



RRB Group D 2024

Level-1 · CEN 08/2024 · Mathematics · Question Paper Compilation

English

All 101 Shifts (Sets) · Mathematics Section · Official Answer Key

About this Compilation

This booklet compiles all **101 shift papers** of the **RRB Group D (Level-1) 2024** examination (CEN 08/2024) in **English** (**Mathematics** section only), with the correct option marked as per the official answer key.

✓ Correct option (highlighted green)

How to use

- Use the **Index** page to jump directly to any set (clickable).
- Questions are grouped by subtopic within each section, so similar questions sit together.
- Diagram and wide-table questions appear at the end of their section at full width.
- The correct answer is highlighted in green with a tick.

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Mathematics

25 Questions • Answer Key

Q1 Mathematics

The average age of 26 students of a class is 26 years. If the age of the teacher is also included, the average age of the whole group becomes 27 years. The age (in years) of the teacher is:

A. 57

B. 50

C. 53



D. 54

Q2 Mathematics

A and B working together can do a piece of work in 6 days. B alone can do the same work in 12 days. How long (in days) will A alone take to do double the work?

A. 12

B. 24



C. 25

D. 27

Q3 Mathematics

A fruit vendor bought 150 mangoes. He sold them at such a price that the selling price of 120 mangoes equals the cost price of 150 mangoes. Find his profit percentage.

A. 20%

B. 25%



C. 35%

D. 30%

Q4 Mathematics

A metal rod is divided into three parts, A, B and C. The lengths of A and B are in the ratio 9 : 20, and the lengths of C and B are in the ratio 5 : 11. If the difference between the lengths of A and C is 10 cm, find the total length (in cm) of the metal rod.

A. 4199

B. 4180

C. 4202

D. 4190



Q5 Mathematics

A scheme like 'Buy 6, Get 4 Free' on the same kind of articles with the same MRP attracts a ____ % discount.

A. 41

B. 67.67

C. 66.67

D. 40



Q6 Mathematics

The amount on a sum of ₹6,800 at 15% per annum compound interest, compounded annually, in 2 years' time, will be:

A. ₹7,996

B. ₹8,993



C. ₹9,393

D. ₹8,641

Q7 Mathematics

P is any point inside the rectangle ABCD. If PA = 98 cm, PB = 91 cm and PC = 21 cm, then the length of PD (in cm) is equal to:

A. 46

B. 38

C. 42



D. 41

Q8 Mathematics

If $p = 6$, $q = -3$, then the value of $p^3 - 3p^2 + 3p + 3q + 3q^2 + q^3$ is:

A. 117



B. -61

C. -117

D. 61



Q9 Mathematics

Two-fifth of a container is filled with blue liquid, one-third of the remaining container is filled with black liquid, five-sixth of the still remaining container is filled with yellow liquid and the remaining 4.2 litres is of white colour. Find the total capacity of the container.

A. 60 litres

B. 72 litres

C. 63 litres ✓

D. 78 litres

Q10 Mathematics

The cost of a washing machine is 40% less than the cost of a TV. If the cost of the washing machine increases by 52% and that of the TV decreases by 76%, then what is the percentage change in the total cost of 5 washing machines and 2 TVs?

A. Decrease by 2%

B. Increase by 0.8% ✓

C. Increase by 5%

D. Decrease by 3%

Q11 Mathematics

Smriti goes to a shopping mall at a speed of 21 km/hr and returns at a speed of 69 km/hr. Find her average speed (in km/hr) for the entire trip.

A. 23.4

B. 32.2 ✓

C. 40.2

D. 30.3

Q12 Mathematics

The total surface area of a solid right circular cylinder is 542 cm^2 . Its curved surface area is two-fifth of its total surface area. Find the curved surface area of the cylinder.

A. 513.2 cm^2

B. 315.4 cm^2

C. 216.8 cm^2 ✓

D. 212.5 cm^2

Q13 Mathematics

Two numbers have an HCF of 18 and an LCM of 1512. If one of the numbers is 126, find the positive difference between these number.

A. 126

B. 90 ✓

C. 256

D. 216

Q14 Mathematics

In statistics out of 100, the marks of 21 students in final exams are as 90, 95, 95, 94, 90, 85, 84, 83, 85, 81, 92, 93, 82, 78, 79, 81, 80, 82, 85, 76, 85, then the mode of data is:

A. 84

B. 85 ✓

C. 83

D. 87

Q15 Mathematics

A 325 m long train overtakes a man moving at a speed of 5 km/hr (in the same direction) in 45 seconds. How much time (in seconds) will it take this train to completely cross another 440 m long train, moving in the opposite direction at a speed of 20 km/hr?

A. 52

B. 40

C. 51

D. 54 ✓

Q16 Mathematics

If 20% of a number is added to 90, then the result is the same number. 80% of the same number is:

A. 120

B. 90 ✓

C. 100

D. 110

Q17 Mathematics

The vertices of a convex pentagon (in order) are $P(0,0)$, $Q(6,0)$, $R(8,3)$, $S(4,7)$, $T(0,4)$. Find the area of the pentagon.

A. 39 sq. units ✓

B. 45 sq. units

C. 36 sq. units

D. 42 sq. units



Q18 Mathematics

Which of the following ratios is equivalent to 3 : 2?

A. 51 : 37

B. 53 : 38

C. 52 : 34

D. 54 : 36

**Q19 Mathematics**

An article was bought for ₹8,900. Its price was marked up by 40%. Thereafter, it was sold at a discount of 5% on the marked price. What was the profit percentage on the transaction?

A. 32%

B. 35%

C. 33%



D. 34%

Q20 Mathematics

Soniya got married 15 years ago. Her present age is $\frac{8}{5}$ times her age at the time of her marriage. Her sister was 8 years younger to her at the time of her marriage. Find the present age of her sister.

A. 40 years

B. 28 years

C. 24 years

D. 32 years

**Q21 Mathematics**

$\frac{1}{20}$ is what percentage of $\frac{10}{40}$?

A. 40%

B. 20%



C. 35%

D. 30%

Q22 Mathematics

Three pipes, A, B and C, can fill a tank from empty to full in 40 minutes, 20 minutes and 30 minutes, respectively. When the tank is empty, all the three pipes are opened. A, B and C discharge chemical solutions P, Q and R, respectively. What is the proportion of solution Q in the liquid in the tank after 9 minutes?

A. $\frac{7}{13}$

B. $\frac{3}{13}$

C. $\frac{3}{4}$

D. $\frac{6}{13}$



Q23 Mathematics

If $\tan\theta = \frac{12}{5}$, what is the value of $\sec\theta$?

A. $\frac{12}{5}$

B. $\frac{13}{5}$ 

C. $\frac{5}{13}$

D. $\frac{13}{12}$

Q24 Mathematics

Simplify $\frac{[3\frac{1}{4} \div \{1\frac{1}{4} - 0.5(2\frac{1}{2} - \frac{1}{12})\}]}{5 \times \frac{1}{15}}$.

A. 334

B. 134

C. 234 

D. 434

Q25 Mathematics

If $\Delta \times 2.2 + 0.33 \times \frac{3}{4} - \frac{1}{20} \times 0.55 = 0.99$, then the value of Δ is:

A. 0

B. 0.25

C. 1

D. 0.35 



Mathematics

25 Questions • Answer Key

Q1 Mathematics

Rajiv and Sachin started a business, investing amounts of ₹160 and ₹1,690, respectively. If Rajiv's share in the profit earned by them is ₹720, what is the total profit (in ₹) earned by them together?

A. 8,454

B. 8,361

C. 8,395

D. 8,325 ✓

Q2 Mathematics

Amit and Deeksha together invested ₹15,700 in a business. At the end of the year, out of a total profit of ₹6,000, Amit's share was ₹2,100. How much was Amit's investment?

A. ₹6,330

B. ₹6,960

C. ₹5,495 ✓

D. ₹6,545

Q3 Mathematics

A brother is 6 years older than his sister. The sum of their present ages is 38 years. What will be the age (in years) of the sister after 15 years from now?

A. 30

B. 31 ✓

C. 32

D. 33

Q4 Mathematics

The market value of Amal's investment rises successively by 5% in 2021, 6% in 2022, and 10% in 2023. If the initial value was ₹5,50,000, what will be its value (in ₹) at the end of 2023?

A. 6,75,900

B. 6,75,800

C. 6,75,365

D. 6,73,365 ✓

Q5 Mathematics

A person saves 60% of his income. If his expenditure is ₹400, then his income (in ₹) is:

A. 240

B. 1,000 ✓

C. 160

D. 1,040

Q6 Mathematics

A bag contains 1-rupee and 2-rupee coins. The total number of coins is 10, and their total value is ₹16. What is the difference between the numbers of two-rupee coins and one-rupee coins?

A. 4

B. 1

C. 3

D. 2 ✓

Q7 Mathematics

Two pipes A and B can fill a tank in 18 hours and 24 hours, respectively. If both the pipes are opened simultaneously, after how much time (in hours) should pipe A be closed so that the tank is full in 16 hours?

A. 7

B. 6 ✓

C. 9

D. 8

Q8 Mathematics

If an item marked at ₹3,650 is sold for ₹730, what is the discount percentage?

A. 80% ✓

B. 79%

C. 78%

D. 82%



Q9 Mathematics

The cost of fencing a square field at ₹15/m is ₹18,000. Find the cost of fencing the same field at ₹11 per 100 m.

- A. ₹142
- B. ₹132
- C. ₹138
- D. ₹146

**Q10 Mathematics**

A shopkeeper marks the price of an article at ₹5,670. Find the cost price if after allowing a discount of 28% he still gains 26% on the cost price.

- A. ₹3,153
- B. ₹3,240
- C. ₹3,216
- D. ₹3,225

**Q11 Mathematics**

A shopkeeper sold an article for ₹85.50 at a profit of 12.5%. Had he sold it for ₹81.70, then what would be his profit or loss percentage?

- A. 8.5% profit
- B. 7.25% loss
- C. 8.5% loss
- D. 7.5% profit

**Q12 Mathematics**

Two trains having lengths of 160 m and 140 m are running at speeds of 100 km/hr and 130 km/hr, respectively, in the same direction. The time taken (in minutes) by the faster train, coming from behind, to completely cross the other train is:

- A. 10.4
- B. 7.2
- C. 0.6
- D. 3

**Q13 Mathematics**

A and B working together can do a piece of work in 6 days. B alone can do the same work in 15 days. How long (in days) will A alone take to do double the work?

- A. 21
- B. 10
- C. 23
- D. 20

**Q14 Mathematics**

The ratio of the speeds of two trucks is 7 : 4. The time taken by the faster truck to cover a distance of 196 km is 7 hours less than the other. Find the speed of the slower truck.

- A. 12 km/hr
- B. 4 km/hr
- C. 10 km/hr
- D. 21 km/hr

**Q15 Mathematics**

A toy is in the form of a cone mounted on a hemisphere, both having the same radius of 7 cm. If the volume of the conical part is equal to the volume of the hemispherical part, what is the total height of the toy?

- A. 28 cm
- B. 21 cm
- C. 35 cm
- D. 14 cm

**Q16 Mathematics**

The cost of a washing machine is 10% less than the cost of a TV. If the cost of the washing machine increases by 65% and that of the TV decreases by 34%, then what is the percentage change in the total cost of 5 washing machines and 3 TVs?

- A. Increase by 25.4%
- B. Decrease by 19%
- C. Decrease by 18%
- D. Increase by 24%

**Q17 Mathematics**

The HCF of two numbers is 23 and their sum is 161. The possible pair(s) of these numbers is/are:

- A. 4
- B. 1
- C. 2
- D. 3



Q18 Mathematics

Find the simple interest (in ₹) on ₹4,000 at 6% per annum rate of interest for the period from 19 February 2024 to 20 April 2024.

A. 40



B. 38

C. 39

D. 41

Q19 Mathematics

The arithmetic mean of the observations 76, 28, 79, 17, 33, 95, 83, 30 and 27 is:

A. 47

B. 52



C. 61

D. 46

Q20 Mathematics

The number of prime numbers lying between 374 and 384 is:

A. 0

B. 1

C. 3

D. 2

**Q21 Mathematics**

Simplify: $\frac{32672 \times 32672 - 21864 \times 21864}{10808}$

A. 54536



B. 54836

C. 54436

D. 54636

Q22 Mathematics

If $\tan A = 1$, then find the value of $\sin A + \cos A$.

A. 1

B. $\sqrt{2}$



C. 2

D. $\sqrt{3}$

Q23 Mathematics

Find the median of the numbers 3, 5, 2, 5, 5, 8, 4, 2, 7, 9, 8 and 11.

A. 5



B. 8

C. 4

D. 3



Q24 Mathematics

The side of an equilateral triangle is equal to the side of a square. What is the ratio of the circumradius of the equilateral triangle to the inradius of the square?

A. $\sqrt{2} : \sqrt{3}$

B. $\sqrt{3} : 2$

C. $3 : \sqrt{2}$

D. $2 : \sqrt{3}$

**Q25 Mathematics**

Simplify the following:

$$4 - [3 - 4 \div 2 + \{4 - (5 - 2)\}] + [4 + 18 \div 2 \times 3(4 - 2)]$$

A. 60

B. 56

C. 54

D. 58



Mathematics

25 Questions • Answer Key

Q1 Mathematics

Anmol and Ayushi together invested ₹46,600 in a business. At the end of the year, out of a total profit of ₹7,500, Anmol's share was ₹2,700. What was Anmol's investment?

A. ₹16,080

B. ₹18,740

C. ₹16,776



D. ₹17,240

Q2 Mathematics

A, B and C can do a piece of work in 3, 8 and 24 days, respectively. How long (in days) will they take to do thrice the same work, working together?

A. 6



B. 12

C. 18

D. 7

Q3 Mathematics

A person saves 60% of his income. If his expenditure is ₹440, then his income (in ₹) is:

A. 176

B. 264

C. 1,100



D. 1,140

Q4 Mathematics

The average age of four children I, J, K and L is 9 years and the average age of I, J, L, M is 12 years. K is 5 years old. The age of M (in years) is:

A. 18

B. 19

C. 17



D. 20

Q5 Mathematics

The amount on a sum of ₹6,500 at 20% per annum compound interest, compounded annually, in 2 years will be:

A. ₹9,360



B. ₹9,431

C. ₹10,274

D. ₹8,411

Q6 Mathematics

In a $\triangle PMN$, $\angle P = 76^\circ$. The bisectors of the exterior angles at M and N intersect each other at point O. The degree measure of $\angle MON$ is:

A. 128° B. 38° C. 104° D. 52° 

Q7 Mathematics

After selling an article at a discount of 29%, the profit percentage obtained is 4%. What is the mark-up percentage (rounded off to two decimal places)?

A. 48.51%

B. 46.48%



C. 45.31%

D. 47.05%

Q8 Mathematics

What is the average of the first 50 even natural numbers?

A. 52

B. 51



C. 54

D. 50



Q9 Mathematics

The average age of 51 students in a class is 24 years. If the age of the teacher is also included, the average age of the whole group becomes 25 years. The age (in years) of the teacher is:

A. 75

B. 76



C. 77

D. 71

Q10 Mathematics

The cost of a washing machine is 40% less than the cost of a TV. If the cost of the washing machine increases by 80% and that of the TV decreases by 22%, then what is the percentage change in the total cost of 7 washing machines and 6 TVs?

A. Increase by 20%



B. Decrease by 15%

C. Decrease by 18%

D. Increase by 21%

Q11 Mathematics

A train P going at the speed of 84 km/hr completely passes train Q of length 447 m, going in the same direction on parallel tracks, at 54 km/hr, in 4.5 minutes. How much time (in seconds) will P take to completely cross train R of length 287 m, going at 87 km/hr in the opposite direction?

A. 34

B. 36

C. 44



D. 39

Q12 Mathematics

A purse contains only ₹5 and ₹10 coins. The total number of coins is 118 and their total value is ₹855. How many coins of ₹5 are there?

A. 65



B. 56

C. 53

D. 55

Q13 Mathematics

Mohan buys a watch for ₹460 and sells it for ₹483. Find his percentage of profit.

A. 4.7%

B. 5.5%

C. 4%

D. 5%

**Q14 Mathematics**

Two trains, measuring 267 metres and 153 metres in length, are moving in the same direction at speeds of 162 km/hr and 36 km/hr, respectively. How long will it take for the faster train to completely overtake the slower one?

A. 22 seconds

B. 18 seconds

C. 17 seconds

D. 12 seconds

**Q15 Mathematics**

11 men can dig a well 59 feet deep in 19 days. How many men can dig a well 118 feet deep in 2 days?

A. 209



B. 211

C. 206

D. 208

Q16 Mathematics

A triangular field has sides measuring 42 cm, 34 cm and 20 cm. What is the length of the altitude corresponding to the longest side?

A. 18 cm

B. 16 cm



C. 20 cm

D. 15 cm

Q17 Mathematics

If the third proportional of 32 and 24 is x, then what is the value of x?

A. 20

B. 18



C. 16

D. 17



Q18 Mathematics

If an item marked at ₹485 is sold for ₹293, then what is the discount percentage? (Round off your answer to two decimal places).

A. 39.59%



B. 42.85%

C. 38.99%

D. 36.76%

Q19 Mathematics

3 men can do a piece of work in 20 days. How many men will do it in 2 days?

A. 31

B. 33

C. 32

D. 30

**Q20 Mathematics**

The ratio of the volume of a sphere to the total surface area of a hemisphere is 28 : 3. If the radii of the sphere and the hemisphere are equal, find the volume of the sphere (in cubic centimetres).

(Use $\pi = \frac{22}{7}$)

A. 38,542

B. 38,808



C. 38,208

D. 38,460

Q21 Mathematics

If $\cos \theta = \frac{5}{13}$, then find the value of $\sqrt{\frac{1 - \sin \theta}{1 + \sin \theta}}$.

A. $\frac{1}{25}$

B. $\frac{1}{3}$

C. $\frac{1}{5}$



D. $\frac{12}{13}$

Q22 Mathematics

Simplify: $\frac{[72 \div \{6 \times (3 + 2)\} + 5^2 - 8] \times 5}{97}$

A. 1



B. 7

C. 5

D. 3



Q23 Mathematics

If $x^2 + 1 = 2x$, then $(x^4 - 1)$ is equal to:

A. x

B. 0

C. 1

D. $2x$



Q24 Mathematics

Simplify: $4 \div 24 + 3.6 \times \frac{1}{9} - \left\{ \frac{1}{15} + (1 - 1.5) \right\}$

A. 1

B. 2

C. 0

D. 3



Q25 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{2}{60}$?

A. 150%

B. 160%

C. 165%

D. 300%



Mathematics

25 Questions • Answer Key

Q1 Mathematics

A sum of money is to be distributed among A, B, C and D in the ratio of 10 : 7 : 9 : 5. If C gets ₹334 more than B, then how much did A receive?

A. ₹1,671

B. ₹1,669

C. ₹1,673

D. ₹1,670 ✓

Q2 Mathematics

Find the mode of the data 1, 11, 11, 8, 18, 8, 7, 7, x, y, and 8, given that $3x + 7y = 42$ and $7x + 3y = 58$.

A. 7 ✓

B. 11

C. 8

D. 18

Q3 Mathematics

If $A : B = 1 : 3$, $B : C = 4 : 3$ and $C : D = 6 : 7$, then $A : B : C : D$ is:

A. 8 : 22 : 18 : 21

B. 6 : 24 : 18 : 21

C. 8 : 24 : 16 : 21

D. 8 : 24 : 18 : 21 ✓

Q4 Mathematics

The present age of a father is twice the sum of the present ages of his two sons. After 20 years, the father's age will be equal to the sum of his sons' ages. Find the present age of the father.

A. 48 years

B. 42 years

C. 45 years

D. 40 years ✓

Q5 Mathematics

P is any point inside the rectangle ABCD. If $PA = 85$ cm, $PB = 65$ cm and $PC = 5$ cm, then the length of PD (in cm) is equal to:

A. 58

B. 53

C. 55 ✓

D. 51

Q6 Mathematics

The area of a triangle is 61.5 m^2 . If one of its sides is 12.3 m, find the length of the perpendicular dropped on that side from the opposite vertex.

A. 11 m

B. 11.5 m

C. 10 m ✓

D. 10.5 m

Q7 Mathematics

The cost of a washing machine is 50% less than the cost of a TV. If the cost of the washing machine increases by 33% and that of the TV decreases by 13%, then what is the percentage change in the total cost of 4 washing machines and 2 TVs?

A. Increase by 10% ✓

B. Decrease by 10%

C. Decrease by 7%

D. Increase by 9.5%

Q8 Mathematics

The amount on a sum of ₹2,800 at 10% per annum compound interest, compounded annually, in 2 years will be:

A. ₹2,647

B. ₹3,604

C. ₹3,388 ✓

D. ₹3,274



Q9 Mathematics

The average of 6.5, 10.6, 19.7 and a is 12. The value of a is:

A. 10.2

B. 11.2



C. 13.2

D. 12.2

Q10 Mathematics

The monthly incomes of two friends, Kiran and Mahesh, are in the ratio 5 : 8 respectively, and each of them saves ₹72,000 every month. If the ratio of their monthly expenditure is 2 : 4, find the monthly income of Kiran (in ₹).

A. 1,80,000



B. 1,79,000

C. 2,52,000

D. 1,81,000

Q11 Mathematics

Sushma purchased a used car for ₹1,20,000 and spent ₹28,500 on its repairs. She then sold it to her friend Sam for ₹1,38,600. What percentage did she gain or lose? (Round off your answer to two decimal places.)

A. 8.67% loss

B. 6.67% gain

C. 5.38% gain

D. 6.67% loss

**Q12 Mathematics**

A train, 1312 m long, is running at a speed of 54 m/s. If it takes 106 seconds to cross a tunnel, then find the length of the tunnel.

A. 4408 m

B. 4413 m

C. 4412 m



D. 4402 m

Q13 Mathematics

The price of oil is increased successively by 50% and then by 40%. What is the equivalent single percentage increase?

A. 110%



B. 75%

C. 100%

D. 90%

Q14 Mathematics

The marked price of a wardrobe is ₹8,640, which is 35% above the cost price. It is sold at a discount of 20% on the marked price. Find the profit percentage.

A. 9%

B. 8%



C. 6%

D. 10%

Q15 Mathematics

A father is 5 times as old as his son. If the sum of their ages is 54 years, how old is the son?

A. 12 years

B. 9 years



C. 10 years

D. 11 years

Q16 Mathematics

Which of the following numbers is divisible by 7?

A. 6825907

B. 7357306

C. 7660778

D. 7132951

**Q17 Mathematics**

Navya and Bhavya can paint a house in 40 days and 60 days, respectively. If they work on alternate days, starting with Bhavya, in how many days can the duo complete painting that house?

A. 48 days



B. 45 days

C. 49 days

D. 50 days

Q18 Mathematics

A and B working together can do a piece of work in 6 days. B alone can do the same work in 9 days. How long (in days) will A alone take to do double the work?

A. 18

B. 39

C. 36



D. 37



Q19 Mathematics

After selling an article at a discount of 25%, the profit percentage obtained is 2%. What is the mark-up percentage?

A. 36%



B. 34%

C. 38%

D. 40%

Q20 Mathematics

If $5\cos A = 4$, find the value of $\frac{3\sqrt{\operatorname{cosec}^2 A - 1}}{4\sqrt{\sec^2 A - 1}}$.

A. $\frac{16}{9}$

B. 1

C. $\frac{3}{4}$

D. $\frac{4}{3}$

**Q21 Mathematics**

Chetan travels from City A to City B. If Chetan drives his car at $\frac{3}{5}$ th of his normal speed, then he reaches City B 52 minutes late.

Find the time (in minutes) that Chetan would have taken to travel from City A to City B if he drove at his normal speed.

A. 78



B. 82

C. 83

D. 69

Q22 Mathematics

What is the value of $\frac{5.4(0.1 \times 0.1 \times 0.1 + 0.03 \times 0.03 \times 0.03)}{(0.3 \times 0.3 \times 0.3 + 0.09 \times 0.09 \times 0.09)}$?

A. 0.6

B. 0.5

C. 0.4

D. 0.2



Q23 Mathematics

If $7^5 \times 7\sqrt{7} \div 7^{\frac{-5}{2}} = 7^{2x+3}$, then the value of x is:

A. 2

B. 0

C. 3



D. 0.5

Q24 Mathematics

Simplify $\frac{1.25^2 - 0.75^2}{2.25^2 - 1.25^2} \times \frac{7}{2}$.

A. 0.5

B. 2

C. 0.25

D. 1

**Q25** Mathematics

A triangle has sides of lengths 7 cm, 9 cm and 12 cm. Find its area.

A. $19\sqrt{7} \text{ cm}^2$

B. $14\sqrt{5} \text{ cm}^2$



C. $18\sqrt{13} \text{ cm}^2$

D. $16\sqrt{3} \text{ cm}^2$



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Mathematics

25 Questions • Answer Key

Q1 Mathematics

In a bag containing red, green and pink tokens, the ratio of red to green tokens was 9 : 6, while the ratio of pink to red tokens was 18 : 16. What was the ratio of green to pink tokens?

A. 17 : 28

B. 15 : 23

C. 16 : 27

D. 14 : 31

Q2 Mathematics

What would be the annual interest accrued on a deposit of ₹95,950 in a bank that pays a 9% per annum rate of simple interest?

A. ₹8,455.50

B. ₹8,035.50

C. ₹8,635.50

D. ₹8,855.50

Q3 Mathematics

Two trains are moving in opposite directions at speeds of 100 km/hr and 140 km/hr. The length of one train is 490 m. The time taken by them to cross each other is 22 seconds. The length (in m) of the other train, rounded off to 2 decimal places, is:

A. 974.27

B. 982.47

C. 976.67

D. 972.33

Q4 Mathematics

If an item marked at ₹594 is sold for ₹155, then what is the discount percentage? (Round off your answer to two decimal places).

A. 72.91%

B. 74.35%

C. 77.24%

D. 73.91%

Q5 Mathematics

The marked price of a bench is ₹374, which is 22% above the cost price. If the profit percentage is 13%, find the discount percentage (rounded off to two decimal places).

A. 7.38%

B. 8.91%

C. 6.66%

D. 6.94%

Q6 Mathematics

A and B working together can do a piece of work in 4 days. B alone can do the same work in 8 days. How long (in days) will A alone take to do double the work?

A. 19

B. 8

C. 16

D. 17

Q7 Mathematics

The ratio of the speeds of two trucks is 7 : 3. The time taken by the faster truck to cover a distance of 147 km is 7 hours less than the other. Find the speed of the slower truck.

A. 4 km/hr

B. 22 km/hr

C. 9 km/hr

D. 12 km/hr

Q8 Mathematics

A field in the shape of a trapezium has parallel sides of 60 m and 77 m. The non-parallel sides are 25 m and 26 m. What is the area of the field?

A. 1,720 m²B. 1,524 m²C. 1,644 m²D. 1,812 m²

Q9 Mathematics

A metal rod is divided into three parts, A, B and C. The lengths of A and B are in the ratio 4 : 8, and the lengths of C and B are in the ratio 10 : 18. If the difference between the lengths of A and C is 48 cm, determine the total length (in cm) of the metal rod.

A. 1764

B. 1176 ✓

C. 1798

D. 1782

Q10 Mathematics

The ratio of two numbers is 2 : 3 and their HCF is 6. Find their LCM.

A. 12

B. 18

C. 36 ✓

D. 32

Q11 Mathematics

A camp has provisions for 48 persons for 12 days. In how many days will the same provisions finish off if the strength of the camp is increased to 72 persons?

A. 6

B. 8 ✓

C. 11

D. 7

Q12 Mathematics

The price of a shirt is first increased by 18% and then decreased by 18%. What is the overall percentage decrease in its price?

A. 2.89%

B. 3.45%

C. 3.24% ✓

D. 2.98%

Q13 Mathematics

A can complete a piece of work in 77 days. B is 75% less efficient than A. C is 40% more efficient than B. If B and C work together for 30 days, A alone will complete the remaining work in:

A. 57 days

B. 59 days ✓

C. 54 days

D. 60 days

Q14 Mathematics

P is any point inside the rectangle ABCD. If PA = 79 cm, PB = 61 cm and PC = 17 cm, then the length of PD (in cm) is equal to:

A. 53 ✓

B. 54

C. 48

D. 57

Q15 Mathematics

Simplify: $(2x + 3)(x - 5) - (x - 2)(3x + 4)$

A. $-x^2 - 5x - 7$ ✓B. $x^2 - 5x - 7$ C. $-x^2 - 5x + 7$ D. $-x^2 + 5x - 7$ **Q16 Mathematics**

If the total surface area of a cylinder is 4 times the area of two circular faces, and the volume of the cylinder is $192\pi \text{ cm}^3$, then the height of the cylinder is:

A. 9 cm

B. 8 cm

C. 12 cm ✓

D. 16 cm

Q17 Mathematics

A class of 100 students took a Physics test. 37 students had an average score of 84. The other students had an average score of 96. What is the average score (rounded off to one decimal place) of the whole class?

A. 89.7

B. 97.5

C. 85.5

D. 91.6 ✓

Q18 Mathematics

If 20% of a number is added to 96, then the result is the same number. 75% of the same number is:

A. 110

B. 120

C. 100

D. 90 ✓



Q19 Mathematics

The price of fuel decreases by 20%, 30% and 20% in three successive months but increases by 40% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price?

- A. Increases by 41.98%
- B. Increases by 36.01%
- C. Decreases by 37.28% ✓
- D. Decreases by 33.02%

Q20 Mathematics

A trader buys 80 pens at ₹8 each. He sells 60 of them at ₹12 each and the remaining at a 25% loss. What is the overall profit or loss?

- A. ₹200 Profit ✓
- B. ₹200 Loss
- C. ₹210 Profit
- D. ₹240 Loss

Q21 Mathematics

If the ratio of the present ages of Parul and her mother is 5 : 13 and the product of their ages is 585, find the ratio of their ages after 9 years.

- A. 1 : 2 ✓
- B. 4 : 7
- C. 3 : 5
- D. 2 : 5

Q22 Mathematics

The average age of 35 students of a class is 46 years. If the age of the teacher is also included, the average age of the whole group becomes 47 years. The age (in years) of the teacher is:

- A. 85
- B. 82 ✓
- C. 83
- D. 84

Q23 Mathematics

A point on the ground is at a distance equal to $\sqrt{3}$ times the height of a building from its base. What is the angle (in degrees) formed between the line joining the point to the top of the building and the ground?

- A. 60°
- B. 30° ✓
- C. 90°
- D. 45°

Q24 Mathematics

Simplify: $((342 \div 19 \times 306 \div 17) \div 36 \times 6) + (60 \div 5 \times 2 - 12)$

- A. 66 ✓
- B. 56
- C. 46
- D. 76

Q25 Mathematics

A water tank is $\frac{5}{8}$ full. If 12 buckets of water are taken out and 9 buckets of water are poured into it, the water tank would be $\frac{7}{12}$ full.

Find the number of buckets the water tank can contain.

- A. 96
- B. 48
- C. 72 ✓
- D. 60



Mathematics

25 Questions • Answer Key

Q1 Mathematics

A sum of money is to be distributed among A, B, C and D in the ratio of 17 : 3 : 9 : 6. If C gets ₹294 more than B, then how much did A receive?

A. ₹833



B. ₹836

C. ₹834

D. ₹835

Q2 Mathematics

The sum of two numbers is 26. The bigger number is greater than the smaller number by 4. Find the bigger number.

A. 15



B. 13

C. 21

D. 18

Q3 Mathematics

Ranjeet sold an article for ₹582, earning a profit of 20%. What was the cost price (in ₹) of the article?

A. 480

B. 485



C. 495

D. 490

Q4 Mathematics

A sum of money was invested at simple interest at a certain rate for 3 years. Had it been invested at a 4% per annum higher rate, it would have fetched ₹360 more. Find the principal.

A. ₹3,500

B. ₹3,200

C. ₹3,000



D. ₹2,800

Q5 Mathematics

The arithmetic mean of the observations 29, 48, 65, 32, 72, 63, 64, 18 and 14 is:

A. 45



B. 38

C. 40

D. 43

Q6 Mathematics

P is any point inside the rectangle ABCD. If PA = 73 cm, PB = 57 cm and PC = 99 cm, then the length of PD (in cm) is equal to:

A. 112

B. 103

C. 105

D. 109



Q7 Mathematics

For a trip of 600 km, a truck travels the first 300 km at a speed of 40 km/hr. At what speed (in km/hr) should it cover the remaining distance, so that the average speed is 70 km/hr?

A. 260

B. 295

C. 255

D. 280



Q8 Mathematics

Paul, Ryan and Max can finish a certain piece of work in 15, 14 and 21 days, respectively. All three of them started the work together. Paul left the work after 5 days and Ryan left just 3 days before the work was completed. Find the total number of days taken for the work to be completed.

A. 7.4



B. 11.2

C. 3.7

D. 10.1



Q9 Mathematics

The cost of a washing machine is 50% less than the cost of a TV. If the cost of the washing machine increases by 60% and that of the TV decreases by 11%, what is the percentage change in the total cost of 6 washing machines and 2 TVs?

A. Decrease by 29%

B. Increase by 31.6% ✓

C. Decrease by 33%

D. Increase by 26%

Q10 Mathematics

The ratio of the present ages of Anu and Bina is 4 : 5. After 6 years from now, the ratio becomes 5 : 6. Find Bina's present age (in years).

A. 32

B. 20

C. 25

D. 30 ✓

Q11 Mathematics

The marked price of a bookshelf is ₹572, which is 40% above the cost price. If the profit percentage is 2%, find the discount percentage (rounded off to two decimal places).

A. 25.22%

B. 29.72%

C. 27.14% ✓

D. 28.83%

Q12 Mathematics

Find the value of $x^2 + 3x + 5$ when $x + 2$.

A. 13

B. 17

C. 19

D. 15 ✓

Q13 Mathematics

The average of first 9 multiples of 4 is:

A. 9

B. 20 ✓

C. 18

D. 4

Q14 Mathematics

The diagonals of a rhombus are in the ratio 3 : 4, and the perimeter is 100 cm. Find the area (in cm^2) of the rhombus.

A. 625

B. 600 ✓

C. 550

D. 650

Q15 Mathematics

Nishi travels to a shopping mall at a speed of 21 km/hr and returns at a speed of 77 km/hr. What is her average speed (in km/hr) for the entire journey?

A. 33 ✓

B. 39

C. 23

D. 34

Q16 Mathematics

Smart Bazaar is offering Buy 16, get 9 free on household items. What is the net percentage discount being offered by the Smart Bazaar?

A. 33%

B. 36% ✓

C. 34%

D. 39%

Q17 Mathematics

A, B and C can complete a piece of work in 3, 5 and 15 days, respectively. How long (in days) will they take to complete thrice the same work, working together?

A. 6

B. 15

C. 10

D. 5 ✓

Q18 Mathematics

If a seven-digit number 78p3945 is divisible by 11, then the value of 'p' is:

A. 3

B. 4

C. 6

D. 5 ✓



Q19 Mathematics

2 men can do a piece of work in 2 days. How many men will do it in 4 days?

A. 3

B. 4

C. 1



D. 2

Q20 Mathematics

Simplify the given expression.

$$18 + 3 \text{ of } (24 \div 8 \times 2) - 6$$

A. 16.5

B. 36

C. 30



D. 24

Q21 Mathematics

A metal rod is divided into three parts, A, B and C. The lengths of A and B are in the ratio 9 : 14, while the lengths of C and B are in the ratio 10 : 13. If the difference between the lengths of A and C is 23 cm, find the total length (in cm) of the metal rod.

A. 429

B. 455

C. 439



D. 424

Q22 Mathematics

Find the value of $\sin 45^\circ \times \operatorname{cosec} 45^\circ$.

A. $\sqrt{2}$

B. 1



C. 0

D. $\frac{1}{\sqrt{2}}$

Q23 Mathematics

If 50% of 20% of $\frac{2}{3}$ of a number is 686, find the number.

A. 11840

B. 14190

C. 10150

D. 10290

**Q24 Mathematics**

A cubical block of wood of side 14 cm is surmounted by a hemisphere of the largest possible diameter. What is the total surface area (in cm^2) of the solid thus formed? (Use $\pi = \frac{22}{7}$)

A. 1484

B. 1296

C. 1176

D. 1330



Q25 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{2}{80}$?

A. 210%

B. 215%

C. 400%

D. 200%



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Mathematics

25 Questions • Answer Key

Q1 Mathematics

A ladder is leaning against a wall, making an angle of 60° with the ground. If the foot of the ladder is 5 m away from the wall, find the length of the ladder.

- A. 12 m
- B. 15 m
- C. 20 m
- D. 10 m



Q2 Mathematics

Pushpraj and Himani together invested ₹34,100 in a business. At the end of the year, out of a total profit of ₹5,400, Pushpraj's share was ₹2,700. What was the investment of Pushpraj?

- A. ₹18,870
- B. ₹15,505
- C. ₹17,260
- D. ₹17,050



Q3 Mathematics

The arithmetic mean of the observations 42, 97, 57, 62, 52, 13, 44, 23 and 69 is:

- A. 44
- B. 45
- C. 51
- D. 48



Q4 Mathematics

Three numbers are in the ratio 17 : 12 : 6 and the sum of these numbers is 1820. Find the middle number.

- A. 621
- B. 622
- C. 623
- D. 624



Q5 Mathematics

A and B working together can do a piece of work in 4 days. B alone can do the same work in 20 days. How long (in days) will A alone take to do double the work?

- A. 11
- B. 10
- C. 5
- D. 13



Q6 Mathematics

The marked price of a chair is ₹7,600, which is 25% above the cost price. It is sold at a discount of 4% on the marked price. Find the profit percentage.

- A. 19%
- B. 21%
- C. 20%
- D. 22%



Q7 Mathematics

The cost of a washing machine is 50% less than the cost of a TV. If the cost of the washing machine increases by 83% and that of the TV decreases by 38%, then what is the percentage change in the total cost of 8 washing machines and 4 TVs?

- A. Increase by 22.5%
- B. Increase by 26%
- C. Decrease by 27%
- D. Decrease by 19%



Q8 Mathematics

The perimeter (in cm) of a right-angled triangle whose sides that make the right angle are 18 cm and 24 cm, is:

- A. 79
- B. 60
- C. 72
- D. 68



Q9 Mathematics

Raju walks to his office 3.5 km away from home. In the morning, he covers the distance in 1.5 hours, whereas, while returning home in the evening, he takes 30 more minutes to cover the same distance. Find his average speed (in km/hr) during the two-way journey.

A. 2.5

B. 2

C. 3

D. 3.5

Q10 Mathematics

If 20% of a number is added to 78, then the result is the same number. 80% of the same number is:

A. 78

B. 108

C. 88

D. 98

Q11 Mathematics

The ratio of the present ages of two cousins is 3 : 2. After 6 years, the ratio will become 5 : 4. What was the sum of their ages (in years) 4 years ago?

A. 5

B. 7

C. 11

D. 9

Q12 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 13.5^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 4 : 5, then what is the difference between the measures of $\angle Q$ and $\angle P$?

A. 8°

B. 4°

C. 3°

D. 5°

Q13 Mathematics

If the ratio of two numbers is 7 : 8, and their HCF is 32, then their LCM is:

A. 1792

B. 1809

C. 1833

D. 1783

Q14 Mathematics

A five digit number 761xy is divisible by 90. Find $(x + y)$.

A. 5

B. 9

C. 4

D. 10

Q15 Mathematics

The salary of a person was decreased by 30% and subsequently increased by 30% for 2 years. What is the percentage change in the salary?

A. Decrease of 34.5%

B. Decrease of 28.9%

C. Increase of 18.3%

D. Increase of 21.7%

Q16 Mathematics

What would the annual interest accrued on a deposit of ₹3,500 in a bank that pays a 17% per annum rate of simple interest be?

A. ₹595

B. ₹545

C. ₹615

D. ₹495

Q17 Mathematics

A fruit seller purchases lemons at 2 for a rupee and sells them at 5 for three rupees. Find his profit percentage.

A. 20

B. 24

C. 18

D. 22

Q18 Mathematics

The product of two consecutive odd numbers is 16383. Which is the smaller one?

A. 129

B. 125

C. 127

D. 123



Q19 Mathematics

A train 1439 m long is running at 36 km/hr. How long will it take to clear a 1331 m long platform completely?

- A. 282 seconds
- B. 272 seconds
- C. 277 seconds
- D. 281 seconds

**Q20 Mathematics**

A dealer allowed a 73% discount on an article and was still able to manage a 56% profit. Find the ratio of the cost price to listed price.

- A. 6 : 57
- B. 12 : 54
- C. 12 : 59
- D. 9 : 52

**Q21 Mathematics**

6 men can complete a piece of work in 5 days while 2 women can do it in 15 days. In how many days can 3 women and 3 men complete it?

- A. 15 days
- B. 4 days
- C. 5 days
- D. 14 days

**Q22 Mathematics**

Simplify the following:

$$\frac{5^{3x+4} + 125^{x+1}}{125^{x+1} - 5^{3x+2}}$$

- A. 8
- B. 5
- C. 7.5
- D. 10

**Q23 Mathematics**

Simplify: $x^2 - (3x - 2)(x + 5)$

- A. $-x^2 - 13x + 10$
- B. $2x^2 - 13x + 10$
- C. $-2x^2 - 11x + 10$
- D. $-2x^2 - 13x + 10$

**Q24 Mathematics**

Find the area of a triangle whose sides are in the ratio 28 : 23 : 35 and its perimeter is 516 cm.

- A. $720\sqrt{258} \text{ cm}^2$
- B. $650\sqrt{367} \text{ cm}^2$
- C. $540\sqrt{319} \text{ cm}^2$
- D. $420\sqrt{217} \text{ cm}^2$



Q25 Mathematics

If the mean and mode are equal for the given data. Find x ($x < 6$).

Class Interval	15-25	25-35	35-45
Quantity	6	10	x

A. 3

B. 2

C. 4



D. 1



Mathematics

25 Questions • Answer Key

Q1 Mathematics

If a 1533 m long train crosses a pole in 73 seconds, then find the time (in seconds) taken by the train to cross a 420 m long platform.

- A. 86
- B. 84
- C. 96
- D. 93



Q2 Mathematics

The sides of a triangle are 75 cm, 34 cm and 61 cm. What is the length of its altitude corresponding to the side with the length of 34 cm?

- A. 68 cm
- B. 20 cm
- C. 60 cm
- D. 63 cm



Q3 Mathematics

Pushpraj and Himani together invested ₹17,800 in a business. At the end of the year, out of a total profit of ₹5,600, Pushpraj's share was ₹2,100. What was the investment of Pushpraj?

- A. ₹4,720
- B. ₹7,690
- C. ₹6,090
- D. ₹6,675



Q4 Mathematics

A credit card payment that will settle a bill for 250 mixers at ₹1,014 per mixer with successive discounts of 30% and 15%, with a further discount of 20% on card payment, is:

- A. ₹1,20,678
- B. ₹1,20,664
- C. ₹1,20,696
- D. ₹1,20,666



Q5 Mathematics

The cost price of an article is ₹10,720. It was sold for ₹9,862.40. Find the loss percentage.

- A. 5%
- B. 10%
- C. 6%
- D. 8%



Q6 Mathematics

In a family consisting of a father, mother, son, and daughter, the age difference between the son and the daughter is 3 years, which is the same as the age difference between the father and the mother. The total age of the family is 144 years. The father is the eldest and the son is the youngest. The son's age is half the age of the mother. What is the age (in years) of the daughter?

- A. 26
- B. 23
- C. 20
- D. 22



Q7 Mathematics

A 24-metre-long wire is broken into three pieces. The largest piece has length thrice the length of the smallest piece. The difference between lengths of two larger pieces is equal to the difference between the lengths of two smaller pieces. The length of the largest piece is ____ metres.

- A. 18
- B. 15
- C. 12
- D. 10



Q8 Mathematics

Find the total prime numbers between 146 and 196.

- A. 13
- B. 11
- C. 10
- D. 12



Q9 Mathematics

In a bag containing red, green and pink tokens, the ratio of red to green tokens was 14 : 8 while the ratio of pink to red tokens was 2 : 6. What was the ratio of green to pink tokens?

A. 12 : 7



B. 9 : 11

C. 7 : 12

D. 11 : 14

Q10 Mathematics

A solid metallic sphere of radius 10.5 cm is melted and recast into smaller spherical balls, each of radius 3.5 cm. Find the ratio of the total surface area of all the smaller spheres to the surface area of the original sphere.

A. 12 : 1

B. 9 : 1

C. 3 : 1



D. 6 : 1

Q11 Mathematics

The average age of 35 students of a class is 13 years. If the age of the teacher is also included, the average age of the whole group becomes 14 years. The age (in years) of the teacher is:

A. 53

B. 51

C. 47

D. 49

**Q12 Mathematics**

If 20% of a number is added to 72, then the result is the same number. 80% of the same number is:

A. 82

B. 102

C. 92

D. 72

**Q13 Mathematics**

If an item marked at ₹4,000 is sold for ₹280, then what is the discount percentage?

A. 93%



B. 91%

C. 94%

D. 95%

Q14 Mathematics

The income of Raman is ₹12,000. He saves 27% of his income. If his income increases by 20% and expenditure increases by 15%, then his savings will:

A. decrease by ₹1,089

B. increase by ₹1,088

C. decrease by ₹1,085

D. increase by ₹1,086

**Q15 Mathematics**

The amount on a sum of ₹7,700 at 10% per annum compound interest, compounded annually, in 2 years will be:

A. ₹10,109

B. ₹9,317



C. ₹8,936

D. ₹9,494

Q16 Mathematics

A woman travelled at a speed of 20 m/min for 80 min, and at a speed of 55 m/min for 60 min. Her average speed (in m/min) is:

A. 28

B. 41

C. 39

D. 35

**Q17 Mathematics**

If mode of data 8, 7, 8, 7, 9, 10, 2, 8, 9, 7, 5, 10 and x is 7, then the value of x is:

A. 7



B. 9

C. 5

D. 8

Q18 Mathematics

A, B and C can do a piece of work in 3, 2 and 6 days, respectively. How long (in days) will they take to do thrice the same work, working together?

A. 6

B. 4

C. 3



D. 9



Q19 Mathematics

If $(a-1)^3 + (a-4)^3 + (a-7)^3 = 3(a-1)(a-4)(a-7)$, find the value of a .

A. -4

B. 1

C. 4



D. -1

Q20 Mathematics

If the area of a rectangle is 195 cm^2 and length is 15 cm , then find the perimeter of rectangle.

A. 56 cm



B. 58 cm

C. 52 cm

D. 54 cm

Q21 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{10}{70}$?

A. 50%

B. 35%



C. 45%

D. 70%

Q22 Mathematics

There are two wooden sticks of length 57 m and 399 m , respectively. The sticks are to be cut into pieces of equal length. What is the greatest possible length of each stick?

A. 57 m



B. 59 m

C. 56 m

D. 58 m

Q23 Mathematics

Aman can do $\frac{1}{6}$ th of a piece of work in 13 days and Chaman can do $\frac{1}{7}$ th of the same work in 19 days. Find the number of days taken to complete the work if both work together. (Rounded off to one decimal place)

A. 49.2



B. 54.5

C. 51.6

D. 46.3



Q24 Mathematics

Find the value of $\frac{\sin 80^\circ}{\cos 10^\circ} - \sin 57^\circ \sec 33^\circ + 2$.

A. 2



B. 0

C. 1

D. 3

Q25 Mathematics

A teacher is preparing 15 identical exam folders. Each folder contains: 8 question sheets, 6 answer sheets, and a booklet that includes $\left[\frac{27-3}{6} + 4 \right]$ additional pages. How many total sheets and pages does the teacher prepare for all 15 folders?

A. 360

B. 330



C. 134

D. 270



Mathematics

25 Questions • Answer Key

Q1 Mathematics

Find the simple interest (in ₹) on ₹4,000 at 6% per annum rate of interest for the period from 21 February 2024 to 22 April 2024.

- A. 41
- B. 38
- C. 39
- D. 40



Q2 Mathematics

The arithmetic mean of the observations 79, 42, 47, 77, 49, 75, 56, 26 and 35 is:

- A. 64
- B. 49
- C. 54
- D. 45



Q3 Mathematics

In a box containing blue, yellow, and orange tokens, the ratio of blue to yellow tokens was 13 : 19, while the ratio of orange to blue tokens was 10 : 3. What was the ratio of orange to yellow tokens?

- A. 130 : 57
- B. 137 : 61
- C. 134 : 62
- D. 132 : 59



Q4 Mathematics

Diana is thrice as old as Teresa and Homi is twice as old as Diana. If Diana's age is 4 years less than the average age of all three, then Homi's age (in years) is:

- A. 78
- B. 72
- C. 68
- D. 70



Q5 Mathematics

If 20% of a number is added to 102, then the result is the same number. 60% of the same number is:

- A. 96.5
- B. 86.5
- C. 76.5
- D. 106.5



Q6 Mathematics

The price per unit of lemon candy to strawberry candy is in the ratio 4 : 14, and a family consumes them in the ratio 23 : 2 by quantity. Find the ratio of the expenditure on strawberry candy to that on lemon candy.

- A. 10 : 24
- B. 7 : 24
- C. 7 : 23
- D. 8 : 26



Q7 Mathematics

A typist takes 40 minutes to type 2 pages. How long (in minutes) will he take to type 81 pages?

- A. 1630
- B. 1625
- C. 1610
- D. 1620



Q8 Mathematics

At beginning of the poll, Rahul received 52% of the total votes and Leena received 48% of the total votes. The total voting was of 3,72,000 votes. How many votes did Leena earn above 1,00,000?

- A. 37,20,000 votes
- B. 1,00,000 votes
- C. 78,560 votes
- D. 1,78,560 votes



Q9 Mathematics

A credit card payment that will settle a bill for 290 microwaves at ₹1,050 per microwave with successive discounts of 4% and 25%, with a further discount of 5% on card payment is:

A. ₹2,08,292

B. ₹2,08,260

C. ₹2,08,278



D. ₹2,08,290

Q10 Mathematics

Three men can dig a well 39 feet deep in 4 days. How many men can dig a well 78 feet deep in 12 days?

A. 3

B. 5

C. 1

D. 2

**Q11 Mathematics**

In a fruit basket, there are twice as many oranges as apples. If there are a total of 36 fruits, how many oranges are there?

A. 12

B. 18

C. 24



D. 30

Q12 Mathematics

The average of 4, 12, 8, 10, 16, 14, 9, 20, 18, 22, 15 and K is 14. Find the value of K.

A. 16

B. 20



C. 18

D. 15

Q13 Mathematics

Akriti earns ₹ 54,500 monthly and saves 17% of her salary. Find her monthly expenditure.

A. ₹ 45,523

B. ₹ 45,352

C. ₹ 45,235



D. ₹ 45,325

Q14 Mathematics

A and B working together can do a piece of work in 3 days. B alone can do the same work in 21 days. How long (in days) will A alone take to do double the work?

A. 3.5

B. 10

C. 8

D. 7

**Q15 Mathematics**

The cost of 1 litre milk is equal to the selling price of 800 ml milk. The percentage of profit is ____.

A. 27.5%

B. 22.5%

C. 25%



D. 20%

Q16 Mathematics

P is any point inside the rectangle ABCD. If PA = 57 cm, PB = 9 cm, and PC = 54 cm, then the length PD (in cm) is equal to:

A. 76

B. 78



C. 83

D. 80

Q17 Mathematics

A shop that sells towels has offers going on, wherein customers can buy 2 towels and get 2 free. What is the percentage discount that customers get?

A. 50%



B. 45%

C. 55%

D. 60%

Q18 Mathematics

For a trip of 600 km, a truck travels the first 300 km at a speed of 42 km/hr. At what speed (in km/hr) should it cover the remaining distance, so that the average speed for the entire journey is 63 km/hr?

A. 101

B. 141

C. 106

D. 126



Q19 Mathematics

The diagonals of a quadrilateral are perpendicular bisectors of each other. If the length of one diagonal is 8 cm and the area of the quadrilateral is 48 cm^2 , find the length (in cm) of the other diagonal.

A. 14

B. 10

C. 12



D. 8

Q20 Mathematics

A 435-metre-long train crosses a platform thrice its length in 87 seconds. What is the speed of the train (in km/hr)?

A. 68

B. 76

C. 80

D. 72

**Q21 Mathematics**

The value of $\frac{(0.85)^3 - (0.1)^3}{(0.85)^2 + 0.085 + 0.01}$ is:

A. 0.95

B. 0.75



C. 0.99

D. 0.65

Q22 Mathematics

Simplify: $\left(\frac{3^4 \times 9^{-2}}{27^{-1} \times 3^{-3}} \right)^{\frac{1}{3}}$

A. 27

B. 3

C. 9



D. 1

Q23 Mathematics

Simplify: $\frac{1 - \cos 2\theta}{\sin 2\theta}$

A. $\sin \theta$ B. $\tan \theta$ C. $\cot \theta$ D. $\operatorname{cosec} \theta$ **Q24 Mathematics**

A cylindrical water tank has a diameter of 2.8 m and a height of 3.5 m. It is to be painted on both its outer curved surface and two circular ends. If the cost of painting is ₹25/m², find the total cost of painting the tank. (Use $\pi = \frac{22}{7}$)

A. ₹1,160

B. ₹1,290

C. ₹1,078



D. ₹1,220



Q25 Mathematics

If $x + y + z = 0$ and $xyz = 21$, then $x^3 + y^3 + z^3$ is equal to:

A. 21

B. 63



C. 42

D. 0



Mathematics

25 Questions • Answer Key

Q1 Mathematics

A, B and C can complete a piece of work in 3, 9 and 18 days, respectively. How long (in days) will they take to complete thrice the same work, working together?

A. 7

B. 6



C. 12

D. 18

Q2 Mathematics

Ravi spends ₹80 more than Raj. If together they spend ₹380, how much does Raj spend?

A. ₹110

B. ₹150



C. ₹120

D. ₹140

Q3 Mathematics

The ratio of the present age of Sunil and Shyam is 3 : 4. The ratio of their age after 25 years from now, will be 8 : 9. What is the present age of Sunil?

A. 15 years



B. 14 years

C. 18 years

D. 16 years

Q4 Mathematics

Two banks, A and B, offered loans at 3.5% and 7.5% per annum, respectively. Nirmal borrowed an amount of ₹2,40,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Nirmal after 3 years.

A. 28,300

B. 29,800

C. 28,800



D. 30,300

Q5 Mathematics

An article was bought for ₹2,600. Its price was marked up by 20%. Thereafter, it was sold at a discount of 10% on the marked price. What was the profit percentage on the transaction?

A. 8%



B. 9%

C. 10%

D. 7%

Q6 Mathematics

The insect population in a building was 9580 in 2015. It increased by 12% in 2016, decreased by 8% in 2017, and again increased by 8% in 2018. Find the insect population in 2018, rounded off to the nearest integer.

A. 10,661



B. 11,661

C. 11,665

D. 10,665

Q7 Mathematics

A shopkeeper buys an article for ₹12,000 and sells it for ₹13,500. Find his profit percentage.

A. 10.5%

B. 20%

C. 15%

D. 12.5%



Q8 Mathematics

After selling an article at a discount of 20%, the profit percentage obtained is 32%. What is the markup percentage?

A. 65%



B. 71%

C. 69%

D. 61%



Q9 Mathematics

19 men and 13 women can complete a piece of work in 12 days, while 17 men and 9 women can complete the same work in 14 days. The work of how many women is equivalent to that of one man?

A. 5

B. 2

C. 3



D. 4

Q10 Mathematics

The sum of three numbers is 8784. If the ratio between the first and second numbers is 20 : 18 and that of between second and third is 21 : 12, then find the difference between the first and the third number.

A. 1786

B. 1687

C. 1768



D. 1678

Q11 Mathematics

In an election between two candidates, 80% of the total voters cast their votes. Out of the total votes cast, 10% were declared invalid. If Candidate A secured 70% of the valid votes and Candidate B received the rest, and the total number of eligible voters was 50,000. How many votes did candidate A receive?

A. 25,500

B. 26,200

C. 26,500

D. 25,200

**Q12 Mathematics**

A train passes two tunnels of length 2708 m and 2195 m in 88 seconds and 76 seconds, respectively. What is the length of the train?

A. 1063 m

B. 1064 m

C. 1054 m



D. 1048 m

Q13 Mathematics

A jeep travels 80 km at the speed of 40 km/hr and the next 32 km at the speed of 16 km/hr. What is its average speed (in km/hr)?

A. 34

B. 28



C. 22

D. 32

Q14 Mathematics

A solid metallic sphere of radius 10.5 cm is melted and recast into smaller spherical balls of radius 1.5 cm each. If the surface area of the original sphere is S, what is the total surface area of all the small balls combined?

A. 6S

B. 8S

C. 7S



D. 5S

Q15 Mathematics

The median of the data 4, 23, 11, 7, 6, 9, (K + 5), 15, 20 and 16 is 12. Find the value of K.

A. 6

B. 8



C. 7

D. 5

Q16 Mathematics

The sum of the first 16 prime numbers is:

A. 381



B. 377

C. 383

D. 382

Q17 Mathematics

The average age of 25 students of a class is 33 years. If the age of the teacher is also included, the average age of the whole group becomes 34 years. The age (in years) of the teacher is:

A. 61

B. 59



C. 56

D. 55



Q18 Mathematics

Simplify the following.

$$6 \times 6 + 6 \times (8 - 5)^2 \div 3 \times 9$$

A. 192

B. 138

C. 164

D. 198

**Q19 Mathematics**

The sides of a triangle are 41 cm, 21 cm, and 50 cm. What is the length of its altitude corresponding to the side with a length of 21 cm?

A. 54 cm

B. 22 cm

C. 85 cm

D. 40 cm

**Q20 Mathematics**

If the third proportional of 8 and 56 is x, then what is the value of x?

A. 394

B. 392



C. 393

D. 390

Q21 Mathematics

Which of the following numbers is divisible by 41?

A. 7575438

B. 7397665

C. 7497194

D. 7132975

**Q22 Mathematics**

Simplify the given expression.

$$(x + 2)(x + 3)$$

A. $x^2 + 6x + 5$

B. $x^2 + 5x + 6$



C. $x^2 + 2x + 3$

D. $x^2 + 3x + 2$

Q23 Mathematics

The perimeter of an equilateral triangle is three – fifth of the perimeter of a square of diagonal $16\sqrt{2}$ cm. Find the ratio between the area of the triangle and the area of the square.

A. $3\sqrt{2} : 16$

B. $2\sqrt{3} : 11$

C. $4\sqrt{3} : 25$



D. $3\sqrt{5} : 26$



Q24 Mathematics

If 50% of 70% of $\frac{2}{6}$ of a number is 539, find the number.

A. 3800

B. 6880

C. 7200

D. 4620

**Q25** Mathematics

From a point 20 m away from the base of a tower, the angle of elevation to the top of the tower is 30° . Find the height of the tower.

(Use $\sqrt{3} \approx 2$)

A. 15 m

B. 12 m

C. 11 m

D. 10 m



Mathematics

25 Questions • Answer Key

Q1 Mathematics

Water flows through a cylindrical pipe of diameter 14 cm at a speed of 15 km/hr into a rectangular tank 50 m long and 44 m wide. How long will it take for the water level in the tank to rise by 21 cm?

A. 2 hours



B. 3 hours

C. 1.5 hours

D. 2.5 hours

Q2 Mathematics

The average age of 40 students of a class is 33 years. If the age of the teacher is also included, the average age of the whole group becomes 34 years. The age (in years) of the teacher is:

A. 74



B. 77

C. 73

D. 76

Q3 Mathematics

A shopkeeper marks the price of an article at ₹5,360. Find the cost price if after allowing a discount of 8% he still gains 34% on the cost price.

A. ₹3,557

B. ₹3,686

C. ₹3,622

D. ₹3,680



Q4 Mathematics

If a X m long train running at a speed of 59 m/sec crosses a railway platform in 9 sec. Find the value of X, if the length of the railway platform is 279 m.

A. 256

B. 253

C. 252



D. 262

Q5 Mathematics

A car travels from City A to City B, a distance of 150 km, at a speed of 60 km/hr. On the way back, due to heavy traffic, the car's speed decreases. If the total time for the round trip is 7 hours 30 min, what is the speed during the return trip?

A. 30 km/hr



B. 42 km/hr

C. 45 km/hr

D. 36 km/hr

Q6 Mathematics

Thomas is 38 years old. His nephew is 26 years younger than him. In how many years will Thomas's age be 14 years less than three times his nephew's age?

A. 3

B. 5

C. 8



D. 2

Q7 Mathematics

The value of $999.99 + 99.99 + 9.99$ is:

A. 1999.9

B. 1109.97



C. 1119.99

D. 1109.99

Q8 Mathematics

Aakash, Suman and Raj invest ₹1,720, ₹1,690 and ₹1,240, respectively, to start a business. If the profit at the end of the year is ₹1,440, then what is the share of Raj in the profit?

A. ₹381

B. ₹384



C. ₹385

D. ₹382



Q9 Mathematics

If 20% of a number is added to 84, then the result is the same number. 65% of the same number is:

- A. 88.25
- B. 98.25
- C. 68.25
- D. 78.25

Q10 Mathematics

The LCM of two numbers is four times their HCF. The sum of their LCM and HCF is 140. If one of the numbers is 112, find the other number.

- A. 25
- B. 28
- C. 27
- D. 26

Q11 Mathematics

A sum of money was invested at simple interest at a certain rate for 4 years. Had it been invested at a 3% per annum higher rate, it would have fetched ₹960 more. Find the principal.

- A. ₹8,300
- B. ₹8,000
- C. ₹7,800
- D. ₹7,500

Q12 Mathematics

Prakhar and Riya together invested ₹33,500 in a business. At the end of the year, out of a total profit of ₹6,700, Prakhar's share was ₹2,000. What was Prakhar's investment?

- A. ₹10,370
- B. ₹8,540
- C. ₹11,210
- D. ₹10,000

Q13 Mathematics

X people were given a contract for doing a piece of work in 28 days. 5 people did not turn up to work due to sickness, and the rest of the people completed the work in 30 days. What is the value of X?

- A. 74
- B. 75
- C. 82
- D. 65

Q14 Mathematics

One pipe can fill a tank in 3 minutes, while another pipe can empty the completely filled tank in 12 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-fourth of the tank?

- A. 1
- B. 3
- C. 4
- D. 2

Q15 Mathematics

Ravi's father is 4 times as old as Ravi. After 5 years, the father's age will be 3 times Ravi's age. What is Ravi's present age?

- A. 10 years
- B. 18 years
- C. 15 years
- D. 12 years

Q16 Mathematics

In a group of 150 players consisting of males and females, 58% are males. The average weight of the male players is 82 kg, while that of the female players is 72 kg. Find the average weight (in kg) of all the players in the group.

- A. 76.4
- B. 75.9
- C. 77.2
- D. 77.8

Q17 Mathematics

A manufacturer sells a transistor for ₹840 at a gain of 20% to a shopkeeper. The shopkeeper then sells it to a customer at a profit of 10%. What is the difference between the cost price to the manufacturer and the cost price to the customer (in ₹)?

- A. 345
- B. 224
- C. 200
- D. 250



Q18 Mathematics

Arrange the following schemes in the ascending order of their discounts.

- A. Buy 5 get 6 free.
- B. A single discount of 82%.
- C. Two successive discounts of 11% and 24%.

A. C, A, B



B. C, B, A

C. B, C, A

D. A, B, C

Q19 Mathematics

In an examination, the percentage of students who qualified from school X to the number of students who appeared from that school is 80%. In school Y, the number of students who appeared is 15% more than those from school X, and the number of students who qualified is 30% more than the number of students qualified from school X. What is the percentage of students qualified to the number of students who appeared from school Y (rounded off to one decimal place)?

A. 80.4%

B. 90.4%



C. 88.8%

D. 84.6%

Q20 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at point T (inside the quadrilateral) and $\angle STR = 24^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 3 : 5, then what is the difference between the measures of $\angle Q$ and $\angle P$?

A. 11°

B. 12°



C. 17°

D. 15°

Q21 Mathematics

If $a + \frac{1}{a} = 12$, then find the value of $a^2 + \frac{1}{a^2}$.

A. 140

B. 142



C. 138

D. 144

Q22 Mathematics

The curved surface area of a cylinder is 528 m^2 and its volume is 1848 m^3 . Find the total surface area (in m^2) of the cylinder. (Take $\pi = \frac{22}{7}$)

A. 840

B. 836



C. 842

D. 832



Q23 Mathematics

If $\cos \alpha = \frac{5}{13}$, where α is acute, find the value of $\sec \alpha - \tan \alpha$.

A. $\frac{5}{12}$

B. $\frac{1}{5}$



C. $\frac{13}{12}$

D. $\frac{4}{5}$

Q24 Mathematics

Simplify: $(2^4)^3 \times (2^5)^2 \div 2^7$

A. 27

B. 215



C. 210

D. 212

Q25 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{10}{100}$?

A. 60%

B. 100%

C. 65%

D. 50%



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The sum of the present ages of father and son is 96. 20 years ago, the father was three times as old as his son. What is the ratio of the present ages of the father and his son?

A. 32 : 17

B. 32 : 15

C. 31 : 17



D. 31 : 16

Q2 Mathematics

The length, breadth and height of a cuboid are in the ratio 6 : 5 : 3. If the volume of the cuboid is 720 m^3 , find its surface area (in m^2).

A. 458

B. 424

C. 360

D. 504



Q3 Mathematics

A skilled worker earns ₹100 per day and an unskilled worker earns ₹50. If 5 workers earn ₹400 together in one day, how many skilled workers were there?

A. 2

B. 3



C. 4

D. 1

Q4 Mathematics

Three pipes, X, Y, and Z, can fill a tanker in 360 minutes, 540 minutes, and 720 minutes, respectively. Y and Z are opened for 30 minutes, then X is also opened. The time taken by the three pipes together to fill the remaining part of the tank is:

A. 155 minutes

B. 150 minutes



C. 152 minutes

D. 158 minutes

Q5 Mathematics

The average of 6.5, 10.6, 19.7 and a is 13. The value of a is:

A. 17.2

B. 15.2



C. 16.2

D. 14.2

Q6 Mathematics

What is the average speed of a truck that covers half the distance at the speed of 20 km/hr and the other half at the speed of 80 km/hr?

A. 37 km/hr

B. 40 km/hr

C. 41 km/hr

D. 32 km/hr



Q7 Mathematics

A dealer marks his goods at 30% above the cost price and allows a discount of 38% on the marked price. What is his loss percentage?

A. 19.4%



B. 22.9%

C. 21.3%

D. 18.6%

Q8 Mathematics

Two trains having lengths of 410 m and 440 m are running at speeds of 130 km/hr and 140 km/hr, respectively, in the same direction. The time taken (in minutes) by the faster train, coming from behind, to completely cross the other train is:

A. 5.1



B. 6

C. 14.7

D. 8.1



Q9 Mathematics

Subtracting 1% of X from X is the same as multiplying X by:

- A. 0.001
- B. 0.01
- C. 0.99
- D. 0.5

**Q10 Mathematics**

A manufacturer sells an article to a wholesaler at a profit of 20%. The wholesaler then sells it to a retailer at a profit of 25%, and the retailer sells it to a customer at a profit of 24%. If the retailer's selling price is ₹372, what was the manufacturing cost of the article?

- A. ₹120
- B. ₹100
- C. ₹200
- D. ₹172

**Q11 Mathematics**

A and B working together can do a piece of work in 5 days. B alone can do the same work in 55 days. How long (in days) will A alone take to do double the work?

- A. 12
- B. 14
- C. 11
- D. 5.5

**Q12 Mathematics**

What is the difference between the simple interest on a principal of ₹5,000 being calculated at 5% per annum for 3 years and 4% per annum for 4 years?

- A. ₹50
- B. ₹45
- C. ₹55
- D. ₹40

**Q13 Mathematics**

A store is offering 'Buy 47, get 9 free' on household items. What is the net percentage discount (approximately) being offered by the store?

- A. 19.02%
- B. 17.75%
- C. 13.81%
- D. 16.07%

**Q14 Mathematics**

The sides of a triangle are 120 cm, 174 cm, and 126 cm. What is its area (in cm^2)?

- A. 7561
- B. 7552
- C. 7560
- D. 7570

**Q15 Mathematics**

The sum of the first 10 prime numbers is:

- A. 130
- B. 133
- C. 129
- D. 131

**Q16 Mathematics**

In a bag containing teal, maroon, and lime tokens, the ratio of teal to maroon tokens was 15 : 10, while the ratio of lime to teal tokens was 19 : 11. What was the ratio of lime to maroon tokens?

- A. 64 : 23
- B. 57 : 22
- C. 49 : 16
- D. 63 : 29

**Q17 Mathematics**

By selling an article for ₹528, a trader incurs a loss of 12%. At what price should he sell the article to gain 12%?

- A. ₹628
- B. ₹678
- C. ₹666
- D. ₹672

**Q18 Mathematics**

The average age of 26 students of a class is 37 years. If the age of the teacher is also included, the average age of the whole group becomes 38 years. The age (in years) of the teacher is:

- A. 61
- B. 62
- C. 65
- D. 64



Q19 Mathematics

The sum of the first 5 prime numbers is:

A. 28



B. 32

C. 27

D. 26

Q20 Mathematics

Vinod, Kajal and Arpit invest ₹1,040, ₹1,390 and ₹1,890, respectively, to start a business. If the profit at the end of the year is ₹1,440, then what is the share of Arpit in the profit?

A. ₹630



B. ₹627

C. ₹632

D. ₹629

Q21 Mathematics

Which of the following sets of numbers can form the sides of a triangle?

A. {5 cm, 6 cm, 11 cm}

B. {10 cm, 8 cm, 2 cm}

C. {8 cm, 9 cm, 4 cm}



D. {9 cm, 12 cm, 22 cm}

Q22 Mathematics

Find the value of x , if $17 \times 684 \div 57 - \frac{5}{7}$ of $4.2 = x + 13 \times 204 \div 17$.

A. 42

B. 48

C. 45



D. 54

Q23 Mathematics

If $x = -15$, $y = 25$ and $z = -10$, then find the value of $x^3 + y^3 + z^3$.

A. 13250

B. 11250



C. 12250

D. 10250

Q24 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{10}{20}$?

A. 10%



B. 20%

C. 25%

D. 30%



If $\cos\theta = \frac{8}{17}$, what is the value of $\sin\theta$?

A. $\frac{15}{17}$



B. $\frac{15}{8}$

C. $\frac{8}{15}$

D. $\frac{17}{15}$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The average age of 36 students of a class is 12 years. If the age of the teacher is also included, the average age of the whole group becomes 13 years. The age (in years) of the teacher is:

A. 49



B. 55

C. 52

D. 50

Q2 Mathematics

Amit sells two articles for ₹360 each. On one, he gains 20%, and on the other, he loses 10%. Find the gain or loss percent in the entire transaction. [Answer correct to two places after decimal.]

A. 4.56% loss

B. 5.56% loss

C. 5.56% profit

D. 2.86% profit



Q3 Mathematics

The amount on a sum of ₹2,600 at 20% per annum compound interest, compounded annually, in 2 years will be:

A. ₹4,363

B. ₹2,950

C. ₹3,744



D. ₹3,441

Q4 Mathematics

A number is split into two parts so that one part exceeds the other by 10. If the ratio of the two parts is 7 : 5, write the equation representing this situation by assuming the smaller part to be x.

A. $5(x + 10) = 7x$ B. $35(x + 10) = x$ C. $5(10x + 1) = 7x$ D. $7(x + 10) = 5x$

Q5 Mathematics

An Uber auto covers a distance of 639 km in 71 hours. What is its speed in km/hr?

A. 19

B. 13

C. 4

D. 9



Q6 Mathematics

If 20% of a number is added to 84, then the result is the same number. 60% of the same number is:

A. 83

B. 63



C. 73

D. 93

Q7 Mathematics

Aman and Yogita together invested ₹52,200 in a business. At the end of the year, out of a total profit of ₹5,800, Aman's share was ₹1,700. What was the investment of Aman?

A. ₹15,490

B. ₹16,620

C. ₹15,300



D. ₹13,695

Q8 Mathematics

The length, breadth and height of a cuboid are in the ratio 5 : 3 : 2. If the total surface area of the cuboid is 992 m^2 , find its volume.

A. $1,920 \text{ m}^3$ B. $1,980 \text{ m}^3$ C. $2,070 \text{ m}^3$ D. $2,040 \text{ m}^3$ 

Q9 Mathematics

The marked price of a chair is ₹2,700, which is 35% above the cost price. It is sold at a discount of 20% on the marked price. Find the profit percentage.

A. 7%

B. 10%

C. 8% ✓

D. 9%

Q10 Mathematics

The lengths of the two diagonals of a rhombus are 10 cm and 24 cm. Find the length of its perimeter (in cm).

A. 52 ✓

B. 26

C. 34

D. 13

Q11 Mathematics

Provisions meant for 100 men for 13 weeks are shared when 30 more men join them. For how many weeks will the provisions now last?

A. 10 ✓

B. 8

C. 14

D. 12

Q12 Mathematics

If the mean proportional of X and 250 is 50, then find the value of X.

A. 13

B. 10 ✓

C. 8

D. 12

Q13 Mathematics

The sides of a triangle are 30 cm, 63 cm, and 51 cm. What is the length of its altitude corresponding to the side with a length of 63 cm?

A. 57 cm

B. 24 cm ✓

C. 48 cm

D. 3 cm

Q14 Mathematics

X people were given a contract for doing a piece of work in 34 days. 3 people did not turn up to work due to sickness, and the rest of the people completed the work in 35 days. What is the value of X?

A. 103

B. 104

C. 105 ✓

D. 115

Q15 Mathematics

Manoj got a new curtain at 50% discount. If Manoj did not get any discount, Manoj would have to pay ₹251 extra. So how much did Manoj pay for the curtain?

A. ₹251 ✓

B. ₹252

C. ₹250

D. ₹253

Q16 Mathematics

One pipe can fill a tank in 9 minutes while another pipe can empty the completely filled tank in 90 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-half of the tank?

A. 11

B. 5 ✓

C. 10

D. 6

Q17 Mathematics

The cost of a washing machine is 50% less than the cost of a TV. If the cost of the washing machine increases by 62% and that of the TV decreases by 33%, then what is the percentage change in the total cost of 6 washing machines and 2 TVs?

A. Decrease by 27%

B. Increase by 19%

C. Decrease by 31%

D. Increase by 24% ✓



Q18 Mathematics

The product of two numbers is 63 and their difference is 7. The sum of squares of the two numbers is

- A. 220
- B. 130
- C. 112
- D. 175

**Q19 Mathematics**

Eight years ago, A was thrice as old as B. Eight years hence, A will be twice as old as B. Find A's present age.

- A. 52 years
- B. 56 years
- C. 64 years
- D. 60 years

**Q20 Mathematics**

Find the value of $\frac{(0.026)^3 - (0.02)^3}{(0.026)^2 + 0.00052 + (0.02)^2}$.

- A. 0.006
- B. 0.6
- C. 0.0006
- D. 0.06

**Q21 Mathematics**

$\frac{1}{20}$ is what percentage of $\frac{10}{90}$?

- A. 60%
- B. 90%
- C. 55%
- D. 45%

**Q22 Mathematics**

The angle of elevation of the top of a tower from a point 63 m distance away from its foot is 30° . Find the height (in m) of the tower.

- A. $\frac{18}{\sqrt{3}}$
- B. $\frac{21}{\sqrt{3}}$
- C. $18\sqrt{3}$
- D. $21\sqrt{3}$

**Q23 Mathematics**

Simplify: $(3x + 7)^2 - (3x - 7)^2$

- A. $48x$
- B. $-84x$
- C. $-48x$
- D. $84x$



Q24 Mathematics

Walking at $\frac{3}{7}$ of his normal speed, Abhijeet is 24 minutes late in reaching his office. The usual time taken by him to cover the distance between his home and his office is:

A. 10 minutes

B. 26 minutes

C. 28 minutes

D. 18 minutes



Q25 Mathematics

The average of seven consecutive odd numbers (in increasing order) is 51. What is the smallest odd number among them?

A. 43

B. 41

C. 45

D. 47



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The volume (in m^3) of a cuboidal tank with dimensions $2 \text{ m} \times 11 \text{ m} \times 49 \text{ m}$ is:

A. 1061

B. 1078



C. 1049

D. 1102

Q2 Mathematics

If 20% of a number is added to 72, then the result is the same number. 65% of the same number is:

A. 68.5

B. 58.5



C. 78.5

D. 88.5

Q3 Mathematics

When the volume of a sphere is divided by its surface area, the result is 7 cm. Find the surface area.

A. 5544 cm^2 B. 4896 cm^2 C. 5274 cm^2 D. 5088 cm^2

Q4 Mathematics

A number is 18 more than its three-fourth. Find the number.

A. 72



B. 42

C. 54

D. 36

Q5 Mathematics

A 140-metre-long train crosses a platform thrice its length in 56 seconds. What is the speed of the train in km/hr ?

A. 40

B. 26

C. 33

D. 36



Q6 Mathematics

A, B and C can do a piece of work in 2, 20 and 5 days respectively. How long (in days) will they take to do thrice the same work, working together?

A. 5

B. 4



C. 12

D. 8

Q7 Mathematics

Srikar spends 10% of his monthly income on rent, 20% of the rest on household expenditure and 25% of the rest on food and saves the rest. He finally saves ₹78,300. Find his monthly income.

A. ₹1,50,000

B. ₹1,78,300

C. ₹1,00,000

D. ₹1,45,000



Q8 Mathematics

To buy a new apartment, Shweta borrowed ₹9,95,500 at 4% per annum simple interest for 39 months. How much interest will she pay?

A. ₹1,29,665

B. ₹1,29,415



C. ₹1,15,995

D. ₹1,39,545

Q9 Mathematics

The total number of colour blocks is 4641. If the ratio of red blocks to blue blocks is 6 : 10 and the ratio of blue blocks to yellow blocks is 2 : 7, then how many yellow blocks are there?

A. 3149

B. 3148

C. 3155

D. 3185



Q10 Mathematics

Dev and Tej started a business, investing amounts of ₹1,800 and ₹1,620, respectively. If Dev's share in the profit earned by them is ₹930, what is the total profit (in ₹) earned by them together?

A. 1,753

B. 1,869

C. 1,767



D. 1,788

Q11 Mathematics

In a class test, the average score of 35 students was 44. Later, it was found that 25 was incorrectly recorded as 33 in two instances, and 36 was incorrectly recorded as 34 in one instance. What is the actual average score of the class?

A. 42.6

B. 44.6

C. 41.6

D. 43.6

**Q12 Mathematics**

P is any point inside the rectangle ABCD. If PA = 46 cm, PB = 16 cm and PC = 88 cm, then the length of PD (in cm) is equal to:

A. 96

B. 100

C. 98



D. 94

Q13 Mathematics

8 men or 9 women can do a job in 2 days. 8 men work for 1 day and leave. The number of women required to complete the remaining work in 9 days is:

A. 2

B. 4

C. 1



D. 3

Q14 Mathematics

2 men can do a piece of work in 2 days. How many men will do it in 1 day?

A. 2

B. 4



C. 5

D. 3

Q15 Mathematics

The cost of a washing machine is 50% less than the cost of a TV. If the cost of the washing machine increases by 62% and that of the TV decreases by 51%, then what is the percentage change in the total cost of 6 washing machines and 2 TVs?

A. Increase by 17%

B. Decrease by 21%

C. Decrease by 19%

D. Increase by 16.8%

**Q16 Mathematics**

The average age of 31 students of a class is 14 years. If the age of the teacher is also included, the average age of the whole group becomes 15 years. The age (in years) of the teacher is:

A. 46



B. 49

C. 47

D. 45

Q17 Mathematics

A shopkeeper buys 20 pens for ₹600 and sells them for ₹900. Find his profit percentage.

A. 40%

B. 15%

C. 50%



D. 33.33%

Q18 Mathematics

If the listed price of a bag is 93% more than its cost price and a discount of 59% is announced on it, then find the loss percentage.

A. 23.12%

B. 24.87%

C. 20.87%



D. 20.89%

Q19 Mathematics

If Anirudh is as much elder than Praveen as he is younger than Suman and the sum of the ages of Praveen and Suman is 36 years, then find the age of Anirudh.

A. 9 years

B. 12 years

C. 24 years

D. 18 years



Q20 Mathematics

A vendor offers her customers a discount of 24% on her beauty products and she still makes a profit of 22%. What is the cost price (in ₹) of a beauty product marked at ₹854?

A. 576

B. 586

C. 573

D. 532 **Q21 Mathematics**

$$\begin{array}{r} 2300 \quad 2300 \quad 2300 \quad 2300 \\ \hline 99 \quad 9 \quad 33 \quad 11 \end{array}$$

A. $\frac{2300}{99}$ 

B. $\frac{2300}{33}$

C. $\frac{2300}{11}$

D. $\frac{2300}{9}$

Q22 Mathematics

Walking at $\frac{4}{7}$ of his normal speed, Abhijeet is 36 minutes late in reaching his office.

The usual time taken by him to cover the distance between his home and his office is:

A. 48 minutes 

B. 57 minutes

C. 42 minutes

D. 56 minutes

Q23 Mathematics

If $\sin A = \frac{3}{5}$, and A is an acute angle, then find the value of $2\cot^2 A - \operatorname{cosec}^2 A$.

A. $\frac{2}{9}$

B. $\frac{7}{9}$ 

C. $\frac{1}{9}$

D. $\frac{8}{9}$



Q24 Mathematics

What is the value of $\left[10\frac{1}{3} \div \frac{5}{3} \text{ of } (10 + 14 \div 3 - 1)\right]$?

A. $\frac{93}{205}$



B. $\frac{83}{105}$

C. $\frac{83}{205}$

D. $\frac{93}{105}$

Q25 Mathematics

Which of the following expressions is the simplified form of $(2x + 5)(2x - 5) - (2x - 3)^2$?

A. $2(6x - 17)$



B. $2(3x - 17)$

C. $2(3x + 17)$

D. $2(6x + 17)$



Mathematics

25 Questions · Answer Key

Q1 Mathematics

A class of 91 students took a Physics test. 12 students had an average score of 64. The other students had an average score of 77. What is the average score (rounded up to one decimal place) of the whole class?

A. 79.7

B. 73.6

C. 75.3



D. 79.4

Q2 Mathematics

The number of prime numbers lying between 480 and 489 is:

A. 2

B. 0

C. 1



D. 3

Q3 Mathematics

The ratio of the present ages of P and Q is 4 : 3. Six years later, the ratio will be 5 : 4. Find the difference between their present ages.

A. 10 years

B. 8 years

C. 4 years

D. 6 years



Q4 Mathematics

A train passes two tunnels of length 2091 m and 1259 m in 89 seconds and 63 seconds, respectively. What is the length of the train?

A. 748 m

B. 759 m

C. 757 m



D. 747 m

Q5 Mathematics

A sum of money is to be distributed among A, B, C and D in the ratio 6 : 7 : 17 : 19. If C gets ₹250 more than B, then how much did A receive?

A. ₹148

B. ₹150



C. ₹149

D. ₹147

Q6 Mathematics

A cylindrical pipe, open at both ends, has an external diameter of 20 cm and an internal diameter of 16 cm. If the length of the pipe is 35 cm, find the volume of the metal used in making the pipe. (Use $\pi = 22/7$)

A. 3080 cm³B. 3520 cm³C. 3360 cm³D. 3960 cm³

Q7 Mathematics

Two-fifth of Vijay's marks in Hindi are more than one-third of his marks in Sanskrit by 5, while five times his marks in Hindi and five times his marks in Sanskrit together are equal to 310. Find his marks in Sanskrit.

A. 27



B. 25

C. 31

D. 35

Q8 Mathematics

A person's income and expenditure are in the ratio 9 : 5. His income rises by 60% while his expenditure falls by 10%. If his initial expenditure was ₹15,500, then what will be his final saving (in ₹)?

A. 30,690



B. 36,900

C. 30,960

D. 39,600



Q9 Mathematics

A vendor offers her customers a discount of 29% on her beauty products and she still makes a profit of 12%. What is the cost price (in ₹) of a beauty product marked at ₹896?

A. 568



B. 574

C. 622

D. 721

Q10 Mathematics

If $A : B = 4 : 6$ and $B : C = 7 : 12$, then $A : B : C$ is:

A. 14 : 21 : 36



B. 11 : 23 : 4

C. 4 : 7 : 9

D. 4 : 31 : 21

Q11 Mathematics

Navya and Bhavya can paint a house in 50 days and 75 days, respectively. If they work on alternate days, starting with Bhavya, in how many days can the duo complete painting that house?

A. 59 days

B. 55 days

C. 63 days

D. 60 days

**Q12 Mathematics**

One pipe can fill a tank in 4 minutes while another pipe can empty the completely filled tank in 8 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-fourth of the tank?

A. 8

B. 2



C. 4

D. 6

Q13 Mathematics

Sachin got a new curtain at 12% discount. If Sachin did not get any discount, Sachin would have to pay ₹747 extra. So how much did Sachin pay for the curtain?

A. ₹5,478



B. ₹5,480

C. ₹5,479

D. ₹5,476

Q14 Mathematics

What is the difference between the simple interest on a principal of ₹3,600 being calculated at 15% per annum for 3 years and 14% per annum for 4 years?

A. ₹416

B. ₹406

C. ₹396



D. ₹386

Q15 Mathematics

The sides of a triangle are 148 cm, 57 cm, and 175 cm. What is the length (in cm) of its altitude corresponding to the side with a length of 57 cm?

A. 177

B. 121

C. 188

D. 140

**Q16 Mathematics**

A person saves 60% of his income. If his expenditure is ₹600, then his income (in ₹) is:

A. 1,240

B. 1,360

C. 1,500



D. 1,540

Q17 Mathematics

The cost of a washing machine is 25% less than the cost of a TV. If the cost of the washing machine increases by 34% and that of the TV decreases by 21%, then what is the percentage change in the total cost of 4 washing machines and 2 TVs?

A. Decrease by 16%

B. Increase by 12%



C. Increase by 19%

D. Decrease by 9%

Q18 Mathematics

The arithmetic mean of the observations 65, 41, 96, 44, 38, 30, 79, 90 and 21 is:

A. 56



B. 62

C. 64

D. 59



Q19 Mathematics

The length of the shadow of a vertical tower is equal to its height. Find the angle of elevation.

A. 45°



B. 30°

C. 60°

D. 75°

Q20 Mathematics

A car travels for 180 km at a speed of 60 km/hr and then returns along the same route at a speed of 45 km/hr. By how many minutes is the return journey longer than the onward journey?

A. 60 min



B. 120 min

C. 80 min

D. 15 min

Q21 Mathematics

After selling 88 phones, a store owner incurred a loss which is equal to the selling price of 8 phones. Find his loss percentage.

A. $12\frac{1}{2}\%$

B. $6\frac{1}{4}\%$

C. $8\frac{1}{3}\%$



D. 10%

Q22 Mathematics

Simplify: $\frac{(3x)^3 - (4z)^3}{9x^2 + 12xz + 16z^2} \times (3x + 4z)$

A. $9x^2 - 16z^2$



B. $\frac{1}{9x^2 + 16z^2}$

C. $9x^2 + 16z^2$

D. $\frac{1}{9x^2 - 16z^2}$

Q23 Mathematics

In a triangle XYZ, $\angle X - \angle Y = 40^\circ$ and $\angle Y - \angle Z = 25^\circ$. The ratio of $\angle Z$ to $\angle X - \angle Y$ is:

A. 4 : 5

B. 1 : 5

C. 2 : 3

D. 3 : 4



Q24 Mathematics

$$\begin{array}{r} 4 \ 47 \ 9 \ 5 \\ \hline 9 \ 99 \ 20 \ 9 \end{array}$$

A. $\frac{4}{9}$



B. $\frac{47}{99}$

C. $\frac{5}{9}$

D. $\frac{9}{20}$

Q25 Mathematics

Simplify: $\frac{2\frac{1}{2} \div \frac{5}{8} + \frac{3}{4} \times \frac{2}{3} - \frac{5}{6}}{(15 - 6)^2 \div 9 + \frac{1}{2}}$

A. $\frac{20}{57}$

B. $\frac{17}{57}$

C. $\frac{22}{57}$



D. $\frac{18}{57}$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The length of each of the two equal sides of an isosceles triangle is 78 cm, and the length of its base is 60 cm. Find the area (in cm^2) of the triangle.

- A. 2165
- B. 2175
- C. 2158
- D. 2160



Q2 Mathematics

A train, 1195 m-long, is running at a speed of 23m/s. If it takes 72 seconds to cross a tunnel, then find the length of the tunnel.

- A. 452 m
- B. 454 m
- C. 461 m
- D. 462 m



Q3 Mathematics

R pays ₹20 with ₹2 and ₹5 coins. If at least one coin of each denomination is used in paying the amount, then the number of ₹2 coins used is ____.

- A. 8
- B. 4
- C. 5
- D. 10



Q4 Mathematics

If an item marked at ₹758 is sold for ₹256, then what is the discount percentage? (Round off the answer to two decimal places)

- A. 66.23%
- B. 68.01%
- C. 68.31%
- D. 68.94%



Q5 Mathematics

The sum of three numbers is 4512. If the ratio between the first and second numbers is 16 : 9 and that of between the second and third is 15 : 21, then find the difference between the first and the third number.

- A. 389
- B. 398
- C. 480
- D. 408



Q6 Mathematics

The sides of a triangle are 102 cm, 154 cm, and 80 cm. What is the length (in cm) of its altitude corresponding to the side with a length of 154 cm?

- A. 3
- B. 15
- C. 48
- D. 94



Q7 Mathematics

A train overtakes two persons walking along a railway track. The first one walks at 5.4 km/hr. The other one walks at 18 km/hr. The train needs 30 and 44 seconds, respectively, to overtake them. What is the speed of the train, if both the persons are walking in the same direction as the train?

- A. 37 km/hr
- B. 49 km/hr
- C. 45 km/hr
- D. 38 km/hr



Q8 Mathematics

The ratio of the ages of John and James will be 8 : 7 after 8 years. If the difference between their ages is 5 years, find the present age of James.

- A. 27 years
- B. 35 years
- C. 28 years
- D. 32 years



Q9 Mathematics

Seema bought a microwave oven for ₹7,500 and sold it for ₹8,750. Find Seema's profit percentage. (Round off your answer to two decimal places.)

A. 14.23%

B. 16.33%

C. 16.67% ✓

D. 18.67%

Q10 Mathematics

A class of 43 students took a Physics test. 10 students had an average score of 99. The other students had an average score of 55. What is the average score (rounded off to one decimal place) of the whole class?

A. 74.8

B. 66.8

C. 65.2 ✓

D. 67.5

Q11 Mathematics

What is the simple interest on a sum of ₹3,500, if the rate of interest for the first 6 years is 8% per annum and for the last 3 years is 3% per annum?

A. ₹1,995 ✓

B. ₹1,955

C. ₹2,015

D. ₹2,025

Q12 Mathematics

One pipe can fill a tank in 6 minutes while another pipe can empty the completely filled tank in 12 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-fourth of the tank?

A. 6

B. 3 ✓

C. 12

D. 9

Q13 Mathematics

The income of Raman is ₹25,000. He saves 25.5% of his income. If his income increases by 20% and expenditure increases by 40%, then his savings will:

A. increase by ₹2,446

B. decrease by ₹2,452

C. increase by ₹2,453

D. decrease by ₹2,450 ✓

Q14 Mathematics

2 men or 9 women can do a job in 9 days. 2 men work for 5 days and leave. The number of women required to complete the remaining work in 9 days is:

A. 6

B. 4 ✓

C. 3

D. 7

Q15 Mathematics

If $X - Y = 20$ and $XY = 12$, then find the value of $X^2 + Y^2$.

A. 420

B. 422

C. 426

D. 424 ✓

Q16 Mathematics

A garrison of 1,200 men has provisions for 12 days. How long (in days) will the provisions last if the garrison is increased to 1,800 men?

A. 10

B. 8 ✓

C. 7

D. 9

Q17 Mathematics

The unit prices of lemon chocolate and strawberry chocolate are in the ratio 28 : 26, and a family consumes them in the ratio 15 : 14 by quantity. Find the ratio of expenditure on strawberry chocolate to that on lemon chocolate.

A. 12 : 21

B. 13 : 15 ✓

C. 15 : 17

D. 10 : 21

Q18 Mathematics

The number of prime numbers lying between 440 and 452 is:

A. 3

B. 2 ✓

C. 1

D. 0



Q19 Mathematics

The vertices of a quadrilateral are A(2,3), B(5,7), C(10,6), and D(7,2). Find the area of the quadrilateral ABCD.

- A. 25 sq. units
- B. 20 sq. units
- C. 23 sq. units ✓
- D. 28 sq. units

Q20 Mathematics

The marked price of an item is set at 51% above its cost price. If the merchant sells the item at 8% below the marked price, his profit percentage (rounded off to 1 decimal place) is:

- A. 36.8%
- B. 42.4%
- C. 38.9% ✓
- D. 42.9%

Q21 Mathematics

From a point on the ground, the angle of elevation to the top of a tower is θ such that $\tan\theta = 3/4$. Find the sine of angle θ .

- A. $\frac{3}{5}$ ✓
- B. $\frac{3}{4}$
- C. $\frac{4}{5}$
- D. $\frac{5}{3}$

Q22 Mathematics

If 30% of 40% of $\frac{5}{9}$ of a number is 704, find the number.

- A. 10,540
- B. 13,420
- C. 10,560 ✓
- D. 10,960

Q23 Mathematics

Calculate the mode of the following data. (Round off to two decimal places)

Marks	4-8	8-12	12-16	16-20	20-24	24-28	28-32	32-36
No. of Students	9	12	18	34	26	20	12	7

- A. 22.67
- B. 24.67
- C. 18.67 ✓
- D. 20.67



Q24 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{2}{50}$?

A. 140%

B. 250%

C. 135%

D. 125%

**Q25** Mathematics

Simplify the following.

$$(2x^3y^5z) \times (5xy^6z^2) \div (15x^2yz^2)$$

A. $\frac{2x^2y^{10}z}{5}$

B. $\frac{x^2y^5z^2}{2}$

C. $\frac{x^2y^{10}z}{3}$

D. $\frac{2x^2y^{10}z}{3}$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The marked price of a bookshelf is ₹415, which is 33% above the cost price. If the profit percentage is 13%, find the discount percentage (rounded off to two decimal places).

A. 17.32%

B. 18.88%

C. 15.04%



D. 16.86%

Q2 Mathematics

A water tank is initially one-tenth full. Pipe A can empty the tank in 6 minutes. After this, pipes A, B and C are opened together to fill the tank, where pipe B can fill it in 30 minutes and pipe C in 40 minutes. How long will it take to completely fill the tank?

A. 35 minutes

B. 25 minutes

C. 28 minutes

D. 24 minutes



Q3 Mathematics

If the surface area of a sphere increases by 69%, what is the percentage increase in its volume?

A. 119.7%



B. 103.5%

C. 138.6%

D. 90.3%

Q4 Mathematics

The cost of a washing machine is 25% less than the cost of a TV. If the cost of the washing machine increases by 83% and that of the TV decreases by 15%, then what is the percentage change in the total cost of 8 washing machines and 4 TVs?

A. Decrease by 42%

B. Increase by 43.8%



C. Decrease by 41%

D. Increase by 46%

Q5 Mathematics

Prakhar and Riya together invested ₹56,700 in a business. At the end of the year, out of a total profit of ₹5,400, Prakhar's share was ₹1,400. What was Prakhar's investment?

A. ₹16,200

B. ₹14,300

C. ₹14,700



D. ₹14,900

Q6 Mathematics

A train passes two tunnels of length 2492 m and 1914 m in 81 seconds and 64 seconds, respectively. What is the length of the train (in m)?

A. 254 m

B. 262 m



C. 252 m

D. 267 m

Q7 Mathematics

The price of 3 pens is equal to the price of 5 pencils. The price of 5 pens and 3 pencils is ₹34. The price of 3 pen and 5 pencils is ₹_____.

A. 32

B. 31

C. 30



D. 35

Q8 Mathematics

The sum of the modes of the data sets $\{1, 7, 3, 7, 3, x\}$ and $\{4, 8, 9, 8, 4, y\}$ is 11. If $x > y$, then find the possible correct relation between x and y .

A. $x + y = 9$ B. $x - y = 5$ C. $x - y = 3$ D. $x + y = 10$ 

Q9 Mathematics

If a gymnastic coach has 14 gymnasts, their heights are as follows (in cm):
172, 173, 164, 178, 168, 169, 173, 172, 173, 164, 178, 168, 169, 173

The mode of this data (in cm) is:

A. 173



B. 178

C. 172

D. 163

Q10 Mathematics

Which of the following numbers is divisible by 7, 11 and 13?

A. 2121

B. 3026

C. 6006



D. 1546

Q11 Mathematics

A ladder is leaning against a wall. The foot of the ladder is 1115.4705 cm away from the wall, and the ladder makes an angle of 60 degrees with the ground. Find the height of the wall it touches. (Round your answer to the nearest integer.)

A. 1220 cm

B. 1550 cm

C. 1932 cm



D. 1715 cm

Q12 Mathematics

If the listed price of a bag is 76% more than its cost price and a discount of 54% is announced on it, then find the loss percentage.

A. 22.6%

B. 19.04%



C. 18.5%

D. 17.55%

Q13 Mathematics

A and B working together can do a piece of work in 5 days. B alone can do the same work in 10 days. How long (in days) will A alone take to do double the work?

A. 20



B. 10

C. 21

D. 23

Q14 Mathematics

What is the length of the altitude (in cm) to the side QR of a triangle PQR with side PQ = 25 cm, PR = 25 cm and QR = 40 cm?

A. 18

B. 24

C. 15



D. 27

Q15 Mathematics

The sum of the present ages of Ankita and her daughter Anushree is 50 years. Five years ago from now, Ankita was three times as old as Anushree. What is the present age (in years) of Anushree?

A. 18

B. 10

C. 15



D. 12

Q16 Mathematics

Sheethal spends 60% of her monthly salary on household expenses. If the remaining amount after her spending is ₹33,200, what is her monthly salary?

A. ₹83,000



B. ₹76,000

C. ₹78,000

D. ₹69,000

Q17 Mathematics

The amount on a sum of ₹6,800 at the rate of 10% per annum compound interest, compounded annually, in 2 years will be:

A. ₹9,040

B. ₹8,549

C. ₹7,703

D. ₹8,228

**Q18 Mathematics**

If the height of a cylinder is 15 cm and its base area is 169π cm², then find its total surface area.

A. 5577 cm²

B. 55,770 cm²

C. 2288 cm²



D. 1225 cm²



Q19 Mathematics

If 30% of 50% of $\frac{2}{3}$ of a number is 325, find the number.

A. 2590

B. 5230

C. 3250



D. 5330

Q20 Mathematics

A company sells an article at a price such that it earns a 25% profit on the selling price. What is the actual profit percentage on the cost price? (correct to two decimal places)

A. 35.33%

B. 33.33%



C. 30.33%

D. 32.33%

Q21 Mathematics

Simplify: $\frac{35x^3y^2z}{7xy^4} \div 25xy^{-2}z$

A. $\frac{x}{2}$ B. $\frac{x}{5}$ C. $\frac{x}{7}$ D. $\frac{x}{3}$ **Q22** Mathematics

What will come in place of 'A' in the following ratio?

$$\frac{180}{A} = \frac{11}{44}$$

A. 717

B. 722

C. 720



D. 723



Q23 Mathematics

Bhanu travels from City A to City B. If Bhanu drives his car at $\frac{1}{3}$ rd of his normal speed, then he reaches City B 50 minutes late.

Find the time (in minutes) that Bhanu would have taken to travel from City A to City B if he drove at his normal speed.

A. 20

B. 25



C. 29

D. 32

Q24 Mathematics

Which number should replace the question mark (?) in the following equation?

$$(57.6 \div 4.5 \times 1.5) = ? \times \frac{1}{5}$$

A. 192

B. 19.2

C. 96



D. 9.6

Q25 Mathematics

Simplify $\frac{(x^2 + 10x + 25)}{x + 5} - 5$.

A. 0

B. 10

C. x



D. 5



Mathematics

25 Questions • Answer Key

Q1 Mathematics

If $5x + 2 = 62$, then find the value of x .

A. 20

B. 15

C. 12



D. 10

Q2 Mathematics

One pipe can fill a tank in 7 minutes while another pipe can empty the completely filled tank in 56 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-fourth of the tank?

A. 6

B. 2



C. 8

D. 4

Q3 Mathematics

The amount on a sum of ₹5,700 at 10% per annum compound interest, compounded annually, in 2 years will be:

A. ₹7,505

B. ₹7,798

C. ₹6,897



D. ₹6,629

Q4 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 32.5^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 6 : 7, then what is the difference between the measures of $\angle Q$ and $\angle P$?

A. 9° B. 4° C. 5° D. 1°

Q5 Mathematics

If a 8,763 m long train crosses a pole in 127 seconds, then find the time (in seconds) taken by the train to cross a 552 m long platform.

A. 135



B. 132

C. 145

D. 144

Q6 Mathematics

The marked price of a wardrobe is ₹821, which is 39% above the cost price. If the profit percent is 2%, find the discount percentage (rounded off to two decimal places).

A. 26.62%



B. 26%

C. 23.62%

D. 28.03%

Q7 Mathematics

In an election, Candidate A secured 60% of the total valid votes, while Candidate B received the rest. If the total number of valid votes was 18,600, find the difference between the number of votes the two candidates received.

A. 2,750

B. 3,720



C. 2,520

D. 3,550

Q8 Mathematics

Provisions meant for 100 men for 12 weeks are shared when 50 more men join them. For how many weeks will the provisions now last?

A. 12

B. 8



C. 10

D. 6



Q9 Mathematics

The difference in the measures of two complementary angles is 22° . Find the measure of the bigger angle.

A. 52° B. 65° C. 56° ✓D. 50° **Q10 Mathematics**

Prakhar and Riya together invested ₹10,500 in a business. At the end of the year, out of a total profit of ₹9,000, Prakhar's share was ₹1,200. How much was Prakhar's investment?

A. ₹2,780

B. ₹1,645

C. ₹1,635

D. ₹1,400 ✓

Q11 Mathematics

A car's speed decreases by 20% every hour. If it covers a certain distance in 4 hours, how much time would it take to cover the same distance at its original speed?

A. 2.942 hours

B. 3.952 hours

C. 3.942 hours

D. 2.952 hours ✓

Q12 Mathematics

After selling an article at a discount of 50%, the profit percentage obtained is 30%. What is the mark-up percentage?

A. 166%

B. 160% ✓

C. 158%

D. 162%

Q13 Mathematics

A spherical chocolate truffle with radius 6 cm has a spherical hollow cavity at its centre. If the volume of chocolate used is exactly $800\pi/3 \text{ cm}^3$, what is the radius of the hollow cavity (rounded off to two decimal places)?

A. 2.26 cm

B. 2.52 cm ✓

C. 2.18 cm

D. 2.44 cm

Q14 Mathematics

If 20% of a number is added to 72, then the result is the same number. 75% of the same number is:

A. 67.5 ✓

B. 97.5

C. 87.5

D. 77.5

Q15 Mathematics

Eighteen men can dig a well 65 feet deep in 4 days. How many men can dig a well 130 feet deep in 6 days?

A. 24 ✓

B. 26

C. 22

D. 27

Q16 Mathematics

If the median of the given data is $143 + X$, find X (round off to two decimal places).

Height in cm	No. of boys
Below 140	4
140 – 145	7
145 – 150	18
150 – 155	11
155 – 160	6
160 – 700	5

A. 6.03 ✓

B. 8.15

C. 9.23

D. 7.05

Q17 Mathematics

The area of a rectangular field is 176 m^2 and the length of its diagonal is 18 m. Find the perimeter of this field.

A. 60 m

B. 48 m

C. 61 m

D. 52 m ✓



Q18 Mathematics

The number of prime numbers lying between 386 and 395 is:

A. 2

B. 1



C. 3

D. 0

Q19 Mathematics

The father is currently three times that of his son's age. Ten years ago from now, the father's age was five times the son's age. What will be the sum of their ages ten years from now?

A. 80 years

B. 90 years

C. 120 years

D. 100 years

**Q20 Mathematics**

Given that R is the third proportional of 9 and Q. If Q is the sum of first three odd natural numbers, then find the value of R.

A. 11

B. 7

C. 9



D. 10

Q21 Mathematics

The arithmetic mean of the observations 16, 85, 98, 12, 69, 95, 21, 45 and 54 is:

A. 62

B. 55



C. 63

D. 48

Q22 Mathematics

On selling an item for ₹120, a shopkeeper earns x% profit. If it is sold for ₹20 more than the earlier price, the percentage of profit would be 2x%. The value of x is ____.

A. 20



B. 30

C. 40

D. 15

Q23 Mathematics

If $9^k + 3^{(2k-1)} = \frac{2}{3} \left[5^{\left(k+\frac{1}{2}\right)} + 5^{\left(k-\frac{1}{2}\right)} \right]$, then k is equal to:

A. 1

B. $\frac{1}{2}$



C. $\frac{5}{2}$

D. $\frac{3}{2}$



Q24 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{10}{80}$?

A. 50%

B. 55%

C. 80%

D. 40%

**Q25** Mathematics

From a point P on a level ground, the angle of elevation of the top tower is 30° . If the tower is 100 m high, find the distance of point P from the foot of the tower. (Take $\sqrt{3} = 1.73$)

A. 175 m

B. 170 m

C. 178 m

D. 173 m



Mathematics

25 Questions • Answer Key

Q1 Mathematics

Smart Bazaar is offering 'Buy 14, Get 11 free' on household items. What is the net percentage discount being offered by the Smart Bazaar?

A. 45%

B. 46%

C. 44% ✓

D. 48%

Q2 Mathematics

If 20% of a number is added to 96, then the result is the same number. 60% of the same number is:

A. 102

B. 92

C. 82

D. 72 ✓

Q3 Mathematics

To buy furniture for a new apartment, Chang borrowed ₹50,000 at 16% per annum simple interest for 18 months. How much interest will she pay?

A. ₹10,500

B. ₹11,000

C. ₹11,500

D. ₹12,000 ✓

Q4 Mathematics

A motorist travels a total distance of 30 km in 50 minutes. He drives at a speed of x km/hr for the first 11 minutes, then at $2x$ km/hr for the next 25 minutes, and finally at x km/hr for the remaining part of the journey. Find the value of x .

A. 24 ✓

B. 29

C. 27

D. 21

Q5 Mathematics

A, B and C can do a piece of work in 3, 6 and 10 days, respectively. How long (in days) will they take to do thrice the same work, working together?

A. 10

B. 5 ✓

C. 6

D. 15

Q6 Mathematics

A purse has ₹1 and ₹2 coins in the ratio 3 : 2. If the total amount of money is ₹70, how many coins are there in total?

A. 35

B. 50 ✓

C. 45

D. 40

Q7 Mathematics

The average age of 20 students of a class is 29 years. If the age of the teacher is also included, the average age of the whole group becomes 30 years. The age (in years) of the teacher is:

A. 52

B. 53

C. 49

D. 50 ✓

Q8 Mathematics

If the ratio of two numbers is 8 : 7, and their HCF is 30, then their LCM is:

A. 1662

B. 1717

C. 1687

D. 1680 ✓



Q9 Mathematics

A number is increased by 15% and the resulting number is again increased by 10%. What is the overall percentage increase in the number?

A. 26.5%



B. 15%

C. 10%

D. 12.5%

Q10 Mathematics

The marked price of an item is set at 49% above its cost price. If the merchant sells the item at 16% below the marked price, his profit percentage (rounded off to 1 decimal place) is:

A. 29.1%

B. 25.2%



C. 26.3%

D. 28.8%

Q11 Mathematics

A rectangular box without a lid is made of thin sheet metal. The box has a length of 60 cm, a breadth of 40 cm, and a height of 30 cm. Find the total area of the sheet metal used to make the box and the cost of the sheet if 1 m² costs ₹50.

A. ₹56

B. ₹60

C. ₹42



D. ₹44

Q12 Mathematics

Which of the following numbers is the largest number between 4000 and 5000 that is completely divisible by 42?

A. 4446

B. 4956

C. 4032

D. 4998

**Q13 Mathematics**

If $2a + b + c = 0$ and $8a^3 + b^3 + c^3 = kabc$, then find the value of k^2 .

A. 81

B. 49

C. 36



D. 16

Q14 Mathematics

An amount of ₹4328 is divided among A, B, C and D in such a way that the shares of A and B, B and C, and C and D are in the ratios of 4 : 5, 4 : 5 and 6 : 7, respectively. The share of A (in ₹) is:

A. 804

B. 724

C. 768



D. 700

Q15 Mathematics

Rahul is 5 years younger than his sister. After 3 years, the sum of their ages will be 35 years. Find Rahul's present age.

A. 15 years

B. 14 years

C. 12 years



D. 18 years

Q16 Mathematics

Two pipes can fill a tank in 10 and 12 minutes respectively and a waste pipe can empty 6 gallons per minute. All the three pipes working together can fill the tank in 30 minutes. Find the capacity of the tank.

A. 45 gallons

B. 30 gallons

C. 40 gallons



D. 25 gallons

Q17 Mathematics

The income of Raman is ₹50,400. He saves 7.5% of his income. If his income increases by 26% and expenditure increases by 45%, then his savings will:

A. increase by ₹7,872

B. decrease by ₹7,880

C. increase by ₹7,878

D. decrease by ₹7,875

**Q18 Mathematics**

If $p : q : r = 13 : 5 : 14$ and $r : s = 42 : 3$, then what is the value of $p : q : r : s$?

A. 39:15:42:3



B. 36:19:45:4

C. 41:22:45:8

D. 40:19:48:9



Q19 Mathematics

A vendor bought 100 dozens of bananas for ₹4,800 and sold them at 4 bananas for ₹20. Find his gain percentage.

A. 25%



B. 20%

C. 35%

D. 30%

Q20 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 40^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 3 : 5, then what is the difference between the measures of $\angle Q$ and $\angle P$?

A. 17°

B. 21°

C. 20°



D. 24°

Q21 Mathematics

Two trains 285 metres and 235 metres long are running in the opposite direction with speeds of 61 km/hr and 83 km/hr, respectively. In how much time will the first train cross the second?

A. 16 seconds

B. 13 seconds



C. 3 seconds

D. 5 seconds

Q22 Mathematics

Simplify: $-5 \times [-4 \times \{-3 - (2 \times (-3) \times (-4) + 5 \times 6) - 3\} \div (-20 \times 3)] \times \frac{0.5}{2 \times 5}$

A. 4

B. 0.5

C. 1



D. 2

Q23 Mathematics

From the top of a 42 m high building, the angle of depression of a man on the ground is 30° . How far is the man from the base of the building?

(Take $\sqrt{3} = 1.7321$ and round off your answer to two decimal places)

A. 77.75 m

B. 79.25 m

C. 74.25 m

D. 72.75 m



Q24 Mathematics

(Take $\pi = \frac{22}{7}$)

A. $\frac{539\sqrt{3}}{8} \text{ cm}^3$



B. $418\sqrt{3} \text{ cm}^3$

C. $\frac{593\sqrt{3}}{8} \text{ cm}^3$

D. $\frac{539\sqrt{3}}{2} \text{ cm}^3$

Q25 Mathematics

The marks obtained by 15 students out of a maximum of 26 in a test are given as 14, 12, 17, 16, 19, 13, 14, 15, 11, 23, 16, 22, 21, 18, and 25. Find the product of the possible modes of this set of data.

A. 220

B. 224



C. 222

D. 225



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Mathematics

25 Questions • Answer Key

Q1 Mathematics

A regular hexagonal tile has a side length of 6 cm. The tile is divided into 6 equilateral triangles by drawing lines from the centre to each vertex. If 3 alternate triangles are painted blue, what is the total blue painted area (rounded off to two decimal places)?

A. 46.77 cm²B. 44.77 cm²C. 47.27 cm²D. 45.27 cm²

Q2 Mathematics

DMART is offering 'Buy 30, get 21 free' on grocery items. What is the net percentage discount being offered by the DMART? (Corrected up to two decimal places)

A. 39.7%

B. 44.15%

C. 41.18%



D. 42.01%

Q3 Mathematics

Which of the following numbers is divisible by 105?

A. 4525

B. 4675

C. 4845

D. 4515



Q4 Mathematics

If $a + b = 8$ and $ab = 12$, calculate the value of $a^2 + b^2$.

A. 35

B. 40



C. 30

D. 45

Q5 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 36^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 2 : 7, then what is the difference between the measures of $\angle Q$ and $\angle P$?

A. 43° B. 40° C. 45° D. 39°

Q6 Mathematics

If 20% of a number is added to 84, then the result is the same number. 80% of the same number is:

A. 114

B. 104

C. 94

D. 84



Q7 Mathematics

Ajay and Shanu together have ₹1,050. If ₹350 is taken from Ajay, he will have the same amount that Shanu had initially. Find the initial ratio of the amounts with Ajay and Shanu.

A. 4 : 3

B. 3 : 2

C. 5 : 4

D. 2 : 1



Q8 Mathematics

The arithmetic mean of the observations 39, 91, 32, 73, 84, 18, 83, 83 and 28 is:

A. 62

B. 51

C. 59



D. 50



Q9 Mathematics

Which of the following numbers is divisible by 6?

- A. 7993043
- B. 6348681
- C. 7699504
- D. 7132950

**Q10 Mathematics**

Nick, Kevin, and Joe can finish a certain piece of work in 10, 47, and 24 days, respectively. All three of them started the work together. Nick left the work after 2 days and Kevin left just 5 days before the work was completed. Find the total number of days taken for the work to be completed.

- A. 19.8
- B. 12.5
- C. 14.4
- D. 18.9

**Q11 Mathematics**

The sides of a triangle are 45 cm, 28 cm, and 53 cm. What is its area (in cm^2)?

- A. 624
- B. 623
- C. 630
- D. 603

**Q12 Mathematics**

One pipe can fill a tank in 9 minutes while another pipe can empty the completely filled tank in 18 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-half of the tank?

- A. 19
- B. 9
- C. 18
- D. 10

**Q13 Mathematics**

A product was sold for ₹980, resulting in a loss of ₹150. To earn a profit of ₹270 instead, what should be its revised selling price?

- A. ₹1,430
- B. ₹1,400
- C. ₹1,100
- D. ₹1,130

**Q14 Mathematics**

The population of a village increased by 5% in 2023 and was expected to increase again by 6% in 2024. Find the overall percentage increase in the population of the village over the two years.

- A. 12.2%
- B. 14.22%
- C. 11.3%
- D. 11.13%

**Q15 Mathematics**

A sum of money was invested at simple interest at a certain rate for 10 years. Had it been invested at a 6% per annum higher rate, it would have fetched ₹5,700 more. Find the principal.

- A. ₹10,000
- B. ₹8,500
- C. ₹9,500
- D. ₹9,000

**Q16 Mathematics**

Isha buys a gold ring for her mother. The gold ring is marked at ₹50,000, and two successive discounts of 30% and R%, respectively, are given. After getting the two successive discounts, she paid ₹14,000. Find the value of R.

- A. 59
- B. 62
- C. 58
- D. 60

**Q17 Mathematics**

The cost of a washing machine is 25% less than the cost of a TV. If the cost of the washing machine increases by 66% and that of the TV decreases by 57%, then what is the percentage change in the total cost of 7 washing machines and 5 TVs?

- A. Increase by 6%
- B. Increase by 8%
- C. Decrease by 1%
- D. Decrease by 7%



Q18 Mathematics

Two numbers add up to 98. If twice the smaller number minus the bigger number equals 28, find the smaller number.

A. 56

B. 42



C. 48

D. 36

Q19 Mathematics

The sum of ages of three brothers is 52 years. The eldest is 4 years older than the middle brother, and the middle brother is 6 years older than the youngest. Find the age of the eldest brother.

A. 14 years

B. 22 years



C. 18 years

D. 24 years

Q20 Mathematics

The sum of three numbers is 2316. If the ratio between the first and second numbers is 16 : 10 and that of between second and third is 6 : 18, then find the difference between the first and the third number.

A. 574

B. 579



C. 547

D. 597

Q21 Mathematics

What is the average speed of a bike, which covers half the distance with a speed of 42 km/hr and the other half with a speed of 84 km/hr?

A. 47 km/hr

B. 63 km/hr

C. 57 km/hr

D. 56 km/hr

**Q22 Mathematics**

If $5^{u+v} = 625$ and $625^{u-v} = 5$, then the value of u is:

A. $\frac{15}{8}$

B. 25

C. $\frac{17}{8}$



D. 125

Q23 Mathematics

Find the value of $\sin^2 45^\circ + \cos^2 45^\circ$.

A. $\sqrt{2}$

B. 1



C. 2

D. $1/2$

Q24 Mathematics

If the difference of the mode and median of a data is 52, then find the difference of the median and mean.

A. 26



B. 22

C. 24

D. 28



Walking at $\frac{2}{7}$ of his normal speed, Abhijeet is 30 minutes late in reaching his office. The usual time taken by him to cover the distance between his home and his office is:

A. 5 minutes

B. 15 minutes

C. 12 minutes



D. 13 minutes



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The perimeter of a rectangle is 54 cm. Its length is 3 cm more than twice the breadth. Find the breadth.

- A. 10 cm
- B. 9 cm
- C. 8 cm
- D. 6 cm



Q2 Mathematics

Bharat buys a gold ring for his mother. The ring is marked at ₹96,000 and is offered with two successive discounts of 25% and Q%, respectively. After receiving both discounts, he pays ₹18,000. Find the value of Q.

- A. 77
- B. 76
- C. 75
- D. 74



Q3 Mathematics

By selling 20 pens for the cost price of 25 pens, what is the profit percentage?

- A. 20%
- B. 35%
- C. 25%
- D. 28%



Q4 Mathematics

The arithmetic mean of the observations 53, 63, 79, 40, 34, 88, 34, 25 and 25 is:

- A. 44
- B. 50
- C. 42
- D. 49



Q5 Mathematics

The sides of a triangle are 85 cm, 13 cm, and 84 cm. What is the length of its altitude corresponding to the side with a length of 13 cm?

- A. 101 cm
- B. 55 cm
- C. 84 cm
- D. 126 cm



Q6 Mathematics

After selling an article at a discount of 44%, the profit percentage obtained is 12%. What is the markup percentage?

- A. 97%
- B. 100%
- C. 101%
- D. 102%



Q7 Mathematics

A garrison of 1200 men has provisions for 12 days. How long (in days) will the provisions last if the garrison be increased by 600 men?

- A. 8
- B. 28
- C. 3
- D. 18



Q8 Mathematics

A train overtakes two persons walking along a railway track. The first person walks at 10.8 km/hr, and the second person walks at 21.6 km/hr. The train takes 15 seconds and 20 seconds, respectively, to completely pass them. What is the speed of the train if both persons are walking in the same direction as the train?

- A. 50 km/hr
- B. 64 km/hr
- C. 54 km/hr
- D. 45 km/hr



Q9 Mathematics

One pipe can fill a tank in 9 minutes while another pipe can empty the completely filled tank in 36 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-half of the tank?

A. 6



B. 13

C. 7

D. 12

Q10 Mathematics

The present age of Mohan is three times the age of his son Rakesh. Four years ago from now, Mohan's age was four times his son's age at that time. What will be Rakesh's age (in years) after 7 years from now?

A. 19



B. 12

C. 36

D. 20

Q11 Mathematics

If 20% of a number is added to 96, then the result is the same number. 70% of the same number is:

A. 104

B. 94

C. 114

D. 84

**Q12 Mathematics**

If a 2622 m long train crosses a pole in 57 seconds, then find the time (in seconds) taken by the train to cross a 736 m long platform.

A. 74

B. 83

C. 73



D. 63

Q13 Mathematics

If $a - b = 6$ and $ab = 135$, then find a possible value of $(a + b)$.

A. 24



B. 27

C. 23

D. 26

Q14 Mathematics

Divide ₹8,118 between Ravina and Sarita in the ratio 3 : 15, then find the share of Sarita.

A. ₹6,763

B. ₹6,767

C. ₹6,765



D. ₹6,768

Q15 Mathematics

Akshat and Neha together invested ₹57,000 in a business. At the end of the year, out of a total profit of ₹8,000, Akshat's share was ₹2,200. How much was Akshat's investment?

A. ₹16,645

B. ₹15,355

C. ₹15,675



D. ₹17,445

Q16 Mathematics

A typist takes 40 minutes to type 2 pages. How long (in minutes) will he take to type 87 pages?

A. 1740



B. 1745

C. 1730

D. 1750

Q17 Mathematics

Two banks, A and B, offered loans at 3.5% and 7.5% per annum, respectively. Chetan borrowed an amount of ₹2,00,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Chetan after 3 years.

A. 25,500

B. 23,500

C. 25,000

D. 24,000

**Q18 Mathematics**

A can complete a piece of work in 90 days. B is 75% less efficient than A. C is 80% more efficient than B. If B and C work together for 30 days, A alone will complete the remaining work in:

A. 68 days

B. 71 days

C. 73 days

D. 69 days



Q19 Mathematics

A solid metallic sphere of radius 9 cm is melted and recast into smaller spherical balls, each of radius 3 cm. Find the number of such small balls formed.

A. 24

B. 21

C. 32

D. 27

**Q20 Mathematics**

The cost of a washing machine is 16% less than the cost of a TV. If the cost of the washing machine increases by 80% and that of the TV decreases by 44%, then what is the percentage change in the total cost of 5 washing machines and 2 TVs?

A. Decrease by 37%

B. Increase by 43%

C. Decrease by 38%

D. Increase by 40%

**Q21 Mathematics**

Find the median of the given data, if the cumulative frequency is 45.

Class Interval	1-11	11-21	21-31	31-41
Frequency	10	11	X	11

A. $22\frac{3}{13}$ B. $22\frac{1}{13}$ C. $22\frac{2}{13}$ D. $22\frac{4}{13}$ **Q22 Mathematics**

If $2^x = 8$ and $3^y = 27$, find the value of $(2^{x+1} \times 3^{y-2})$.

A. 144

B. 48

C. 121

D. 81

**Q23 Mathematics**

The volume of a right circular cylinder is $13,860 \text{ cm}^3$ and circumference of its base is 66 cm. The height of this cylinder is: (Use $\pi = \frac{22}{7}$)

A. 39 cm

B. 40 cm

C. 53 cm

D. 45 cm



Q24 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{2}{90}$?

A. 235%

B. 240%

C. 450%

D. 225%

**Q25** Mathematics

A 20-metre-tall building has an observer at the top looking at a point on the ground. If the line of sight to that point makes a downward-facing angle of 45° , what is the horizontal distance from the building's base to that point?

A. 10 m

B. 40 m

C. $20\sqrt{2}$ m

D. 20 m



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The average of the first 7 odd natural numbers is:

A. 7



B. 8

C. 3.5

D. 6

Q2 Mathematics

If third proportional of 9 and 60 be x, then what is the value of x?

A. 398

B. 400



C. 402

D. 401

Q3 Mathematics

In an election, four candidates received 1242, 832, 1426 and 1100 votes, respectively. The difference between the winning candidate's votes percentage and runner up candidate vote percentage is:

A. 3%

B. 5%

C. 4%



D. 6%

Q4 Mathematics

After selling an article at a discount of 37%, the profit percentage obtained is 50%. What is the mark-up percentage (rounded off to two decimal places)?

A. 140.46%

B. 138.10%



C. 136.35%

D. 140.41%

Q5 Mathematics

The marks of P are 10 more than the marks of Q. The marks of Q are 10 more than half of the marks of P. The marks of Q are ____.

A. 36

B. 30



C. 40

D. 20

Q6 Mathematics

The ratio of the present ages of Shreya and her mother is 3 : 5 and the ratio of present ages of her mother and her grandmother is 10 : 13. If the average age of Shreya, her mother and her grandmother is 58 years, then find the present age of her mother.

A. 60 years



B. 36 years

C. 78 years

D. 84 years

Q7 Mathematics

A shop that sells towels has offers going on, wherein customers can buy 2 towels and get 3 free. What is the percentage discount that the customer gets?

A. 55%

B. 70%

C. 60%



D. 65%

Q8 Mathematics

Two numbers are in the ratio 5 : 7. Find the sum of the numbers, if their HCF is 23.

A. 258

B. 276



C. 236

D. 284



Q9 Mathematics

A child inflates a balloon, increasing its size by 50%. Later, while tying it, the balloon's size decreases by 20%. What is the overall percentage change in the size of the balloon?

- A. 10% (decrement)
- B. 20% (decrement)
- C. 10% (increment)
- D. 20% (increment) ✓

Q10 Mathematics

The amount on a sum of ₹2,500 at 10% per annum compound interest, compounded annually, in 2 years will be:

- A. ₹3,714
- B. ₹3,623
- C. ₹3,025 ✓
- D. ₹2,895

Q11 Mathematics

Two trains are moving in opposite directions at speeds of 50 km/hr and 90 km/hr. The length of one train is 430 m. The time taken by them to cross each other is 31 seconds. The length (in m) of the other train, rounded off to 2 decimal places, is:

- A. 781.49
- B. 786.76
- C. 775.56 ✓
- D. 765.66

Q12 Mathematics

In 330 litres solution of acid and water, the ratio of acid and water is 1:2. How many litres of acid must be added to it to get the solution in which the ratio of acid and water is 8:5?

- A. 240
- B. 242 ✓
- C. 243
- D. 241

Q13 Mathematics

The average age of 44 students of a class is 34 years. If the age of the teacher is also included, the average age of the whole group becomes 35 years. The age (in years) of the teacher is:

- A. 77
- B. 76
- C. 79 ✓
- D. 78

Q14 Mathematics

A trader sells a watch at a loss of 28%. If he had sold it for ₹280 more, he would have made neither a profit nor a loss. What is the cost price of the watch?

- A. ₹1,400
- B. ₹1,000 ✓
- C. ₹1,200
- D. ₹800

Q15 Mathematics

One pipe can fill a tank in 10 minutes while another pipe can empty the completely filled tank in 20 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-half of the tank?

- A. 10 ✓
- B. 20
- C. 21
- D. 11

Q16 Mathematics

A man standing on the line joining the feet of two towers of heights 10 m, 15 m observes the top of the towers with the angles of elevation 45° and 60° , respectively. What is the distance (in metres) between the feet of two towers (take $\sqrt{3} = 1.73$)?

- A. 20.25
- B. 18.65 ✓
- C. 15.75
- D. 16.54



Q17 Mathematics

A person saves 60% of his income. If his expenditure is ₹520, then his income (in ₹) is:

- A. 1340
- B. 1312
- C. 1300
- D. 1208

**Q18 Mathematics**

If $x^{2m} \times y^5 \times \frac{x^2}{y^{m-1}} = (y^2x^3)^2$, find the value of m.

- A. 2
- B. 4
- C. 3
- D. 1

**Q19 Mathematics**

If the radius of a sphere is decreased by 25% and becomes 6 cm, find the decrease in its volume.

- A. $450\frac{1}{4}\pi \text{ cm}^3$
- B. $574\frac{3}{4}\pi \text{ cm}^3$
- C. $394\frac{2}{3}\pi \text{ cm}^3$
- D. $662\frac{1}{3}\pi \text{ cm}^3$

**Q20 Mathematics**

Pipe P can fill $\frac{4}{5}$ part of a tank in 28 hours and pipe Q can fill $\frac{2}{3}$ part of the same tank in 42 hours. Both P and Q were kept open for 7 hours, then both were closed. Pipe R alone was then opened and it emptied the water in the tank in 14 hours. Pipes P, Q and R together can fill the empty tank in:

- A. 53 hours
- B. 45 hours
- C. 64 hours
- D. 26 hours



Q21 Mathematics

$$4\frac{37}{49} - 5\frac{2}{49} - 5\frac{37}{49} + 4\frac{1}{7}$$

A. $5\frac{2}{49}$

B. $4\frac{1}{7}$

C. $5\frac{37}{49}$ ✓

D. $4\frac{37}{49}$

Q22 Mathematics

If $\frac{4x}{0.75^2 - 0.25^2} = 0.5$, find the value of x.

A. 0.03125

B. 0.0975

C. 0.125

D. 0.0625 ✓

Q23 Mathematics

The diameter of a hemispherical bowl is 11.2 cm. How many litres of liquid can it hold?

(Use $\pi = \frac{22}{7}$ and round off your answer to three decimal places)

A. 3.168 litres

B. 0.368 litres ✓

C. 2.380 litres

D. 0.525 litres

Q24 Mathematics

Two trains, 133 m and 227 m long, are moving in the same direction at speeds of 93 km/hr and 51 km/hr, respectively. How much time will the faster train take to completely cross the slower one?

A. $30\frac{6}{7}$ seconds ✓

B. $25\frac{5}{7}$ seconds

C. 18 seconds

D. 9 seconds



Q25 Mathematics

In a triangle with sides 12 units, 5 units and 13 units, the perpendiculars are drawn from all vertices. The length of the smallest perpendicular (in units) is:

A. $\frac{60}{13}$



B. $\frac{40}{13}$

C. $\frac{50}{13}$

D. $\frac{73}{13}$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The average age of 50 students in a class is 29 years. If the age of the teacher is also included, the average age of the whole group becomes 30 years. The age (in years) of the teacher is:

A. 80



B. 82

C. 85

D. 83

Q2 Mathematics

Train P, going at the speed of 51 km/hr, completely passes Train Q of length 225 m, going in the same direction on parallel tracks, at 22 km/hr, in 7.5 minutes. How much time (in seconds) will P take to completely cross Train R of length 420 m, going at 21 km/hr in the opposite direction?

A. 196

B. 191



C. 181

D. 193

Q3 Mathematics

In an election between two candidates, 20% of the total votes were declared invalid. The winning candidate received 70% of the valid votes and won by a margin of 12,400 votes. Find the total number of registered voters.

A. 38,000

B. 11,625

C. 38,750



D. 27,125

Q4 Mathematics

Simplify $3 \times 5 + 8 - 15 \div 3 - 12 + 72 \div 8 \times 5 - 32$.

A. 28

B. 72

C. 19



D. 45

Q5 Mathematics

Sohan purchased 25 dozens of toys at the rate of ₹480 per dozen. He sold each one of them at the rate of ₹45. What was his percentage profit?

A. 14.5%

B. 11.5%

C. 12.5%



D. 10.5%

Q6 Mathematics

A, B, and C can do a piece of work in 3, 3, and 3 days respectively. How long (in days) will they take to do thrice the same work, working together?

A. 9

B. 3



C. 4

D. 6

Q7 Mathematics

The product of the present ages of Seema and Jyoti is 3,952 years, and their present age ratio is 19 : 13. Find the difference in the ages (in years) of Seema and Jyoti.

A. 18

B. 24



C. 22

D. 16

Q8 Mathematics

A credit card payment that will settle a bill for 383 mixers at ₹1,000 per mixer with successive discounts of 25% and 20% with a further discount of 13% on card payment is:

A. ₹1,99,915

B. ₹1,99,908

C. ₹1,99,926



D. ₹1,99,918



Q9 Mathematics

Find the HCF of 27, 54 and 108.

A. 27



B. 18

C. 54

D. 9

Q10 Mathematics

The average of the first 5 odd natural numbers is:

A. 2.5

B. 4

C. 5



D. 6

Q11 Mathematics

The sum of seven consecutive numbers is 168. What is the sum of the largest and the smallest numbers?

A. 45

B. 46

C. 48



D. 49

Q12 Mathematics

The income of Raman is ₹70,900. He saves 12% of his income. If his income increases by 39% and expenditure increases by 50%, then his savings will:

A. increase by ₹3,548

B. increase by ₹3,546

C. decrease by ₹3,550

D. decrease by ₹3,545

**Q13 Mathematics**

Manoj got a new curtain at 20% discount. If Manoj did not get any discount, Manoj would have to pay ₹664 extra. So how much did Manoj pay for the curtain?

A. ₹2,657

B. ₹2,656



C. ₹2,654

D. ₹2,655

Q14 Mathematics

If the mean proportional of A and 50 is 40, then find the value of A.

A. 31

B. 30

C. 33

D. 32

**Q15 Mathematics**

The sides of a triangle are 75 cm, 44 cm, and 35 cm. What is the length of its altitude corresponding to the side with a length of 44 cm?

A. 21 cm



B. 26 cm

C. 45 cm

D. 50 cm

Q16 Mathematics

The areas of three adjacent faces of a solid cuboid are 108 cm^2 , 60 cm^2 and 45 cm^2 . What is the volume (in cm^3) of the cuboid?

A. 332

B. 540



C. 686

D. 296

Q17 Mathematics

Aman and Yogita together invested ₹59,200 in a business. At the end of the year, out of a total profit of ₹8,000, Aman's share was ₹1,400. How much was Aman's investment?

A. ₹11,915

B. ₹11,385

C. ₹10,360



D. ₹8,610

Q18 Mathematics

An Uber auto covers a distance of 680 km in 17 hours. What is its speed in km/hr?

A. 43

B. 34

C. 40



D. 32



Q19 Mathematics

A cistern is normally filled in 12 hours but takes 2 hours longer to fill because of a leak in its bottom. If the cistern is full, then in how much time will the leak empty the tank?

- A. 124 hours
- B. 48 hours
- C. 84 hours
- D. 120 hours

**Q20 Mathematics**

Consider two triangles, ABC and XYZ. In triangle ABC, the base is 21 cm and the other two sides are 17 cm and 10 cm, respectively. In triangle XYZ, the base is two-thirds the base of triangle ABC and has an altitude of 5 cm. Find the sum of the areas of triangles ABC and XYZ.

- A. 124.5 cm²
- B. 136.5 cm²
- C. 119 cm²
- D. 108 cm²

**Q21 Mathematics**

A certain sum of money amounts to ₹7,040 in 2 years and ₹8,000 in 5 years on simple interest. Find the principal.

- A. ₹6,400
- B. ₹6,550
- C. ₹6,200
- D. ₹5,800

**Q22 Mathematics**

$\frac{1}{20}$ is what percentage of $\frac{11}{40}$ (rounded off to two decimal places)?

- A. 36.36%
- B. 33.18%
- C. 18.18%
- D. 28.18%

**Q23 Mathematics**

The angle of elevation of the top of a tree at a distance of 60 m from its foot on a horizontal plane is found to be 30°. Find the height of the tree.

- A. $20\sqrt{3}$ m
- B. $10\sqrt{3}$ m
- C. $40\sqrt{3}$ m
- D. $15\sqrt{3}$ m

**Q24 Mathematics**

The value of $\left(\frac{0.896 \times 0.763 + 0.896 \times 0.237}{0.7 \times 0.064 + 0.7 \times 0.936} \right)$ is:

- A. 12.8
- B. 1.28
- C. 128
- D. 0.128



Q25 Mathematics

Simplify: $21^3 + 13^3 - 34^3 + 3 \times 21 \times 13 \times 34$

A. 1

B. 0



C. 68

D. 9282



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Mathematics

25 Questions • Answer Key

Q1 Mathematics

What is the mode of the data 20, 21, 15, 16, 20, 17, 18, 16, 15, 14, 19, 20, 18, 14, and 20?

A. 21

B. 20



C. 19

D. 18

Q2 Mathematics

A trader purchased a bundle of 15 notebooks for ₹1,200 and sold the entire bundle for ₹1,040. The loss incurred is equal to the cost price of how many notebooks?

A. 4

B. 1

C. 2



D. 3

Q3 Mathematics

The sum of the first 12 prime numbers is:

A. 199

B. 201

C. 197



D. 202

Q4 Mathematics

In a college election, the valid votes for candidates X and Y were in the ratio 7 : 2. The college had 1800 registered voters, of which 20% did not cast their votes and 20% of the votes cast were declared invalid. What is the difference in the number of votes secured by candidates X and Y?

A. 896

B. 256

C. 459

D. 640



Q5 Mathematics

The cost of a washing machine is 50% less than the cost of a TV. If the cost of the washing machine increases by 57% and that of the TV decreases by 74%, then what is the percentage change in the total cost of 6 washing machines and 2 TVs?

A. Increase by 5.2%

B. Decrease by 1%

C. Increase by 4.6%



D. Decrease by 5%

Q6 Mathematics

A shopkeeper marks his goods at X% above the cost price and sells them at a discount of 40%. If he makes a profit of 62%, find the value of X.

A. 171

B. 170



C. 168

D. 169

Q7 Mathematics

DMART is offering Buy 2, get 29 free on grocery items. What is the net percentage discount being offered by DMART? (Correct up to two decimal places)

A. 95.63%

B. 97.4%

C. 92.67%

D. 93.55%



Q8 Mathematics

The area of a trapezium is 54 sq.units. Its parallel sides are $3x + 1$ units and $2x + 2$ units, respectively. The distance between the parallel sides is $3y$ units and $x - y = 1$. Find the sum of parallel sides.

A. 18 units



B. 22 units

C. 12 units

D. 16 units



Q9 Mathematics

If the value of 13% of 16% of x is 59.28, then the value of x is:

- A. 2580
- B. 2760
- C. 2850
- D. 2690

**Q10 Mathematics**

A number is divided into two parts, such that one part is 10 more than the other. If the two parts are in the ratio 5 : 3, find the two parts of the number.

- A. 25 and 15
- B. 26 and 16
- C. 27 and 17
- D. 24 and 14

**Q11 Mathematics**

Two trains are moving in opposite directions at speeds of 130 km/hr and 60 km/hr, respectively. The length of one train is 360 m. The time taken by them to cross each other is 12 seconds. The length (in m) of the other train, correct to 2 decimal places, is:

- A. 273.33
- B. 269.96
- C. 282.54
- D. 277.92

**Q12 Mathematics**

A, B and C can do a piece of work in 2, 6 and 12 days, respectively. How long (in days) will they take to do thrice the same work, working together?

- A. 4
- B. 8
- C. 12
- D. 5

**Q13 Mathematics**

A father is 30 years older than his son. After 5 years, he will be twice as old as his son. Find the son's present age.

- A. 20 years
- B. 22 years
- C. 27 years
- D. 25 years

**Q14 Mathematics**

A 275-metre-long train crosses a platform thrice its length in 44 seconds. What is the speed of the train in km/hr?

- A. 81
- B. 98
- C. 85
- D. 90

**Q15 Mathematics**

Find the largest number that divides 555, 703, 999 and 1147 leaving the same remainder in each case.

- A. 137
- B. 89
- C. 74
- D. 148

**Q16 Mathematics**

Pipes A and B can fill 50% of a tank in 15 and 10 minutes, respectively. There is also an emptying pipe C attached to the tank. If all the three pipes are opened together, the tank is filled in 15 minutes. If the tank is two-third filled, then in how much time (in minutes) C alone will empty the tank completely?

- A. 60
- B. 20
- C. 30
- D. 40

**Q17 Mathematics**

Given that C is the third proportional of 16 and B. If B is the sum of the first three even natural numbers, then find the value of C.

- A. 8.49
- B. 7.55
- C. 9.0
- D. 11.74

**Q18 Mathematics**

If $A : B = 4 : 6$ and $B : C = 7 : 10$, then $A : B : C$ is:

- A. 14 : 21 : 30
- B. 14 : 12 : 30
- C. 14 : 31 : 21
- D. 14 : 23 : 40



Q19 Mathematics

Two banks, A and B, offered loans at 3.5% and 7% per annum, respectively. Vijay borrowed an amount of ₹4,80,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Vijay after 3 years.

A. 49,900

B. 51,900

C. 50,400



D. 51,400

Q20 Mathematics

Quadrilateral ABCD has sides AB = 9 m, BC = 12 m, CD = 14 m and DA = 13 m, taken in order. If $\angle ABC = 90^\circ$, find the area (in m^2) of quadrilateral ABCD.

A. 135

B. 138



C. 148

D. 128

Q21 Mathematics

Simplify the following.

$$\frac{8^{21} \div 4^{28} \times 2^5}{(4^{14})^{\frac{1}{7}} \times 8^2}$$

A. 4



B. 8

C. 2

D. 16

Q22 Mathematics

In an equilateral triangle ABC of side 18 cm, what is the sum (in cm) of the perpendicular distances of the centroid G from the sides of the triangle?

A. $9\sqrt{3}$ B. $3\sqrt{3}$ C. $6\sqrt{3}$ D. $12\sqrt{3}$ **Q23 Mathematics**

If $x + \frac{1}{x} = 13$, then the value of $(x^2 + \frac{1}{x^2})$ is:

A. 169

B. 171

C. 163

D. 167



Q24 Mathematics

Find the value of $\tan 30^\circ \times \cos 30^\circ$.

A. 1

B. $\frac{\sqrt{3}}{2}$

C. $\frac{1}{2}$



D. $\frac{1}{\sqrt{2}}$

Q25 Mathematics

If the mode of the given data is $133\frac{2}{11}$ cm., find the value of X.

Height (in cm)	125 - 130	130 - 135	135 - 140	140 - 145	145 - 150
Number of girls	7	14	X	10	9

A. 15

B. 11

C. 10



D. 12



Mathematics

25 Questions • Answer Key

Q1 Mathematics

If $A : B = 1 : 3$, $B : C = 4 : 3$ and $C : D = 5 : 7$, then $A : B : C : D$ is:

A. 18 : 60 : 45 : 63

B. 20 : 60 : 43 : 63

C. 20 : 58 : 45 : 63

D. 20 : 60 : 45 : 63



Q2 Mathematics

One pipe can fill a tank in 6 minutes while another pipe can empty the completely filled tank in 24 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-fourth of the tank?

A. 6

B. 2



C. 8

D. 4

Q3 Mathematics

Aaron is 5 years younger than Ron. Four years later from now, Ron will be twice as old as Aaron. Find Ron's present age.

A. 5 years

B. 6 years



C. 7 years

D. 8 years

Q4 Mathematics

To buy a car, Taniya borrowed ₹75,000 at 8% per annum simple interest for 27 months. How much interest will she pay?

A. ₹14,000

B. ₹13,500



C. ₹13,000

D. ₹12,500

Q5 Mathematics

Rohit bought a bicycle for ₹3,200 and sold it for ₹3,840. What is his profit percentage?

A. 18%

B. 25%

C. 20%



D. 22%

Q6 Mathematics

Determine the largest number that divides both 1058 and 1550, leaving remainders of 5 and 11, respectively.

A. 81



B. 86

C. 88

D. 83

Q7 Mathematics

If the third proportional of 50 and 30 be x , then what is the value of x ?

A. 21

B. 18



C. 15

D. 20

Q8 Mathematics

A number when doubled and increased by 7 becomes 29. Find the number.

A. 14

B. 12

C. 15

D. 11



Q9 Mathematics

A number is first decreased by 35% and then further decreased by 25%. By what percentage has the original number been decreased altogether?

A. 50%

B. 53.25%

C. 55%

D. 51.25%



Q10 Mathematics

A rectangular garden is 50 m long and 40 m wide. A path of uniform width is laid inside the garden along its boundary. If the area of the path is 344 m^2 , find the perimeter of the inner rectangle.

A. 136 m

B. 140 m

C. 148 m

D. 164 m

**Q11 Mathematics**

A person saves 60% of his income. If his expenditure is ₹480, then his income (in ₹) is:

A. 2880

B. 1200



C. 1920

D. 1240

Q12 Mathematics

The points scored by a basket-ball team in a series of matches are as follows:

17, 2, 7, 27, 25, 5, 14, 18, 10, 24, 10, 8, 7, 10.

The value of mode is:

A. 4

B. 10



C. 17

D. 7

Q13 Mathematics

The cost of a washing machine is 10% less than the cost of a TV. If the cost of the washing machine increases by 55% and that of the TV decreases by 71%, then what is the percentage change in the total cost of 6 washing machines and 3 TVs?

A. Increase by 12%

B. Decrease by 11%

C. Decrease by 13%

D. Increase by 10%

**Q14 Mathematics**

A dealer marks his goods at 80% above the cost price and allows a discount of 5% on the marked price. What is his gain or loss percentage?

A. 72% loss

B. 74.2% loss

C. 71% gain



D. 71.3% gain

Q15 Mathematics

Simplify: $3 \times 2 + 12 \div (6 - 2) \times 2$

A. 12



B. 18

C. 21

D. 15

Q16 Mathematics

A class of 95 students took a Physics test. 47 students had an average score of 93. The other students had an average score of 54. What is the average score (rounded off to one decimal place) of the whole class?

A. 83.7

B. 65.6

C. 73.3



D. 79.7

Q17 Mathematics

What is the average speed of a car that covers half the distance at the speed of 84 km/hr and the other half at the speed of 63 km/hr?

A. 68 km/hr

B. 69 km/hr

C. 79 km/hr

D. 72 km/hr

**Q18 Mathematics**

The sides of a triangle are 146 cm, 96 cm, and 110 cm. What is its area (in cm^2)?

A. 5296

B. 5280



C. 5290

D. 5275



Q19 Mathematics

A vendor offers her customers a discount of 15% on her beauty products and she still makes a profit of 5%. What is the cost price (in ₹) of a beauty product marked at ₹273?

A. 166

B. 221



C. 247

D. 219

Q20 Mathematics

Walking at $\frac{3}{4}$ th of his normal speed from his home, Bhavesh is 15 minutes late in reaching his office.

The usual time taken by him to cover the distance between his home and his office is:

A. 38 minutes

B. 45 minutes



C. 43 minutes

D. 54 minutes

Q21 Mathematics

1324

A. 3

B. 1

C. 2



D. 4

Q22 Mathematics

If $\cot A = \frac{3}{4}$, the find the value of $3\sin 2A - \cos 3A$ is:

A. 497/125

B. 437/125

C. 477/125



D. 417/125

Q23 Mathematics

In a $\triangle MNR$, the sides MN and MR are extended to P and Q , respectively.

The bisectors of $\angle PNR$ and $\angle QRN$ intersect at a point X .

If $\angle X = 75^\circ$, then the value of $2\angle M$ is:

A. 56°

B. 50°

C. 60°



D. 66°



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Q24 Mathematics

If $\alpha + \beta = 14$ and $\alpha\beta = 20$, then what is the value of $(\alpha^2 + \beta^2)^{\frac{1}{2}}$?

A. $2\sqrt{39}$



B. $39\sqrt{2}$

C. 236

D. 156

Q25 Mathematics

Aditya can do $\frac{1}{6}$ th of a piece of work in 13 days and Bhagawan can do $\frac{1}{9}$ th of the same work in 12 days. Find the number of days taken to complete the work if both work together.

(Round off your answer to one decimal place.)

A. 51.4

B. 45.3



C. 47.5

D. 41.9



Mathematics

25 Questions • Answer Key

Q1 Mathematics

A person can cover a certain distance in 1 hour 24 minutes by covering one-fourth of the distance at 5 km/hr and the rest at 6 km/hr. Find the total distance (in km).

A. 12

B. 6

C. 8



D. 10

Q2 Mathematics

A dealer makes a profit of 40% even after giving a 26% discount on the advertised price of a bike. If he makes a profit of ₹5,698 on the sale of the bike, what is the advertised price (in ₹)?

A. 26,846

B. 26,952

C. 27,014

D. 26,950



Q3 Mathematics

Robert, Chris, and Jeremy can finish a certain piece of work in 16, 48, and 32 days, respectively. All three of them started the work together. Robert left the work after 2 days and Chris left just 4 days before the work was completed. Find the total number of days taken for the work to be completed.

A. 24.3

B. 18.4



C. 16.2

D. 17.7

Q4 Mathematics

A shopkeeper bought a chair for ₹750. He sold it at a 10% loss. What was the selling price of the chair?

A. ₹675



B. ₹740

C. ₹710

D. ₹640

Q5 Mathematics

If 20% of a number is added to 78, then the result is the same number. 60% of the same number is:

A. 78.5

B. 58.5



C. 88.5

D. 68.5

Q6 Mathematics

If 4 lines of a print, in a column of a book, contain 63 words, how many words will a column of 64 lines contain?

A. 1018

B. 1008



C. 1004

D. 1012

Q7 Mathematics

From the top of a building 72.1 m high, the angle of depression to a car on the ground is 45° . Find the distance of the car from the foot of the building.

A. 124.73 m

B. 41.6 m

C. 81.2 m

D. 72.1 m



Q8 Mathematics

A rectangular park is 34 m long and 24 m wide. A path of uniform width runs inside it, surrounding a grassy lawn. If the area of the path is 216 m^2 , what is the perimeter of the grassy lawn?

A. 112 m

B. 96 m

C. 104 m

D. 100 m



Q9 Mathematics

A class of 30 students took a Physics test. Fourteen students had an average score of 98. The other students had an average score of 54. What is the average score (rounded up to one decimal place) of the whole class?

A. 74.5



B. 71.6

C. 76.9

D. 64.6

Q10 Mathematics

The mode of the observations 35, 21, 25, 21, 35, 32, 32, 30, 20, 35, 34, 35, 34, 25, 35, 33 and 25 is:

A. 32

B. 35



C. 25

D. 21

Q11 Mathematics

The cost of a washing machine is 50% less than the cost of a TV. If the cost of the washing machine increases by 64% and that of the TV decreases by 28%, then what is the percentage change in the total cost of 6 washing machines and 2 TVs?

A. Decrease by 27%

B. Increase by 27.2%



C. Increase by 29.4%

D. Decrease by 30%

Q12 Mathematics

A two-digit number is 7.75 times the sum of its digits. If its digits are reversed, the number decreases by 54. What is the original number?

A. 93



B. 71

C. 82

D. 60

Q13 Mathematics

A 793 m long train is running at 90 km/hr. How long will it take to clear a 782 m long platform completely?

A. 66 seconds

B. 61 seconds

C. 60 seconds

D. 63 seconds

**Q14 Mathematics**

If an item marked at ₹1,675 is sold for ₹1,273, then what is the discount percentage?

A. 24%



B. 26%

C. 25%

D. 22%

Q15 Mathematics

Simplify: $37^2 - 36^2 + 35^2 - 34^2 + 33^2 - 32^2$

A. 200

B. 207



C. 197

D. 211

Q16 Mathematics

Two banks, A and B, offered loans at 3.5% and 7% per annum, respectively. Rupesh borrowed an amount of ₹5,00,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Rupesh after 4 years.

A. 71,000

B. 70,000



C. 71,500

D. 69,500

Q17 Mathematics

Given that C is the third proportional of 6 and B. If B is the sum of the first three even natural numbers, then find the value of C.

A. 23.39

B. 24.0



C. 26.31

D. 21.9

Q18 Mathematics

The sum of the ages of Ramesh and Suresh is 52 years. Ramesh's age is 4 years more than twice Suresh's age. What is Suresh's age?

A. 12 years

B. 16 years



C. 14 years

D. 15 years



Q19 Mathematics

A, B and C can do a piece of work in 2, 12 and 6 days, respectively. How long (in days) will they take to do thrice the same work, working together?

A. 5

B. 4



C. 12

D. 8

Q20 Mathematics

Amit and Deeksha together invested ₹56,100 in a business. At the end of the year, out of a total profit of ₹9,200, Amit's share was ₹2,300. How much was Amit's investment?

A. ₹12,370

B. ₹14,025



C. ₹14,690

D. ₹14,870

Q21 Mathematics

A trapezium-shaped field has an area of 720 m^2 , and the perpendicular distance between its parallel sides is 16 m. If one of the parallel sides is 25% more than the other parallel side, then the length of the smaller parallel side is ____.

A. 30 m

B. 50 m

C. 40 m



D. 60 m

Q22 Mathematics

Simplify: $100^{0.25} \times 5^2 \times 2^4 \times \frac{1}{800^{0.5}} \times \sqrt{\frac{1}{5}}$

A. 10

B. 25

C. 20



D. 40

Q23 Mathematics

Simplify $\frac{(0.36)^2 - (0.04)^2}{1.6}$.

A. 1.8

B. 1.2

C. 0.08



D. 0.8

Q24 Mathematics

Identify the correct set of angles of a triangle.

A. $\{85^\circ, 30^\circ, 75^\circ\}$

B. $\{120^\circ, 35^\circ, 25^\circ\}$



C. $\{65^\circ, 45^\circ, 80^\circ\}$

D. $\{95^\circ, 40^\circ, 85^\circ\}$



$\frac{1}{20}$ is what percentage of $\frac{11}{80}$? (Round off the answer to two decimal places.)

A. 72.73%

B. 36.36%



C. 51.36%

D. 46.36%



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The length of a rectangle is twice its breadth. If the perimeter of the rectangle is 12 cm, find the length and breadth.

A. Length = 4 cm and breadth = 2 cm ✓

B. Length = 6 cm and breadth = 3 cm

C. Length = 2 cm and breadth = 4 cm

D. Length = 3 cm and breadth = 6 cm

Q2 Mathematics

The cost of a washing machine is 40% less than the cost of a TV. If the cost of the washing machine increases by 51% and that of the TV decreases by 15%, then what is the percentage change in the total cost of 5 washing machines and 7 TVs?

A. Decrease by 8%

B. Increase by 5.2%

C. Increase by 4.8% ✓

D. Decrease by 5%

Q3 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 28^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 3 : 4, then what is the difference between the measures of $\angle Q$ and $\angle P$?

A. 13°

B. 6°

C. 8° ✓

D. 3°

Q4 Mathematics

Two trains, 130 m and 190 m long, are running in the same direction at speeds of 96 km/hr and 48 km/hr, respectively. How much time will the faster train take to completely cross the slower one?

A. 24 seconds ✓

B. 8 seconds

C. 18 seconds

D. 9 seconds

Q5 Mathematics

The monthly incomes of two friends Kiran and Mahesh, are in the ratio 5 : 8 respectively and each of them saves ₹78,000 every month. If the ratio of their monthly expenditure is 2 : 4, find the monthly income of Kiran (in ₹).

A. 1,96,000

B. 1,94,000

C. 1,95,000 ✓

D. 2,73,000

Q6 Mathematics

The total number of colour blocks is 8360. If the ratio of red block to blue block is 1 : 3 and the ratio of blue block to yellow block is 7 : 4, then how many yellow blocks are there?

A. 2495

B. 2508 ✓

C. 2598

D. 2494

Q7 Mathematics

A and B working together can do a piece of work in 4 days. B alone can do the same work in 36 days. How long (in days) will A alone take to do double the work?

A. 12

B. 10

C. 9 ✓

D. 4.5

Q8 Mathematics

Two banks, A and B, offered loans at 3.5% and 7.5% per annum, respectively. Rakesh borrowed an amount of ₹2,20,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Rakesh after 4 years.

A. 36,700

B. 35,200 ✓

C. 34,700

D. 36,200



Q9 Mathematics

Evaluate: $60 - [12 \div (2 + 1) + 4 \times 2]$

A. 46

B. 48



C. 49

D. 50

Q10 Mathematics

The sum of the first 9 prime numbers is:

A. 96

B. 102

C. 101

D. 100

**Q11 Mathematics**

If the total age of Hassan and Ali is 12 years more than the total age of Ali and Ahmed, how many years younger is Ahmed than Hassan?

A. 12



B. 11

C. 14

D. 10

Q12 Mathematics

Three numbers are in the ratio 2 : 17 : 19 and the sum of these numbers is 7752. Find the middle number.

A. 3468



B. 3470

C. 3469

D. 3465

Q13 Mathematics

Find the lowest value for * in the number 3*760 such that the resulting number is divisible by 12.

A. 5

B. 0

C. 1

D. 2

**Q14 Mathematics**

The difference between the cost price and the selling price of an object is ₹480. If the profit is 20% on the cost price, find the selling price of the object.

A. ₹2,400

B. ₹2,500

C. ₹2,000

D. ₹2,880

**Q15 Mathematics**

After allowing a discount of 11% on the marked price of an article, it is sold for ₹41,207. Find its marked price (in ₹).

A. 46,363

B. 46,300



C. 46,148

D. 46,276

Q16 Mathematics

A train overtakes two people running along a railway track. The first person is running at 12.6 km/hr, and the second person is running at 25.2 km/hr. The train takes 16.8 seconds to pass the first person and 22.4 seconds to pass the second person. What is the speed of the train if both are running in the same direction as the train?

A. 62 km/hr

B. 60 km/hr

C. 63 km/hr



D. 59 km/hr

Q17 Mathematics

The arithmetic mean of the observations 58, 13, 74, 38, 98, 36, 43, 39 and 42 is:

A. 49



B. 43

C. 51

D. 53

Q18 Mathematics

The marked price of an item is set at 41% above its cost price. If the merchant sells the item at 13% below the marked price, his profit percentage (rounded off to 1 decimal place) is:

A. 26.3%

B. 22.7%



C. 21.8%

D. 25.4%



Q19 Mathematics

The largest possible cone is carved from a solid wooden cube of side 21 cm. What is the volume of the wood (in cm^3) left over?

(Use $\pi = \frac{22}{7}$)

A. 5940.5

B. 7240.3

C. 6835.5



D. 6125.5

Q20 Mathematics

If 3 is added to the numerator of a fraction, it becomes 1, and if 4 is added to the denominator of the fraction, it becomes $\frac{4}{5}$.

What is the product of the numerator and the denominator of the original fraction?

A. 886

B. 896

C. 688

D. 868

**Q21 Mathematics**

From a shipmast head 210 m high, the angle of depression of a boat is observed to be 60° . Find the distance (in m) of the boat from the ship.

A. $70\sqrt{2}$

B. $60\sqrt{3}$

C. $60\sqrt{2}$

D. $70\sqrt{3}$

**Q22 Mathematics**

$\frac{1}{20}$ is what percentage of $\frac{11}{90}$ (rounded off to two decimal places)?

A. 40.91%



B. 50.91%

C. 55.91%

D. 81.82%

Q23 Mathematics

Simplify $(2x - 1)^2 - (x - 4)(x + 4)$.

A. $3x^2 - 4x + 15$

B. $2x^2 - 4x + 17$

C. $3x^2 + 4x + 17$

D. $3x^2 - 4x + 17$



Q24 Mathematics

A group of 10 women can weave a designer saree in 20 days. After 4 days, another group of 20 women joins them to work on the same saree. In how many more days will the saree be completely woven?

A. $5\frac{1}{3}$ days



B. $6\frac{4}{11}$ days

C. 10 days

D. $10\frac{1}{2}$ days

Q25 Mathematics

Calculate the mode from the following data.

Days of Confinement	7	8	9	10	11
Number of Patients	5	7	8	6	4

A. 9



B. 11

C. 8

D. 10



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Mathematics

25 Questions • Answer Key

Q1 Mathematics

A, B and C can do a piece of work in 3, 24 and 8 days, respectively. How long (in days) will they take to do twice the same work, working together?

A. 4



B. 8

C. 5

D. 12

Q2 Mathematics

Two engines of trains 60 km apart start towards each other at speeds of 16 km/hr and 29 km/hr, respectively. After how much time will they meet each other? (Assume the length of engine is negligible.)

A. 80 minutes



B. 86 minutes

C. 90 minutes

D. 72 minutes

Q3 Mathematics

The average age of 57 students of a class is 19 years. If the age of the teacher is also included, the average age of the whole group becomes 20 years. The age (in years) of the teacher is:

A. 77



B. 71

C. 79

D. 75

Q4 Mathematics

The present age of Mr. Gupta is three times the present age of his daughter. Six years hence, the ratio of their ages will be 5 : 2. What is the present age of the daughter?

A. 22 years

B. 20 years

C. 18 years



D. 24 years

Q5 Mathematics

What is the smallest natural number that should be added to 4478 such that a remainder of 2 is left when the resulting number is divided by each of the numbers 56, 80, 16 and 60?

A. 564



B. 549

C. 574

D. 584

Q6 Mathematics

A typist takes 40 minutes to type 2 pages. How long (in minutes) will he take to type 96 pages?

A. 1920



B. 1930

C. 1925

D. 1910

Q7 Mathematics

In a polling booth with 9000 valid votes, four candidates P, Q, R and S contested, and a NOTA option was also available. Exactly 1% of the total votes went to NOTA. Candidate Q received 25% of the votes secured by P. The combined votes of R and S totaled 5,830, distributed between them in the ratio 3 : 2. How many votes did the winning candidate receive?

A. 3498



B. 3894

C. 4398

D. 3984

Q8 Mathematics

If the mean proportional of A and 112 is 28, then find the value of A.

A. 6

B. 4

C. 7



D. 5



Q9 Mathematics

A cash payment that will settle a bill for 600 pairs of sandals at ₹91 per pair of sandals with the successive discounts of 25% and 25% with a further discount of 28% on cash payment is:

- A. ₹22,101
- B. ₹22,113
- C. ₹22,111
- D. ₹22,104

Q10 Mathematics

The length, breadth, and height of a cuboid are in the ratio 1 : 2 : 3. If the length, breadth, and height are increased by 100%, 50%, and 80%, respectively, find the percentage increase in the volume of the cuboid.

- A. 440%
- B. 404%
- C. 450%
- D. 402%

Q11 Mathematics

A shopkeeper bought certain goods for ₹2,500 and sold them for ₹3,250. Find his profit percentage.

- A. 30%
- B. 40%
- C. 20%
- D. 25%

Q12 Mathematics

In 532 litres solution of acid and water, the ratio of acid and water is 4:3. How many litres of acid must be added to it to get the solution in which the ratio of acid and water is 8:4?

- A. 154
- B. 151
- C. 153
- D. 152

Q13 Mathematics

The cost price of a box of sharpeners is ₹2,400. The shopkeeper gave 41% of discount on the cost price. What is the selling price (in ₹)?

- A. 1,496
- B. 1,416
- C. 1,242
- D. 1,494

Q14 Mathematics

Two banks, A and B, offered loans at 3.5% and 7% per annum, respectively. Salil borrowed an amount of ₹4,60,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Salil after 3 years.

- A. 49,300
- B. 47,800
- C. 48,300
- D. 49,800

Q15 Mathematics

In $\triangle ABC$, $BD \perp AC$ at D and $\angle DBC = 71^\circ$. E is a point on BC such that $\angle CAE = 57^\circ$. What is the measure of $\angle AEB$?

- A. 76°
- B. 71°
- C. 68°
- D. 62°

Q16 Mathematics

The sum of two integers is 40. If the difference between them is 14, find the larger integer.

- A. 17
- B. 25
- C. 27
- D. 33

Q17 Mathematics

The monthly incomes of two friends Gopal and Akshay are in the ratio 5 : 8 and each of them saves ₹78,000 every month. If the ratio of their monthly expenditure is 1 : 4, then find the monthly income of Gopal (in ₹).

- A. 96,500
- B. 98,500
- C. 97,500
- D. 1,36,500

Q18 Mathematics

A woman travelled at a speed of 20 m/min for 80 min, and at a speed of 50 m/min for 70 min. Her average speed (in m/min) is:

- A. 40
- B. 34
- C. 27
- D. 38



Q19 Mathematics

A sphere of diameter 14 cm is cut into 4 equal parts. What is the total surface area (in cm^2) of the four parts?

(Use $\pi = \frac{22}{7}$)

A. 3606

B. 4408

C. 2464

D. 1232

**Q20** Mathematics

If $1 - \sin^2 B = K \cdot \sin^2 B$, find K.

A. $\sec^2 B$

B. $\operatorname{cosec}^2 B$

C. $\tan^2 B$

D. $\cot^2 B$

**Q21** Mathematics

Simplify: $\frac{(x^4 - 1)(x^2 + x + 1)}{(x^3 - 1)(x^2 + 1)}$

A. $x^2 + 1$

B. $x - 1$

C. $x + 1$

D. $x^2 - 1$

**Q22** Mathematics

If $90 - [36 \div 3 + 2 \times (P^2 - 21)] \div 3 = \frac{70}{3}$, find the positive value of P.

A. 5

B. 6

C. 4

D. $\sqrt{115}$



Q23 Mathematics

20 men can reap a field in 18 days. If the goal is to finish reaping the field in 30 days, after how many days should 9 men stop working?

A. $1\frac{1}{2}$



B. $4\frac{1}{2}$

C. $3\frac{1}{2}$

D. $2\frac{1}{2}$

Q24 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{11}{100}$ (rounded off to two decimal places)?

A. 60.45%

B. 55.45%

C. 45.45%



D. 90.91%

Q25 Mathematics

The product of mean and mode is 24 and the product of median and mean is 32.

If the square root of the sum of squares of mean, 3 times median and mode is $a \times \sqrt{b \times 11}$, find $\sqrt{a + b}$.

A. 4

B. 5

C. 3



D. 6



Mathematics

25 Questions • Answer Key

Q1 Mathematics

A, B and C can do a piece of work in 3, 6 and 4 days, respectively. How long (in days) will they take to do thrice the same work, working together?

- A. 5
- B. 12
- C. 8
- D. 4



Q2 Mathematics

The sides of a triangle are 77 cm, 36 cm and 85 cm. What is the length of its altitude corresponding to the side with the length of 36 cm?

- A. 89 cm
- B. 77 cm
- C. 53 cm
- D. 43 cm



Q3 Mathematics

An article is sold at a gain of 30%. Had it been sold for ₹48 more, the profit would have been 35%. The cost price of the article is:

- A. ₹318
- B. ₹636
- C. ₹480
- D. ₹960



Q4 Mathematics

Two trains, 295 m and 215 m in length are running in opposite directions. The first runs at the rate of 61 km/hr and the second at the rate of 47 km/hr. How long will they take to cross each other?

- A. 17 seconds
- B. 23 seconds
- C. 24 seconds
- D. 12 seconds



Q5 Mathematics

A class of 78 students took a Physics test. 17 students had an average score of 70. The remaining students had an average score of 90. What is the average score (rounded off to one decimal place) of the whole class?

- A. 92.1
- B. 84.4
- C. 80.7
- D. 85.6



Q6 Mathematics

During a New-Year sale, a company gives a 'Buy 9 Sweaters and Get 1 Free' offer to customers. The percentage discount involved in this deal is:

- A. 15%
- B. 12%
- C. 10%
- D. 8%



Q7 Mathematics

A shopkeeper marks his goods at X% above the cost price and sells them at a discount of 48%. If he makes a profit of 82%, find the value of X.

- A. 249
- B. 250
- C. 251
- D. 248



Q8 Mathematics

The wages of 5 carpenters for a 2-day week are ₹1,220. What are the 1-day wages (in ₹) of one carpenter?

- A. 245
- B. 123
- C. 244
- D. 122



Q9 Mathematics

The age of a mother is three times the age of her daughter. After 12 years, the mother's age will be twice the daughter's age. Find the present age of the mother.

A. 40 years

B. 36 years ✓

C. 44 years

D. 48 years

Q10 Mathematics

The radii of two cylinders is in the ratio 3 : 4 and their heights is in the ratio 5 : 2. The ratio of their volumes will be:

A. 22 : 17

B. 45 : 32 ✓

C. 28 : 41

D. 8 : 15

Q11 Mathematics

If $p : q : r = 8 : 5 : 12$ and $r : s = 36 : 18$, then what is the value of $p : q : r : s$?

A. 23:18:38:24

B. 21:21:39:22

C. 22:18:40:19

D. 24:15:36:18 ✓

Q12 Mathematics

₹567 is divided among Arjun, Nisha and Gaurav in such a way that if ₹10, ₹45 and ₹39 are deducted from their respective shares, they have money in the ratio 3:6:2. Find the actual share of Nisha.

A. ₹408

B. ₹358

C. ₹303 ✓

D. ₹308

Q13 Mathematics

The income of Raman is ₹49,000. He saves 27.5% of his income. If his income increases by 34% and expenditure increases by 20%, then his savings will:

A. increase by ₹9,555 ✓

B. decrease by ₹9,556

C. increase by ₹9,559

D. decrease by ₹9,550

Q14 Mathematics

The average age of 38 students of a class is 21 years. If the age of the teacher is also included, the average age of the whole group becomes 22 years. The age (in years) of the teacher is:

A. 59

B. 62

C. 60 ✓

D. 57

Q15 Mathematics

Two banks, A and B, offered loans at 3.5% and 7.5% per annum, respectively. Manjit borrowed an amount of ₹2,20,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Manjit after 2 years.

A. 19,100

B. 18,600

C. 17,600 ✓

D. 17,100

Q16 Mathematics

The ratio of the two sides of a rectangle is 2 : 3. If the area of the rectangle is 2646 cm^2 , then its perimeter is _____ cm.

A. 220

B. 212

C. 200

D. 210 ✓



Q17 Mathematics

If 20% of 90% of $\frac{5}{9}$ of a number is 345, find the number.

A. 6790

B. 7190

C. 5790

D. 3450

**Q18** Mathematics

Walking at $\frac{2}{3}$ rd of his normal speed, Abhijeet is 18 minutes late in reaching his office.

The usual time taken by him to cover the distance between his home and his office is:

A. 36 minutes

B. 37 minutes

C. 35 minutes

D. 41 minutes

**Q19** Mathematics

Simplify the following.

$$(\sqrt{6} \times \sqrt{15} - 5\sqrt{10}) + 3\sqrt{10}$$

A. $\sqrt{15}$

B. $\sqrt{10}$

C. $\sqrt{5}$

D. 10

**Q20** Mathematics

$\frac{1}{20}$ is what percentage of $\frac{2}{40}$?

A. 100%

B. 115%

C. 200%

D. 110%



Q21 Mathematics

If 9 is subtracted from the numerator of a fraction, it becomes $\frac{2}{9}$, and if 12 is added to the denominator of the fraction, it becomes $\frac{1}{3}$.

What is the sum of the numerator and the denominator of the original fraction?

A. 64



B. 61

C. 63

D. 62

Q22 Mathematics

Two outlet pipes, A and B, can separately empty a full tank in 17 hours and 15 hours, respectively. Both the outlet pipes are opened together for 'x' hours. Had outlet pipe B been opened alone, it would have taken (x + 5) hours to empty the same quantity of water from the tank. What is the value of x?

A. $4\frac{2}{3}$

B. $5\frac{2}{3}$



C. $5\frac{1}{3}$

D. $4\frac{1}{3}$

Q23 Mathematics

The HCF of $\frac{1}{2}$, $\frac{3}{4}$, $\frac{27}{16}$ and $\frac{81}{64}$ is:

A. $\frac{243}{256}$

B. $\frac{81}{64}$

C. $\frac{1}{64}$



D. $\frac{9}{64}$

Q24 Mathematics

From the top of a tower of height 10 m, a boy observes a car on the ground moving away from the base of the tower. If the angle of depression of the car changes from 60° to 30° , how far has the car moved during this time?

A. 10 m

B. $\left(10\sqrt{3} - \frac{10}{\sqrt{3}}\right)$ m



C. $10(\sqrt{3} + 1)$ m

D. $(10\sqrt{3} + 1)$ m



If $x^2 + \frac{1}{x^2} = 123$, then a possible value of $(x - \frac{1}{x})$ is:

A. 13

B. 11



C. 12

D. 10



Mathematics

25 Questions • Answer Key

Q1 Mathematics

Two banks, A and B, offered loans at 3.5% and 7% per annum, respectively. Keshav borrowed an amount of ₹4,80,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Keshav after 2 years.

A. 33,600



B. 35,100

C. 33,100

D. 34,600

Q2 Mathematics

If 30 workers earn ₹4140 in 4 days, how much (in ₹) will 55 workers earn in 10 days?

A. 18,475

B. 19,175

C. 18,725

D. 18,975



Q3 Mathematics

Amit and Deeksha together invested ₹46,800 in a business. At the end of the year, out of a total profit of ₹8,700, Amit's share was ₹2,900. What was the investment of Amit?

A. ₹15,600



B. ₹17,445

C. ₹16,730

D. ₹15,225

Q4 Mathematics

A number when multiplied by 3 and then added to 8, results in 29. What is the number?

A. 8

B. 7



C. 5

D. 6

Q5 Mathematics

Arrange the following schemes in the ascending order of their discounts.

A. Buy 3 get 2 free.

B. A single discount of 65%.

C. Two successive discounts of 31% and 40%.

A. A, C, B



B. B, A, C

C. C, B, A

D. A, B, C

Q6 Mathematics

The income of Raman is ₹68,500. He saves 22.5% of his income. If his income increases by 14% and expenditure increases by 40%, then his savings will:

A. decrease by ₹11,647

B. decrease by ₹11,645



C. increase by ₹11,642

D. increase by ₹11,647

Q7 Mathematics

If 20% of a number is added to 72, then the result is the same number. 60% of the same number is:

A. 74

B. 64

C. 84

D. 54



Q8 Mathematics

The average age of 25 students of a class is 27 years. If the age of the teacher is also included, the average age of the whole group becomes 28 years. The age (in years) of the teacher is:

A. 53



B. 56

C. 55

D. 52



Q9 Mathematics

The ratio of the price per unit of lemon chocolate to that of strawberry chocolate is 22 : 6, and a family consumes them in the ratio of 14 : 23 by quantity. Determine the ratio of the expenditure on strawberry chocolate to that on lemon chocolate.

- A. 71 : 159
- B. 68 : 157
- C. 69 : 154
- D. 67 : 156

**Q10 Mathematics**

A flight travels a distance of 1,200 km in 3 hours. What is the speed of the flight?

- A. 400 km/hr
- B. 200 km/hr
- C. 382 km/hr
- D. 425 km/hr

**Q11 Mathematics**

A class of 69 students took a Physics test. 17 students had an average score of 94. The other students had an average score of 84. What is the average score (rounded off to one decimal place) of the whole class?

- A. 89.3
- B. 86.5
- C. 82.8
- D. 95.7

**Q12 Mathematics**

A, B and C can do a piece of work in 2, 5 and 20 days, respectively. How long (in days) will they take to do thrice the same work, working together?

- A. 4
- B. 12
- C. 8
- D. 5

**Q13 Mathematics**

A baker sells 100 cupcakes and earns a profit equal to the selling price of 20 cupcakes. What is his profit percentage?

- A. 20%
- B. 25%
- C. 18%
- D. 33.33%

**Q14 Mathematics**

The marked price of a bed is ₹744, which is 36% above the cost price. If the profit percentage is 20%, find the discount percentage (rounded off to two decimal places).

- A. 12.89%
- B. 11.27%
- C. 10.39%
- D. 11.76%

**Q15 Mathematics**

Five years ago, the ratio of the ages of two buildings was 7 : 2. Five years hence, the ratio will be 3 : 1. What is the present age of the newer building?

- A. 55 years
- B. 40 years
- C. 50 years
- D. 45 years

**Q16 Mathematics**

If the price of a product is first increased by 18% and then decreased by 22%. Find the percentage change in the price (correct to two places of decimals).

- A. Increased 7.96%
- B. Increased 5.85%
- C. Decreased 7.96%
- D. Decreased 5.85%

**Q17 Mathematics**

P is any point inside the rectangle ABCD. If PA = 86 cm, PB = 49 cm and PC = 79 cm, then the length of PD (in cm) is equal to:

- A. 105
- B. 106
- C. 104
- D. 107

**Q18 Mathematics**

A solid sphere of radius 7 cm is coated with a layer of paint that increases its radius to 7.5 cm, find the volume of the painted layer. (Use $\pi = 22/7$ and round off your answer to the nearest integer)

- A. 442 cm³
- B. 331 cm³
- C. 330 cm³
- D. 440 cm³



Q19 Mathematics

A camp has provisions for 42 pupils for 12 days. In how many days will the same provisions finish off if the strength of the camp is increased to 63 pupils?

A. 9

B. 7

C. 11

D. 8

**Q20 Mathematics**

If $x^2 + \frac{1}{x^2} = 79$, then a possible value of $(x + \frac{1}{x})$ is:

A. 6

B. 7

C. 9

D. 8

**Q21 Mathematics**

A train of length 299 m takes 12 seconds to pass another train 101 m long coming from the opposite direction. If the speed of the first train is 71 km/hr, then find the speed of the second train.

A. 48 km/hr

B. 41 km/hr

C. 56 km/hr

D. 49 km/hr

**Q22 Mathematics**

A hollow metallic sphere with an external radius of 10 cm and an internal radius of 6 cm is melted and recast into a solid cone with a base radius of 8 cm. What is the height of the cone? (Use $\pi = \frac{22}{7}$)

A. 49 cm

B. 42 cm

C. 52 cm

D. 45 cm

**Q23 Mathematics**

Simplify: $\frac{2^3 \times 3^{-2} \times 5^4}{6^{-1} \times 10^2}$.

A. $2^4 \times 3^{-1} \times 5^2$

B. $2^2 \times 3^{-3} \times 5^3$

C. $2^2 \times 3^{-1} \times 5^2$

D. $2^1 \times 3^{-2} \times 5^2$



Q24 Mathematics

A cistern of dimensions $100\text{ cm} \times 80\text{ cm} \times 120\text{ cm}$ is fitted with an inlet pipe and an outlet pipe. The inlet pipe pours in 2000 cm^3 of water per minute and the outlet pipe can empty the full tank in 3 hours and 20 minutes. If the tank is full and both pipes are open, then how many hours will it take to empty the cistern?

A. 4

B. 5

C. $5\frac{5}{7}$ D. $4\frac{5}{7}$ **Q25** Mathematics

Find the value of $\frac{\sin 15^\circ}{\cos 75^\circ} + \frac{\cos 78^\circ}{\sin 12^\circ} - 1$.

A. 0

B. 2

C. 3

D. 1



Mathematics

25 Questions • Answer Key

Q1 Mathematics

3 cups and 4 glasses cost ₹270. If 2 more glasses are purchased, then the total amount becomes ₹330. Find the cost of a cup.

A. ₹30

B. ₹45

C. ₹40

D. ₹50



Q2 Mathematics

If the expenditure of Company A in 2023 was ₹660 crore and the profit percentage was 35%, then what was its income in 2023?

A. ₹435 crore

B. ₹665 crore

C. ₹231 crore

D. ₹891 crore



Q3 Mathematics

Maya buys a mobile phone for her child. The phone is marked at ₹21,000 and is offered with two successive discounts of 5% and Z%, respectively. After receiving both discounts, she pays ₹11,172. Find the value of Z.

A. 44



B. 45

C. 42

D. 43

Q4 Mathematics

When x is added to each of 10, 14, 38 and 28, then the numbers so obtained, in this order, are in proportion. Then, if $3x : y :: y : (5x - 6)$, and $y > 0$, what is the value of y ?

A. 65

B. 78

C. 79

D. 72



Q5 Mathematics

A trader buys an article and sells it at a profit of 25%. The buyer again sells it at a loss of 10%. If the final selling price is ₹9,900, then what was the cost price (in ₹) of the article for the first trader?

A. 8,800



B. 8,400

C. 9,000

D. 8,000

Q6 Mathematics

The curved surface area and the volume of a cylindrical pipe is 565.2 m^2 and $1,695.6 \text{ m}^3$, respectively. Find the total surface area of the pipe.

(Use $\pi = 3.14$)A. 548.29 m^2 B. 428.36 m^2 C. 658.76 m^2 D. 791.28 m^2 

Q7 Mathematics

The average age of 43 students of a class is 13 years. If the age of the teacher is also included, the average age of the whole group becomes 14 years. The age (in years) of the teacher is:

A. 56

B. 57



C. 58

D. 54

Q8 Mathematics

R's age is twice the age of S and three times the age of T. S is 5 years older than T. What is the difference in ages (in years) between R and T?

A. 24

B. 28

C. 30

D. 20



Q9 Mathematics

If the radius of the base of a right circular cylinder is decreased by 15% and its height is increased by 149%, then what is the percentage increase (rounded to the nearest integer) in its volume?

- A. 109%
- B. 73%
- C. 80%
- D. 53%

Q10 Mathematics

Two trains, 170 metres and 220 metres in length, are running in opposite directions. The first runs at the rate of 45 km/hr and the second at the rate of 63 km/hr. How long will they take to cross each other?

- A. 13 seconds
- B. 17 seconds
- C. 23 seconds
- D. 20 seconds

Q11 Mathematics

The number of prime numbers lying between 309 and 320 is:

- A. 1
- B. 5
- C. 4
- D. 3

Q12 Mathematics

The monthly incomes of two friends, David and Ajay, are in the ratio 5 : 8, and each of them saves ₹72,000 every month. If the ratio of their monthly expenditure is 1 : 4, find the monthly income of David (in ₹).

- A. 91,000
- B. 89,000
- C. 90,000
- D. 1,26,000

Q13 Mathematics

The income of Raman is ₹43,800. He saves 20% of his income. If his income increases by 36% and expenditure increases by 40%, then his savings will:

- A. decrease by ₹1,748
- B. increase by ₹1,752
- C. increase by ₹1,757
- D. decrease by ₹1,753

Q14 Mathematics

The cost price of a box of notebooks is ₹7,400. The shopkeeper gave 28% discount on the cost price. What will be the selling price (in ₹)?

- A. 5,328
- B. 5,348
- C. 5,406
- D. 5,377

Q15 Mathematics

The amount on a sum of ₹4,400 at the rate of 20% per annum compound interest, compounded annually, in 2 years will be:

- A. ₹7,289
- B. ₹5,729
- C. ₹6,336
- D. ₹5,989

Q16 Mathematics

A class of 75 students took a Physics test. 22 students had an average score of 85. The other students had an average score of 95. What is the average score (rounded off to one decimal place) of the whole class?

- A. 88.3
- B. 92.1
- C. 96.7
- D. 82.4

Q17 Mathematics

Given that C is the third proportional of 59 and B. If B is the sum of the first three even natural numbers, then find the value of C. (Round off the answer to two decimal places.)

- A. 1.44
- B. 2.44
- C. 0.14
- D. 6.32

Q18 Mathematics

X people were given a contract for doing a piece of work in 36 days. 3 people did not turn up to work due to sickness, and the rest of the people completed the work in 39 days. What is the value of X?

- A. 44
- B. 40
- C. 39
- D. 48



Q19 Mathematics

Which of the following is NOT a prime number?

A. 67

B. 79

C. 51



D. 31

Q20 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 42.5^\circ$. If the ratio of $\angle P$ to $\angle Q$ is $8 : 9$, then what is the difference between the measures of $\angle Q$ and $\angle P$?

A. 2°

B. 5°



C. 7°

D. 6°

Q21 Mathematics

Simplify: $72 - [49 - (81 \div 9 - (14 - 24 \div 4) \div 8)]$

A. 35

B. 31



C. 27

D. 39

Q22 Mathematics

From the top of a building 15 m high, the angle of depression to a point on the ground is 45 degrees. Find the horizontal distance from the building to the point.

A. 45 m

B. 7.5 m

C. 30 m

D. 15 m

**Q23 Mathematics**

One pipe can fill a tank in 11 minutes, while another pipe can empty the completely filled tank in 22 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-half of the tank?

A. 22

B. 12

C. 23

D. 11

**Q24 Mathematics**

A train of length 239 m takes 20 seconds to pass another train 161 m long coming from the opposite direction. If the speed of the first train is 43 km/hr, then find speed of the second train.

A. 29 km/hr



B. 38 km/hr

C. 32 km/hr

D. 25 km/hr

Q25 Mathematics

Simplify the following.

$$\frac{(a^3 - b^3)}{(a^2 + ab + b^2)} + \frac{(a^3 + b^3)}{(a^2 - ab + b^2)}$$

A. $2a^2$

B. $2b^2$

C. $2a$



D. $2b$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The price of 1 kg of carrot on Monday is ₹40. If it is increased by 5% and 3% on the next two consecutive days, then what is its price (in ₹) on Wednesday?

A. 46.32

B. 43.26 ✓

C. 49.25

D. 36.43

Q2 Mathematics

If the ratio of two numbers is 2 : 5, and their HCF is 29, then their LCM is:

A. 281

B. 319

C. 290 ✓

D. 283

Q3 Mathematics

Two trains are moving in opposite directions at speeds of 110 km/hr and 150 km/hr. The length of one train is 500 m. The time taken by them to cross each other is 10 seconds. The length (in m) of the other train, correct to 2 decimal places, is:

A. 222.22 ✓

B. 228.02

C. 233.21

D. 225.93

Q4 Mathematics

A shopkeeper sold a pen for ₹150 and made a profit of ₹30. Find the cost price of the pen.

A. ₹100

B. ₹120 ✓

C. ₹110

D. ₹130

Q5 Mathematics

An uncle is 6 times as old as his nephew. In 6 years, the difference in their ages will be 30 years. What is the sum of their current ages (in years)?

A. 48

B. 30

C. 42 ✓

D. 36

Q6 Mathematics

If ₹8,404 is divided between Rishi and Yash in the ratio 7 : 15, then find the share of Yash (in ₹).

A. 5,732

B. 5,731

C. 5,733

D. 5,730 ✓

Q7 Mathematics

A train 1386 m long is running at 18 km/hr. How long will it take to clear a 564 m long platform completely?

A. 390 seconds ✓

B. 385 seconds

C. 393 seconds

D. 386 seconds

Q8 Mathematics

A and B working together can complete a piece of work in 2 days. B alone can complete the same work in 10 days. How long (in days) will A alone take to complete double the work?

A. 2.5

B. 8

C. 5 ✓

D. 6



Q9 Mathematics

A cycle is sold for ₹2,700 at a loss of 10%. Find its cost price.

- A. ₹3,200
- B. ₹3,600
- C. ₹2,800
- D. ₹3,000

**Q10 Mathematics**

If the radius of the base of a right circular cylinder is decreased by 12% and its height is increased by 169%, then what is the percentage increase (closest integer) in its volume?

- A. 110%
- B. 108%
- C. 134%
- D. 111%

**Q11 Mathematics**

Two pumps, M and N, can fill a tank in 36 hours and 45 hours, respectively. Another pump P can empty the tank in 30 hours. First M and N are opened, and after 8 hours, P is also opened. The tank will be filled up in total T hours. The value of T is:

- A. 44
- B. 36
- C. 32
- D. 40

**Q12 Mathematics**

After selling an article at a discount of 4%, the profit percentage obtained is 20%. What is the markup percentage?

- A. 25%
- B. 28%
- C. 19%
- D. 27%

**Q13 Mathematics**

A shopkeeper marks the price of an article at ₹1,980. Find the cost price if after allowing a discount of 12% he still gains 32% on the cost price.

- A. ₹1,349
- B. ₹1,209
- C. ₹1,283
- D. ₹1,320

**Q14 Mathematics**

When x is added to each of 17, 9, 26 and 14, then the numbers so obtained, in this order, are in proportion. Then, if $8x : y :: y : (4x - 2)$, and $y > 0$, what is the value of y?

- A. 22
- B. 14
- C. 4
- D. 12

**Q15 Mathematics**

Two banks, A and B, offered loans at 3.5% and 7.5% per annum, respectively. Mukund borrowed an amount of ₹2,00,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Mukund after 2 years.

- A. 15,500
- B. 17,000
- C. 16,000
- D. 17,500

**Q16 Mathematics**

The sides of a triangle are 68 cm, 31 cm, and 87 cm. What is the length of its altitude corresponding to the side with a length of 31 cm?

- A. 40 cm
- B. 103 cm
- C. 60 cm
- D. 85 cm

**Q17 Mathematics**

The cost of a washing machine is 50% less than the cost of a TV. If the cost of the washing machine increases by 76% and that of the TV decreases by 28%, then what is the percentage change in the total cost of 4 washing machines and 2 TVs?

- A. Decrease by 27%
- B. Increase by 31%
- C. Decrease by 25%
- D. Increase by 24%



Q18 Mathematics

The average age of 37 students of a class is 42 years. If the age of the teacher is also included, the average age of the whole group becomes 43 years. The age (in years) of the teacher is:

A. 80



B. 83

C. 81

D. 77

Q19 Mathematics

Simplify: $[24 - \{6 + 3^2 - (4 \times 2 + 1)\}] \div 3 + 5 \times 2$

A. 20

B. 18

C. 16

D. 17

**Q20 Mathematics**

The data 30, 33, 49, 51, x, x + 4, 73, 79, 85, 96 is arranged in the ascending order and the median of the data is 64. Find the value of x.

A. 61

B. 63

C. 64

D. 62

**Q21 Mathematics**

Simplify: $(3x - 2)^2 - (x + 4)^2$

A. $8 \times 2 + 20x - 12$

B. $8 \times 2 - 20x - 12$



C. $8 \times 2 - 16x - 12$

D. $8 \times 2 - 20x - 4$

Q22 Mathematics

If $\frac{5}{13}$ of a certain number is added to $\frac{7}{39}$ of the same number, the result is 132. Find the number.

A. 224

B. 228

C. 238

D. 234



Q23 Mathematics

The total surface area of a sphere is 6006 cm^2 less than the total surface area of a hemisphere. If the ratio between the radii of the hemisphere and sphere is $5 : 3$, then find the radius of the sphere.

(Use $\pi = \frac{22}{7}$)

A. 42 cm

B. 28 cm

C. 21 cm



D. 35 cm

Q24 Mathematics

If 50% of 60% of $\frac{2}{7}$ of a number is 618, find the number.

A. 7400

B. 7210



C. 10350

D. 8450

Q25 Mathematics

Simplify :

$$\frac{1 - \sec x}{\csc x \cdot \cot x}$$

A. $(\cos x - 1)\tan^2 x$



B. $(\cos x - 1)\cot^2 x$

C. $(\cos x + 1)\cot^2 x$

D. $(\cos x + 1)\tan^2 x$



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Mathematics

25 Questions • Answer Key

Q1 Mathematics

11 men and 17 women can complete a piece of work in 6 days, and 18 men and 15 women can complete the same work in 4 days. The work of how many women is equivalent to that of one man?

A. 10

B. 6

C. 4

D. 7 ✓

Q2 Mathematics

A cricketer has an average of 57 runs over 10 innings. If he scores 195 runs in the 11th inning, by how many runs (rounded off to the nearest whole number) does his average score increase?

A. 8

B. 13 ✓

C. 16

D. 14

Q3 Mathematics

A typist takes 40 minutes to type 2 pages. How long (in minutes) will he take to type 101 pages?

A. 2030

B. 2010

C. 2025

D. 2020 ✓

Q4 Mathematics

If a 1768 m long train crosses a pole in 68 seconds, then find the time (in seconds) taken by the train to cross a 338 m long platform.

A. 77

B. 81 ✓

C. 82

D. 76

Q5 Mathematics

The fourth proportional to 18, a and 8a is 16. What is the positive value of a?

A. 9

B. 6 ✓

C. 3

D. 8

Q6 Mathematics

In an election between two candidates, 80% of the registered voters cast their votes. Out of these, 2% were declared invalid. One candidate secured 8,820 votes, which accounted for 75% of the valid votes. Find the total number of registered voters.

A. 16,200

B. 15,800

C. 15,200

D. 15,000 ✓

Q7 Mathematics

A dealer allowed a 32% discount on an article and was still able to manage a 57% profit. Find the ratio of the cost price to listed price.

A. 71 : 162

B. 65 : 161

C. 68 : 157 ✓

D. 69 : 160

Q8 Mathematics

A salesman marks his goods 75% above the cost price and gives a discount of 52% on them. Find the percentage of this gain or loss.

A. 19% loss

B. 15% loss

C. 16% loss ✓

D. 18% gain



Q9 Mathematics

Two trains, having lengths 210 m and 390 m, are running at speeds of 120 km/hr and 150 km/hr, respectively, in the same direction. The time taken (in minutes) by the faster train, coming from behind, to completely cross the other train is:

A. 9.3

B. 11.1

C. 1.2



D. 2

Q10 Mathematics

The income of Raman is ₹68,800. He saves 18.5% of his income. If his income increases by 17% and expenditure increases by 25%, then his savings will:

A. increase by ₹2,319

B. decrease by ₹2,325

C. increase by ₹2,325

D. decrease by ₹2,322

**Q11 Mathematics**

A cuboid with dimensions 24 cm × 16 cm × 10 cm is melted to form smaller cubes with sides of 4 cm. Determine the number of cubes that can be formed.

A. 60



B. 64

C. 58

D. 62

Q12 Mathematics

The difference between the current ages of two brothers is 4 years. Twenty years ago, the age of the elder brother was 1.25 times the age of the younger brother. What is the current age (in years) of the elder brother?

A. 38

B. 36

C. 40



D. 34

Q13 Mathematics

The sides of a triangle are 39 cm, 62 cm, and 85 cm. What is the length of its altitude corresponding to the side with a length of 62 cm?

A. 36 cm



B. 57 cm

C. 18 cm

D. 12 cm

Q14 Mathematics

A typist takes 40 minutes to type 4 pages. How long (in minutes) will he take to type 112 pages?

A. 1125

B. 1130

C. 1120



D. 1110

Q15 Mathematics

A piece of land in the form of a rectangle has dimensions 240 m × 180 m. A narrow strip 10 m wide is dug all around it (outside) and the earth dug out is evenly spread over the land, increasing its surface level by 25 cm. Find the depth of the strip, rounded off to two decimal places.

A. 1.34 m

B. 1.43 m

C. 1.23 m



D. 1.11 m

Q16 Mathematics

Two banks, A and B, offered loans at 3.5% and 7.5% per annum, respectively. Atul borrowed an amount of ₹2,20,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Atul after 3 years.

A. 27,400

B. 27,900

C. 26,400



D. 25,900



Q17 Mathematics

A person stands 36 metres away from the foot of a tower. The angle of elevation to the top of the tower is θ , and $\tan\theta = 5/3$. What is the height (in metres) of the tower?

A. 48

B. 60



C. 45

D. 54

Q18 Mathematics

Ravi sells only pens and pencils. A pen costs ₹12 and a pencil costs ₹4. A student buys a total of 25 items and spends ₹180. How many pens did the student buy?

A. 10



B. 5

C. 20

D. 15

Q19 Mathematics

A pair of earrings is bought for ₹27,650 and is sold at a profit of 5%. Find the profit (in ₹). (Round off your answer to the nearest rupee)

A. ₹1,462

B. ₹1,383



C. ₹1,362

D. ₹1,450

Q20 Mathematics

The arithmetic mean of the observations 96, 70, 85, 52, 40, 88, 63, 40 and 60 is:

A. 65

B. 74

C. 56

D. 66

**Q21 Mathematics**

A and B working together can do a piece of work in 6 days. B alone can do the same work in 7 days. How long (in days) will A alone take to do double the work?

A. 87

B. 42

C. 85

D. 84

**Q22 Mathematics**

The total number of colour blocks is 6409. If the ratio of red blocks to blue blocks is 7 : 5 and the ratio of blue blocks to yellow blocks is 8 : 4, then how many yellow blocks are there?

A. 1099

B. 1102

C. 1105



D. 1098

Q23 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{11}{50}$? (Round off the answer to two decimal places.)

A. 45.45%

B. 37.73%

C. 22.73%



D. 32.73%

Q24 Mathematics

Simplify: $(5x + 11y)^2 + (5x - 11y)^2$

A. $50x^2 + 242y^2$



B. $50x^2 - 242y^2$

C. $220xy$

D. $-220xy$



Simplify: $\left(\frac{16^{-1} \times 8^2}{4^{-3} \times 2^5}\right)^{\frac{1}{3}}$

A. 4

B. 2



C. 1

D. 8



Mathematics

25 Questions • Answer Key

Q1 Mathematics

A class of 93 students took a Physics test. 10 students had an average score of 90. The remaining students had an average score of 75. What is the average score (rounded off to one decimal place) of the whole class?

A. 86.7

B. 74.9

C. 71.8

D. 76.6 ✓

Q2 Mathematics

The difference between two numbers is 92. The ratio of the two numbers is 7 : 3. Which is the smaller of the two numbers?

A. 79

B. 96

C. 63

D. 69 ✓

Q3 Mathematics

The cost of a washing machine is 75% less than the cost of a TV. If the cost of the washing machine increases by 72% and that of the TV decreases by 20%, then what is the percentage change in the total cost of 4 washing machines and 3 TVs?

A. Increase by 6%

B. Decrease by 1%

C. Decrease by 8%

D. Increase by 3% ✓

Q4 Mathematics

If an item marked at ₹6,250 is sold for ₹250, then what is the discount percentage?

A. 95%

B. 96% ✓

C. 97%

D. 98%

Q5 Mathematics

A 290-metre-long train crosses a platform thrice its length in 29 seconds. What is the speed of the train (in km/hr)?

A. 153

B. 147

C. 144 ✓

D. 138

Q6 Mathematics

A dealer makes a profit of 52% even after giving a 24% discount on the advertised price of a scooty. If he makes a profit of ₹6,526 on the sale of the scooty, what is the advertised price (in ₹)?

A. 25,065

B. 25,132

C. 25,103

D. 25,100 ✓

Q7 Mathematics

If $A : B = 4 : 6$ and $B : C = 7 : 11$, then $A : B : C$ is:

A. 14 : 21 : 33 ✓

B. 4 : 12 : 33

C. 4 : 31 : 21

D. 11 : 23 : 40

Q8 Mathematics

A and B working together can do a piece of work in 6 days. B alone can do the same work in 14 days. How long (in days) will A alone take to do double the work?

A. 10.5

B. 22

C. 24

D. 21 ✓



Q9 Mathematics

A sum of money was invested at simple interest at a certain rate for 9 years. Had it been invested at an 8% per annum higher rate, it would have fetched ₹7,992 more. Find the principal.

A. ₹11,100



B. ₹11,200

C. ₹10,200

D. ₹12,200

Q10 Mathematics

Sohan sells a water bottle to Ronak at 28% profit. Ronak sells the water bottle to Rahul at a profit of 12.5%. If Rahul paid ₹288 for the water bottle, then for how much did Sohan buy it?

A. ₹200



B. ₹220

C. ₹180

D. ₹150

Q11 Mathematics

A rectangular aquarium with dimensions 60 cm × 45 cm × 40 cm is filled with water to 80% of its height. If a solid metallic cube of edge 20 cm is completely immersed in it, by how much does the water level rise (rounded off to two decimal places)?

A. 2.36 cm

B. 2.96 cm



C. 2.56 cm

D. 2.76 cm

Q12 Mathematics

Find the H.C.F. of 18, 54, and 72 is:

A. 27

B. 12

C. 18



D. 6

Q13 Mathematics

In 10 years from now, A will be twice as old as B was 10 years ago. If A is 9 years older than B, find the present age of A.

A. 48 years



B. 40 years

C. 44 years

D. 38 years

Q14 Mathematics

The sides of a triangle are 24 cm, 32 cm and 40 cm. What is the length of its altitude corresponding to the side with the length of 32 cm?

A. 33 cm

B. 24 cm



C. 43 cm

D. 55 cm

Q15 Mathematics

Find the area of the triangle if the lengths of its two perpendicular sides are 4 cm and 5 cm.

A. 10 cm²



B. 30 cm²

C. 20 cm²

D. 25 cm²

Q16 Mathematics

What is the third proportional to $54x^2$ and $18xy$?

A. $7y^2$

B. $4y^2$

C. $6y^2$



D. $5y^2$

Q17 Mathematics

The arithmetic mean of the observations 27, 36, 12, 24, 48, 59, 60, 80 and 14 is:

A. 38

B. 40



C. 31

D. 36



Q18 Mathematics

The value of $[3 \div 2 \times (7 - 2)] - (3 \div 2 \text{ of } 6) - 2$ is:

A. 5.75

B. 6.25

C. 5.25



D. 4.75

Q19 Mathematics

If 10% of 60% of $\frac{2}{3}$ of a number is 841, find the number.

A. 21500

B. 22530

C. 20110

D. 21025

**Q20** Mathematics

The minute hand of a large wall clock is 63 cm long. Using $\pi = \frac{22}{7}$, find the length of the arc (in cm) traced by the tip of the minute hand in 11 seconds.

A. 1.74

B. 1.21



C. 1.10

D. 1.59

Q21 Mathematics

Simplify: $\frac{(2x^2y^{-1})^3}{(4xy)^4} \times \frac{(4x^{-3}y^4)^3}{(2x^2y)^3}$

A. $\frac{y^2}{2x^{13}}$

B. $\frac{y^2}{4x^{13}}$



C. $\frac{3y^2}{2x^{11}}$

D. $\frac{y^2}{x^{11}}$



Q22 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{9}{90}$?

- A. 100%
- B. 65%
- C. 50%
- D. 60%

**Q23** Mathematics

Simplify: $(x + 7)^2$

- A. $x^2 + 49$
- B. $x^2 + 14x + 49$
- C. $x^2 + 2x + 49$
- D. $x^2 + 7x + 49$

**Q24** Mathematics

A helicopter is flying at a height of 575 m. A person on the ground sees it at an angle of elevation of 30° . What is the horizontal distance from the person to the point on the ground exactly below the helicopter?

(Take $\sqrt{3} = 1.73$)

- A. 990.75 m
- B. 896.75 m
- C. 994.75 m
- D. 895.75 m

**Q25** Mathematics

Pipe P can fill $\frac{2}{5}$ part of a tank in 42 hours and pipe Q can fill $\frac{2}{5}$ part of the same tank in 30 hours. Both P and Q were kept open for 5 hours, then both were closed. Pipe R alone was then opened and it emptied the water in the tank in 12 hours. Pipes P, Q and R together can fill the empty tank in:

- A. 92 hours
- B. 71 hours
- C. 94 hours
- D. 75 hours



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The sum of two consecutive numbers is 51. What are the numbers?

A. 24, 25

B. 26, 27

C. 25, 26



D. 27, 28

Q2 Mathematics

The cost price of a box of pen is ₹5,400. The shopkeeper gives a 62% discount on the cost price. What will be the selling price (in ₹)?

A. 1,986

B. 2,052



C. 2,138

D. 2,095

Q3 Mathematics

Pipe A can fill a tank in 32 minutes and pipe B can empty it in 48 minutes. If both the pipes are opened together, after how many minutes should pipe B be closed, so that the tank is filled in 60 minutes?

A. 36

B. 40

C. 48

D. 42



Q4 Mathematics

The average age of a father and his daughter is 27 years. The ratio of their ages 4 years hence from now, will be 23 : 8. Find the daughter's present age (in years).

A. 16

B. 12



C. 15

D. 20

Q5 Mathematics

Two banks, A and B, offered loans at 3.5% and 7% per annum, respectively. Ashish borrowed an amount of ₹4,40,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Ashish after 4 years.

A. 61,600



B. 62,600

C. 61,100

D. 63,100

Q6 Mathematics

If mean is 35 and median is 33.5, then the value of mode is:

A. 31

B. 30.5



C. 31.5

D. 32

Q7 Mathematics

In a right-angle triangle ABC, right angled at B, AB = 8 cm. A line AO is drawn which meets BC at O such that AO = OC = 10 cm. Find the area of triangle ABC.

A. 40 cm²B. 36 cm²C. 64 cm²D. 50 cm²

Q8 Mathematics

A, B and C can do a piece of work in 2, 6 and 3 days, respectively. How long (in days) will they take to do thrice the same work, working together?

A. 4

B. 9

C. 3



D. 6



Q9 Mathematics

The fourth proportional to 12, a, and 6a is 50. What is the positive value of 'a'?

A. 10



B. 8

C. 12

D. 13

Q10 Mathematics

A camp has provisions for 55 persons for 14 days. In how many days will the same provisions finish off, if the strength of the camp is increased to 70 persons?

A. 14

B. 11



C. 10

D. 9

Q11 Mathematics

The total surface area of a right circular cylinder with radius of the base 12 cm and height 72 cm is:

(take $\pi = 22/7$)

A. 5430 cm²

B. 6336 cm²



C. 905 cm²

D. 528 cm²

Q12 Mathematics

If a X m long train running at a speed of 41 m/sec crosses a railway platform in 34 sec. Find the value of X, if the length of the railway platform is 301 m.

A. 1088

B. 1093



C. 1090

D. 1089

Q13 Mathematics

The income of Raman is ₹70,000. He saves 26% of his income. If his income increases by 32% and expenditure increases by 45%, then his savings will:

A. decrease by ₹910



B. increase by ₹909

C. increase by ₹913

D. decrease by ₹908

Q14 Mathematics

An article is sold at a 15% profit. If it had been sold for ₹90 more, the profit would have been 25%. What is the cost price of the article?

A. ₹800

B. ₹850

C. ₹900



D. ₹950

Q15 Mathematics

The arithmetic mean of the observations 90, 94, 44, 97, 46, 72, 62, 44 and 54 is:

A. 72

B. 67



C. 71

D. 57

Q16 Mathematics

A dealer purchased a microwave for ₹57,000. He allows a discount of 64% on its marked price and still gains 38%. Find the marked price of the microwave.

A. ₹2,18,514

B. ₹2,18,500



C. ₹2,18,310

D. ₹2,18,398

Q17 Mathematics

The sides of a triangle are 20 cm, 51 cm, and 37 cm. What is the length of its altitude corresponding to the side with a length of 51 cm?

A. 30 cm

B. 49 cm

C. 12 cm



D. 53 cm

Q18 Mathematics

₹3,246 is divided among A, B, C and D in such a way that the shares of A and B, B and C, and C and D are in the ratios of 4 : 5, 4 : 5, and 6 : 7, respectively. The share of A (in ₹) is:

A. 508

B. 532

C. 576



D. 612



Q19 Mathematics

Two cars start from the same point and travel in opposite directions. If one car travels at 60 km/hr and the other at 75 km/hr, how far apart will they be after 3 hours?

A. 445 km

B. 425 km

C. 395 km

D. 405 km

**Q20 Mathematics**

$\frac{1}{20}$ is what percentage of $\frac{9}{100}$? (Round off to two decimal places)

A. 65.55%

B. 70.55%

C. 55.56%

D. 111.11%

**Q21 Mathematics**

Find the simplified value of the following expression.

$$(3^4 \times 3^{-2}) \div (3^3 \times 3^{-5}) \times (3^6)^{-1}$$

A. $\frac{1}{27}$

B. $\frac{1}{3}$

C. $\frac{1}{9}$

D. $\frac{1}{81}$

**Q22 Mathematics**

If 60% of 20% of $\frac{2}{6}$ of a number is 343, find the number.

A. 11400

B. 10610

C. 8575

D. 11240



Q23 Mathematics

If $\left(8.5 \div 0.25 + \frac{26}{3} \div \frac{1}{3}\right)$ of $\frac{3}{50} = 0.01$ of P, then the value of P is:

A. 340

B. 348

C. 360



D. 354

Q24 Mathematics

If $x^2 + \frac{1}{x^2} = 47$, then a possible value of $\left(x + \frac{1}{x}\right)$ is:

A. 6

B. 8

C. 7



D. 9

Q25 Mathematics

A ladder makes an angle of 60° with the ground when placed against a wall.

If the foot of the ladder is 2 m away from the wall, the length of the ladder is:

A.

B. $3\sqrt{2}$ m

C. 6 m

D. $2\sqrt{3}$ m

Mathematics

25 Questions • Answer Key

Q1 Mathematics

If 20% of a number is added to 78, then the result is the same number. 70% of the same number is:

A. 68.25



B. 98.25

C. 78.25

D. 88.25

Q2 Mathematics

One pipe can fill a tank in 2 minutes, while another pipe can empty the completely filled tank in 4 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-fourth of the tank?

A. 1



B. 2

C. 4

D. 3

Q3 Mathematics

Which of the given values can x NOT take without changing the mode in the following data set?

{1, 2, 3, 3, 7, 8, 9, 3, 11, x, 17, 11, 13}

A. 11



B. 2

C. 13

D. 3

Q4 Mathematics

A son's present age is two-fifths of the age of his father. After 8 years from now, his age will be one-half of the age of his father. How old (in years) is the father at present?

A. 44

B. 45

C. 40



D. 42

Q5 Mathematics

Aarti, Anil and Naveen started a business in partnership, investing in the ratio of 17:6:17, respectively. At the end of the year, they earned a profit of ₹78,600, which is 20% of their total investment. How much did Anil invest (in ₹)?

A. 58,788

B. 58,950



C. 58,880

D. 58,838

Q6 Mathematics

If $8x^2 + 2y^2 + 18z^2 - 4xy - 6yz - 12zx = 0$, then find $x : y : z$.

A. 2 : 3 : 5

B. 3 : 4 : 5

C. 7 : 6 : 4

D. 3 : 6 : 2



Q7 Mathematics

If three numbers are in the ratio 3 : 5 : 7 and their total sum is 510, what is the greatest number that can exactly divide all three numbers?

A. 32

B. 35

C. 33

D. 34



Q8 Mathematics

A cricketer has an average of 62 runs over 5 innings. If he scores 296 runs in the 6th inning, by how many runs does his average score increase?

A. 39



B. 37

C. 30

D. 36



Q9 Mathematics

The income of Raman is ₹43,500. He saves 17% of his income. If his income increases by 18% and expenditure increases by 20%, then his savings will:

A. increase by ₹609



B. increase by ₹606

C. decrease by ₹608

D. decrease by ₹604

Q10 Mathematics

The curved surface area of a cylinder of height 12 cm is 602.88 cm^2 . If the radius of the cylinder is doubled and its height is increased by 25%, then find the ratio between the original volume to the new volume of the cylinder.

(Use $\pi = 3.14$)

A. 2 : 3

B. 3 : 7

C. 1 : 5



D. 4 : 9

Q11 Mathematics

Prakhar and Riya together invested ₹35,600 in a business. At the end of the year, out of a total profit of ₹5,000, Prakhar's share was ₹2,300. What was Prakhar's investment?

A. ₹16,376



B. ₹16,390

C. ₹16,675

D. ₹16,235

Q12 Mathematics

In $\triangle ABC$, $BD \perp AC$ at D and $\angle DBC = 14^\circ$. E is a point on BC such that $\angle CAE = 75^\circ$. What is the measure of $\angle AEB$?

A. 137°

B. 151°



C. 136°

D. 166°

Q13 Mathematics

The sum of two numbers is 45 and their difference is 13. Find the smaller number.

A. 12

B. 16



C. 15

D. 13

Q14 Mathematics

A shopkeeper marks his goods at X% above the cost price and sells them at a discount of 35%. If he makes a profit of 69%, find the value of X.

A. 161

B. 162

C. 159

D. 160

**Q15 Mathematics**

Two banks, A and B, offered loans at 3.5% and 7% per annum, respectively. Mahesh borrowed an amount of ₹4,60,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Mahesh after 2 years.

A. 33,700

B. 33,200

C. 31,700

D. 32,200

**Q16 Mathematics**

Rizwan buys 3 watches, all with the same price, for a total of ₹4,800. He sells the first at a profit of ₹200, the second at a loss of ₹100, and the third at a profit of ₹150. What is the overall profit or loss percentage? (Round off to two decimal places)

A. 4.31% loss

B. 4.31% profit

C. 5.21% profit



D. 5.21% loss



Q17 Mathematics

A woman travelled at a speed of 20 m/min for 80 min, and at a speed of 56 m/min for 64 min. Her average speed (in m/min) is:

A. 29

B. 36 ☒

C. 42

D. 40

Q18 Mathematics

The length, breadth, and height of a rectangular box are in the ratio 8 : 7 : 5. If the volume of the box is 2240 cm^3 , find the total surface area (in cm^2 , round off to the nearest tens) of the box.

A. 1140

B. 960

C. 1050 ☒

D. 1250

Q19 Mathematics

A person's salary is first reduced by 30% and then increased by 40%. What is the overall percentage decrease in his salary?

A. 3%

B. 2% ☒

C. 1%

D. 5%

Q20 Mathematics

Two trains, 259 m and 231 m in length, are running in opposite directions. The first runs at the rate of 55 km/hr and the second at the rate of 71 km/hr. How long will they take to cross each other?

A. 16 seconds

B. 11 seconds

C. 17 seconds

D. 14 seconds ☒

Q21 Mathematics

If an item marked at ₹4,820 is sold for ₹4,338, then what is the discount percentage?

A. 8%

B. 11%

C. 9%

D. 10% ☒

Q22 Mathematics

The value of $\frac{5}{14} \times \frac{14}{\frac{7}{5} \div \frac{7}{11} \text{ of } 2\frac{1}{5}}$ is:

A. $\frac{5}{14}$

B. $\frac{1}{5}$

C. 1

D. 5 ☒



Q23 Mathematics

What is the value of x in the following equation?

$$x \div 0.45 = 2660$$

A. 1195

B. 1179

C. 1971

D. 1197

**Q24 Mathematics**

Aditya can do $\frac{1}{6}$ th of a piece of work in 5 days and Bhagawan can do $\frac{1}{5}$ th of the same work in 11 days.

Find the number of days taken to complete the work if both work together.

(Rounded off to one decimal place)

A. 18.9

B. 19.4

C. 23.1

D. 15.4

**Q25 Mathematics**

A building casts a shadow of length 46 m, when the angle of elevation of the sun is 60° .

Find the height of the building. (Use $\sqrt{3} = 1.7$)

A. 66.4 m

B. 78.2 m

C. 56.2 m

D. 82.4 m



Mathematics

25 Questions • Answer Key

Q1 Mathematics

4 men can do a piece of work in 27 days. How many men will do it in 18 days?

A. 9

B. 8

C. 6



D. 7

Q2 Mathematics

The marked price of a television set is ₹35,000. A shopkeeper allows a discount of 22% and gets a profit of 75%. What is the cost price of the television set?

A. ₹15,600



B. ₹15,662

C. ₹15,570

D. ₹15,714

Q3 Mathematics

The price of fuel decreases by 50%, 35% and 50% in three successive months, but increases by 45% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price? (Round off the answer to two decimal places)

A. Increases by 80.11%

B. Decreases by 76.44%



C. Increases by 81.75%

D. Decreases by 74.19%

Q4 Mathematics

What is the average speed of a bus which covers half the distance at a speed of 72 km/hr and the other half at a speed of 90 km/hr?

A. 80 km/hr



B. 84 km/hr

C. 83 km/hr

D. 77 km/hr

Q5 Mathematics

The sides of a triangle are 37 cm, 44 cm and 15 cm. What is the length of its altitude corresponding to the side with the length of 44 cm?

A. 16 cm

B. 45 cm

C. 12 cm



D. 33 cm

Q6 Mathematics

Simplify: $57 - [82 - (72 \div 3 - (17 - 40 \div 5) \div 9)]$

A. -2



B. 3

C. -9

D. -8

Q7 Mathematics

The average age of 42 students in a class is 14 years. If the age of the teacher is also included, the average age of the whole group becomes 15 years. The age (in years) of the teacher is:

A. 65

B. 59

C. 57



D. 60

Q8 Mathematics

A shopkeeper declares the given three schemes of discounts. Which of the following schemes is most beneficial to a customer?

A. Buy 5 items and get 23 of the same items free

B. Two successive discounts of 14% and 37%

C. Two successive equal discounts of 39%

A. Only C

B. Both A and C

C. Only A



D. Only B



Q9 Mathematics

A, B and C can complete a piece of work in 3, 4 and 6 days, respectively. How long (in days) will they take to complete thrice the same work, working together?

A. 12

B. 5

C. 4



D. 8

Q10 Mathematics

The greatest number that will divide 45, 95 and 185, so as to leave the same remainder in each case is:

A. 95

B. 10



C. 185

D. 45

Q11 Mathematics

If 20% of a number is added to 96, then the result is the same number. 65% of the same number is:

A. 78



B. 98

C. 108

D. 88

Q12 Mathematics

'A' buys an air conditioner for ₹1,50,000 and sells it to 'B' at a loss of 30%. 'B' then sells it to 'C' at a profit of 5% on his cost price. What is the cost price (in ₹) of the air conditioner for 'C'?

A. 1,10,250



B. 2,10,350

C. 75,250

D. 1,25,480

Q13 Mathematics

The amount on a sum of ₹5,200 at 10% per annum compound interest, compounded annually, in 2 years will be:

A. ₹5,552

B. ₹6,292



C. ₹5,569

D. ₹5,991

Q14 Mathematics

The prices of articles of types P, Q and R are ₹280, ₹180 and ₹100, respectively. Rajiv purchases these articles in the ratio 3 : 4 : 3, spending a total of ₹27,900. How many articles of type Q did he buy?

A. 60



B. 84

C. 72

D. 48

Q15 Mathematics

Rahul's present age is two-seventh of the present age of his grandmother. After 16 years, his age will be two-fifth of the age of his grandmother at that time. Find the present age of his grandmother.

A. 97 years

B. 100 years

C. 84 years



D. 90 years

Q16 Mathematics

A cricketer has an average of 68 runs over 9 innings. If he scores 130 runs in the 10th inning, by how many runs (rounded off to the nearest whole number) does his average score increase?

A. 6



B. 15

C. 7

D. 10

Q17 Mathematics

In a presentation competition, Group Leo can complete a task in 9 days, while Group Tiger can finish it in 18 days if they work alone. If both groups work together, in how many days will they complete the task?

A. 6 days



B. 7 days

C. 10 days

D. 5 days



Q18 Mathematics

From a point 40 m away from the foot of a tower, the angle of elevation of the top of the tower is 45° . Find the height of the tower.

A. 48 m

B. 40 m



C. 45 m

D. 20 m

Q19 Mathematics

In 540 litres solution of acid and water, the ratio of acid and water is 2 : 10. How many litres of acid must be added to it to get the solution in which the ratio of acid and water is 9 : 5?

A. 721

B. 720



C. 719

D. 718

Q20 Mathematics

The sum of the digits of a two-digit number is 5. If 9 is added to this number, the digits interchange their places. Find the number.

A. 14

B. 41

C. 32

D. 23

**Q21 Mathematics**

The ratio of the curved surface area to the total surface area of a solid cylinder is 3 : 5. If its volume is $12,936 \text{ cm}^3$, what is its height? (Use $\pi = \frac{22}{7}$)

A. 21 cm



B. 28 cm

C. 18 cm

D. 14 cm

Q22 Mathematics

Simplify $(x-3)^2 + (x+3)^2$.

A. $2 \times 2 - 18$

B. $2 \times 2 + 18$



C. $3 \times 2 + 18$

D. $2 \times 2 + 16$

Q23 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{11}{30}$? (Rounded off to two decimal places.)

A. 13.64%



B. 27.27%

C. 23.64%

D. 28.64%



Q24 Mathematics

A small sphere has a radius of 5 cm. A larger sphere is created by uniformly expanding the smaller sphere. The radius of the larger sphere is 15 cm. How many times greater is the surface area of the larger sphere compared to the smaller sphere?

A. 3 times

B. 15 times

C. 9 times



D. 6 times

Q25 Mathematics

Arun travels from City A to City B. If Arun drives his car at $\frac{2}{3}$ rd of his normal speed, then he reaches City B 38 minutes late.

Find the time (in minutes) that Arun would have taken to travel from City A to City B if he drove at his normal speed.

A. 76



B. 73

C. 81

D. 78



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The simplified value of $4 \times (17 \times (3^2)) \div 12 + 26 - 41$ is:

A. 36



B. 44

C. 32

D. 30

Q2 Mathematics

A, B and C can do a piece of work in 2, 20 and 20 days respectively. How long (in days) will they take to do thrice the same work, working together?

A. 5



B. 6

C. 15

D. 10

Q3 Mathematics

5 men can complete a piece of work in 16 days while 9 women can do it in 8 days. In how many days can 3 women and 2 men complete it?

A. 24 days

B. 13 days

C. 15 days



D. 22 days

Q4 Mathematics

Two trains, 165 m and 195 m in length, are running in opposite directions. The first runs at the rate of 83 km/hr and the second at the rate of 79 km/hr. How long will they take to cross each other?

A. 15 seconds

B. 13 seconds

C. 5 seconds

D. 8 seconds



Q5 Mathematics

The average of 12 numbers is 58. The average of the first 5 numbers is 55, and the average of the next 4 numbers is 62. If the 10th number is 10 less than the 11th number and is 5 more than the 12th number, then the average of the 11th and 10th numbers is:

A. 61



B. 60.5

C. 60

D. 61.5

Q6 Mathematics

The average age of 40 students of a class is 18 years. If the age of the teacher is also included, the average age of the whole group becomes 19 years. The age (in years) of the teacher is:

A. 56

B. 59



C. 62

D. 58

Q7 Mathematics

What is the third proportional to $16x^2$ and $20xy$?

A. $25y^2$ B. $27y^2$ C. $22y^2$ D. $28y^2$

Q8 Mathematics

The diagonals of a rhombus are 24 cm and 7 cm. The perimeter of the rhombus is:

A. 50 cm



B. 48 cm

C. 52 cm

D. 46 cm



Q9 Mathematics

In $\triangle ABC$, $BD \perp AC$ at D and $\angle DBC = 42^\circ$. E is a point on BC such that $\angle CAE = 24^\circ$. What is the measure of $\angle AEB$?

A. 72°



B. 59°

C. 58°

D. 67°

Q10 Mathematics

The income of Raman is ₹34,000. He saves 5.5% of his income. If his income increases by 17% and expenditure increases by 50%, then his savings will:

A. increase by ₹10,283

B. increase by ₹10,284

C. decrease by ₹10,285



D. decrease by ₹10,288

Q11 Mathematics

In an election between two candidates, 2% of the voters did not cast their votes. Out of the polled votes, 5% were declared invalid. One candidate secured 65% of the valid votes. If the total number of voters was 25,20,000, how many valid votes did the losing candidate receive?

A. 8,21,142



B. 8,21,124

C. 8,24,112

D. 8,22,114

Q12 Mathematics

If the three digit number $7n4$ is divisible by 6, then find the least possible value for n.

A. 1



B. 3

C. 0

D. 2

Q13 Mathematics

A positive number when increased by 14, equals 176 times its reciprocal. What is the number?

A. 14

B. 22

C. 12

D. 8

**Q14 Mathematics**

A train travels 180 km in 3 hours. How long will it take to travel 420 km at the same speed?

A. 7 hours



B. 6 hours

C. 8 hours

D. 5 hours

Q15 Mathematics

An item is sold to C by B, and then to D by C. Both B and C earn an equal profit of 12%, and the selling price to D is ₹313.60. What is the cost price (in ₹) of the item to B?

A. 200

B. 280

C. 250



D. 240

Q16 Mathematics

The marked price of a sofa is ₹331, which is 41% above the cost price. If the profit percent is 22%, find the discount percentage. (Rounded off to two decimal places)

A. 11.23%

B. 12.02%

C. 13.48%



D. 16.1%

Q17 Mathematics

Arrange the following schemes in the ascending order of their discounts.

A. Buy 1 get 5 free

B. A single discount of 64%

C. Two successive discounts of 3% and 37%

A. B, A, C

B. C, A, B

C. C, B, A



D. A, C, B



Q18 Mathematics

Anmol and Ayushi together invested ₹41,400 in a business. At the end of the year, out of a total profit of ₹5,000, Anmol's share was ₹2,300. How much was Anmol's investment?

A. ₹20,105

B. ₹17,095

C. ₹19,044 ☒

D. ₹18,630

Q19 Mathematics

The amount on a sum of ₹6000 at 5% per annum compound interest, compounded annually, in 2 years, will be:

A. ₹6385

B. ₹6615 ☒

C. ₹5722

D. ₹7047

Q20 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{2}{100}$?

A. 260%

B. 265%

C. 250% ☒

D. 500%

Q21 Mathematics

B's age is 5 times the difference in ages of C and D. D's age is 10 years more than the age of B. If the age of C is 30 years, then the minimum age of D is _____ years.

A. 30

B. $\frac{50}{3}$

C. 35

D. $\frac{80}{3}$ ☒**Q22 Mathematics**

Simplify: $\frac{9x^2 - 4y^2}{9x - 2y} \times \frac{3x}{9x + 2y}$

A. $\frac{x}{9}$ B. x C. $3x$ ☒D. $\frac{x}{3}$ 

Q23 Mathematics

From the top of a 45 m high building, the angle of depression of a car on the ground is 30° . How far is the car from the base of the building? (Take $\sqrt{3} = 1.732$ and round off the answer to two decimal places.)

A. 71.94 m

B. 89.94 m

C. 81.94 m

D. 77.94 m

**Q24 Mathematics**

Find the value of the expression $\frac{0.079^2 + 0.25^2 + 3.37^2}{0.0079^2 + 0.025^2 + 0.337^2}$.

A. 3.699

B. 100



C. 10000

D. 0.3699

Q25 Mathematics

The length, breadth and height of a cuboid are in the ratio of 8 : 5 : 3. If its diagonal length is $21\sqrt{2}$ m, then find the total surface area of the cuboid.

A. 1,388 m²

B. 1,422 m²



C. 1,250 m²

D. 1,622 m²



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Mathematics

25 Questions • Answer Key

Q1 Mathematics

At present, Amar is 5 years younger than Ravi. After four years from now, Ravi will be twice as old as Amar. Find Amar's present age (in years).

A. 6

B. 2

C. 4

D. 1



Q2 Mathematics

The average age of 51 students of a class is 21 years. If the age of the teacher is also included, the average age of the whole group becomes 22 years. The age (in years) of the teacher is:

A. 70

B. 74

C. 71

D. 73



Q3 Mathematics

8 men and 3 women can complete a piece of work in 15 days, and 14 men and 19 women can complete the same work in 5 days. The work of how many women is equivalent to that of one man?

A. 4

B. 1



C. 2

D. 3

Q4 Mathematics

Consider a cube of edge 5 cm and a cuboid with dimensions $7 \times 4 \times 2$ cm. Which of them has the larger volume?

A. Cannot be determined

B. Both occupy equal space

C. Only cuboid

D. Only cube



Q5 Mathematics

A certain sum of money amounts to ₹12,000 in 3 years and ₹16,000 in 5 years on simple interest. Find the principal.

A. ₹5,500

B. ₹6,000



C. ₹5,200

D. ₹6,200

Q6 Mathematics

A train overtakes two people walking along a railway track. The first person walks at 7.2 km/hr, and the second person walks at 14.4 km/hr. The train takes 29.9 seconds to pass the first person and 43.7 seconds to pass the second person. What is the speed of the train if both are walking in the same direction as the train?

A. 27 km/hr

B. 38 km/hr

C. 36 km/hr

D. 30 km/hr



Q7 Mathematics

An Uber cab covers a distance of 640 km in 80 hours. What is its speed in km/hr?

A. 8



B. 3

C. 16

D. 12

Q8 Mathematics

Meera purchased 23 bracelets at ₹160 each. At what rate per bracelet must she sell them to earn a 15% profit?

A. ₹198

B. ₹184



C. ₹186

D. ₹192



Q9 Mathematics

In an election with three candidates—Ram, Mohan, and Sohan—10% of the total votes cast were invalid. Sohan received 40% of the valid votes. If Ram got 2,000 more valid votes than Mohan and the total number of votes cast was 10,000, what is the remainder when Ram's votes are divided by Mohan's votes?

A. 320

B. 490

C. 400

D. 300

**Q10 Mathematics**

A rectangle's length is three times its width. If its perimeter is 160 cm, then its width (in cm) is:

A. 15

B. 22

C. 18

D. 20

**Q11 Mathematics**

Simplify the following expression.

$$(8 \times 8 - 8 + 4) \div 10 + (4 \times 4 + 4 + 4 \div 4) \times 3 + 2 \text{ of } 26 \div 4$$

A. 69

B. 89

C. 72

D. 82

**Q12 Mathematics**

A dealer purchased a laptop for ₹99,000. He allows a discount of 37% on its marked price and still gains 40%. Find the marked price of the laptop.

A. ₹2,19,878

B. ₹2,20,000



C. ₹2,19,903

D. ₹2,20,172

Q13 Mathematics

The length, breadth and height of a room are in the ratio 3 : 2 : 1. If the breadth and height are each reduced to half their original values while the length is doubled, find the percentage change (rounded off to two decimal places) in the total surface area of the room.

A. Decrease by 13.46%

B. Decrease by 13.64%



C. Increase by 13.64%

D. Increase by 13.46%

Q14 Mathematics

The cost price of the box of sharpener is ₹1,150. The shopkeeper gave 12% discount on the cost price. What is the selling price (in ₹)?

A. 1,012



B. 1,095

C. 1,074

D. 955

Q15 Mathematics

If the exterior angles obtained on producing the base YZ of a triangle XYZ in both ways are 110° and 115° , then the measure of $\angle X$ is:

A. three fourth of a right angle

B. one fourth of a right angle

C. one fourth of a straight angle



D. equal to right angle

Q16 Mathematics

Prakhar and Riya together invested ₹31,600 in a business. At the end of the year, out of a total profit of ₹7,900, Prakhar's share was ₹1,400. What was the investment of Prakhar?

A. ₹6,500

B. ₹4,600

C. ₹4,200

D. ₹5,600

**Q17 Mathematics**

Find the greatest possible length which can be used to measure exactly the lengths 42 m, 63 m and 140 m.

A. 32 m

B. 22 m

C. 5 m

D. 7 m



Q18 Mathematics

If the third proportional of 4 and 24 is x, then what is the value of x?

A. 141

B. 146

C. 144



D. 142

Q19 Mathematics

What must be the total percentage change in the volume of a cuboid, if its length and breadth are decreased by 10% and 20% respectively, while its height is increased by 35%?

A. 2.8% decrease in volume



B. 197.2% increase in volume

C. 10.5% decrease in volume

D. 4.68% increase in volume

Q20 Mathematics

If 20% of a number is added to 90, then the result is the same number. 60% of the same number is:

A. 77.5

B. 87.5

C. 97.5

D. 67.5

**Q21 Mathematics**

A, B and C can complete a piece of work in 3, 6 and 2 days, respectively. How long (in days) will they take to complete thrice the same work, working together?

A. 3



B. 9

C. 6

D. 4

Q22 Mathematics

If the mode of the given data is 22.75, find the median. (Round off to two decimal places)

Class Interval	0-7	7-14	14-21	21-28	28-35	35-42
Frequency	1	7	9	11	X	3

A. 32.25

B. 24.25

C. 36.25

D. 21.64

**Q23 Mathematics**

A ladder is leaning against a wall such that it makes a 45° angle with the ground. If the foot of the ladder is 5 m away from the wall, what is the height of the point (in m) where the ladder touches the wall?

A. $\frac{5}{\sqrt{3}}$ m

B. 5 m

C. $5\sqrt{3}$ m

D. 10 m

Q24 Mathematics

The expression $\frac{8.73 \times 8.73 \times 8.73 + 4.27 \times 4.27 \times 4.27}{8.73 \times 8.73 - 4.27 \times 8.73 + 4.27 \times 4.27}$ is equal to:

A. 12

B. 11

C. 13



D. 10



Simplify $(5x - 4)^2 - (5x + 4)^2$.

A. $50x^2 + 32$

B. $-80x$



C. $25x^2 - 4$

D. $-40x$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

Danish is 9 years younger than Roshan. If their ages are in the ratio 4 : 5, how old is Danish?

- A. 33 years
- B. 34 years
- C. 36 years
- D. 35 years



Q2 Mathematics

Amit and Deeksha together invested ₹17,400 in a business. At the end of the year, out of a total profit of ₹6,000, Amit's share was ₹2,800. What was the investment of Amit?

- A. ₹7,325
- B. ₹8,010
- C. ₹8,120
- D. ₹7,910



Q3 Mathematics

In a parking lot, there are cars and motorcycles totaling 28 vehicles. If there are 92 wheels in total, how many cars are there?

- A. 16
- B. 22
- C. 20
- D. 18



Q4 Mathematics

After allowing a discount of 50% on the marked price of an article, it is sold for ₹61,649. Find its marked price (in ₹).

- A. 1,23,308
- B. 1,23,280
- C. 1,23,380
- D. 1,23,298



Q5 Mathematics

A dealer marks his goods at 57% above the cost price and allows a discount of 22% on the marked price. What is his gain percentage (correct to two decimal places)?

- A. 25.98%
- B. 22.46%
- C. 19.94%
- D. 20.14%



Q6 Mathematics

Harjeet bought a second-hand scooter for ₹18,000 and spent ₹8,000 for repairing it. At what price should he sell the scooter to get a profit of 10%?

- A. ₹25,600
- B. ₹28,600
- C. ₹27,600
- D. ₹24,600



Q7 Mathematics

The area of a rectangle decreases by 9 m^2 when its length is reduced by 5 m and its breadth is increased by 3 m. However, if the length is increased by 3 m and the breadth is increased by 2 m, the area increases by 67 m^2 . Find the original area of the rectangle.

- A. 156 m²
- B. 151 m²
- C. 152 m²
- D. 153 m²



Q8 Mathematics

When reduced by 6, the smallest number M is divisible by 9, 12, and 26. The digit sum of M is:

- A. 15
- B. 6
- C. 7
- D. 8



Q9 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 10.5^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 3 : 4, then what is the difference between the measures of $\angle Q$ and $\angle P$?

A. 1° B. 5° C. 7° D. 3° ✓**Q10 Mathematics**

A train, 822 m long, is running at a speed of 67m/s. If it takes 133 seconds to cross a tunnel, then find the length of the tunnel.

A. 8085 m

B. 8086 m

C. 8089 m ✓

D. 8097 m

Q11 Mathematics

The average age of 31 students of a class is 21 years. If the age of the teacher is also included, the average age of the whole group becomes 22 years. The age (in years) of the teacher is:

A. 53 ✓

B. 55

C. 52

D. 50

Q12 Mathematics

The amount on a sum of ₹4,300 at 10% per annum compound interest, compounded annually, in 2 years will be:

A. ₹5,203 ✓

B. ₹5,048

C. ₹5,701

D. ₹4,294

Q13 Mathematics

Two taps function simultaneously to fill a tank in 24 hours. The second tap fills the tank 14 hours slower than the first tap. How many hours will it take by the second tap to fill the tank alone?

A. 42

B. 28

C. 70

D. 56 ✓

Q14 Mathematics

The median of a set of data is 3 times its mode. Find the square of the product of the mean and mode, given that the median is 9.

A. 1128

B. 1432

C. 1296 ✓

D. 1345

Q15 Mathematics

If 20% of a number is added to 84, then the result is the same number. 70% of the same number is:

A. 93.5

B. 83.5

C. 103.5

D. 73.5 ✓

Q16 Mathematics

A and B working together can do a piece of work in 3 days. B alone can do the same work in 9 days. How long (in days) will A alone take to do double the work?

A. 12

B. 9 ✓

C. 4.5

D. 10

Q17 Mathematics

The cost of a washing machine is 75% less than the cost of a TV. If the cost of the washing machine increases by 80% and that of the TV decreases by 14%, then what is the percentage change in the total cost of 8 washing machines and 2 TVs?

A. Increase by 33% ✓

B. Decrease by 32%

C. Increase by 29%

D. Decrease by 30%



Q18 Mathematics

Two trains having lengths of 440 m and 310 m are running at speeds of 60 km/hr and 90 km/hr, respectively, in the same direction. The time taken (in minutes) by the faster train, coming from behind, to completely cross the other train is:

A. 6

B. 1.5



C. 10.1

D. 7.2

Q19 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{11}{70}$? (Round off the answer to two decimal places.)

A. 31.82%



B. 41.82%

C. 63.64%

D. 46.82%

Q20 Mathematics

Simplify the following.

$$5^{15} \div 25^{\frac{13}{2}} \div 125^{\frac{2}{3}} + 5^{17} \div 125^{\frac{16}{3}} + 5^3$$

A. 131



B. 125

C. 130

D. 126

Q21 Mathematics

What is the value of $40 \times \left(\frac{0.74 + 1.48}{2\frac{4}{5} + 7\frac{1}{15}} \right)$?

A. 8.7

B. 9



C. 8.4

D. 9.5



Q22 Mathematics

Simplify: $(3x + 5y)^3 + (3x - 5y)^3$

A. $6x(9x^2 - 75y^2)$

B. $10y(9x^2 + 75y^2)$

C. $10y(9x^2 - 75y^2)$

D. $6x(9x^2 + 75y^2)$

**Q23** Mathematics

What will come in place of 'A' in the given ratio?

$$\frac{112}{A} = \frac{8}{67}$$

A. 936

B. 938

C. 939

D. 940

**Q24** Mathematics

If the area of an equilateral triangle is $16\sqrt{3} \text{ cm}^2$, then find its perimeter.

A. 24 cm

B. 12 cm

C. 16 cm

D. 32 cm

**Q25** Mathematics

If the height of a vertical pole is $\sqrt{3}$ times the length of its shadow on the ground, then the angle of elevation of the sun at that time is:

A. 45°

B. 30°

C. 70°

D. 60°



Mathematics

25 Questions • Answer Key

Q1 Mathematics

A typist takes 40 minutes to type 2 pages. How many pages will he type in 60 minutes?

A. 3



B. 2

C. 5

D. 4

Q2 Mathematics

The income of Raman is ₹91,700. He saves 20% of his income. If his income increases by 19% and expenditure increases by 35%, then his savings will:

A. increase by ₹8,255

B. decrease by ₹8,252

C. increase by ₹8,249

D. decrease by ₹8,253



Q3 Mathematics

A typist takes 40 minutes to type 4 pages. How long (in minutes) will he take to type 111 pages?

A. 1115

B. 1100

C. 1110



D. 1120

Q4 Mathematics

If 20% of a number is added to 72, then the result is the same number. 70% of the same number is:

A. 93

B. 63



C. 73

D. 83

Q5 Mathematics

Nisha buys a gold ring for her mother. The ring is marked at ₹88,000 and is offered with two successive discounts of 25% and Z%, respectively. After receiving both discounts, she pays ₹33,000. Find the value of Z.

A. 49

B. 50



C. 48

D. 51

Q6 Mathematics

A, B and C can individually do a piece of work in 2 days each. How long (in days) will they take to do thrice the same work, working together?

A. 4

B. 3

C. 2



D. 6

Q7 Mathematics

Two banks, A and B, offered loans at 3.5% and 7.5% per annum, respectively. Sachin borrowed an amount of ₹2,00,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Sachin after 4 years.

A. 32,000



B. 31,500

C. 33,000

D. 33,500

Q8 Mathematics

Smart Bazaar is offering 'Buy 2, Get 8 free' on household items. What is the net percentage discount being offered by the Smart Bazaar?

A. 78%

B. 82%

C. 80%



D. 83%



Q9 Mathematics

If 5 men and 2 women can reap 48 hectares in 3 days, and if 3 men and 1 woman can reap 54 hectares in 6 days, then how many women must assist 6 men to reap 378 hectares in 14 days?

A. 9

B. 5



C. 3

D. 7

Q10 Mathematics

In a pouch containing blue, yellow and orange tokens, the ratio of blue to yellow tokens was 5 : 2, while the ratio of orange to blue tokens was 11 : 18. What was the ratio of orange to yellow tokens?

A. 63 : 39

B. 51 : 32

C. 55 : 36



D. 59 : 40

Q11 Mathematics

A shopkeeper has ₹10 and ₹5 notes totaling ₹350. If he has 45 notes in total, how many ₹10 notes does he have?

A. 29

B. 31

C. 25



D. 27

Q12 Mathematics

The ages of Amit and Geeta are in the ratio 6 : 5, and the sum of their ages is 44 years. Find Amit's age.

A. 28 years

B. 24 years



C. 20 years

D. 30 years

Q13 Mathematics

The sides of a triangle are 34 cm, 88 cm, and 78 cm. What is the length of its altitude corresponding to the side with a length of 88 cm?

A. 19 cm

B. 30 cm



C. 79 cm

D. 9 cm

Q14 Mathematics

A cricketer has an average of 88 runs over 10 innings. If he scores 219 runs in the 11th inning, by how many runs (rounded off to the nearest whole number) does his average score increase?

A. 2

B. 6

C. 19

D. 12

**Q15 Mathematics**

Train P going at a speed of 72 km/hr completely passes train Q of length 393 m, going in the same direction on parallel tracks at 42 km/hr, in 1.5 minutes. How much time (in seconds) will train P take to completely cross train R of length 468 m, going at 63 km/hr in the opposite direction?

A. 24

B. 32

C. 10

D. 22

**Q16 Mathematics**

If each of the length, breadth and height of a cuboid is doubled, its total surface area becomes _____ the original total surface area.

A. 2 times

B. 3 times

C. 4 times



D. 8 times

Q17 Mathematics

Raghu's ratio of income to expenditure is 2 : 1. His income increased by 30% and expenditure decreased by 10%. If the initial expenditure was ₹35,000, find his final saving (in ₹).

A. 68,500

B. 58,500

C. 69,500

D. 59,500



Q18 Mathematics

A triangular garden has vertices at coordinates A(2, 3), B(8, 11), and C(14, 7). A landscape designer wants to plant flowers covering exactly half of this triangular area. What area should be covered with flowers?

- A. 12 square units
- B. 36 square units
- C. 18 square units
- D. 24 square units

Q19 Mathematics

Prabhddeep buys 60 identical pens for ₹900. She sells 45 of them at a profit of 20% and the remaining at a loss of 40%. What is the total profit or loss percentage on the whole transaction?

- A. 5% profit
- B. 5% loss
- C. 9% profit
- D. 9% loss

Q20 Mathematics

A speed of 126 km/hr is the same as:

- A. 32 m/sec
- B. 30 m/sec
- C. 37 m/sec
- D. 35 m/sec

Q24 Mathematics

Expression $\sqrt{\frac{1 + \sin\theta}{1 - \sin\theta}}$ is equal to:

- A. $\sec\theta - \cot\theta$
- B. $\sec\theta + \tan\theta$
- C. $\sec\theta - \tan\theta$
- D. $\operatorname{cosec}\theta + \cot\theta$

Q21 Mathematics

If $x + y = 10$ and $xy = 24.96$, then find the value of $(x - y)^2$.

- A. 0.16
- B. 1.69
- C. 0.49
- D. 2.25

Q22 Mathematics

What is the third proportional of $75x^2$ and $30xy$?

- A. $13y^2$
- B. $12y^2$
- C. $11y^2$
- D. $9y^2$

Q23 Mathematics

The arithmetic mean of the observations 61, 33, 94, 48, 36, 93, 73, 94 and 53 is:

- A. 61
- B. 56
- C. 71
- D. 65



Find the value of $\frac{2}{3} \div \frac{12}{11}$ of $8\frac{1}{4} + 4\frac{1}{7} - 5\frac{1}{2} \times 1\frac{1}{7} + 5\frac{1}{3}$.

A. $\frac{131}{17}$

B. $\frac{617}{189}$



C. $\frac{511}{105}$

D. $\frac{389}{53}$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

During a New Year sale, a company gives 'Buy 9 Sweaters and Get 3 Free' offer to customers. The percentage discount involved in this deal is:

A. 30%

B. 27%

C. 25%

D. 23%

Q2 Mathematics

The age of a mother 8 years ago from now was five times the age of her daughter. After 2 years from now, the mother's age will be thrice that of her daughter. Find the ratio of the present age of mother to daughter.

A. 15 : 8

B. 17 : 8

C. 29 : 9

D. 22 : 9

Q3 Mathematics

₹3,787 is divided among A, B, C and D in such a way that the shares of A and B, B and C, and C and D are in the ratios of 4 : 5, 4 : 5, and 6 : 7, respectively. The share of A (in ₹) is:

A. 708

B. 628

C. 672

D. 604

Q4 Mathematics

In $\triangle ABC$, $BD \perp AC$ at D and $\angle DBC = 72^\circ$. E is a point on BC such that $\angle CAE = 71^\circ$. What is the measure of $\angle AEB$?

A. 88° B. 92° C. 93° D. 89°

Q5 Mathematics

If $2a + b + c = 0$ and $8a^3 + b^3 + c^3 = kabc$, then find the value of k^2 .

A. 16

B. 36

C. 25

D. 49

Q6 Mathematics

A cricketer has an average of 55 runs over 5 innings. If he scores 166 runs in the 6th inning, by how many runs (rounded off to the nearest whole number) does his average score increase?

A. 8

B. 18

C. 19

D. 10

Q7 Mathematics

A certain sum of money triples itself in 8 years on simple interest. In how many years it will be four times?

A. 12

B. 11

C. 13

D. 10

Q8 Mathematics

The sum of two numbers is 25. One of the numbers exceeds the other by 9. Find the numbers.

A. 11 and 14

B. 10 and 15

C. 17 and 8

D. 16 and 9



Q9 Mathematics

A shopkeeper bought 20 kg of apples for ₹3,600 and sold them at the rate of ₹220/kg. How much profit (in ₹) did he gain?

A. 600

B. 700

C. 800



D. 750

Q10 Mathematics

A person spent ₹14,000 on groceries, ₹8,000 on house rent, ₹10,000 on children's school fees and the remaining 20% of the total income was kept as cash with him. Find his income.

A. ₹40,000



B. ₹52,000

C. ₹46,000

D. ₹50,000

Q11 Mathematics

A, B and C can do a piece of work in 2, 8 and 8 days, respectively. How long (in days) will they take to do thrice the same work, working together?

A. 4



B. 12

C. 8

D. 5

Q12 Mathematics

Sakshi goes to a shopping mall at a speed of 36 km/hr and returns at a speed of 24 km/hr. Find her average speed (in km/hr) for the entire journey.

A. 23.5

B. 37.8

C. 36.4

D. 28.8

**Q13 Mathematics**

Three numbers are in the ratio 7 : 20 : 8 and the sum of these numbers is 4830. Find the middle number.

A. 2761

B. 2763

C. 2760



D. 2759

Q14 Mathematics

Two cars start from the same point and travel in the same direction. If one car travels at 55 km/hr and the other at 72 km/hr, how far apart will they be after 3 hours?

A. 45 km

B. 61 km

C. 51 km



D. 57 km

Q15 Mathematics

7 men or 6 women can do a job in 15 days. 7 men work for 8 days and leave. The number of women required to complete the remaining work in 6 days is:

A. 6

B. 7



C. 10

D. 8

Q16 Mathematics

A shopkeeper declares the following three schemes of discounts. Which scheme is the most beneficial to a customer?

A. Buy 5 items and get 22 of the same items free

B. Two successive discounts of 13% and 38%

C. Two successive equal discounts of 21%

A. Only C

B. Only A



C. Only B

D. A and C both

Q17 Mathematics

The cost of a washing machine is 20% less than the cost of a TV. If the cost of the washing machine increases by 45% and that of the TV decreases by 38%, then what is the percentage change in the total cost of 5 washing machines and 4 TVs?

A. Increase by 2.5%

B. Decrease by 10%

C. Decrease by 9%

D. Increase by 3.5%



Q18 Mathematics

A garrison of 1,206 men has provisions for 24 days. How long (in days) will the provisions last if the garrison is increased to 1,809 men?

A. 18

B. 15

C. 17

D. 16

**Q19 Mathematics**

A metallic sphere of radius 36 cm is dropped into a cylindrical vessel, which is partly filled with water. The diameter of the vessel is 4.8 metres. If the sphere is completely submerged, find by how much the surface of the water will rise.

A. 1.08 cm



B. 2.82 cm

C. 2.08 cm

D. 1.82 cm

Q20 Mathematics

Simplify: $(24 - 6 \times 3) + 18 \div 3 \times 2$

A. 12

B. 30

C. 24

D. 18

**Q21 Mathematics**

If the mode of the data 12, 9, 10, 12, 13, $(2K - 2)$, 13, 19, 15 and 17 is 12, then find the value of K.

A. 7



B. 8

C. 6

D. 5

Q22 Mathematics

If 50% of 80% of $\frac{1}{2}$ of a number is 442, find the number.

A. 1480

B. 3630

C. 2210



D. 3530

Q23 Mathematics

The volume of a solid cylinder is $34,650 \text{ cm}^3$. If the height is 25 cm, then the circumference of the base is:

(Use $\pi = \frac{22}{7}$)

A. 132 cm



B. 121 cm

C. 128 cm

D. 135 cm



Q24 Mathematics

If $\tan A = \frac{6}{7}$, find the value of $\frac{7\sin A + 2\cos A}{7\sin A - 2\cos A}$.

A. 2



B. 5

C. $-\frac{19}{5}$ D. $\frac{9}{5}$ **Q25** Mathematics

The value of $\frac{(0.12)^2 + (0.123)^2 + (0.1234)^2}{(0.012)^2 + (0.0123)^2 + (0.01234)^2}$ is:

A. 100



B. 1000

C. 1

D. 10



Mathematics

25 Questions • Answer Key

Q1 Mathematics

₹3,596 is to be divided among three persons M, N and T. If the shares of M and N are in the ratio 6 : 8 and that of N and T are in the ratio 9 : 6, what is the share (in ₹) of N?

A. 1,489

B. 1,486

C. 1,488

D. 1,487

Q2 Mathematics

If 20% of a number is added to 96, then the result is the same number. 80% of the same number is:

A. 96

B. 126

C. 116

D. 106

Q3 Mathematics

One pipe can fill a tank in 8 minutes, while another pipe can empty the completely filled tank in 16 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-half of the tank?

A. 9

B. 8

C. 16

D. 17

Q4 Mathematics

2 pens and 3 pencils cost ₹35, and 3 pens and 2 pencils cost ₹40. Find the cost of 3 pencils.

A. ₹18

B. ₹12

C. ₹30

D. ₹15

Q5 Mathematics

A shopkeeper buys a toy for ₹200 and sells it for ₹280. What is his profit percentage?

A. 40%

B. 35%

C. 30%

D. 45%

Q6 Mathematics

The arithmetic mean of the observations 35, 26, 56, 41, 56, 46, 34, 16 and 68 is:

A. 42

B. 39

C. 43

D. 50

Q7 Mathematics

A dealer marks his goods at 50% above the cost price and allows a discount of 52% on the marked price. What is his loss percentage?

A. 27%

B. 28%

C. 26%

D. 29%

Q8 Mathematics

The mother of two sons is 20 years older than her elder son. Five years from now, the elder son will be twice as old as the younger son, and the ratio of their current ages is 3 : 1. What is the current age (in years) of the mother?

A. 25

B. 30

C. 40

D. 35



Q9 Mathematics

The price of fuel decreases by 35%, 60% and 10% in three successive months but increases by 65% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price?

- A. Increases by 63.54%
- B. Increases by 67.46%
- C. Decreases by 60.08%
- D. Decreases by 61.39%

**Q10 Mathematics**

Find the smallest number to be added to 1000 so that 45 divides the sum exactly.

- A. 30
- B. 35
- C. 25
- D. 10

**Q11 Mathematics**

Zubeda's income is ₹1,20,000. She spends 20% on accommodation, 35% on household expenses, and 25% on other activities. She saves the remaining amount. What are her total savings?

- A. ₹26,000
- B. ₹30,000
- C. ₹24,000
- D. ₹29,000

**Q12 Mathematics**

The cost price of a box of marker is ₹3,300. The shopkeeper gives 75% of discount on the cost price. What will be the selling price (in ₹)?

- A. 883
- B. 865
- C. 812
- D. 825

**Q13 Mathematics**

A solid wooden cuboid of dimensions 60 cm × 45 cm × 30 cm is cut completely into smaller cubes of side 5 cm each. Find the number of smaller cubes formed.

- A. 584
- B. 920
- C. 622
- D. 648

**Q14 Mathematics**

Two banks, A and B, offered loans at 3.5% and 7.5% per annum, respectively. Nirmal borrowed an amount of ₹2,40,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Nirmal after 2 years.

- A. 20,200
- B. 20,700
- C. 19,200
- D. 18,700

**Q15 Mathematics**

Which of the following ratios is equivalent to 5 : 3?

- A. 125 : 85
- B. 50 : 30
- C. 48 : 33
- D. 53 : 31

**Q16 Mathematics**

A hole can empty a full tank in 1 hour. To maintain the level of water in the tank, 3 filling pipes of equal efficiency are required. How many more such filling pipes are required so that an empty tank gets filled in 3 hours?

- A. 3
- B. 0
- C. 2
- D. 1

**Q17 Mathematics**

Two trains, 163 m and 117 m long, are moving in the same direction at speeds of 93 km/hr and 33 km/hr, respectively. How much time will the faster train take to completely cross the slower one?

- A. 16.8 second
- B. 15 seconds
- C. 18 seconds
- D. 8 seconds

**Q18 Mathematics**

P is any point inside the rectangle ABCD. If PA = 87 cm, PB = 12 cm and PC = 96 cm, then the length of PD (in cm) is equal to:

- A. 130
- B. 126
- C. 124
- D. 129



Q19 Mathematics

A byke travels 80 km at the speed of 40 km/hr and the next 30 km at the speed of 10 km/hr. What is its average speed (in km/hr)?

A. 16

B. 28

C. 22



D. 26

Q20 Mathematics

The radius of a road roller is 1 m, and its length is $\frac{21}{22}$ m. When it is rolled on the ground, it takes 600 rolls to level the entire ground.

However, it was found that on 10% of the ground, the roller rolled twice. What is the total area (in sq.m) of the ground?

(Use $\pi = \frac{22}{7}$, and round off your answer to two decimal places)

A. 3200.75

B. 3272.73



C. 3460.25

D. 3287.43

Q21 Mathematics

Simplify $\frac{(64x^2 - 49)}{8x - 7} - 8x$.

A. $16x + 7$

B. $-16x$

C. $8x + 7$

D. 7

**Q22 Mathematics**

The value of $\frac{((0.66)^3 - (0.22)^3)}{((0.66)^2 + 0.1452 + (0.22)^2)}$ is:

A. 100

B. 0.44



C. 1

D. 10

Q23 Mathematics

If $\operatorname{cosec} A = \frac{5}{4}$, then the value of $\sin 2A + 2\cos 2A$ is:

A. $\frac{2}{5}$



B. $\frac{4}{5}$

C. $\frac{9}{5}$

D. $\frac{7}{5}$



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Q24 Mathematics

A set of data is given, the mean of the set is 40 while the median is set as 70. Find the mode of the data.

A. 110

B. 130



C. 140

D. 120

Q25 Mathematics

The simplified value of the expression $[(18 + 6) \div 3 \times 2 - 4] \times [5 + 3^2] - 2 \times (8 - 3)$ is:

A. 148

B. 152

C. 158



D. 162



Mathematics

25 Questions • Answer Key

Q1 Mathematics

A class of 38 students took a Physics test. 14 students had an average score of 68. The remaining students had an average score of 73. What is the average score (rounded off to one decimal place) of the whole class?

A. 78.3

B. 71.2



C. 65.1

D. 61.8

Q2 Mathematics

After allowing a discount of 60% on the marked price of an article, it is sold for ₹49,834. Find its marked price (in ₹).

A. 1,24,571

B. 1,24,687

C. 1,24,593

D. 1,24,585



Q3 Mathematics

P is two years older than Q who is twice as old as R. If the total of the ages of P, Q and R be 27 years, then how old is Q?

A. 10 years



B. 13 years

C. 12 years

D. 11 years

Q4 Mathematics

The cost of a washing machine is 50% less than the cost of a TV. If the cost of the washing machine increases by 53% and that of the TV decreases by 55%, then what is the percentage change in the total cost of 8 washing machines and 2 TVs?

A. Decrease by 19%

B. Increase by 15%

C. Increase by 17%



D. Decrease by 11%

Q5 Mathematics

Which of the following numbers is divisible by 49?

A. 7311476

B. 7132979



C. 7492470

D. 6697359

Q6 Mathematics

If 20% of a number is added to 60, then the result is the same number. 80% of the same number is:

A. 90

B. 70

C. 80

D. 60



Q7 Mathematics

Nisha buys a mobile phone for her child. The phone is marked at ₹24,500 and is offered with two successive discounts of 20% and C%, respectively. After receiving both discounts, she pays ₹13,132. Find the value of C.

A. 32

B. 34

C. 33



D. 31

Q8 Mathematics

How many seconds will a boy take to run one complete round around a square field of side 20 metres, if he runs at a speed of 9 km/hr?

A. 22

B. 12

C. 32



D. 42



Q9 Mathematics

A can complete a piece of work in 66 days. B is 45% less efficient than A. C is 50% more efficient than B. If B and C work together for 24 days, then A alone will complete the remaining work in:

A. 36 days

B. 33 days



C. 37 days

D. 31 days

Q10 Mathematics

When x is added to each of 25, 11, 34 and 13, then the numbers so obtained, in this order, are in proportion. Then, if $9x : y :: y : (8x - 7)$, and $y > 0$, what is the value of y ?

A. 59

B. 63



C. 70

D. 72

Q11 Mathematics

The volume (in m^3) of a cuboidal tank with dimensions $13 \text{ m} \times 4 \text{ m} \times 9 \text{ m}$ is:

A. 453

B. 484

C. 468



D. 483

Q12 Mathematics

One pipe can fill a tank in 8 minutes, while another pipe can empty the completely filled tank in 16 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-fourth of the tank?

A. 4



B. 12

C. 8

D. 16

Q13 Mathematics

If the third proportional of 9 and 48 is x , then what is the value of x ?

A. 259

B. 256



C. 254

D. 255

Q14 Mathematics

If the profit on selling an article for ₹986 is the same as the loss incurred on selling it for ₹726, then the cost price of the article is:

A. ₹760

B. ₹856



C. ₹870

D. ₹863

Q15 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 37.5^\circ$. If the ratio of $\angle P$ to $\angle Q$ is $7 : 8$, then what is the difference between the measures of $\angle Q$ and $\angle P$?

A. 3°

B. 6°

C. 5°



D. 2°

Q16 Mathematics

The arithmetic mean of the observations 21, 23, 38, 99, 64, 35, 48, 52 and 16 is:

A. 47

B. 43

C. 53

D. 44

**Q17 Mathematics**

A certain sum of money doubles itself in 16 years on simple interest. In how many years it will be six times?

A. 75

B. 85

C. 65

D. 80

**Q18 Mathematics**

If the cost of 13 kg onions is ₹273, cost of 21 kg tomatoes is ₹462 and the cost of 27 kg potatoes is ₹594, then find the total cost of 21 kg onions, 25 kg tomatoes and 32 kg potatoes.

A. ₹1,690

B. ₹1,675

C. ₹1,655

D. ₹1,695



Q19 Mathematics

Simplify: $\sqrt{5 + \sqrt{25 + 5^2 - 3^2 - 10}} - \sqrt{4}$

A. 2



B. $\sqrt{2}$

C. $\sqrt{8}$

D. $2\sqrt{3}$

Q20 Mathematics

A girl is standing 15 m away from a vertical flagpole. She observes the top of the flagpole at an angle of elevation of 30° . Find the height of the flagpole.

A. $15\sqrt{3}$ m

B. $5\sqrt{3}$ m



C. $\frac{1}{\sqrt{3}}$ m

D. $10\sqrt{3}$ m

Q21 Mathematics

Simplify $(3x + 2)^2 + (3x - 2)^2$.

A. $-24x$

B. $18x^2 + 8$



C. $24x$

D. $9x^2 + 4$

Q22 Mathematics

Walking at $\frac{3}{4}$ th of his normal speed from his home, Manish is 8 minutes late in reaching his office.

The usual time taken by him to cover the distance between his home and his office is:

A. 22 minutes

B. 27 minutes

C. 24 minutes



D. 15 minutes



Q23 Mathematics

A solid brass sphere has a diameter of 10.5 cm. Find the cost of tin-plating its surface at a rate of ₹4 per 100 cm².

(Use $\pi = \frac{22}{7}$)

A. ₹13.16

B. ₹13.81

C. ₹13.84

D. ₹13.86

**Q24 Mathematics**

The fraction form of the decimal number 0.595959 is:

A. $\frac{59}{99}$



B. $\frac{41}{100}$

C. $\frac{95}{99}$

D. $\frac{59}{100}$

Q25 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{10}{50}$?

A. 25%



B. 35%

C. 50%

D. 40%



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Mathematics

25 Questions • Answer Key

Q1 Mathematics

A dealer makes a profit of 50% even after giving a 25% discount on the advertised price of a bike. If he makes a profit of ₹1,290 on the sale of the bike, what is the advertised price (in ₹)?

A. 5,220

B. 5,298

C. 5,160



D. 5,236

Q2 Mathematics

A rectangle has a perimeter of 64 cm. If its length is 8 cm more than its width, find the width of the rectangle.

A. 12 cm



B. 14 cm

C. 10 cm

D. 16 cm

Q3 Mathematics

If the radius of the base of a right circular cylinder is decreased by 17% and its height is increased by 138%, then what is the percentage increase (rounded off to the closest integer) in its volume?

A. 75%

B. 55%

C. 61%

D. 64%



Q4 Mathematics

The area of a right-angled triangle is three-fourths of the area of a rhombus, whose one diagonal is 48 cm long. The sides containing the right angle of the triangle are 36 cm and 64 cm. Find the perimeter of the rhombus.

A. 152 cm

B. 140 cm

C. 160 cm



D. 184 cm

Q5 Mathematics

If an item marked at ₹3,392 is sold for ₹1,696, then what is the discount percentage?

A. 50%



B. 52%

C. 49%

D. 51%

Q6 Mathematics

What is the mode of the following data?

5, 7, 6, 5, 9, 8, 6, 7, 11, 10, 5, 7, 6, 8, 6, 9, 10, 6

A. 7

B. 5

C. 6



D. 9

Q7 Mathematics

A and B working together can complete a piece of work in 2 days. B alone can complete the same work in 4 days. How long (in days) will A alone take to complete double the work?

A. 11

B. 9

C. 4

D. 8



Q8 Mathematics

The average of 13 numbers is 7. If each number is multiplied by 2, then what will the new average be?

A. 14



B. 13

C. 2

D. 7



Q9 Mathematics

The income of Raman is ₹83,000. He saves 16% of his income. If his income increases by 22% and expenditure increases by 25%, then his savings will:

- A. decrease by ₹833
- B. increase by ₹827
- C. increase by ₹830
- D. decrease by ₹828

**Q10 Mathematics**

The sides of a triangle are 35 cm, 21 cm and 28 cm. What is the length of its altitude corresponding to the side with length of 21 cm?

- A. 39 cm
- B. 28 cm
- C. 64 cm
- D. 29 cm

**Q11 Mathematics**

Two trains, 136 metres and 144 metres in length are running in opposite directions. The first runs at the rate of 65 km/hr and the second at the rate of 79 km/hr. How long will they take to cross each other?

- A. 6 seconds
- B. 12 seconds
- C. 16 seconds
- D. 7 seconds

**Q12 Mathematics**

Two banks, A and B, offered loans at 3.5% and 7.5% per annum, respectively. Ajay borrowed an amount of ₹2,40,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Ajay after 4 years.

- A. 37,900
- B. 39,900
- C. 39,400
- D. 38,400

**Q13 Mathematics**

The ages of three siblings are x , 25, and $2x + 8$ years, arranged in ascending order. The total ages of the youngest and the eldest is double the age of the third sibling. What is the age (in years) of the eldest?

- A. 33
- B. 30
- C. 36
- D. 39

**Q14 Mathematics**

₹1,071 is to be divided among three persons M, N and T. If the shares of M and N are in the ratio 3 : 9 and that of N and T are in the ratio 6 : 9, what is the share (in ₹) of N?

- A. 380
- B. 376
- C. 379
- D. 378

**Q15 Mathematics**

If the third proportional of 9 and 51 be x , then what is the value of x ?

- A. 291
- B. 288
- C. 287
- D. 289

**Q16 Mathematics**

If the LCM of two numbers is 192 and their HCF is 32. If the first number is 64, find the second number.

- A. 96
- B. 94
- C. 93
- D. 95



Q17 Mathematics

Pipe P can fill $\frac{3}{8}$ part of a tank in 30 hours and pipe Q can fill $\frac{3}{5}$ part of the same tank in 48 hours. Both P and Q were kept open for 4 hours, then both were closed. Pipe R alone was then opened and it emptied the water in the tank in 6 hours. Pipes P, Q and R together can fill the empty tank in:

- A. 104 hours
- B. 115 hours
- C. 120 hours
- D. 112 hours

**Q18 Mathematics**

Simplify $(3^6 \div 3^2)^2 \times (3^3 \div 3^4)$.

- A. 37
- B. 32
- C. 310
- D. 34

**Q19 Mathematics**

$\frac{1}{20}$ is what percentage of $\frac{2}{70}$?

- A. 175%
- B. 190%
- C. 350%
- D. 185%

**Q20 Mathematics**

If 60% of 30% of $\frac{1}{3}$ of a number is 204, find the number.

- A. 3400
- B. 5250
- C. 4390
- D. 7050

**Q21 Mathematics**

A boy standing 12 m away from a flagpole observes the top of the pole at an angle of elevation of 60° . Find the height of the flagpole.
Note: Consider the height of the boy as 0 m.

(Use $\sqrt{3} \approx 2$)

- A. 20 m
- B. 24 m
- C. 18 m
- D. 22 m



Q22 Mathematics

Simplify: $\frac{8.4 \times 8.4 - 2.8 \times 2.8}{5.6 \times 11.2}$

A. 0.5

B. 5.6

C. 1



D. 4.2

Q23 Mathematics

Simplify $\frac{(x^2 - 15x + 50)}{(x - 10)}$.

A. $x - 5$ B. $x + 10$ C. $x - 10$ D. $x + 5$ **Q24** Mathematics

Manu purchased a microwave for ₹12,000 and sold it to Anuj at a loss of 12.5%. Anuj sold it to Rani at a profit of 20% and Rani sold it to Priya at a profit of $6\frac{2}{3}\%$. Find the price at which Priya purchased it.

A. ₹13,440



B. ₹13,340

C. ₹13,100

D. ₹12,600

Q25 Mathematics

Zakir travels from City A to City B. If Zakir drives his car at $\frac{3}{8}$ th of his normal speed, then he reaches City B 10 minutes late. Find the time (in minutes) that Zakir would have taken to travel from City A to City B if he drove at his normal speed.

A. 5

B. 10

C. 6



D. 14



Mathematics

25 Questions • Answer Key

Q1 Mathematics

Simplify the algebraic expression.

$$a^2(a + 2) - 3a(a^2 - 3) - 5a(a + 5)$$

A. $a^3 - 3a^2 - 16a$ B. $-2a^3 - 3a^2 - 16a$ ✓C. $2a^3 - 3a^2 - 16$ D. $-2a^3 - a^2 - 16a$

Q2 Mathematics

A dealer purchased a dryer for ₹92,000. He allows a discount of 77% on its marked price and still gains 83%. Find the marked price of the dryer.

A. ₹7,32,000 ✓

B. ₹7,31,917

C. ₹7,31,919

D. ₹7,31,858

Q3 Mathematics

P is any point inside the rectangle ABCD. If PA = 100 cm, PB = 76 cm, and PC = 85 cm, then the length PD (in cm) is equal to:

A. 104

B. 112

C. 107 ✓

D. 103

Q4 Mathematics

Find the value of $(2.99)^2$.

A. 8.9401 ✓

B. 8.8401

C. 8.9104

D. 8.9041

Q5 Mathematics

A man is walking at a speed of 12 km/hr. After every kilometre of walk, he takes a rest for 7 minutes. How much time (in minutes) will he take to cover a distance of 6 km?

A. 54

B. 72

C. 65 ✓

D. 42

Q6 Mathematics

A man buys magazines in bulk for ₹20 each. He sells them for ₹23 each. Find the profit percentage.

A. 14%

B. 10%

C. 15% ✓

D. 12%

Q7 Mathematics

Three-fourth of a number exceeds its two-fifth by 63. What is the number?

A. 163

B. 252

C. 180 ✓

D. 126

Q8 Mathematics

The sum of the present ages of A and B is 42 years. After 6 years, A will be twice as old as B. Find B's present age.

A. 12 years ✓

B. 10 years

C. 14 year

D. 15 years

Q9 Mathematics

The vertices of a triangle are A(4, -6), B(3, -2) and C(5, 2). Find the area of the triangle formed by these points.

A. 10 sq. units

B. 6 sq. units ✓

C. 5 sq. units

D. 8 sq. units



Q10 Mathematics

The arithmetic mean of the observations 29, 90, 50, 26, 36, 77, 86, 33 and 41 is:

A. 52



B. 65

C. 50

D. 60

Q11 Mathematics

If the mean proportional of X and 125 is 25, then find the value of X.

A. 5



B. 7

C. 8

D. 4

Q12 Mathematics

Mahi would need twice as much time as Neha and Asha combined, while Asha would require three times as much time as Neha and Mahi combined to complete a certain task. If all three friends work together, they can finish the task in 20 days. How many days would Neha take to complete the same task on her own?

A. 24 days

B. 36 days

C. 42 days

D. 48 days

**Q13 Mathematics**

One pipe can fill a tank in 8 minutes, while another pipe can empty the completely filled tank in 40 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-half of the tank?

A. 5



B. 6

C. 10

D. 11

Q14 Mathematics

A cricketer has an average of 97 runs over 6 innings. If he scores 231 runs in the 7th inning, by how many runs (rounded off to the nearest whole number) does his average score increase?

A. 25

B. 17

C. 19



D. 11

Q15 Mathematics

The LCM of two numbers is 84. The numbers are in the ratio 4 : 3. Find the sum of the numbers.

A. 56

B. 49



C. 24

D. 32

Q16 Mathematics

If 20% of a number is added to 84, then the result is the same number. 75% of the same number is:

A. 78.75



B. 98.75

C. 108.75

D. 88.75

Q17 Mathematics

A dealer marks his goods at 29% above the cost price and allows a discount of 7% on the marked price. What is his gain or loss percentage?

A. 23.89% gain

B. 19.1% loss

C. 19.97% gain



D. 22.67% gain

Q18 Mathematics

Two banks, A and B, offered loans at 3.5% and 7% per annum, respectively. Akshay borrowed an amount of ₹4,60,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Akshay after 4 years.

A. 63,900

B. 65,900

C. 65,400

D. 64,400



Q19 Mathematics

The income of Raman is ₹61,500. He saves 17% of his income. If his income increases by 38% and expenditure increases by 20%, then his savings will:

A. decrease by ₹13,159

B. increase by ₹13,161



C. increase by ₹13,156

D. decrease by ₹13,165

Q20 Mathematics

Nishi travels to a shopping mall at 33 km/hr and returns at 57 km/hr. What is her average speed (in km/hr) for the entire journey?

A. 34.8

B. 32.8

C. 41.8



D. 39.1

Q21 Mathematics

Simplify: $(\sqrt{75} - \sqrt{108} + \sqrt{6075})^2$

A. 132

B. 5808



C. $5808\sqrt{3}$

D. $1936\sqrt{3}$

Q22 Mathematics

If 646 bananas were distributed among three monkeys in the ratio $\frac{1}{6} : \frac{1}{9} : \frac{1}{4}$, how many bananas did the first monkey get?

A. 234

B. 204



C. 214

D. 174

Q23 Mathematics

The area of a triangle is 84 cm^2 . If the altitude corresponding to its base is two-thirds of the base length, find the length of the base.

A. $5\sqrt{7} \text{ cm}$

B. $6\sqrt{3} \text{ cm}$

C. $6\sqrt{7} \text{ cm}$



D. $4\sqrt{7} \text{ cm}$

Q24 Mathematics

From the top of a lighthouse of height 279 m, the angle of depression of a ship is 60° . Find the distance (in meters) between the ship and the foot of the lighthouse.

A. $90\sqrt{3}$

B. $92\sqrt{3}$

C. $93\sqrt{3}$



D. $89\sqrt{3}$



Q25 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{10}{60}$?

A. 40%

B. 45%

C. 30%



D. 60%



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Mathematics

25 Questions • Answer Key

Q1 Mathematics

The angle of elevation of a ladder leaning against a wall is 60° and the foot of the ladder is 5.6 m away from the wall. Find the length of the ladder.

A. 11.2 m



B. 14.2 m

C. 12.2 m

D. 10.2 m

Q2 Mathematics

The sides of a triangle are 87 cm, 108 cm, and 75 cm. What is the length (in cm) of its altitude corresponding to the side with a length of 108 cm?

A. 60



B. 24

C. 41

D. 17

Q3 Mathematics

Juli is 24 years older than her daughter. In 6 years, Juli's age will be double that of her daughter. What is the present age (in years) of Juli?

A. 48

B. 30

C. 24

D. 42



Q4 Mathematics

A and B working together can do a piece of work in 3 days. B alone can do the same work in 12 days. How long (in days) will A alone take to do double the work?

A. 8



B. 11

C. 4

D. 9

Q5 Mathematics

The sides of a triangle are 34 cm, 18 cm and 20 cm. What is the length of its altitude corresponding to the side with the length of 18 cm?

A. 22 cm

B. 16 cm



C. 63 cm

D. 42 cm

Q6 Mathematics

Given $x + y = 4$, and $xy = 2$, what is $x^2 + y^2$?

A. 10

B. 12



C. 14

D. 16

Q7 Mathematics

A fruit vendor buys 10 kg of apples at ₹85/kg and sells them at ₹100/kg. What is his total profit?

A. ₹120

B. ₹140

C. ₹180

D. ₹150



Q8 Mathematics

If P is a prime number, what is the HCF of P and $P + 1$?

A. P

B. $P^2 + P$ C. $P^2 + 1$

D. 1



Q9 Mathematics

How many seconds will a boy take to run one complete round around a square field of side 25 metres, if he runs at a speed of 4 km/hr?

A. 90



B. 80

C. 70

D. 100



Q10 Mathematics

The price of a commodity decreases by 5% in the first week and then increases by 8% in the second week. What is the effective percentage increase in the price after the second week?

A. 2.6%



B. 1.5%

C. 0.8%

D. 3%

Q11 Mathematics

The amount on a sum of ₹2,500 at the rate of 14% per annum compound interest, compounded annually, in 2 years will be:

A. ₹3,184

B. ₹3,249



C. ₹2,497

D. ₹2,877

Q12 Mathematics

In an election with two candidates, 8% of the registered voters did not vote, and 120 voters submitted blank ballots. Among the votes cast, the winning candidate received support from 48% of all registered voters and secured 780 more votes than the other candidate. Determine the total number of voters on the list.

A. 16,500



B. 15,690

C. 14,840

D. 17,800

Q13 Mathematics

The Rajdhani Express and Garib Rath Express run in the same direction with speeds of 87 km/hr and 51 km/hr, respectively, and their lengths are the same. What is the length of the Rajdhani Express if it completely crosses the Garib Rath Express in 175 seconds?

A. 867 m

B. 875 m



C. 880 m

D. 883 m

Q14 Mathematics

A dealer purchased a ceiling fan for ₹391. After allowing a discount of 31% on its marked price, he still gains 68%. Find the marked price of the ceiling fan.

A. ₹952



B. ₹994

C. ₹927

D. ₹902

Q15 Mathematics

If the mean proportional of X and 147 is 84, then find the value of X.

A. 49

B. 50

C. 45

D. 48

**Q16 Mathematics**

A seller sells two fruits, apples and bananas. An apple costs ₹20 and a banana costs ₹10. Ravi buys 6 fruits and pays ₹80. How many more bananas did he buy than apples?

A. 4

B. 1

C. 2



D. 3

Q17 Mathematics

Two pipes, P and Q, can fill a cistern in 37 minutes 30 seconds and 45 minutes, respectively. Both pipes are opened simultaneously. The cistern gets completely filled in exactly 30 minutes if pipe Q is turned off after x minutes. Find x.

A. 9



B. 8

C. 7

D. 12



Q18 Mathematics

The average age of 30 students of a class is 19 years. If the age of the teacher is also included, the average age of the whole group becomes 20 years. The age (in years) of the teacher is:

A. 58

B. 50



C. 54

D. 52

Q19 Mathematics

₹10,279 is divided among A, B, and C in such a way that if ₹67, ₹33, and ₹13 are deducted from their respective shares, they have money in the ratio 4 : 2 : 20. Find the difference between B's and C's original shares.

A. ₹6988

B. ₹7188

C. ₹7138

D. ₹7018

**Q20 Mathematics**

DMART is offering Buy 30, get 11 free on grocery items. What is the net percentage discount being offered by DMART? (Correct up to two decimal places)

A. 23.99%

B. 24.84%

C. 28.04%

D. 26.83%

**Q21 Mathematics**

The value of $(1 - \frac{1}{2})(1 - \frac{1}{3})(1 - \frac{1}{4})(1 - \frac{1}{5})\dots\dots\dots(1 - \frac{1}{m})$ is equal to:

A. $m + 1$

B. $m - 1$

C. m

D. $\frac{1}{m}$

**Q22 Mathematics**

If 20% of 10% of $\frac{2}{3}$ of a number is 697, find the number.

A. 56260

B. 52275



C. 52990

D. 52290



Q23 Mathematics

$$\frac{3}{2}$$

A. $18\frac{7}{9}$

B. $21\frac{7}{9}$ ✓

C. $169\frac{7}{9}$

D. $189\frac{7}{9}$

Q24 Mathematics

Simplify: $\sqrt{51 - \sqrt{7} + \sqrt{11 - 4\sqrt{7}}}$

A. 5

B. 7 ✓

C. 11

D. 10

Q25 Mathematics

An athletic track forms a shape consisting of a rectangle with semicircles on two opposite ends. If the straight portions are each 100 metres long and the total perimeter of the track is 400 metres, what is the radius of each semicircular end (rounded off to two decimal places)?

$\left(\text{Use } \pi = \frac{22}{7} \right)$

A. 33.73 metres

B. 31.82 metres ✓

C. 32.43 metres

D. 30.23 metres



Mathematics

25 Questions • Answer Key

Q1 Mathematics

A solid cylinder has a height of 12 cm and a radius of r cm. A part of the cylinder is melted and molded into two cones. One cone has a radius of 3 cm and a height of 4 cm, while the other cone has a radius of 6 cm and a height of 8 cm. If the ratio of the curved surface area of the original cylinder to the sum of the curved surface areas of the two cones is $4 : 1$, find the value of $2r$.

A. 26

B. 24

C. 27

D. 25



Q2 Mathematics

If the mode of a data exceeds its mean by 27.3, then the mode exceeds the median by _____. (Use empirical formula to find the answer.)

A. 15.8

B. 24.9

C. 27.1

D. 18.2



Q3 Mathematics

The selling price of an iPhone is ₹3,300, after allowing two successive discounts of 36% and 25%. Find the marked price of the iPhone.

A. ₹6,815

B. ₹6,769

C. ₹6,875

D. ₹6,983



Q4 Mathematics

A man observes the top of a building at an angle of elevation 45° . If the building is 20 m high, find the distance of the man from the building.

A. 35 m

B. 20 m

C. 25 m

D. 30 m



Q5 Mathematics

A, B and C can do a piece of work in 3, 12 and 4 days, respectively. How long (in days) will they take to do twice the same work, working together?

A. 3



B. 6

C. 4

D. 9

Q6 Mathematics

The amount on a sum of ₹7,500 at 8% per annum compound interest, compounded annually, in 2 years will be:

A. ₹8,989

B. ₹9,355

C. ₹9,135

D. ₹8,748



Q7 Mathematics

102 men have provisions for 30 weeks. They are joined by 68 men. How long (in weeks) will the provisions last?

A. 18



B. 22

C. 16

D. 20

Q8 Mathematics

If the cost price of 30 chairs is equal to the selling price of 40 chairs, find the loss percentage.

A. 19%

B. 23%

C. 25%

D. 17%



Q9 Mathematics

The trains Rajdhani Express and Garib Rath Express run in the same direction with speeds of 101 km/hr and 65 km/hr, respectively, and their lengths are same. What is the length of Rajdhani Express if it completely crosses Garib Rath Express in 66 seconds?

A. 338 m

B. 322 m

C. 330 m



D. 326 m

Q10 Mathematics

The sum of two numbers is 45 and their difference is 9. Find the smaller number.

A. 12

B. 15

C. 20

D. 18

**Q11 Mathematics**

For what value of x will the equation $(x + 5)^2 - (x - 5)^2 = 80$ be true?

A. 4



B. 3

C. 6

D. 5

Q12 Mathematics

If the radius of a sphere is increased by 15%, then find the percentage increase in its volume. (Rounded up to 2 decimal places.)

A. 52.09%



B. 41.67%

C. 80.25%

D. 23.20%

Q13 Mathematics

In a student body election, 5% of the eligible voters are aged 18–21 years, 12% are aged 21–25 years, and the rest are older than 25 years. Among these groups, 80% of the 18–21 year age group and 60% of the 21–25 year age group actually voted. If the number of voters aged 21–25 years who voted exceeds those aged 18–21 years by 320, what is the difference between the number of eligible voters aged 18–21 years and those aged 21–25 years?

A. 700



B. 600

C. 800

D. 500

Q14 Mathematics

The average age of 31 students of a class is 34 years. If the age of the teacher is also included, the average age of the whole group becomes 35 years. The age (in years) of the teacher is:

A. 63

B. 69

C. 66



D. 67

Q15 Mathematics

A train travels at a speed of 72 km/hr. How long will it take to cover a distance of 180 km?

A. 2.4 hours

B. 2.5 hours



C. 2.1 hours

D. 2.7 hours

Q16 Mathematics

The sum of the first 11 prime numbers is:

A. 160



B. 162

C. 164

D. 165



Q17 Mathematics

At present, the ratio of the ages of Meena and Sita is 5 : 4 and sixteen years from now, the ratio will get changed to 9 : 8. Find the present age of Meena.

- A. 23 years
- B. 22 years
- C. 21 years
- D. 20 years

**Q18 Mathematics**

The ratio of 20 hours to 7 days is equivalent to which of the following?

- A. 20:7
- B. 4:43
- C. 2:47
- D. 5:42

**Q19 Mathematics**

In how many minutes will a cistern be filled if three pipes with diameters 2 cm, 3 cm and 4 cm are opened together, given that the largest pipe alone can fill it in 87 minutes? (Assume the rate of flow of water through each pipe is proportional to the square of its diameter.)

- A. 40
- B. 36
- C. 50
- D. 48

**Q20 Mathematics**

The monthly incomes of two friends Shivam and Rupesh, are in the ratio 5 : 8, respectively, and each of them saves ₹81,000 every month. If the ratio of their monthly expenditure is 1 : 4, find the monthly income of Shivam (in ₹).

- A. 1,02,250
- B. 1,00,250
- C. 1,01,250
- D. 1,41,750

**Q21 Mathematics**

Bharat goes to a shop to purchase a toy train priced at ₹5,000. He is offered 4 discount options by the shopkeeper. Which of these options should he opt for to gain maximum advantage of the discount offered?

- A. Two successive discounts of 44% and 18%
- B. Two successive discounts of 24% and 25%
- C. Two successive discounts of 30% each
- D. Single discount of 22%

**Q22 Mathematics**

The sum of three numbers is 180. If the ratio of the second number to the first number is 14:7 and that of the third number to the second number is 15:15, then find the second number.

- A. 71
- B. 74
- C. 72
- D. 70

**Q23 Mathematics**

Simplify the following expression.

$$\frac{(256)^4 \times (125)^3 \times (81)^5}{(64)^5 \times (25)^4 \times (27)^6}$$

- A. 150
- B. 60
- C. 120
- D. 180



Q24 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{10}{30}$?

A. 30%

B. 35%

C. 15%



D. 25%

Q25 Mathematics

In a triangle MNR, the bisectors of $\angle MNR$ and $\angle MRN$ are respectively NO and RO, which intersect at O. If $\angle M = 60^\circ$ and $\angle MRN = 66^\circ$, then the value of $\angle RON$ is:

A. 30°

B. 130°

C. 120°



D. 110°



Mathematics

25 Questions • Answer Key

Q1 Mathematics

A seller makes a loss of 5% by selling a shirt for ₹1,000. He would have made $x\%$ profit by selling for ₹1,400. Find the value of x .

- A. 30.5
- B. 33
- C. 34
- D. 31.2



Q2 Mathematics

The cost of a washing machine is 25% less than the cost of a TV. If the cost of the washing machine increases by 87% and that of the TV decreases by 45%, then what is the percentage change in the total cost of 4 washing machines and 5 TVs?

- A. Increase by 5.2%
- B. Decrease by 9%
- C. Increase by 4.5%
- D. Decrease by 4%



Q3 Mathematics

In a test, B got 50 marks while A got 75 marks, out of 105 maximum marks. What percentage of A's marks was B's marks? (Round off your answer to two decimal places.)

- A. 105.12%
- B. 150.57%
- C. 71.43%
- D. 66.67%



Q4 Mathematics

The average of 13 numbers is 7. If each number is multiplied by 3, then what will the new average be?

- A. 7
- B. 21
- C. 3
- D. 13



Q5 Mathematics

Find a single discount (approximately) equal to three consecutive discounts of 7%, 10% and 15%.

- A. 29.49%
- B. 31.22%
- C. 30.16%
- D. 28.85%



Q6 Mathematics

The mode of the observations 9, 6, 8, 1, 9, 6, 4, 5, 7, 1, 6, 5, 3, 6, 6, 3 and 3 is:

- A. 1
- B. 6
- C. 9
- D. 8



Q7 Mathematics

The monthly incomes of two friends Mohan and David, are in the ratio 5 : 8, respectively, and each of them saves ₹75,000 every month. If the ratio of their monthly expenditure is 1 : 4, find the monthly income of Mohan(in ₹).

- A. 93,750
- B. 94,750
- C. 92,750
- D. 1,31,250



Q8 Mathematics

Two trains, 232 m and 248 m in length, are running in opposite directions. The first runs at the rate of 51 km/hr and the second at the rate of 57 km/hr. How long will they take to cross each other?

- A. 26 seconds
- B. 22 seconds
- C. 11 seconds
- D. 16 seconds



Q9 Mathematics

Malati bought 5 rose plants and 9 jasmine plants for ₹1,410 and her friend Rani bought 6 rose plants and 5 jasmine plants for ₹1,170. Find the prices (in ₹) of 1 rose and 1 jasmine plant, respectively.

A. 120; 90



B. 90; 120

C. 132; 94

D. 115; 87

Q10 Mathematics

Find the simple interest (in ₹) on ₹2,000 at 7% per annum rate of interest for the period from 5 February 2023 to 19 April 2023.

A. 28



B. 29

C. 26

D. 27

Q11 Mathematics

The number of diagonals of an n -sided regular polygon is 665. What is the value of ' n '?

A. 35

B. 40

C. 38



D. 33

Q12 Mathematics

A cistern has two inlet pipes, A and B, and one outlet pipe, C. Pipe A can fill the cistern alone in 15 hours, pipe B in 18 hours, and pipe C can empty it in 27 hours. For the first 5 hours, pipes A and B are opened together. Then, for the next 12 hours, pipes B and C are opened together. After that, only pipe B works. How long will pipe B alone take to fill the remaining part of the cistern?

A. 5 hours

B. 3 hours



C. 4 hours

D. 6 hours

Q13 Mathematics

16 m, 20 m and 24 m are the dimensions of a room. Find the length (in m) of the greatest possible scale to measure all dimensions exactly.

A. 9

B. 5

C. 6

D. 4

**Q14 Mathematics**

P and Q together can fill a cistern with water in 12 hours. If P alone can fill the cistern with water in 24 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

A. 6



B. 12

C. 7

D. 13

Q15 Mathematics

Five years ago, Meera was three times as old as her niece, Kavya. Seven years from now, Meera will be twice as old as Kavya. What is Meera's current age (in years)?

A. 45

B. 39

C. 43

D. 41

**Q16 Mathematics**

Simplify:

$$[(3x + 5y)^2 - 60xy] \div [(3x - 5y)^2]$$

A. -1

B. -2

C. 2

D. 1

**Q17 Mathematics**

₹10,415 is divided among P, Q, and R in such a way that if ₹62, ₹17, and ₹79 are deducted from their respective shares, they have money in the ratio 15:10:14. Find the difference between the original shares of Q and R.

A. ₹902

B. ₹1,114



C. ₹1,202

D. ₹1,152



Q18 Mathematics

The prices of each article of types P, Q, and R are ₹280, ₹180 and ₹100, respectively. Kishore buys articles of each type in the ratio 3 : 4 : 5 in ₹6,180. How many articles of type Q did he purchase?

A. 20

B. 18

C. 12



D. 9

Q19 Mathematics

An item with a marked price of ₹657 was sold for ₹526. What was the percentage of discount given? (Round off the answer to two decimal places.)

A. 17.13%

B. 19.94%



C. 23.93%

D. 17.29%

Q20 Mathematics

If m and n are positive integers and $(m - n)$ is an even number, then $(m^2 - n^2)$ will always be divisible by:

A. 5

B. 4



C. 7

D. 6

Q21 Mathematics

Find the value of x in the following expression

$$(0.36)^3 \times (0.216)^3 \div (0.1296)^3 = (60 \div 100)^{x+1}.$$

A. 3

B. 2



C. 1

D. 0

Q22 Mathematics

A train of length 282 m takes 12 seconds to pass over another train 248 m long coming from the opposite direction. If the speed of the first train is 68 km/hr, then find the speed of the second train.

A. 82 km/hr

B. 89 km/hr

C. 96 km/hr

D. 91 km/hr



Q23 Mathematics

In a right – angled triangle ABC, right – angled at B, if $\tan A = \frac{3}{4}$, then find cosec A.

A. $\frac{5}{3}$



B. $\frac{5}{2}$

C. $\frac{4}{3}$

D. $\frac{3}{2}$

Q24 Mathematics

The length, breadth and height of a cuboid are in the ratio 6 : 5 : 4 and its volume is $81000\sqrt{2}$ cm³. Find its surface area.

A. 65600 cm²

B. 66600 cm²



C. 68600 cm²

D. 67600 cm²

Q25 Mathematics

The area of a triangle is one – third of the area of a parallelogram, whose base is 24 cm. Find the height of the parallelogram, if the sides of the triangle are 22 cm, 18 cm and 24 cm long, respectively.

(Use $\sqrt{35} = 5.9$)

A. 23.6 cm



B. 18.2 cm

C. 21.8 cm

D. 26.4 cm



Mathematics

25 Questions • Answer Key

Q1 Mathematics

Find the HCF of the numbers 2520, 3600, 5880.

A. 100

B. 120



C. 140

D. 180

Q2 Mathematics

In an election, 30% of the total votes were declared invalid. Of the remaining valid votes, 60% were cast for the winning candidate. What percentage of the total votes did the losing candidate receive?

A. 40%

B. 28%



C. 15%

D. 35%

Q3 Mathematics

The area of an isosceles triangle is 48 square units. The unequal side (base) has a length of 12 units. Find the perimeter (in units) of the triangle.

A. 24

B. 32



C. 36

D. 28

Q4 Mathematics

A cyclist travels 150 km in 5 hours and then another 90 km in 3 hours. What is the average speed of the cyclist for the entire journey?

A. 45 km/hr

B. 35 km/hr

C. 40 km/hr

D. 30 km/hr



Q5 Mathematics

Arohi buys 3 apples and 5 bananas for ₹85, while Rhea buys 2 apples and 4 bananas for ₹60. What is the total cost (in ₹) of one apple and one banana?

A. 18

B. 20

C. 25



D. 30

Q6 Mathematics

A, B and C can do a piece of work in 3, 18 and 9 days, respectively. How long (in days) will they take to do twice the same work, working together?

A. 8

B. 4



C. 12

D. 5

Q7 Mathematics

The arithmetic mean of the observations 27, 69, 15, 88, 15, 54, 53, 20 and 19 is:

A. 50

B. 31

C. 40



D. 37

Q8 Mathematics

Two banks, A and B, offered loans at 3.5% and 7.5% per annum, respectively. Ashish borrowed an amount of ₹2,60,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Ashish after 3 years.

A. 32,700

B. 32,200

C. 30,700

D. 31,200



Q9 Mathematics

A triangle has sides of length 13 cm, 14 cm and 15 cm. Find the area of the triangle.

- A. 92 cm²
- B. 84 cm² ✓
- C. 72 cm²
- D. 88 cm²

Q10 Mathematics

Pushparaj and Himani together invested ₹48,600 in a business. At the end of the year, out of a total profit of ₹6,600, Pushparaj's share was ₹2,200. What was the investment of Pushparaj?

- A. ₹17,170
- B. ₹16,200 ✓
- C. ₹15,365
- D. ₹17,280

Q11 Mathematics

The selling price of an iPhone is ₹5,400, after allowing two successive discounts of 10% and 36%. Find the marked price of the iPhone.

- A. ₹9,375 ✓
- B. ₹9,294
- C. ₹9,511
- D. ₹9,403

Q12 Mathematics

If the mean proportional of P and 242 is 88, then find the value of P.

- A. 35
- B. 32 ✓
- C. 31
- D. 34

Q13 Mathematics

After selling an article at a discount of 27%, the profit percentage obtained is 36%. What is the mark-up percentage (rounded off to two decimal places)?

- A. 86.30% ✓
- B. 83.64%
- C. 88.29%
- D. 84.01%

Q14 Mathematics

An 8-digit number is divisible by 45. If the digits are rearranged, then the number must be divisible by:

- A. 5
- B. 15
- C. 3 ✓
- D. 45

Q15 Mathematics

A person travels 60 km by car at a speed of 50 km/hr, then 80 km by bus at a speed of 40 km/hr and finally 100 km by train at a speed of 80 km/hr. What is the average speed (rounded off two decimal places) of the person for the entire trip?

- A. 53.93 km/hr ✓
- B. 48.93 km/hr
- C. 61.93 km/hr
- D. 59.93 km/hr

Q16 Mathematics

The father's age will be double his son's age after twenty years from now. If the father's age was seven times the son's age five years ago from now, then find their present ages (in years), respectively.

- A. 40, 10 ✓
- B. 42, 11
- C. 38, 9
- D. 46, 13

Q17 Mathematics

There is a polygon of 10 sides. How many triangles can be drawn using the vertices of the polygon?

- A. 100
- B. 150
- C. 125
- D. 120 ✓

Q18 Mathematics

A water tank can be filled in 12 hours using three pipes. Pipe Z is three times as fast as pipe C, and pipe C is twice as fast as pipe B. How long will it take pipe B alone to fill the tank?

- A. 100 hours
- B. 108 hours ✓
- C. 96 hours
- D. 50 hours



Q19 Mathematics

If the mode of a data exceeds its mean by 10.8, then the mode exceeds the median by _____. (Use empirical formula to find the answer.)

A. 7.2



B. 12.9

C. 9.3

D. 15.5

Q20 Mathematics

A kite is flying at a height of 75 m, and the string makes an angle of 60° with the ground. What is the length of the string?

A. $50\sqrt{3}$ m



B. 150 m

C. $\frac{75\sqrt{3}}{2}$ m

D. $75\sqrt{3}$ m

Q21 Mathematics

If $x = 3 + 2\sqrt{2}$ and $y = 3 - 2\sqrt{2}$, find the value of $x^2 + y^2$ by direct calculation.

A. 26

B. 34



C. 36

D. 32

Q22 Mathematics

$\frac{1}{30}$ is what percentage of $\frac{1}{80}$ (rounded off to two decimal places)?

A. 276.67%

B. 533.33%

C. 266.67%



D. 281.67%

Q23 Mathematics

In a local election, there were 20,000 voters. Candidate A received 40% of the total votes, and Candidate B received 50% of the total votes. The remaining votes were split equally between two other candidates, C and D. How many votes did Candidate C receive?

A. 700

B. 1200

C. 1000



D. 600



Q24 Mathematics

The simplified value of $\sqrt{29 + \sqrt{41 + \sqrt{55 + \sqrt{81}}}}$ is:

A. 6



B. 5

C. 4

D. 3

Q25 Mathematics

A shopkeeper calculates his profit per cent on the selling price and his profit is 6.25%. Find his actual profit percentage.

A. 8%

B. 10%

C. $6\frac{2}{3}\%$ D. $7\frac{1}{7}\%$ 

Mathematics

25 Questions • Answer Key

Q1 Mathematics

A taxi service charges a fixed base fare plus a variable rate per kilometre. For a 10 km trip, Raju paid ₹230 and for a 15 km trip, Meena paid ₹330. What is the base fare and the per-kilometre charge?

- A. Base fare = ₹60; Per-kilometre Charge = ₹15
- B. Base fare = ₹40; Per-kilometre Charge = ₹18
- C. Base fare = ₹50; Per-kilometre Charge = ₹18
- D. Base fare = ₹30; Per-kilometre Charge = ₹20

Q2 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 17^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 8 : 9, then what is the difference between the measures of $\angle Q$ and $\angle P$?

- A. 6°
- B. 5°
- C. 4°
- D. 2°

Q3 Mathematics

If $5^x - y = 3125$ and $3^{3x + y} = 2187$, then the value of $19x - 18y$ is:

- A. 95
- B. 93
- C. 97
- D. 91

Q4 Mathematics

In a distribution where the empirical relation holds true, if both the mode and the median are 46, find the mean.

- A. 45.5
- B. 46
- C. 46.5
- D. 45

Q5 Mathematics

A, B and C can do a work in 17 days, 51 days and 68 days, respectively. They finished together that work and gained ₹5,985 in wages. Find B's wage (in ₹).

- A. 1,260
- B. 2,241
- C. 945
- D. 3,780

Q6 Mathematics

An article is marked 25% above its cost price. A discount is offered so that a profit of 15% is made. Find the discount percentage.

- A. 12%
- B. 8%
- C. 5%
- D. 10%

Q7 Mathematics

The price of fuel decreases by 45%, 15% and 50% in three successive months, but increases by 70% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price? (Rounded off to two decimal places)

- A. Decreases by 60.26%
- B. Increases by 65.02%
- C. Increases by 66.72%
- D. Decreases by 61.32%

Q8 Mathematics

A stationery seller purchases 6 notebooks for ₹30 and sells them for ₹36. What is his profit percentage?

- A. 16.67%
- B. 6%
- C. 120%
- D. 20%



Q9 Mathematics

A, B and C can do a piece of work in 3, 10 and 15 days, respectively. How long (in days) will they take to do twice the same work, working together?

A. 5

B. 8

C. 4



D. 12

Q10 Mathematics

The amount on a sum of ₹4,400 at 5% per annum compound interest, compounded annually, in 2 years will be:

A. ₹4,851



B. ₹5,840

C. ₹4,071

D. ₹4,819

Q11 Mathematics

The market prices of jowar to gram are in the ratio 1 : 5, and a family consumes them in the ratio 4 : 3 by quantity. Find the ratio of expenditure on jowar to that on gram.

A. 6 : 17

B. 3 : 11

C. 4 : 15



D. 5 : 16

Q12 Mathematics

Aarti got a new bed at 50% discount. If Aarti did not get any discount, Aarti would have to pay ₹8,453 extra. So how much did Aarti pay for the bed?

A. ₹8,452

B. ₹8,453



C. ₹8,455

D. ₹8,454

Q13 Mathematics

In an election between two candidates, 20% of the voters did not cast their votes, and all the votes cast were valid. The winner secured 70% of the votes cast and won by a margin of 23,200 votes. What was the total number of voters?

A. 75,000

B. 72,500



C. 69,500

D. 82,500

Q14 Mathematics

The sum of the present ages of Priya and her younger brother Rohan is 44 years. Four years ago, Priya was twice as old as Rohan was at that time. What is Priya's current age (in years)?

A. 28



B. 26

C. 24

D. 30

Q15 Mathematics

A car travels a distance of 120 km in 2 hours. What is its speed?

A. 240 km/h

B. 60 km/h



C. 120 km/h

D. 40 km/h

Q16 Mathematics

The average age of 43 students of a class is 25 years. If the age of the teacher is also included, the average age of the whole group becomes 26 years. The age (in years) of the teacher is:

A. 66

B. 68

C. 69



D. 71

Q17 Mathematics

₹8,516 is divided among A, B and C in such a way that if ₹88, ₹31 and ₹90 are deducted from their respective shares, they have money in the ratio 18:17:4. Find the difference between B's and C's original shares.

A. ₹2,719

B. ₹2,619

C. ₹2,919

D. ₹2,710

**Q18 Mathematics**

A garrison of 1209 men has provisions for 20 days. How long (in days) will the provisions last if the garrison is increased by 403 men?

A. 15



B. 10

C. 35

D. 25



Q19 Mathematics

Expand: $(3m - 5n)^2$

- A. $6m^2 - 30mn + 25n^2$
- B. $9m^2 - 15mn + 25n^2$
- C. $9m^2 + 30mn + 25n^2$
- D. $9m^2 - 30mn + 25n^2$ ✓

Q20 Mathematics

10% decrease 10% increase 9% increase 8% increase

- A. 10% decrease ✓
- B. 9% increase
- C. 8% increase
- D. 10% increase

Q21 Mathematics

The height of a cylinder is 56 cm. If the circumference of its base is 176 cm, then what is the total surface area (in cm^2) of this cylinder?

Use $\pi = \frac{22}{7}$

- A. 14,784 ✓
- B. 13,252
- C. 12,895
- D. 11,745

Q22 Mathematics

Find the value of x in the given expression.

$$\frac{x}{2.1} + \frac{4.2}{6.3} = 4$$

- A. 8
- B. 7 ✓
- C. 6
- D. 9

Q23 Mathematics

Walking at $\frac{4}{7}$ of his normal speed from his home, Shahid is 12 minutes late in reaching his office. The usual time taken by him to cover the distance between his home and his office is:

- A. 16 minutes ✓
- B. 9 minutes
- C. 10 minutes
- D. 21 minutes



Q24 Mathematics

If $\frac{1}{1 - \tan \theta} + \frac{1}{1 + \tan \theta} = 3$, and θ is an acute angle, find the value of $\operatorname{cosec} \theta$.

A. $\sqrt{2}$

B. 2



C. $\frac{1}{\sqrt{2}}$

D. 1

Q25 Mathematics

From an interior point of an equilateral triangle, three perpendiculars are drawn to its three sides which are of lengths 12.7 cm, 14.8 cm and 11.5 cm, respectively. Find the area of the equilateral triangle.

A. $507\sqrt{3} \text{ cm}^2$



B. $526\sqrt{3} \text{ cm}^2$

C. $510\sqrt{3} \text{ cm}^2$

D. $539\sqrt{3} \text{ cm}^2$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

Simplify: $[(4x - 5y)^2 + 80xy] \div [(4x + 5y)^2]$

A. 4

B. -3

C. 1



D. 2

Q2 Mathematics

A dealer marks his goods at 44% above the cost price and allows a discount of 75% on the marked price. What is his gain or loss percentage?

A. 64% loss



B. 66% loss

C. 67% gain

D. 65% loss

Q3 Mathematics

₹1,964 is divided among Ashish, Lalita and Pranav in such a way that if ₹50, ₹17 and ₹10 are deducted from their respective shares, they have money in the ratio 20:4:13. Find Lalita's share.

A. ₹154

B. ₹304

C. ₹354

D. ₹221



Q4 Mathematics

In a quadrilateral ABCD, $\angle A = 32^\circ$ and $\angle B = 58^\circ$. The bisectors of $\angle C$ and $\angle D$ meet at O. What is the measure of $\angle DOC$?

A. 60° B. 45° C. 33° D. 50°

Q5 Mathematics

A typist takes 40 minutes to type 4 pages. How many pages will he type in 90 minutes?

A. 9



B. 11

C. 8

D. 10

Q6 Mathematics

In a race, an athlete covers a distance of 420 m in 140 sec in the first lap. He covers the second lap of the same distance in 70 sec. What is the average speed (in m/sec) of the athlete?

A. 5

B. 9

C. 3

D. 4



Q7 Mathematics

One pipe can fill a tank in 6 minutes, while another pipe can empty the completely filled tank in 9 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-half of the tank?

A. 19

B. 10

C. 9



D. 18

Q8 Mathematics

A shopkeeper offers the following four schemes:

A) Two successive discounts of 32% and 40%

B) Buy 1, get 5 free

C) A single discount of 48%

D) Two successive discounts of 8% and 33%

Which scheme is best for the shopkeeper?

A. B

B. D



C. A

D. C



Q9 Mathematics

The price of fuel decreases by 40%, 15% and 45% in three successive months, but increases by 70% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price? (Round off your answer to two decimal places)

- A. Increases by 54.13%
- B. Decreases by 52.32% ✓
- C. Increases by 48.21%
- D. Decreases by 53.03%

Q10 Mathematics

The amount on a sum of ₹1,500 at 10% per annum compound interest, compounded annually, in 2 years will be:

- A. ₹1,940
- B. ₹1,661
- C. ₹2,423
- D. ₹1,815 ✓

Q11 Mathematics

A cylinder whose height is eight times its radius is melted and cast into spherical balls each of half the radius of the cylinder. Find the number of spherical balls.

- A. 56
- B. 24
- C. 35
- D. 48 ✓

Q12 Mathematics

A person sells a table at a 7% profit. If he had sold it for ₹1,280 more, then his profit would have been 17%. Find the cost price of the table.

- A. ₹12,800 ✓
- B. ₹12,400
- C. ₹12,600
- D. ₹12,200

Q13 Mathematics

The ratio of two numbers is 3:4 and their HCF is 7. Their LCM is:

- A. 64
- B. 84 ✓
- C. 56
- D. 49

Q14 Mathematics

The average age of 23 students of a class is 25 years. If the age of the teacher is also included, the average age of the whole group becomes 26 years. The age (in years) of the teacher is:

- A. 59
- B. 49 ✓
- C. 56
- D. 57

Q15 Mathematics

In a test, B got 50 marks while A got 75 marks, out of 110 maximum marks. What percentage of A's marks was B's marks? (Round off your answer to two decimal places.)

- A. 66.67% ✓
- B. 68.18%
- C. 110.19%
- D. 150.22%

Q16 Mathematics

A food outlet sells two types of meal combos. The first combo contains 2 sandwiches and 1 juice and costs ₹80. The second combo contains 1 sandwich and 2 juices and costs ₹70. What is the price of one sandwich?

- A. ₹20
- B. ₹25
- C. ₹35
- D. ₹30 ✓

Q17 Mathematics

A person is 5 years older than twice their sibling's age. If the person is currently 27 years old, how old is the sibling?

- A. 12 years
- B. 11 years ✓
- C. 13 years
- D. 10 years



Q18 Mathematics

A room with a square base and height 10 ft occupies $25,000 \text{ ft}^3$ volume. The room has cubicles of base area 25 ft^2 in four corners. The walls and ceiling of the area of the room which is not occupied by cubicles is to be painted. How much area is to be painted?

A. 4300 ft^2

B. 4000 ft^2 ✓

C. 4200 ft^2

D. 4500 ft^2

Q19 Mathematics

If the mode of a data exceeds its mean by 19.8, then the mode exceeds the median by _____. (Use empirical formula to find the answer.)

A. 13.2 ✓

B. 8.6

C. 15.3

D. 14.6

Q20 Mathematics

What will come in place of 'X', and $X > 0$, in the equation $\frac{X}{125} = \frac{5}{X}$?

A. 23

B. 25 ✓

C. 27

D. 28

Q21 Mathematics

Walking at $\frac{3}{5}$ of his normal speed from his home, Vishal is 24 minutes late in reaching his office. The usual time taken by him to cover the distance between his home and his office is:

A. 34 minutes

B. 36 minutes ✓

C. 41 minutes

D. 45 minutes

Q22 Mathematics

If $4^{(x+1)} = 64 \times 8^x$, find the value of x.

A. -2

B. 4

C. 2

D. -4 ✓

Q23 Mathematics

If a pole is 30 m high, casts a shadow $10\sqrt{3}$ m long on the ground, then the angle of elevation of the sun is:

A. 90°

B. 30°

C. 45°

D. 60° ✓



Q24 Mathematics

If 40% of 10% of $\frac{1}{3}$ of a number is 477, find the number.

A. 38170

B. 37030

C. 35775



D. 39070

Q25 Mathematics

Mohan can complete a piece of work alone in 6 days by working 5 hours a day, and Rohan can do the same in 8 days. If they work together for 8 hours each day, how long will it take them to finish the work?

A. $3\frac{4}{9}$ daysB. $2\frac{5}{8}$ daysC. $3\frac{1}{5}$ daysD. $2\frac{1}{7}$ days

Mathematics

25 Questions • Answer Key

Q1 Mathematics

One pipe can fill a tank in 6 minutes, while another pipe can empty the completely filled tank in 15 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-half of the tank?

A. 5



B. 6

C. 11

D. 10

Q2 Mathematics

Find the LCM of the numbers 780, 2080 and 2600.

A. 10400

B. 31200



C. 15600

D. 6240

Q3 Mathematics

If the fourth proportional to P, 25 and 8 is 4, then find the value of P.

A. 52

B. 50



C. 48

D. 49

Q4 Mathematics

In $\triangle ABC$, $BD \perp AC$ at D and $\angle DBC = 71^\circ$. E is a point on BC such that $\angle CAE = 55^\circ$. What is the measure of $\angle AEB$?

A. 66° B. 79° C. 74° D. 73°

Q5 Mathematics

A dealer marks his goods at 37% above the cost price and allows a discount of 16% on the marked price. What is his gain or loss percentage?

A. 14.66% loss

B. 16.51% loss

C. 15.08% gain



D. 12.76% loss

Q6 Mathematics

What is the mode of the following data?

41, 48, 54, 50, 54, 48, 42, 43, 48, 42, 53, 45, 44, 50, 49, 45, 43, 48, 42, 48

A. 50

B. 41

C. 48



D. 54

Q7 Mathematics

The monthly incomes of two friends Rakesh and Shivam, are in the ratio 5 : 9, respectively, and each of them saves ₹39,000 every month. If the ratio of their monthly expenditure is 1 : 3, find the monthly income of Rakesh (in ₹).

A. 64,000

B. 66,000

C. 65,000



D. 91,000

Q8 Mathematics

The mean and the mode of a set of data are 53.1 and 14.1, respectively. Find the median of the data, using the empirical formula.

A. 40.5

B. 41.8

C. 42.8

D. 40.1



Q9 Mathematics

In a parallelogram, the length of its two adjacent parallel sides are 11.9 cm and a cm where a is the smaller side. If the perpendicular distance between the two longer and shorter sides are 3.9 cm and 5.1 cm, find the perimeter of the parallelogram.

- A. 48.2 cm
- B. 45.6 cm
- C. 42 cm
- D. 38 cm

**Q10 Mathematics**

The sum of two numbers is 32. If one number is 5 more than twice the other, then find the smaller number.

- A. 7
- B. 11
- C. 9
- D. 13

**Q11 Mathematics**

If the curved surface area of a cylinder of height 6 cm is 264 cm^2 , then its volume is: (Use $\pi=22/7$)

- A. 824 cm³
- B. 944 cm³
- C. 950 cm³
- D. 924 cm³

**Q12 Mathematics**

Which of the following numbers is divisible by both 2 and 5?

- A. 135
- B. 133
- C. 134
- D. 130

**Q13 Mathematics**

Two trains, 248 m and 142 m in length are running in opposite directions. The first runs at the rate of 34 km/hr and the second at the rate of 74 km/hr. How long will they take to cross each other?

- A. 13 seconds
- B. 12 seconds
- C. 18 seconds
- D. 19 seconds

**Q14 Mathematics**

The difference of the present ages of two friends Gopal and Manoj is 2 years. If the ratio of their ages after 18 years from now will be 21 : 22, then find the sum of their respective ages 10 years ago from now (in years).

- A. 39
- B. 32
- C. 46
- D. 30

**Q15 Mathematics**

A man buys 9 identical articles for a total of ₹16. If he sells each of them for ₹2.8, then his profit percentage will be ____%.

- A. 58.5
- B. 37.51
- C. 36.51
- D. 57.5

**Q16 Mathematics**

The price of fuel decreases by 45%, 55% and 50% in three successive months, but increases by 40% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price? (Round off the answer to two decimal places.)

- A. Decreases by 78.11%
- B. Decreases by 82.68%
- C. Increases by 81.11%
- D. Increases by 85.23%

**Q17 Mathematics**

Find the simple interest (in ₹) on ₹2,000 at 7% per annum rate of interest for the period from 3 February 2023 to 17 April 2023.

- A. 28
- B. 29
- C. 27
- D. 26

**Q18 Mathematics**

A person who spends 75% of his monthly income is able to save ₹4,827 per month. His monthly expenses (in ₹) are:

- A. 14,481
- B. 14,435
- C. 14,394
- D. 14,395



Q19 Mathematics

A cistern has a hole at the bottom through which water leaks. A tap can fill the cistern in 7 hours and the hole at the bottom can empty the fully filled cistern in 8 hours. If both the tap and the hole are open, then what will be the time taken to completely fill the empty cistern?

A. 56 hours



B. 75 hours

C. 66.5 hours

D. 36.6 hours

Q20 Mathematics

Simplify the given expression.

$$189 \div 9 + 117 \div 13 \times 5 - 12 \text{ of } 4 + 9 \times 7$$

A. 83

B. 81



C. 89

D. 87

Q21 Mathematics

Three numbers are in the ratio $\frac{4}{8} : \frac{11}{16} : \frac{18}{21}$. The difference between the greatest and the smallest numbers is 40. Find the largest number.

A. 96



B. 95

C. 98

D. 97

Q22 Mathematics

From the top of a 50 m high tower, the angle of depression to a car on the ground is 30° , and the angle of elevation to a balloon directly above the car is 60° . Find the height of the balloon from the ground.

A. 200 metres



B. 100 metres

C. 150 metres

D. 250 metres

Q23 Mathematics

A dealer purchased a washing machine for ₹7660. If he allows a discount of 12% on its marked price and still gains 10%, then the marked price of the machine is:

A. ₹9575



B. ₹9975

C. ₹8975

D. ₹8575

Q24 Mathematics

If $x + \frac{1}{x} = 17$, then the value of $(x^2 + \frac{1}{x^2})$ is:

A. 291

B. 283

C. 289

D. 287



Q25 Mathematics

Walking at $\frac{3}{4}$ of his normal speed from his home, Tarun is 19 minutes late in reaching his office.

The usual time taken by him to cover the distance between his home and his office is:

A. 66 minutes

B. 59 minutes

C. 53 minutes

D. 57 minutes



Mathematics

25 Questions • Answer Key

Q1 Mathematics

If the marked price of a towel is 85% more than its cost price and a discount of 20% is announced on it, then find the profit percentage.

A. 49%

B. 48% ✓

C. 45%

D. 47%

Q2 Mathematics

P and Q together can fill a cistern with water in 10 hours. If P alone can fill the cistern with water in 20 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

A. 6

B. 5 ✓

C. 11

D. 10

Q3 Mathematics

The sides of a triangle are 105 cm, 137 cm, and 88 cm. What is its area (in cm^2)?

A. 4573

B. 4634

C. 4620 ✓

D. 4598

Q4 Mathematics

How many numbers up to 200 are divisible by 4 and 3 both?

A. 10

B. 16 ✓

C. 14

D. 12

Q5 Mathematics

If the third proportional of 64 and Z is 4, then what is the value of Z?

A. 18

B. 17

C. 14

D. 16 ✓

Q6 Mathematics

A man receives ₹7,420 per month as salary. He saves 35% of his salary every month. His expenditure per month is:

A. ₹4,857

B. ₹4,920

C. ₹4,724

D. ₹4,823 ✓

Q7 Mathematics

The expenditure of Sudha is 125% more than her savings. If her expenditure decreases by 14% and savings increase by 38%, then by what percentage does her income increase?

A. 5%

B. 6%

C. 3%

D. 2% ✓

Q8 Mathematics

The present ages of A and B are in the ratio of 7 : 6. Eight years hence, the ratio of their ages will be 8 : 7. Find the present age of B.

A. 36 years

B. 24 years

C. 40 years

D. 48 years ✓



Q9 Mathematics

Two trains, 297 m and 243 m, in length are running in opposite directions. The first runs at the rate of 42 km/hr and the second at the rate of 66 km/hr. How long will they take to cross each other?

- A. 9 seconds
- B. 13 seconds
- C. 8 seconds
- D. 18 seconds

**Q10 Mathematics**

The amount on a sum of ₹1,000 at the rate of 10% per annum compound interest, compounded annually, in 2 years will be:

- A. ₹1,210
- B. ₹1,220
- C. ₹1,240
- D. ₹1,640

**Q11 Mathematics**

A total profit of ₹25,000 is to be distributed amongst P, Q and R such that $P : Q = 2 : 1$ and $Q : R = 11 : 7$. The share (in ₹) of R in the profit is:

- A. 4,225
- B. 4,375
- C. 4,325
- D. 4,275

**Q12 Mathematics**

If the mode of a data exceeds its mean by 77.7, then the mode exceeds the median by _____. (Use empirical formula to find the answer)

- A. 47.8
- B. 52.2
- C. 51.8
- D. 58.8

**Q13 Mathematics**

Pipe A can fill a tank in 12 minutes, while pipe B can empty the completely filled tank in 24 minutes. Initially, pipe A is opened and after 4 minutes, pipe B is also opened. In how much time (in minutes) will the remaining tank be filled completely?

- A. 28
- B. 18
- C. 35
- D. 16

**Q14 Mathematics**

The arithmetic mean of the observations 64, 11, 66, 98, 25, 17, 50, 75 and 62 is:

- A. 52
- B. 45
- C. 44
- D. 56

**Q15 Mathematics**

Find the single equivalent discount (rounded off to two decimal places) for successive discounts of 16%, 29% and 4%.

- A. 44.77%
- B. 41.18%
- C. 42.75%
- D. 41.75%

**Q16 Mathematics**

If the cost price of 60 guavas is equal to the selling price of 45 guavas, what is the profit percentage (rounded off to 2 decimal places)?

- A. 34.33%
- B. 33.33%
- C. 32.33%
- D. 31.33%

**Q17 Mathematics**

Three cubes of edges 3 cm, 4 cm, and 5 cm are melted and formed into a single cube. What is the percentage change in the total surface area after melting and recasting?

- A. 28% increase
- B. 28% decrease
- C. 22% decrease
- D. 22% increase



Q18 Mathematics

Amit and Rahul have a total of ₹50. If Amit has ₹16 more than Rahul, then find the amount with Rahul.

A. ₹19

B. ₹17



C. ₹16

D. ₹20

Q19 Mathematics

What is the smallest natural number that should be added to 5023, such that a remainder of 5 is left when the resulting number is divided by each of the numbers 20, 98, 35 and 21?

A. 846

B. 862



C. 855

D. 850

Q20 Mathematics

In a quadrilateral ABCD, $\angle A = 88^\circ$ and $\angle B = 81^\circ$. The bisectors of $\angle C$ and $\angle D$ meet at O. What is the measure of $\angle DOC$?

A. 81.5°

B. 96°

C. 99°

D. 84.5°

**Q21 Mathematics**

Simplify: $(\sqrt{98} + \sqrt{200} - 2\sqrt{8})^2$

A. $13\sqrt{2}$

B. 338



C. 169

D. $169\sqrt{2}$

Q22 Mathematics

Walking at $\frac{3}{4}$ of his normal speed from his home, Manish is 20 minutes late in reaching his office. The usual time taken by him to cover the distance between his home and his office is:

A. 54 minutes

B. 70 minutes

C. 60 minutes



D. 58 minutes

Q23 Mathematics

If $\tan\theta + \cot\theta = 4$, then $\sec^2\theta \times \operatorname{cosec}^2\theta$ is equal to:

A. 16



B. 8

C. 12

D. 24



Q24 Mathematics

If $4A^2 + B^2 = 24$ and $AB = 4$, find the value of $2A + B$.

A. $\pm 2\sqrt{10}$



B. $\pm 2\sqrt{5}$

C. $\pm 3\sqrt{5}$

D. $\pm 3\sqrt{10}$

Q25 Mathematics

If 30% of 50% of $\frac{4}{7}$ of a number is 303, find the number.

A. 4650

B. 6400

C. 3535



D. 5860



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The median of the following observations 46, 64, 87, 41, 58, 77, 35, 90, 55, 92, 33 is 58. If 92 is replaced by 99 and 41 by 43 in the given data, then the new median is:

A. 58



B. 56.5

C. 55

D. 57.5

Q2 Mathematics

If each edge of a cube is increased by 10%, then the percentage increase in its surface area is:

A. 25%

B. 20%

C. 22%

D. 21%



Q3 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 22.5^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 4 : 5, then what is the difference between the measures of $\angle Q$ and $\angle P$?

A. 1° B. 6° C. 5° D. 2°

Q4 Mathematics

The ratio of the number of girls and boys participating in the sports of a school is 2 : 5. If the number of girls is 200, determine the number of boys participating in the sports.

A. 530

B. 475

C. 520

D. 500



Q5 Mathematics

What is the number of ordered pairs (x, y) where x, y are positive integers such that the eight digit number $74 \times 8935y$ is divisible by 11?

A. 7



B. 10

C. 6

D. 9

Q6 Mathematics

A scheme like 'Buy 6, Get 2 Free' on the same kind of articles with the same MRP attracts a ____ % discount.

A. 26

B. 25



C. 33.33

D. 34.33

Q7 Mathematics

A basket contains 42 fruits, which are either apples or oranges. If there are 6 more apples than oranges, how many oranges are there?

A. 22

B. 20

C. 18



D. 24

Q8 Mathematics

A cash payment that will settle a bill for 625 pairs of boots at ₹94 per pair of boots with successive discounts of 20% and 7% with a further discount of 20% on cash payment is:

A. ₹34,972

B. ₹34,963

C. ₹34,992

D. ₹34,968



Q9 Mathematics

The cost price of a toy car is 80% of its selling price. If the selling price is ₹100, what is the profit percentage?

A. 25%



B. 100%

C. 80%

D. 20%

Q10 Mathematics

From a point 30 m away from the base of a tree, the angle of elevation of the top of the tree is 60° . Find the height of the tree (take $\sqrt{3} = 1.73$).

A. 51 m

B. 51.9 m



C. 54 m

D. 52.5 m

Q11 Mathematics

The price of fuel decreases by 45%, 35% and 30% in three successive months, but increases by 45% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price? (Round off the answer to two decimal places.)

A. Increases by 59.57%

B. Decreases by 63.71%



C. Increases by 61.52%

D. Decreases by 64.78%

Q12 Mathematics

The amount on a sum of ₹4,200 at 20% per annum compound interest, compounded annually, in 2 years will be:

A. ₹6,497

B. ₹6,219

C. ₹5,348

D. ₹6,048

**Q13 Mathematics**

The monthly incomes of two friends David and Ashish, are in the ratio 5 : 8, respectively, and each of them saves ₹81,000 every month. If the ratio of their monthly expenditure is 2 : 4, find the monthly income of David (in ₹).

A. 2,83,500

B. 2,03,500

C. 2,01,500

D. 2,02,500

**Q14 Mathematics**

If an X-m long train running at a speed of 63 m/s crosses a railway platform in 28 sec, find the value of X, if the length of the railway platform is 213 m.

A. 1558

B. 1549

C. 1551



D. 1545

Q15 Mathematics

A car covers three different segments of a journey: it travels 40 km at a speed of 60 km/hr, then 50 km at a speed of 50 km/hr and finally 60 km at a speed of 40 km/hr. What is the car's average speed (rounded off to one decimal place) for the entire trip?

A. 52.9 km/hr

B. 48.3 km/hr

C. 50.3 km/hr

D. 47.4 km/hr

**Q16 Mathematics**

₹4,445 is divided among A, B and C in such a way that if ₹65, ₹39 and ₹77 are deducted from their respective shares, they have money in the ratio 18:3:20. Find the difference between B's and C's original shares.

A. ₹1,868

B. ₹1,918

C. ₹1,718

D. ₹1,806

**Q17 Mathematics**

The average age of 31 students of a class is 30 years. If the age of the teacher is also included, the average age of the whole group becomes 31 years. The age (in years) of the teacher is:

A. 63

B. 65

C. 64

D. 62

**Q18 Mathematics**

Simplify: $(0.7 \times 72 \div 14 + 6.25 - 8.34 \times 0.15 + 5.95)$

A. 14.549



B. 14.823

C. 21.549

D. 12.526



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Q19 Mathematics

A, B and C can do a piece of work in 3, 12 and 12 days, respectively. How long (in days) will they take to do twice the same work, working together?

A. 5

B. 12

C. 4



D. 8

Q20 Mathematics

What is the number of natural numbers less than or equal to 1000 and divisible by 5 or 7?

A. 328

B. 314



C. 370

D. 342

Q21 Mathematics

The sum of the ages of a daughter and her mother is 56 years. After 8 years, the age of the mother will be three times that of the daughter. Find the daughter's present age (in years).

A. 10



B. 18

C. 12

D. 16

Q22 Mathematics

The lengths of each side of two squares are given as $(5 + \sqrt{3})$ cm and $(5 - \sqrt{3})$ cm, respectively. What is the sum of the areas of these two squares?

A. 25 cm^2

B. 28 cm^2

C. 52 cm^2

D. 56 cm^2

**Q23 Mathematics**

If A can complete a task in 10 days and B is 25% more efficient than A, how long (in days) will it take them to complete 60% of the task when they work together?

A. $2\frac{1}{3}$

B. $1\frac{2}{3}$

C. $1\frac{1}{3}$

D. $2\frac{2}{3}$

**Q24 Mathematics**

$\frac{1}{30}$ is what percentage of $\frac{1}{90}$?

A. 300%



B. 315%

C. 310%

D. 600%



Q25 Mathematics

A sphere of radius 14 cm is cut along three diametrical planes to form 6 equal parts. What would be the total surface area (in cm^2) of all the new pieces so obtained?

$$\left(\text{Take } \pi = \frac{22}{7} \right)$$

A. 4312

B. 5544

C. 7392

D. 6160



Mathematics

25 Questions • Answer Key

Q1 Mathematics

An item is sold for ₹6,500 after two successive discounts of 35% and 20%. What is the marked price (in ₹) of the item?

A. 12,560

B. 12,500 ✓

C. 12,435

D. 12,674

Q2 Mathematics

The expenditure of Sudha is 200% more than her savings. If her expenditure decreases by 10% and savings increase by 34%, then by what percentage does her income increase?

A. 3%

B. 1% ✓

C. 4%

D. 6%

Q3 Mathematics

Find the smallest number which when increased by 10 is completely divisible by 12, 15, 18 and 20.

A. 200

B. 180

C. 190

D. 170 ✓

Q4 Mathematics

Ramesh bought an article for ₹5,000 and sold it to Suresh at a profit of 20%. Suresh then sold it further at a loss of 10%. For how much did Suresh sell the article?

A. ₹5,800

B. ₹5,600

C. ₹5,200

D. ₹5,400 ✓

Q5 Mathematics

The mode of the observations 21, 29, 35, 24, 25, 33, 24, 23, 26, 28, 35, 27, 20, 35 and 20 is:

A. 24

B. 21

C. 35 ✓

D. 29

Q6 Mathematics

The amount on a sum of ₹4,800 at 15% per annum compound interest, compounded annually, in 2 years will be:

A. ₹6,348 ✓

B. ₹6,836

C. ₹7,194

D. ₹6,717

Q7 Mathematics

The price of a branded pen is ₹180 and that of a pencil is ₹3.50. If the total price of x branded pens and y pencils is ₹935 and $x + y = 15$, then what is the value of $(x^2 + y^2)$?

A. 125 ✓

B. 181

C. 164

D. 205

Q8 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 36^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 3 : 5, then what is the difference between the measures of $\angle Q$ and $\angle P$?

A. 18° ✓B. 21° C. 25° D. 22° 

Q9 Mathematics

The monthly incomes of two friends Mukund and Sachin are in the ratio 5 : 9 respectively and each of them saves ₹45,000 every month. If the ratio of their monthly expenditure is 1 : 3, then find the monthly income of Mukund (in ₹).

A. 74,000

B. 75,000

C. 1,05,000

D. 76,000

Q10 Mathematics

Simplify: $[(9x + 4y)^2 - (9x - 4y)^2] \div 24x$

A. $12xy$

B. $6y$

C. $16x$

D. $8x$

Q11 Mathematics

Find the single discount (approximately) equal to three consecutive discounts of 6%, 5% and 11%.

A. 20.52%

B. 21.86%

C. 21.73%

D. 23.23%

Q12 Mathematics

₹5,575 is divided among X, Y and Z in such a way that if ₹85, ₹65 and ₹61 is deducted from their respective shares, they have money in the ratio 5:11:20. Find the difference between the original shares of Y and Z.

A. ₹1,191

B. ₹1,241

C. ₹1,337

D. ₹1,491

Q13 Mathematics

A train passes a station platform in 60 seconds and a man standing on the platform in 40 seconds. If the speed of the train is 63 km/hr, calculate the length of the platform.

A. 350 metres

B. 400 metres

C. 550 metres

D. 300 metres

Q14 Mathematics

The distance between points A and B is 933 km. Namit travels from A to B at a speed of 70 km/hr and returns at a speed of 111 km/hr. Calculate Namit's average speed for the entire journey (rounded off to two decimal places).

A. 85.86 km/hr

B. 94.58 km/hr

C. 88.58 km/hr

D. 81.26 km/hr

Q15 Mathematics

Find the ratio between the fourth proportional of 4, 8 and 19 to the mean proportional of 9 and 4.

A. 22 : 7

B. 19 : 3

C. 19 : 4

D. 16 : 9

Q16 Mathematics

A camp has provisions for 20 pupils for 12 days. In how many days will the same provisions be used up, if the strength of the camp is increased to 80 pupils?

A. 2

B. 4

C. 6

D. 3

Q17 Mathematics

The product of the present ages of Ram and Lalith is 216 years, and their age ratio is 6 : 1. Find the difference in their ages.

A. 24 years

B. 18 years

C. 36 years

D. 30 years

Q18 Mathematics

Pipes A and B can fill an empty cistern in 65 minutes and 26 minutes, respectively. Both Pipe A and Pipe B are opened together. After how much time should Pipe B be turned off so that the empty cistern is completely filled in a total of 30 minutes?

A. 15 minutes

B. 20 minutes

C. 14 minutes

D. 10 minutes



Q19 Mathematics

The average of 7 numbers is 23. If each number is decreased by 7, what will the new average be?

- A. 9
- B. 7
- C. 23
- D. 16

**Q20 Mathematics**

A, B and C can do a piece of work in 2, 4 and 4 days, respectively. How long (in days) will they take to do thrice the same work, working together?

- A. 9
- B. 4
- C. 6
- D. 3

**Q21 Mathematics**

Simplify: $\frac{\sin 60^\circ \cos 30^\circ}{\tan 45^\circ}$

- A. $\frac{1}{2}$
- B. $\frac{3}{4}$
- C. $\frac{\sqrt{3}}{2}$
- D. 1

**Q22 Mathematics**

In a right circular cylinder, diameter of the base is 21 cm. If eight times the sum of the areas of its two circular faces is five times the area of its curved surface, find the volume of the cylinder (in cm^3).

(Take $\pi = \frac{22}{7}$)

- A. 5842.2
- B. 5812.2
- C. 5832.2
- D. 5821.2

**Q23 Mathematics**

$\frac{1}{20}$ is what percentage of $\frac{11}{60}$? (Round off to two decimal places)

- A. 42.27%
- B. 54.54%
- C. 37.27%
- D. 27.27%



Q24 Mathematics

The diagonal of a rectangle is $\sqrt{89}$ cm and its area is 40 cm^2 . Find the perimeter of the rectangle.

A. 80 cm

B. 169 cm

C. 13 cm

D. 26 cm



Q25 Mathematics

The simplified value of $\sqrt{256} - \sqrt{169} + (\sqrt{144} - \sqrt{25})^2$ is:

A. 41

B. 37

C. 52

D. 47



Mathematics

25 Questions • Answer Key

Q1 Mathematics

If the mean proportional of P and 150 is 120, then find the value of P.

A. 99

B. 97

C. 96



D. 98

Q2 Mathematics

Find the largest number which divides 62, 134 and 242 to leave the same remainder in each case.

A. 38

B. 34

C. 36



D. 32

Q3 Mathematics

A total profit of ₹14,200 is to be distributed amongst A, B and C such that $A : B = 13 : 9$ and $B : C = 18 : 11$. The share (in ₹) of C in the profit is:

A. 2,740

B. 2,690

C. 2,940

D. 2,840



Q4 Mathematics

In a test, B got 50 marks while A got 75 marks, out of 100 maximum marks. What percentage of A's marks was B's marks? (Round off the answer to two decimal places.)

A. 82.35%

B. 150.19%

C. 75.55%

D. 66.67%



Q5 Mathematics

What is the difference between the average of prime numbers between 20 and 40 and the average of multiples of 2 between 10 and 30?

A. 20

B. 1

C. 10



D. 18

Q6 Mathematics

In a farm, there are chickens and rabbits, altogether, there are 20 animals. The total number of legs is 56. How many chickens are there in the farm?

A. 6

B. 12



C. 8

D. 14

Q7 Mathematics

If 4 lines of a print, in a column of a book, contain 63 words, how many words will a column of 52 lines contain?

A. 819



B. 815

C. 829

D. 823

Q8 Mathematics

P and Q together can fill a cistern with water in 12 hours. If P alone can fill the cistern with water in 48 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

A. 9

B. 4



C. 5

D. 8



Q9 Mathematics

The monthly incomes of two friends Rupesh and Manjit, are in the ratio 5 : 9, respectively, and each of them saves ₹36,000 every month. If the ratio of their monthly expenditure is 2 : 4, find the monthly income of Rupesh (in ₹).

A. 1,79,000

B. 1,81,000

C. 2,52,000

D. 1,80,000

**Q10 Mathematics**

Raman's income is ₹43,000. He saves 26% of his income. If his income increases by 20% and expenditure increases by 40%, then his savings will:

A. decrease by ₹4,133

B. increase by ₹4,131

C. increase by ₹4,133

D. decrease by ₹4,128

**Q11 Mathematics**

The amount on a sum of ₹2,000 at 15% per annum compound interest, compounded annually, in 2 years will be:

A. ₹2,667

B. ₹2,645



C. ₹2,575

D. ₹2,650

Q12 Mathematics

A trader marks an item 40% above its cost price and gives a discount of 10%. Find his profit percentage.

A. 26%



B. 24%

C. 30%

D. 20%

Q13 Mathematics

If the radius of a cylinder is halved and its height is doubled, then its volume will be _____.

A. Doubled

B. Same

C. Increased by four times

D. Halved

**Q14 Mathematics**

The mode of the observations 7, 5, 6, 3, 3, 7, 1, 7, 8, 7, 1, 4, 8, 8 and 4 is:

A. 3

B. 7



C. 5

D. 6

Q15 Mathematics

The ratio of two friends' ages is 4 : 5. Together, their ages add up to 36 years. What is the age of the older friend?

A. 22 years

B. 16 years

C. 18 years

D. 20 years

**Q16 Mathematics**

After allowing a discount of 9% on the marked price of an article, it is sold for ₹53,053. Find its marked price (in ₹).

A. 58,300



B. 58,204

C. 58,146

D. 58,132

Q17 Mathematics

A car travels 128 km in the first hour and 146 km in the second hour. What is the average speed (in km/hr) of the car for the whole journey?

A. 137



B. 145

C. 131

D. 133

Q18 Mathematics

What price should Anjali mark on a shirt which cost her ₹7,000, so as to gain 17% after allowing successive discounts of 35% and 30%?

A. ₹18,066

B. ₹18,070

C. ₹18,138

D. ₹18,000



Q19 Mathematics

A can complete one-sixth of a work in 13 days, B can complete 34% of the same work in 17 days, C can complete one-third of the work in 19 days and D can complete three-fourth of the work in 15 days. Who will be able to complete the work first?

A. A

B. B

C. C

D. D

**Q20 Mathematics**

PQRS is a trapezium with PQ parallel to SR and $\angle QRS = 60^\circ$. With R as centre and RQ as radius, an arc QAB is drawn which intersects SR in B. A is an arbitrary point on the arc QAB. If $PQ = QR = 14$ cm and $SB = 8$ cm, then find the area (in cm^2 , rounded off to the nearest integer) of the region PQABSP.

(Take $\pi = \frac{22}{7}$, and $\sqrt{3} = 1.732$)

A. 110

B. 102

C. 116

D. 96

**Q21 Mathematics**

If $\sqrt{72} + \sqrt{12} = a\sqrt{2} + b\sqrt{3}$, then what is the value of $a - b$?

A. 6

B. 8

C. 4

D. 5

**Q22 Mathematics**

If $x + y = 12$ and $xy = 32$, find the value of $x^2 + y^2$.

A. 76

B. 84

C. 88

D. 80

**Q23 Mathematics**

If $\sec \theta + \tan \theta = 4 + \sqrt{15}$, then find the value of $\sec \theta - \tan \theta$.

A. $4 - \sqrt{15}$

B. 10

C. 15

D. $4\sqrt{15}$



Q24 Mathematics

Walking at $\frac{3}{4}$ th of his normal speed from his home, Abhishek is 5 minutes late in reaching his office.

The usual time taken by him to cover the distance between his home and his office is:

A. 11 minutes

B. 15 minutes



C. 7 minutes

D. 12 minutes

Q25 Mathematics

A regular polygon has $2n$ sides. What is the angle made between two adjacent sides (in degrees)?

A. $\left(1 - \frac{1}{n}\right) \times 180^\circ$



B. $\left(1 - \frac{1}{n}\right) \times 90^\circ$

C. $\left(1 + \frac{1}{n}\right) \times 90^\circ$

D. $\left(1 + \frac{1}{n}\right) \times 180^\circ$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

One pipe can fill a tank in 5 minutes while another pipe can empty the completely filled tank in 10 minutes. If both the pipes are opened together when the tank is empty, then how many minutes will it take to fill one-half of the tank?

A. 5 minutes



B. 11 minutes

C. 6 minutes

D. 10 minutes

Q2 Mathematics

A father is three times as old as his son. After 12 years from now, he will be twice as old as his son. Find the present ages (in years) of the father and the son, respectively.

A. 35 and 11

B. 38 and 14

C. 37 and 13

D. 36 and 12



Q3 Mathematics

How many numbers between 351 and 650 are divisible by 7?

A. 43

B. 42



C. 92

D. 50

Q4 Mathematics

For 11 innings, a cricketer has an average of 71 runs. In the 12th inning, he scores 119 runs. His average score increased by _____.

A. 5

B. 13

C. 4



D. 8

Q5 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 14^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 2 : 5, then what is the difference between the measures of $\angle Q$ and $\angle P$?

A. 8° B. 3° C. 16° D. 12° 

Q6 Mathematics

A teacher is currently four times as old as one of her students. Five years ago, she was seven times as old as the same student was at that time. What is the teacher's current age (in years)?

A. 40



B. 45

C. 50

D. 35

Q7 Mathematics

The arithmetic mean of the observations 88, 99, 47, 79, 12, 79, 76, 17 and 61 is:

A. 61

B. 62



C. 52

D. 66

Q8 Mathematics

The areas of three adjacent faces of a solid cuboid are 92 cm^2 , 69 cm^2 and 75 cm^2 . What is the volume (in cm^3) of the cuboid?

A. 843

B. 617

C. 690



D. 730



Q9 Mathematics

Find a single discount (approximately) equal to three consecutive discounts of 20%, 4% and 14%.

- A. 36.60%
- B. 33.95% ✓
- C. 33.42%
- D. 33.18%

Q10 Mathematics

An agent sells a pressure cooker with a marked price of ₹8,460 at a discount of 20%. What is the selling price (in ₹) of the pressure cooker?

- A. 6,766
- B. 6,770
- C. 6,767
- D. 6,768 ✓

Q11 Mathematics

Find the simple interest (in ₹) on ₹2,000 at 7% per annum rate of interest for the period from 10 February 2023 to 24 April 2023.

- A. 27
- B. 26
- C. 28 ✓
- D. 29

Q12 Mathematics

Two engines of trains 75 km apart start towards each other at speeds of 13 km/hr and 17 km/hr, respectively. After how much time will they meet each other? (Assume the length of engine is negligible.)

- A. 150 minutes ✓
- B. 155 minutes
- C. 146 minutes
- D. 143 minutes

Q13 Mathematics

A woodcutter earns ₹500 per day and spends 30% of his earning daily. What is his daily saving (in ₹)?

- A. 355
- B. 150
- C. 350 ✓
- D. 450

Q14 Mathematics

A man buys 9 identical articles for a total of ₹16. If he sells each of them for ₹2.4, then his profit percentage will be ____%.

- A. 35 ✓
- B. 36
- C. 26.92
- D. 25.92

Q15 Mathematics

Simplify: $(3x + 2)^2$

- A. $6x^2 + 12x + 4$
- B. $9x^2 + 12x + 4$ ✓
- C. $4x^2 + 12x + 9$
- D. $9x^2 + 4x + 4$

Q16 Mathematics

A motorist travels 30 km in 50 minutes. He drives at a speed of x km/hr for the first 12 minutes, then at $2x$ km/hr for the next 22 minutes and finally at x km/hr for the remainder of the journey. Determine the value of x .

- A. 28
- B. 22
- C. 25 ✓
- D. 30

Q17 Mathematics

A and B can do a piece of work in 18 days, while A and C can do the same work in 12 days. If B and C together can complete the work in 48 days, how long will it take for A, B, and C working together to complete the work (rounded off to two decimal places)?

- A. 13.52 days
- B. 12.52 days ✓
- C. 12.07 days
- D. 12.92 days

Q18 Mathematics

If $9 : A :: A : 4$, then find the positive value of A .

- A. 7
- B. 8
- C. 6 ✓
- D. 5



Q19 Mathematics

Two cylindrical vessels have the same capacity and identical dimensions. If the radius of the first vessel is increased by 14 cm and the height of the second vessel is increased by 30 cm, the increase in capacity for both vessels is equal to $Q \text{ cm}^3$. If the actual height of each vessel is 24 cm, find the value of Q .

A. $23,025\pi$

B. $23,520\pi$ ✓

C. $23,250\pi$

D. $23,502\pi$

Q20 Mathematics

In an election, Candidate A secures 60% of the votes, Candidate B secures 30% of the votes, and Candidate C secures the remaining 10%. If the total number of votes cast in the election is 1,20,000, how many more votes did Candidate A receive than Candidate B?

A. 28,000

B. 21,000

C. 32,000

D. 36,000 ✓

Q21 Mathematics

If $\operatorname{cosec}\theta - \cot\theta = \frac{1}{11}$, and θ lies in the first quadrant, then find the value of $122 \cos\theta$.

A. 231

B. 164

C. 120 ✓

D. 214

Q22 Mathematics

1816636

A. 18

B. 6

C. 16

D. 36 ✓

Q23 Mathematics

If 649 bananas were distributed among three monkeys in the ratio $\frac{1}{2} : \frac{1}{6} : \frac{1}{4}$, how many bananas did the first monkey get?

A. 324

B. 374

C. 354 ✓

D. 344

Q24 Mathematics

If $\frac{x^4 + x^2 + 1}{x^2 + x + 1} = 3(2x + 5)$, then find the positive value of x .

A. 4 ✓

B. 2.8

C. 6

D. 3.5



If 10% of 30% of $\frac{2}{3}$ of a number is 537, find the number.

A. 27090

B. 29050

C. 28620

D. 26850



Mathematics

25 Questions • Answer Key

Q1 Mathematics

A shopkeeper buys a bag for ₹850 and sells it for ₹1,020. Find his profit percentage.

- A. 30%
- B. 40%
- C. 20%
- D. 25%



Q2 Mathematics

In a quadrilateral IJKL, $\angle I = 36^\circ$ and $\angle J = 44^\circ$. The bisectors of $\angle K$ and $\angle L$ meet at Z. What is the measure of $\angle LZK$?

- A. 40°
- B. 54°
- C. 55°
- D. 34°



Q3 Mathematics

The number of prime numbers between 472 and 486 is:

- A. 1
- B. 3
- C. 2
- D. 4



Q4 Mathematics

The arithmetic mean of the observations 94, 59, 46, 34, 15, 55, 89, 98 and 68 is:

- A. 63
- B. 67
- C. 60
- D. 62



Q5 Mathematics

The amount on a sum of ₹8,800 at 10% per annum compound interest, compounded annually, in 2 years will be:

- A. ₹11,225
- B. ₹9,757
- C. ₹10,012
- D. ₹10,648



Q6 Mathematics

A money box contains only ₹2 coins and ₹5 coins. There are 20 coins in total, and their combined value is ₹70. How many ₹2 coins are there?

- A. 10
- B. 15
- C. 5
- D. 12



Q7 Mathematics

Mohan is twice as old as Suresh. Four years ago, the sum of their ages was 40. What is the present age of Suresh?

- A. 32 years
- B. 24 years
- C. 16 years
- D. 18 years



Q8 Mathematics

An agent sells a pressure cooker with a marked price of ₹8,460 at a discount of 30%. What is the selling price (in ₹) of the pressure cooker?

- A. 6,768
- B. 5,922
- C. 6,367
- D. 6,166



Q9 Mathematics

A retailer offers the following discount schemes for buyers on an article. Which scheme will be the LEAST beneficial to the customer?

- i. A discount of 48%.
- ii. A discount of 31% followed by a discount of 44%.
- iii. Successive discounts of 32% and 21%.

- A. Scheme iii and Scheme ii
- B. Scheme i
- C. Scheme ii
- D. Scheme iii



Q10 Mathematics

Kiran spends 65% of his income. If he saves ₹42,000, then his income (in ₹) is:

- A. 27,300
- B. 1,19,000
- C. 1,20,000 ✓
- D. 1,21,000

Q11 Mathematics

A can complete a piece of work in 24 days, B in 18 days and C in 36 days. All of them started working together. After working for 4 days, A left the work. B and C continued, but B left 3 days before the completion of the work. How long (in days) did the work last?

- A. 11
- B. 12 ✓
- C. 14
- D. 13

Q12 Mathematics

₹6,129 is divided among P, Q and R in such a way that if ₹71, ₹38 and ₹20 is deducted from their respective shares, they have money in the ratio 14:3:8. Find the difference between the original shares of Q and R.

- A. ₹1,150
- B. ₹1,050
- C. ₹1,100
- D. ₹1,182 ✓

Q13 Mathematics

P and Q together can fill a cistern with water in 9 hours. If P alone can fill the cistern with water in 12 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

- A. 19
- B. 18
- C. 9 ✓
- D. 10

Q14 Mathematics

Ajay, Maya and Mohan started a business in partnership investing in the ratio of 11 : 16 : 6, respectively. At the end of the year, they earned a profit of ₹69,300, which is 70% of their total investment. How much did Maya invest (in ₹)?

- A. 47,872
- B. 47,850
- C. 48,000 ✓
- D. 48,184

Q15 Mathematics

The monthly incomes of two friends Rupesh and Manjit, are in the ratio 5 : 8, respectively, and each of them saves ₹84,000 every month. If the ratio of their monthly expenditure is 1 : 3, find the monthly income of Rupesh (in ₹).

- A. 1,68,000
- B. 1,20,000 ✓
- C. 1,21,000
- D. 1,19,000

Q16 Mathematics

Due to a water crisis, 40% of the initial population left the village and 35% of the remaining left the town to pursue a job. If presently 2340 people inhabit the village, what is the ratio of initial population to present population?

- A. 100:39 ✓
- B. 103:43
- C. 105:40
- D. 100:49

Q17 Mathematics

Two trains are running in opposite directions at speeds of 72 km/hr and 108 km/hr, respectively. The length of the first train is 150 m, and the length of the second train is 200 m. How much time will they take to cross each other?

- A. 9 seconds
- B. 7 seconds ✓
- C. 5 seconds
- D. 14 seconds



Q18 Mathematics

Two trains are travelling towards each other on parallel tracks, 9660 kilometres apart. Train A initially travels at 80 km/hr, and Train B initially travels at 60 km/hr. If Train A's speed is reduced by 10% and Train B's speed is increased by 10%, what is the ratio of the time taken for the trains to meet initially to the time taken after their speed adjustments?

A. 68:69

B. 70:69

C. 69:70



D. 69:68

Q19 Mathematics

Simplify: $\sqrt{2} + \frac{1}{\sqrt{2}} + \frac{1}{2+\sqrt{2}} - \frac{1}{2-\sqrt{2}}$

A. $3\sqrt{2}$ B. $2\sqrt{2}$ C. $\frac{1}{\sqrt{2}}$ D. $\sqrt{2}$ **Q20 Mathematics**

$$\frac{72}{96}$$

A. $\frac{2}{3}$ B. $\frac{5}{8}$ C. $\frac{3}{4}$ D. $\frac{4}{5}$ **Q21 Mathematics**

A running track consists of two straight parallel segments, each 120 m long, connected at both ends by semicircular arcs. The inner perimeter of the track is 504 m. If the track has a uniform width of 18 m throughout, find the outer perimeter (in m, rounded off to the nearest tens) of the track.

$$\left(\text{Take } \pi = \frac{22}{7} \right)$$

A. 590

B. 620



C. 610

D. 600



Q22 Mathematics

If the ratio of the mode and median of a certain data is 11:9, then find the ratio of its mean and median.

A. 8:9



B. 7:9

C. 7:8

D. 11:8

Q23 Mathematics

If $x = \sqrt{10} + 3$, then the value of $x^3 - \frac{1}{x^3}$ is:

A. 314

B. 304

C. 234



D. 284

Q24 Mathematics

If $\tan\theta = \frac{1}{2}$, then $\frac{\cos\theta - \sin\theta}{\sin\theta + \cos\theta}$ is equal to:

A. $\frac{2}{3}$

B. $\frac{2}{5}$

C. $\frac{1}{3}$



D. $\frac{1}{5}$

Q25 Mathematics

A spherical water tank has a radius of 21 metres. Calculate the volume (in m^3) of water it can hold. (Use $\pi = \frac{22}{7}$)

A. 30,800

B. 30,808

C. 38,800

D. 38,808



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The prices of articles P, Q and R are ₹280, ₹180 and ₹100, respectively. Subrata buys these articles in the ratio 3 : 4 : 5, spending a total of ₹26,780. How many articles of type Q did he buy?

A. 40

B. 84

C. 52



D. 76

Q2 Mathematics

Given $a + b + c = 15$ and $a^2 + b^2 + c^2 = 83$, find $ab + bc + ca$.

A. 71



B. 11

C. 25

D. 20

Q3 Mathematics

The average of 8 numbers is 121. If the first 7 numbers are 35, 35, 49, 83, 102, 80 and 20, then the eighth number is:

A. 567

B. 564



C. 566

D. 557

Q4 Mathematics

Two trains 259 m and 431 m long are running in opposite directions at a speed of 52 km/h and 56 km/h, respectively. They cross each other in:

A. 22 seconds

B. 23 seconds



C. 18 seconds

D. 34 seconds

Q5 Mathematics

The arithmetic mean of the observations 35, 53, 38, 89, 71, 69, 86, 40 and 41 is:

A. 66

B. 60

C. 65

D. 58



Q6 Mathematics

Which of the following numbers is divisible by both 6 and 9, but not divisible by 12?

126, 252, 72, 108

A. 126



B. 252

C. 72

D. 108

Q7 Mathematics

The total cost of 10 mangoes and 13 apples is ₹134 and the cost of 4 apples is ₹13 less than that of 15 mangoes. Then find the price (in rupees) of a mango and an apple, respectively.

A. 3, 8



B. 4, 5.60

C. 3.50, 5

D. 2, 7

Q8 Mathematics

What is the least number which should be added to 539, so that the number obtained is exactly divisible by 10, 15 and 3?

A. 3

B. 1



C. 2

D. 5



Q9 Mathematics

A person sells an article for ₹3,450 and earns a profit of 15%. Find the cost price of the article.

- A. ₹2,980
- B. ₹3,000
- C. ₹2,860
- D. ₹2,900

**Q10 Mathematics**

In a quadrilateral MNST, $\angle M = 63^\circ$ and $\angle N = 99^\circ$. The bisectors of $\angle S$ and $\angle T$ meet at O. What is the measure of $\angle TOS$?

- A. 81°
- B. 94°
- C. 73°
- D. 87°

**Q11 Mathematics**

A, B and C can do a piece of work in 3, 15 and 10 days, respectively. How long (in days) will they take to do twice the same work, working together?

- A. 5
- B. 8
- C. 12
- D. 4

**Q12 Mathematics**

The salaries of X, Y and Z are in the ratio 4:18:21. If the increments of 90%, 90% and 40% are allowed, respectively, in their salaries, then what will be the new ratio of their salaries?

- A. 41:173:154
- B. 36:172:149
- C. 38:171:147
- D. 35:172:153

**Q13 Mathematics**

In an election between two candidates, one candidate secured 42% of the votes and was defeated by the other candidate with a margin of 416 votes. If all the votes cast were valid, what was the total number of votes polled?

- A. 2590
- B. 2615
- C. 2595
- D. 2600

**Q14 Mathematics**

The price of fuel decreases by 40%, 25% and 45% in three successive months, but increases by 55% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price? (Round off your answer to two decimal places)

- A. Increases by 67.66%
- B. Decreases by 61.64%
- C. Decreases by 63.14%
- D. Increases by 64.75%

**Q15 Mathematics**

An agent sells a pan with a marked price of ₹6,420 at a discount of 30%. What is the selling price (in ₹) of the pan?

- A. 4,935
- B. 5,136
- C. 4,494
- D. 4,449

**Q16 Mathematics**

A shopkeeper offers the following four schemes:

- A) Two successive discounts of 39% and 8%
- B) Buy 8, get 4 free
- C) A single discount of 16%
- D) Two successive discounts of 38% and 34%

Which scheme is best for the shopkeeper?

- A. B
- B. A
- C. C
- D. D

**Q17 Mathematics**

Saloni's age is 7 years more than twice her sister Emma's age. If the sum of their ages is 25 years, how old is Emma?

- A. 8 years
- B. 5 years
- C. 6 years
- D. 7 years



Q18 Mathematics

The amount on a sum of ₹2,000 at 5% per annum compound interest, compounded annually, in 2 years will be:

A. ₹3,039

B. ₹2,205



C. ₹2,880

D. ₹2,886

Q19 Mathematics

A park, in the shape of a quadrilateral ABCD, has $\angle C = 90^\circ$, $AB = 36$ m, $BC = 42$ m, $CD = 40$ m and $AD = 36$ m. What is the area (in m^2 , rounded off to 1 decimal place) of the park?

A. 1458.6



B. 1548.6

C. 1584.6

D. 1485.6

Q20 Mathematics

Two pipes can fill a cistern, individually, in 96 min and 64 min, respectively. There is a pipe located at the bottom of the cistern to empty it. If all the three pipes are opened simultaneously, then the empty cistern gets filled in 48 min. How long will the pipe at the bottom of the tank take to empty the completely filled cistern if no other pipe is then open?

A. 201 min

B. 207 min

C. 175 min

D. 192 min

**Q21 Mathematics**

In a test, B got 50 marks while A got 75 marks, out of 120 maximum marks. What percentage of A's marks was B's marks? (Round off your answer to two decimal places)

A. 150.33%

B. 120.73%

C. 66.67%



D. 62.50%

Q22 Mathematics

Simplify $((3^2)^6)^5$ and express it as a power of 9. What is the exponent of 9?

A. 90

B. 60

C. 30



D. 10

Q23 Mathematics

A man has to cover a distance of 168 km in 18 hours. If he covers two — thirds of this distance in $\frac{4}{6}$ th of the time, then what should be his speed (in km/hr, rounded off to one decimal place) to cover the remaining distance in the time left?

A. 4.7



B. 8.8

C. 4.6

D. 8.2



Q24 Mathematics

Find the value of $\frac{\sin 30^\circ + \cos 60^\circ}{\cot 45^\circ}$:

A. $\frac{1}{2}$

B. 0

C. 2

D. 1

**Q25** Mathematics

If a solid sphere of radius 14 cm is moulded into 8 spherical solid balls of equal radius, then find the surface area of each ball.

$\left(\text{Use } \pi = \frac{22}{7} \right)$

A. 650 cm²

B. 616 cm²

C. 600 cm²

D. 598 cm²



Mathematics

25 Questions • Answer Key

Q1 Mathematics

In a bag containing red, green and pink tokens, the ratio of red to green tokens was 15 : 19 while the ratio of pink to red tokens was 17 : 2. What was the ratio of green to pink tokens?

- A. 41:260
- B. 39:259
- C. 37:257
- D. 38:255



Q2 Mathematics

The largest four-digit number which, when divided by 14, 9 and 6, leaves remainder 2 in each case is:

- A. 9956
- B. 9998
- C. 9984
- D. 9948



Q3 Mathematics

When the price of a book is reduced by 16%, its sale increases by 80%. What is the net per cent increment in the revenue?

- A. 50.6%
- B. 49.2%
- C. 48.8%
- D. 51.2%



Q4 Mathematics

Roshan and Anshu together invested ₹13,500 in a business. At the end of the year, out of a total profit of ₹9,000, Roshan's share was ₹1,300. What was Roshan's investment?

- A. ₹2,295
- B. ₹1,950
- C. ₹1,565
- D. ₹1,765



Q5 Mathematics

The ratio of the speeds of two trucks is 5 : 4. The time taken by the faster truck to cover a distance of 200 km is 2 hours less than the other. Find the speed of the slower truck.

- A. 24 km/hr
- B. 26 km/hr
- C. 20 km/hr
- D. 17 km/hr



Q6 Mathematics

In a zoo, there are 32 ducks, 41 sheep, 7 horses and some crows. If the total number of feet is 211 more than the number of heads, find the number of crows.

- A. 21
- B. 35
- C. 30
- D. 43



Q7 Mathematics

Two banks, A and B, offered loans at 3.5% and 7.5% per annum, respectively. Mohan borrowed an amount of ₹2,60,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Mohan after 2 years.

- A. 21,800
- B. 22,300
- C. 20,300
- D. 20,800



Q8 Mathematics

The average of the first 9 multiples of 3 is:

- A. 15
- B. 13.5
- C. 9
- D. 3



Q9 Mathematics

A trader marked his goods 35% above its cost price. He then gave a discount of 15%. Find his profit percentage.

A. 14.75% ☒

B. 20%

C. 16.5%

D. 15.25%

Q10 Mathematics

Which of the following options is NOT true about triangles?

A. For a given area, the equilateral triangle has the least perimeter.

B. If the largest side of a triangle is 4 units, then its area is less than 8 square units.

C. There are right-angled triangles with three consecutive natural numbers as lengths of its sides.

D. An isosceles right-angled triangle with area 50 square units has one side with length 8 units. ☒

Q11 Mathematics

An article was bought for ₹4,000. Its price was marked up by 40%. Thereafter, it was sold at a discount of 20% on the marked price. What was the per cent profit on the transaction?

A. 12% ☒

B. 14%

C. 10%

D. 11%

Q12 Mathematics

A and B working together can do a piece of work in 3 days. B alone can do the same work in 6 days. How long (in days) will A alone take to do double the work?

A. 6

B. 12 ☒

C. 15

D. 13

Q13 Mathematics

Raman's income is ₹10,200. He saves 30% of his income. If his income increases by 14% and expenditure increases by 40%, then his savings will:

A. decrease by ₹1,427

B. decrease by ₹1,428 ☒

C. increase by ₹1,430

D. increase by ₹1,429

Q14 Mathematics

The present ages of P and Q are in the ratio 9 : 8 and after 2 years from now, they will be in the ratio 10 : 9. The present age of P is:

A. 18 years ☒

B. 8 years

C. 9 years

D. 16 years

Q15 Mathematics

The inradius of a triangle is 8 cm and the sum of the lengths of its sides is 60 cm. Find the area (in cm^2) of the triangle.

A. 280

B. 480

C. 260

D. 240 ☒

Q16 Mathematics

In an election between two candidates, 20% of the total votes were declared invalid. The winning candidate received 40% of the valid votes and secured 1,60,000 more valid votes than the runner-up, who received 32% of the valid votes. Find the total number of valid votes.

A. 20,00,000 ☒

B. 10,00,000

C. 12,00,000

D. 25,00,000

Q17 Mathematics

Simplify the given expression.

$$12 + \{6 \times 27 \div 3 + 2\} - (16 \div 8) \times 5$$

A. 55

B. 58 ☒

C. 57

D. 56

Q18 Mathematics

If the volume of a cylinder is 1848 cm^3 , and its height is 12 cm, find the curved surface area (in cm^2).

A. 528 ☒

B. 432

C. 476

D. 560



Q19 Mathematics

A dealer allowed a 50% discount on an article and still managed a 71% profit. Find the ratio of the cost price to the listed price.

A. 53 : 173

B. 47 : 174

C. 50 : 171 ☒

D. 49 : 173

Q20 Mathematics

A jeep travels 80 km at the speed of 40 km/hr and the next 36 km at the speed of 18 km/hr. What is its average speed (in km/hr)?

A. 33

B. 29 ☒

C. 23

D. 35

Q21 Mathematics

A typist takes 40 minutes to type 2 pages. How many pages will he type in 80 minutes?

A. 3

B. 2

C. 4 ☒

D. 1

Q22 Mathematics

The average age of 24 students of a class is 46 years. If the age of the teacher is also included, the average age of the whole group becomes 47 years. The age (in years) of the teacher is:

A. 73

B. 71 ☒

C. 74

D. 70

Q23 Mathematics

4 men can complete a piece of work in 8 days while 2 women can do it in 10 days. In how many days can 5 women and 8 men complete it?

A. 2 ☒

B. 7

C. 6

D. 4

Q24 Mathematics

The value of the expression $\frac{8}{4.5^3 - 0.5^3} \times (4.5 \times 4.5 + 0.25 + 4.5 \times 0.5)$ is _____.

A. 1

B. 2 ☒

C. 8

D. 4

Q25 Mathematics

What is the value of $\frac{1 + \tan^2 \theta}{1 + \cot^2 \theta}$?

A. $\tan^2 \theta$ ☒

B. $\cot^2 \theta$

C. $\operatorname{cosec}^2 \theta$

D. $\tan \theta$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

If the perimeter of a rectangle is 500 cm and its length is 1.5 times its breadth, then find the area of the rectangle (in cm^2).

A. 12,500

B. 16,400

C. 15,000

D. 22,500

Q2 Mathematics

An article is marked at ₹2,000. A shopkeeper offers a discount of 25% on the article. What is the selling price of the article after the discount?

A. ₹1,400

B. ₹1,600

C. ₹1,500

D. ₹1,200

Q3 Mathematics

Poonam, Qasim and Rina invest ₹1,92,000, ₹1,20,000, and ₹88,000, respectively to start a business. If the profit at the end of the year is ₹4,93,600, then what is the share of Rina in the profit?

A. ₹1,08,594

B. ₹1,08,595

C. ₹1,08,592

D. ₹1,08,591

Q4 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 24^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 5 : 7, then what is the difference between the measures of $\angle Q$ and $\angle P$?

A. 13° B. 16° C. 8° D. 12°

Q5 Mathematics

Kanchan spends 60% of her income. If she saves ₹90,000, then her income (in ₹) is:

A. 2,25,000

B. 54,000

C. 2,26,000

D. 2,24,000

Q6 Mathematics

P and Q together can fill a cistern with water in 6 hours. If P alone can fill the cistern with water in 24 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

A. 2

B. 4

C. 5

D. 3

Q7 Mathematics

A man buys a car for ₹3,00,000, spends ₹30,000 on modifications and sells it at 5% loss. What is the selling price?

A. ₹3,13,500

B. ₹3,15,500

C. ₹3,17,500

D. ₹3,11,500

Q8 Mathematics

The monthly incomes of two friends Chetan and Vipul are in the ratio 5 : 9 respectively and each of them saves ₹45,000 every month. If the ratio of their monthly expenditure is 2 : 4, then find the monthly income of Chetan (in ₹).

A. 2,26,000

B. 3,15,000

C. 2,24,000

D. 2,25,000



Q9 Mathematics

The value of $3\tan^2x - 3\sec^2x + 4$ is equal to:

- A. 3
- B. 1
- C. 2
- D. 0

Q10 Mathematics

What is the smallest value of a in the number $a3724$, so that the number formed is divisible by 3?

- A. 1
- B. 4
- C. 2
- D. 3

Q11 Mathematics

Pipe A can fill a tank in 6 minutes, while pipe B can empty the completely filled tank in 12 minutes. Initially, pipe A is opened and after 2 minutes pipe B is also opened. In how much time (in minutes) will the remaining tank be filled completely?

- A. 19
- B. 8
- C. 2
- D. 9

Q12 Mathematics

A father is currently four times as old as his son. Eighteen years from now, the father will be twice as old as his son. What is the father's present age?

- A. 45 years
- B. 40 years
- C. 49 years
- D. 36 years

Q13 Mathematics

A packaging company requires cardboard for two sizes of rectangular boxes. The larger box measures $30\text{ cm} \times 25\text{ cm} \times 10\text{ cm}$, and the smaller one measures $18\text{ cm} \times 12\text{ cm} \times 10\text{ cm}$. An additional 6% of the total surface area is needed for overlaps. If cardboard costs ₹45 per $10,000\text{ cm}^2$, calculate the total cost (in ₹, rounded off to the nearest hundreds) of cardboard needed to produce 400 big boxes and 500 small boxes.

- A. 7,400
- B. 7,500
- C. 7,600
- D. 7,200

Q14 Mathematics

A car travels 209 km in the first hour and 83 km in the second hour. What is the average speed (in km/hr) of the car for the whole journey?

- A. 142
- B. 150
- C. 141
- D. 146

Q15 Mathematics

The mode and median of a data are 27.6 and 28, respectively. What is the mean of the data? (Use empirical formula.)

- A. 31.9
- B. 32.7
- C. 28.2
- D. 20.6

Q16 Mathematics

The amount on a sum of ₹3,600 at 10% per annum compound interest, compounded annually, in 2 years will be:

- A. ₹4,356
- B. ₹3,863
- C. ₹4,389
- D. ₹5,217



Q17 Mathematics

If the radius of the base of a right circular cylinder is decreased by 28% and its height is increased by 114%, then what is the percentage increase (rounded off to the nearest integer) in its volume?

A. 11%



B. 13%

C. 21%

D. 1%

Q18 Mathematics

₹1,386 is divided among Vinod, Kajal, and Arpit in such a way that if ₹7, ₹41, and ₹12 be deducted from their respective shares, they have money in the ratio 4 : 10 : 12. Find the actual share of Kajal.

A. ₹610

B. ₹551



C. ₹460

D. ₹410

Q19 Mathematics

The cost of a washing machine is 26% less than the cost of a TV. If the cost of the washing machine increases by 86% and that of the TV decreases by 38%, then what is the percentage change in the total cost of 8 washing machines and 4 TVs?

A. Increase by 36%



B. Increase by 38%

C. Decrease by 29%

D. Decrease by 30%

Q20 Mathematics

The marked price of a painting was ₹3,800, but the shopkeeper offered a double discount in a successive manner of 22% and 25%. Ultimately for how much did he sell the item?

A. ₹2,236

B. ₹2,059

C. ₹2,223



D. ₹2,302

Q21 Mathematics

The mode of the observations 1, 1, 8, 3, 1, 3, 4, 3, 9, 9, 4, 3, 2, 2 and 6 is:

A. 8

B. 5

C. 3



D. 1

Q22 Mathematics

Solve:
$$\frac{(112 + 99)^2 + (112 - 99)^2}{112 \times 112 + 99 \times 99}$$

A. 4

B. 2



C. 3

D. 1



Q23 Mathematics

Simplify the following expression for $k = 2$ and $m = 1$.

$$\frac{8^k \times 18^m \times 10^{k+m}}{4^{k+m} \times 27^m \times 5^{2k}}$$

A. $1\frac{7}{15}$

B. $1\frac{4}{15}$

C. $1\frac{8}{15}$

D. $1\frac{1}{15}$

**Q24** Mathematics

What is the value of $4.05 \times \left(\frac{24\frac{3}{5} + 3.2}{8.34} \right)$?

A. 15.3

B. 13.5

C. 15.4

D. 14,5

**Q25** Mathematics

Walking at $\frac{5}{6}$ of his normal speed from his home, Tarun is 16 minutes late in reaching his office.

The usual time taken by him to cover the distance between his home and his office is:

A. 80 minutes

B. 86 minutes

C. 70 minutes

D. 72 minutes



Mathematics

25 Questions • Answer Key

Q1 Mathematics

A man receives ₹7,700 per month as salary. He saves 25% of his salary every month. His expenditure per month is:

A. ₹5,775



B. ₹5,832

C. ₹5,856

D. ₹5,761

Q2 Mathematics

A pen is purchased for ₹40 and sold for ₹50. Find the profit percentage.

A. 35%

B. 22%

C. 20%

D. 25%



Q3 Mathematics

If $a^2 - b^2 = 21$ and $a - b = 3$, what is $a + b$?

A. 7



B. 6

C. 8

D. 5

Q4 Mathematics

In an examination there are 150 questions and 4 marks are given for every correct answer and 1 mark is deducted for every wrong answer. A candidate attempted all 150 questions and scored 250 marks. Find the number of questions he answered correctly.

A. 80



B. 60

C. 70

D. 50

Q5 Mathematics

A building is at a distance of 108 feet from point A on the ground. The angle of elevation of the top of the building from point A is θ . If $\tan \theta = 4/3$, then find the height (in feet) of the building.

A. 140

B. 138

C. 135

D. 144



Q6 Mathematics

The average of the marks of 12 students in a class is 36. If the marks of each student are doubled, find the new average?

A. 36

B. 24

C. 12

D. 72



Q7 Mathematics

Dolly goes to a shop to purchase a toy bus priced at ₹5,300. She is offered 4 discount options by the shopkeeper. Which of the following options should she opt for to gain maximum advantage of the discount offered?

A. Two successive discounts of 21% each

B. Two successive discounts of 7% and 7%

C. Two successive discounts of 43% and 38%



D. Single discount of 47%

Q8 Mathematics

The monthly incomes of two friends Manjit and Keshav are in the ratio 5 : 9 respectively and each of them saves ₹48,000 every month. If the ratio of their monthly expenditure is 1 : 3, then find the monthly income of Manjit (in ₹).

A. 80,000



B. 1,12,000

C. 79,000

D. 81,000



Q9 Mathematics

The cost price of a whiteboard is ₹2,800. The shopkeeper gave 87% of discount on the cost price. What is the selling price (in ₹)?

A. 526

B. 399

C. 316

D. 364

**Q10 Mathematics**

The number of prime numbers between 308 and 320 is:

A. 7

B. 1

C. 3



D. 6

Q11 Mathematics

The sum of two numbers is 50 and their LCM is 429. The two numbers are:

A. 4, 46

B. 11, 39



C. 16, 34

D. 9, 41

Q12 Mathematics

A solid metallic cylinder of radius 4 cm and height 6 cm is melted and recast into smaller solid cylinders of radius 2 cm and height 3 cm. Find the ratio of the total surface areas of one small cylinder to the original cylinder.

A. 1 : 8

B. 1 : 4



C. 1 : 3

D. 2 : 5

Q13 Mathematics

The amount on a sum of ₹7,800 at 20% per annum compound interest, compounded annually, in 2 years will be:

A. ₹10,914

B. ₹11,730

C. ₹11,232



D. ₹10,795

Q14 Mathematics

The price of fuel decreases by 30%, 40% and 45% in three successive months, but increases by 65% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price? (Round off your answer to two decimal places.)

A. Decreases by 63.43%

B. Decreases by 61.89%



C. Increases by 66.65%

D. Increases by 67.69%

Q15 Mathematics

If the fourth proportion to 17, X and 7 is 91, then find the value of X.

A. 218

B. 222

C. 221



D. 219

Q16 Mathematics

A, B and C can do a piece of work in 3, 2 and 6 days, respectively. How long (in days) will they take to do twice the same work, working together?

A. 3

B. 6

C. 2



D. 4

Q17 Mathematics

Two trains are running on parallel tracks towards each other. Train A is 250 meters long and is moving at a speed of 90 km/h. Train B is 150 meters long and is moving at a speed of 60 km/h. How much time (rounded off to the nearest seconds) will it take for Train A to completely pass Train B?

A. 12 seconds

B. 20 seconds

C. 10 seconds



D. 15 seconds



Q18 Mathematics

The sides of a triangle are 90 cm, 11 cm and 97 cm. What is the length of its altitude corresponding to the side with the length of 11 cm?

A. 97 cm

B. 72 cm



C. 105 cm

D. 31 cm

Q19 Mathematics

Three solid metallic cubes of sides 2 cm, 12 cm and 16 cm are melted to form a new cube. Find the surface area of the cube so formed.

A. 944 cm²

B. 1944 cm²



C. 1744 cm²

D. 1644 cm²

Q20 Mathematics

₹8,413 is divided among S, B, and C in such a way that if ₹32, ₹60, and ₹71 are deducted from their respective shares, they have money in the ratio 5:11:14. Find the difference between the actual shares of B and C.

A. ₹775

B. ₹836



C. ₹925

D. ₹675

Q21 Mathematics

A girl goes to school at a speed of 20 km/h. She comes back with a speed of 12 km/h. Find her average speed for the whole journey.

A. 16 km/h

B. 15 km/h



C. 17 km/h

D. 14 km/h

Q22 Mathematics

The average age of 30 students of a class is 12 years. If the age of the teacher is also included, the average age of the whole group becomes 13 years. The age (in years) of the teacher is:

A. 44

B. 43



C. 45

D. 46

Q23 Mathematics

The present ages of Rohit and his father are in the ratio 2 : 5. Four years from now, the ratio of their ages will become 12 : 27. What was the father's age (in years) five years ago from now?

A. 48

B. 45



C. 52

D. 50

Q24 Mathematics

Pipe A can fill a tank alone in 6 hours, pipe B can fill it in 9 hours, and pipe C can empty the full tank in 12 hours. If all three pipes are initially opened and after 1.5 hours, pipe C is discovered to be leaking and immediately closed, and if the work done by pipe C during the initial 1.5 hours is $\frac{x}{7}\%$ of the work done by all the three pipes in the initial 1.5 hours, then the number of factors of x is:

A. 21

B. 12

C. 18



D. 15



Q25 Mathematics

Evaluate: $\sqrt{250 + \sqrt{19 + \sqrt{289}}} + \sqrt{620 + \sqrt{11 + \sqrt{196}}}$

A. 41



B. 25

C. 45

D. 31



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Mathematics

25 Questions • Answer Key

Q1 Mathematics

The difference between the ages of Girish and Rohan is 10 years. 15 years ago, Girish was twice as old as Rohan. Find Girish's present age.

A. 35 years



B. 39 years

C. 32 years

D. 37 years

Q2 Mathematics

Find the simple interest (in ₹) on ₹2,000 at 7% per annum rate of interest for the period from 11 February 2023 to 25 April 2023.

A. 26

B. 27

C. 29

D. 28



Q3 Mathematics

A train covers a distance of 270 km in 4.5 hours. What is the speed of the train?

A. 70 km/h

B. 55 km/h

C. 60 km/h



D. 65 km/h

Q4 Mathematics

If an item is bought for ₹800 and sold for ₹740, what is the loss percentage?

A. 6.5%

B. 9.5%

C. 7.5%



D. 8.5%

Q5 Mathematics

Find the HCF of 44, 110 and 198.

A. 22



B. 44

C. 33

D. 11

Q6 Mathematics

In a quadrilateral QRST, $\angle Q = 96^\circ$ and $\angle R = 43^\circ$. The bisectors of $\angle S$ and $\angle T$ meet at E. What is the measure of $\angle TES$?

A. 56° B. 78° C. 69.5° D. 70.5°

Q7 Mathematics

One pipe can fill a tank in 6 minutes, while another pipe can empty the completely filled tank in 12 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-half of the tank?

A. 7

B. 12

C. 6



D. 13

Q8 Mathematics

If the fourth proportional to P, 15 and 20 is 1, then find the value of P.

A. 302

B. 300



C. 297

D. 298

Q9 Mathematics

102 men have provisions for 30 weeks. They are joined by 78 men. How long (in weeks) will the provisions last?

A. 17



B. 15

C. 21

D. 19



Q10 Mathematics

In a test, B got 50 marks while A got 75 marks, out of 85 maximum marks. What percentage of A's marks was B's marks? (Round off the answer to two decimal places.)

A. 88.23%

B. 85.79%

C. 66.67%

D. 150.28%

Q11 Mathematics

The arithmetic mean of the observations 52, 40, 76, 99, 52, 27, 80, 27 and 24 is:

A. 47

B. 53

C. 60

D. 56

Q12 Mathematics

The price of fuel decreases by 50%, 40% and 20% in three successive months, but increases by 50% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price?

A. Decreases by 64%

B. Increases by 65%

C. Increases by 61%

D. Decreases by 62%

Q13 Mathematics

An agent sells a turbo cooker with a marked price of ₹6,370 at a discount of 60%. What is the selling price (in ₹) of the turbo cooker?

A. 2,549

B. 2,547

C. 2,546

D. 2,548

Q14 Mathematics

Find a single discount (approximately) equal to three consecutive discounts of 11%, 12% and 2%.

A. 23.25%

B. 23.97%

C. 25.59%

D. 20.49%

Q15 Mathematics

Raju has ₹50 more than Riya. Together they have ₹350. How much money does Raju have?

A. ₹200

B. ₹250

C. ₹225

D. ₹150

Q16 Mathematics

₹10,511 is divided among X, Y, and Z in such a way that if ₹87, ₹42, and ₹12 be deducted from their respective shares, they have money in the ratio 6 : 16 : 12. Find the difference between the Y's and Z's original shares.

A. ₹1,320

B. ₹1,120

C. ₹1,370

D. ₹1,250

Q17 Mathematics

The mean and the mode of a set of data are 86.7 and 51.3, respectively. Find the median of the data, using the empirical formula.

A. 74.9

B. 74

C. 76.2

D. 75.8



Q18 Mathematics

Two pipes, A and B, can fill a cistern in 6 hours and 8 hours, respectively. Pipe C can empty the cistern in 10 hours. Initially, pipes A and B are opened together to fill the cistern for 3 hours. After 3 hours, pipe A is closed, and pipes B and C are opened together. By what percentage was the time taken by pipes B and C to fill the remaining part of the cistern greater than the time taken by pipes A and B to fill it in the first 3 hours?

A. $\frac{150}{3}\%$

B. $\frac{50}{3}\%$

C. $\frac{200}{3}\%$ ✓

D. $\frac{100}{3}\%$

Q19 Mathematics

A student simplifies the expression: 0.25 raised to the power 6, divided by 0.125 squared, and then multiplied by 0.5 raised to the power 4. She writes the final answer in the form 0.5^{x+3} . What value of x will make both sides equal?

A. 4

B. 7 ✓

C. 10

D. 6

Q20 Mathematics

If $a + b + c = 0$, then the value of $(a^3 + b^3 + c^3)^2$ is:

A. $9a^2b^2c^2$ ✓

B. $9abc$

C. $6a^2b^2c^2$

D. $3a^2b^2c^2$

Q21 Mathematics

Walking at $\frac{5}{7}$ th of his normal speed from his home, Shahid is 22 minutes late in reaching his office.

The usual time taken by him to cover the distance between his home and his office is:

A. 48 minutes

B. 51 minutes

C. 61 minutes

D. 55 minutes ✓



Q22 Mathematics

If 40% of 50% of $\frac{1}{2}$ of a number is 900, find the number.

A. 9000



B. 11490

C. 12730

D. 8410

Q23 Mathematics

A sphere is lowered into water which is filled up to the brim in a conical vessel of radius 12 cm and height 16 cm. The size of the sphere is such that when it touches the sides of the cone, the sphere is just immersed into the cone. Find the ratio of the volume of water that has overflowed to the volume of water left in the cone.

(Use $\pi = \frac{22}{7}$)

A. 2 : 7

B. 3 : 5



C. 5 : 7

D. 4 : 5

Q24 Mathematics

The base diameter of a closed cylinder is 24 ft and height is 9 ft. Find the total surface area of the cylinder.

(Use $\pi = \frac{22}{7}$)

A. 1594 ft²

B. 1584 ft²



C. 1564 ft²

D. 1574 ft²

Q25 Mathematics

If $\tan \theta = \frac{1-p^2}{2p}$ and θ is an acute angle, find the value of $\sin \theta$.

A. $\frac{1-p^2}{1+p^2}$



B. $\frac{2p}{1+p^2}$

C. $\frac{1+p^2}{1-p^2}$

D. $\frac{1+p^2}{2p}$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The average age of 39 students of a class is 27 years. If the age of the teacher is also included, the average age of the whole group becomes 28 years. The age (in years) of the teacher is:

- A. 68
- B. 70
- C. 67
- D. 69



Q2 Mathematics

A girl goes to school at a speed of 9 km/hr. She comes back with a speed of 45 km/hr. Find her average speed for the whole journey.

- A. 7 km/hr
- B. 20 km/hr
- C. 22 km/hr
- D. 15 km/hr



Q3 Mathematics

Find the simple interest (in ₹) on ₹2,000 at 7% per annum rate of interest for the period from 6 February 2023 to 20 April 2023.

- A. 26
- B. 28
- C. 27
- D. 29



Q4 Mathematics

A, B and C can do a piece of work in 2, 24 and 8 days, respectively. How long (in days) will they take to do twice the same work, working together?

- A. 9
- B. 4
- C. 3
- D. 6



Q5 Mathematics

If $2x + 3y = 8$ and $4x^2 + 9y^2 = 32$, find the value of $8x^3 + 27y^3$.

- A. 112
- B. 142
- C. 128
- D. 106



Q6 Mathematics

A and B together can complete a piece of work in 12 days, B and C together can do it in 15 days, and C and A together can finish it in 20 days. Find the ratio of the number of days taken by B and C to complete the work individually.

- A. 1:3
- B. 3:5
- C. 5:7
- D. 2:3



Q7 Mathematics

The volume (in m^3) of a cube, each edge of which is 45 m, is:

- A. 91128
- B. 91321
- C. 91125
- D. 91057



Q8 Mathematics

What is the HCF of 32, 28, and 24?

- A. 2
- B. 4
- C. 8
- D. 6



Q9 Mathematics

The fourth proportion to 24, 3 and 16 is the same as the third proportion to A and 20. What is the value of A?

- A. 200
- B. 199
- C. 202
- D. 201



Q10 Mathematics

Find the sum of the squares of x and y , given that the number $83y547x$ is divisible by 72.

- A. 23
- B. 13
- C. 43
- D. 53

**Q11 Mathematics**

The interior angle of a regular polygon is 156° . How many sides does this polygon have?

- A. 12
- B. 15
- C. 14
- D. 13

**Q12 Mathematics**

A dealer allowed a 65% discount on an article and was still able to manage an 82% profit. Find the ratio of the cost price to the listed price.

- A. 6 : 29
- B. 7 : 32
- C. 5 : 26
- D. 2 : 33

**Q13 Mathematics**

The average of 13 numbers is 92. If the first 7 numbers are 30, 32, 46, 81, 110, 73 and 20, then what will be the average of the remaining numbers?

- A. 135
- B. 139
- C. 131
- D. 134

**Q14 Mathematics**

If the marked price of an article is ₹2,400 and the discount is 16%, then the selling price of the article is:

- A. ₹2,166
- B. ₹2,060
- C. ₹2,016
- D. ₹2,216

**Q15 Mathematics**

The price of fuel decreases by 50%, 30% and 50% in three successive months, but increases by 65% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price? (Rounded off to two decimal places)

- A. Decreases by 71.13%
- B. Decreases by 75.87%
- C. Increases by 67.43%
- D. Increases by 72.43%

**Q16 Mathematics**

₹2,037 is divided among Vikas, Tina, and Sumit in such a way that if ₹23, ₹42, and ₹52 are deducted from their respective shares, they have money in the ratio 14:19:15. Find the actual share of Tina.

- A. ₹660
- B. ₹910
- C. ₹802
- D. ₹610

**Q17 Mathematics**

At a stationery shop, the total cost of 2 red pens and 3 blue pens is ₹78. On the other hand, the total cost of 3 red pens and 2 blue pens is ₹72. What is the combined cost of one red pen and one blue pen?

- A. ₹26
- B. ₹33
- C. ₹36
- D. ₹30

**Q18 Mathematics**

The sum of the present ages of a mother and daughter is 42 years. After 5 years, the mother will be 3 times as old as her daughter at that time. Find the ratio of the daughter's present age to the mother's age after 4 years.

- A. 6 : 19
- B. 6 : 17
- C. 4 : 17
- D. 4 : 19



Q19 Mathematics

A dealer incurs a loss of 5% if he sells an article for ₹1805. At what price must he sell the article so as to gain 5% on that article?

- A. ₹2005
- B. ₹2105
- C. ₹1985
- D. ₹1995

**Q20 Mathematics**

If 20% of 10% of $\frac{3}{4}$ of a number is 882, find the number.

- A. 59780
- B. 62560
- C. 61960
- D. 58800

**Q21 Mathematics**

The average speed of a car running at 70 km/hr for 1 hour and 'p' km/hr for $1\frac{1}{2}$ hours is 52 km/hr. Find the value of p.

- A. 52.5
- B. 57.5
- C. 60
- D. 40

**Q22 Mathematics**

Find the value of $\left\{\left(\frac{1}{3}\right)^{-2} - \left(\frac{1}{2}\right)^{-3}\right\} \div \left(\frac{1}{4}\right)^{-2} + \left\{\left(\frac{-3}{2}\right)^4 \times \left(\frac{5}{3}\right)^4\right\}$.

- A. $\frac{402}{11}$
- B. $\frac{125}{3}$
- C. $\frac{313}{8}$
- D. $\frac{208}{7}$



Q23 Mathematics

If $\sin \theta = \frac{3}{5}$, find the value of $\cos \theta$. (θ is in the first quadrant)

A. $\frac{4}{5}$



B. $\frac{5}{4}$

C. $\frac{3}{5}$

D. $\frac{5}{6}$

Q24 Mathematics

A hollow cylindrical pipe has an outer radius of 7 cm and an inner radius of 5 cm. If the pipe is 42 cm long and made of metal with a density of 5 g/cm³, what is the mass of the pipe?

(Use $\pi = \frac{22}{7}$ and $\text{Density} = \frac{\text{Mass}}{\text{Volume}}$)

A. 15.98 kg

B. 15.84 kg



C. 15.72 kg

D. 15.56 kg

Q25 Mathematics

$\frac{1}{30}$ is what percentage of $\frac{2}{70}$? (Round off the answer to two decimal places.)

A. 126.67%

B. 233.33%

C. 116.67%



D. 131.67%



Mathematics

25 Questions • Answer Key

Q1 Mathematics

A grocer marked his goods at 80% above their cost price and sold them at a discount of X%. If he gained 8% profit, then find the value of X.

A. 38

B. 37

C. 41

D. 40



Q2 Mathematics

Find the simple interest (in ₹) on ₹2,000 at 7% per annum rate of interest for the period from 4 February 2023 to 18 April 2023.

A. 29

B. 27

C. 26

D. 28



Q3 Mathematics

Two trains are running in opposite directions at the same speed. If the length of each train is 968 m and they cross each other in 22 seconds, then what is the speed of each train?

A. 35 m/s

B. 44 m/s



C. 38 m/s

D. 48 m/s

Q4 Mathematics

For 12 innings, a cricketer has an average of 52 runs. In the 13th inning, he scores 183 runs. His average score increased by _____. (Round off the answer to the nearest whole number.)

A. 10



B. 7

C. 18

D. 16

Q5 Mathematics

A teacher is currently four times as old as one of her students. Five years ago, she was seven times as old as the same student was at that time. What is the teacher's current age (in years)?

A. 35

B. 40



C. 50

D. 45

Q6 Mathematics

P and Q together can fill a cistern with water in 12 hours. If P alone can fill the cistern with water in 30 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

A. 5



B. 6

C. 11

D. 10

Q7 Mathematics

If $x - y = 3$ and $xy = 18$, what is $x^2 - y^2$?

A. 20

B. 25

C. 22

D. 27



Q8 Mathematics

If the cost of painting the whole surface area of a cubical structure, at the rate of 23 paise per cm^2 , is ₹1,006.02, then find the volume of the cubical structure (in cm^3).

A. 19,676

B. 19,683



C. 19,688

D. 19,691



Q9 Mathematics

If 20% of a number is added to 60, then the result is the same number. 70% of the same number is:

A. 52.5



B. 82.5

C. 62.5

D. 72.5

Q10 Mathematics

After allowing a discount of 54% on the marked price of an article, it is sold for ₹29,946. Find its marked price (in ₹).

A. 65,100



B. 65,322

C. 64,998

D. 65,144

Q11 Mathematics

Which of the following numbers is divisible by 3?

A. 245

B. 123



C. 557

D. 781

Q12 Mathematics

The arithmetic mean of the observations 42, 29, 42, 58, 18, 39, 41, 79 and 93 is:

A. 58

B. 49



C. 46

D. 47

Q13 Mathematics

The price of fuel decreases by 30%, 25% and 45% in three successive months, but increases by 45% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price? (Round off the answer to two decimal places.)

A. Increases by 59.54%

B. Increases by 64.88%

C. Decreases by 58.13%



D. Decreases by 57.65%

Q14 Mathematics

Arun and Manish can do a piece of work in 15 days. Manish and Tarun can do the same work in 12 days and Tarun and Arun can do it in 10 days. Find the time taken by Arun alone to complete the same work.

A. 24 days



B. 18 days

C. 25 days

D. 22 days

Q15 Mathematics

In $\triangle ABC$, $BD \perp AC$ at D and $\angle DBC = 33^\circ$. E is a point on BC such that $\angle CAE = 70^\circ$. What is the measure of $\angle AEB$?

A. 127°



B. 132°

C. 135°

D. 131°

Q16 Mathematics

A local cinema charges ₹150 per youth ticket and ₹250 per adult ticket. One evening, the theater sold a total of 200 tickets, collecting ₹38,000 in revenue. Find out how many youth tickets and how many adult tickets were sold?

A. 120 youth tickets and 80 adult tickets



B. 90 youth tickets and 110 adult tickets

C. 80 youth tickets and 120 adult tickets

D. 100 youth tickets and 100 adult tickets

Q17 Mathematics

A total profit of ₹27,600 is to be distributed amongst A, B and C such that $A : B = 18 : 6$ and $B : C = 7 : 12$. The share (in ₹) of C in the profit is:

A. 8,430

B. 8,280



C. 8,230

D. 8,180



Q18 Mathematics

$\frac{1}{20}$ is what percentage of $\frac{11}{20}$? (Rounded off to two decimal places.)

A. 24.09%

B. 9.09% 

C. 18.18%

D. 19.09%

Q19 Mathematics

ABCD is a parallelogram. P and Q are two points lying on the sides DC and AD, respectively. The area of ΔAPB is equal to:

A. the area of ΔDQC B. the area of ΔBQC C. the area of $(\Delta BQC + \Delta ABQ)$

D. half of the area of quadrilateral ABPD

Q20 Mathematics

A point lies on the ground such that its distance from the top of a building is twice its distance from the bottom, which is 15 units. Find the height (in units) of the building.

A. $10\sqrt{2}$ B. $15\sqrt{3}$ C. $10\sqrt{3}$ D. $15\sqrt{2}$ **Q21** Mathematics

$\frac{5}{72} \frac{1}{6} \frac{5}{36} \frac{7}{12}$

A. $\frac{5}{72}$ B. $\frac{7}{12}$ C. $\frac{5}{36}$ D. $\frac{1}{6}$ 

Q22 Mathematics

Simplify: $\sqrt{8} + 2\sqrt{32} - \sqrt{128} + 2\sqrt{50}$

A. $4\sqrt{2}$

B. $3\sqrt{2}$

C. $12\sqrt{2}$



D. $\sqrt{2}$

Q23 Mathematics

A person buys a book for ₹300 and sells it for ₹335. What will be his gain percentage?

A. $11\frac{2}{3}\%$



B. $11\frac{1}{3}\%$

C. $11\frac{5}{3}\%$

D. $11\frac{4}{3}\%$

Q24 Mathematics

A man has to cover a distance of 132 km in 14 hours. If he covers two-thirds of this distance in $\frac{3}{7}$ th of the time, then what should be his speed (in km/hr) to cover the remaining distance in the remaining time?

A. 5.5



B. 3.8

C. 7.3

D. 12.7

Q25 Mathematics

What will come in place of 'X' and $X > 0$ in the equation $\frac{X}{75} = \frac{12}{X}$?

A. 28

B. 31

C. 33

D. 30



Mathematics

25 Questions • Answer Key

Q1 Mathematics

If the third proportional to 50 and Z is 18, then what is the value of Z?

A. 28

B. 30



C. 27

D. 31

Q2 Mathematics

The sum of the present ages of two sisters is 67 years. Five years ago from now, the elder sister was twice as old as the younger one. Find the elder sister's current age.

A. 27 years

B. 43 years



C. 24 years

D. 40 years

Q3 Mathematics

A man walks 430 m in 10 minutes, 470 m in 11 minutes and 620 m in 17 minutes. Then, his average speed (in m/minutes) for the whole journey is:

A. 55

B. 78

C. 40



D. 44

Q4 Mathematics

The sum of two numbers is 88 and their L.C.M. is 870. The two numbers are:

A. 35, 53

B. 30, 58



C. 28, 60

D. 23, 65

Q5 Mathematics

The sum of two numbers is 74 and their difference is 12. Find the ratio of the smaller number to the larger number.

A. 33 : 47

B. 33 : 43

C. 31 : 43



D. 31 : 47

Q6 Mathematics

Find a single discount (approximately) equal to three consecutive discounts of 2%, 8% and 15%.

A. 22.86%

B. 23.36%



C. 26.77%

D. 22.89%

Q7 Mathematics

A total profit of ₹21,800 is to be distributed amongst A, B and C such that $A : B = 4 : 15$ and $B : C = 9 : 3$. The share (in ₹) of B in the profit is:

A. 13,675

B. 13,525

C. 13,625



D. 13,575

Q8 Mathematics

The arithmetic mean of the observations 78, 66, 89, 55, 73, 45, 23, 46 and 29 is:

A. 50

B. 56



C. 48

D. 52



Q9 Mathematics

A fruit seller has 24 kg apples worth ₹3,600. He sells 12 kg apples at a gain of 20% and the remaining at a loss of 10%. Find his gain or loss (in ₹).

A. Gain ₹180



B. Loss ₹360

C. Loss ₹180

D. Gain ₹360

Q10 Mathematics

In an election between two candidates, Dinesh received 46.5% of the total votes and lost to Rizwan by a margin of 3150 votes. If all votes cast were valid, how many votes did Rizwan secure?

A. 20,925

B. 24,075



C. 25,925

D. 25,050

Q11 Mathematics

The amount on a sum of ₹7,500 at 6% per annum compound interest, compounded annually, in 2 years will be:

A. ₹9,253

B. ₹8,427



C. ₹8,604

D. ₹8,994

Q12 Mathematics

If 8 solid spherical balls, each of radius 10 cm, are melted and recast into a single spherical ball, then what is the radius of the new ball so formed?

A. 15 cm

B. 20 cm



C. 10 cm

D. 30 cm

Q13 Mathematics

The price of fuel decreases by 35%, 55% and 35% in three successive months, but increases by 65% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price? (Round off the answer to two decimal places.)

A. Increases by 70.61%

B. Decreases by 68.63%



C. Increases by 64.64%

D. Decreases by 65.25%

Q14 Mathematics

In a race, an athlete covers a distance of 300 m in 100 sec in the first lap. He covers the second lap of the same length in 50 sec. What is the average speed (in m/sec) of the athlete?

A. 13

B. 4



C. 14

D. 9

Q15 Mathematics

In a cyclic quadrilateral ABCD, the sides are AB = 10 cm, BC = 14 cm, CD = 8 cm, and DA = 12 cm. Find the area of the quadrilateral.

A. $8\sqrt{222}$ cm²

B. $10\sqrt{222}$ cm²

C. $8\sqrt{210}$ cm²



D. $10\sqrt{210}$ cm²

Q16 Mathematics

Successive discounts of 9% and 6% are equivalent to a single discount of:

A. 14.46%



B. 15.18%

C. 15.62%

D. 17.78%

Q17 Mathematics

The sides of a triangle are 35 cm, 44 cm and 75 cm. What is the length of its altitude corresponding to the side with the length of 44 cm?

A. 58 cm

B. 14 cm

C. 65 cm

D. 21 cm



Q18 Mathematics

For 6 innings, a cricketer had an average of 90 runs. In the 7th inning, he scored 157 runs. His average score increased by _____. (Round off the answer to the nearest whole number.)

A. 10



B. 8

C. 20

D. 19

Q19 Mathematics

P and Q together can fill a cistern with water in 15 hours. If P alone can fill the cistern with water in 60 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

A. 10

B. 5



C. 6

D. 11

Q20 Mathematics

A tank can be filled by Pipe A in 9 hours and by Pipe B in 12 hours. Pipe C can empty the tank in 18 hours. All three pipes are opened simultaneously, but Pipe C is closed after 4 hours. How much total time in all will it take to fill the tank completely?

A. $\frac{42}{5}$ B. $\frac{44}{7}$ C. $\frac{100}{11}$ D. $\frac{22}{3}$ **Q21 Mathematics**

If $\sec \theta = \frac{17}{12}$, then what is the value of $\sin \theta$? ($0^\circ < \theta < 90^\circ$)

A. $\frac{12}{17}$ B. $\frac{13}{17}$ C. $\frac{\sqrt{145}}{17}$ D. $\frac{\sqrt{170}}{17}$ 

Q22 Mathematics

$$16\frac{2}{7}\% \div 16\frac{1}{3}\% \div 16\frac{2}{3}\% \div 16\frac{4}{7}\%$$

A. $16\frac{4}{7}\%$

B. $16\frac{1}{3}\%$

C. $16\frac{2}{3}\%$ ✓

D. $16\frac{2}{7}\%$

Q23 Mathematics

Find the value of x if $8(x)^{\frac{1}{2}} = \sqrt{6889} + \sqrt{4761}$.

A. 289

B. 729

C. 361 ✓

D. 529

Q24 Mathematics

Solve: $\frac{(100.5)^2 - (79.2)^2}{100.5 + 79.2}$

A. 20.2

B. 22.4

C. 23.5

D. 21.3 ✓

Q25 Mathematics

Which of the options has the two prime numbers whose product is the biggest even number less than 30?

A. 3 and 11

B. 2 and 13 ✓

C. 2 and 5

D. 3 and 7



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The marked price of a toy truck is ₹8,810, and its selling price is ₹6,250. Find the discount percentage. (Round off the answer to two decimal places.)

A. 32.51%

B. 29.06% ✓

C. 31.08%

D. 27.41%

Q2 Mathematics

Find the simple interest (in ₹) on ₹4,000 at 6% per annum rate of interest for the period from 20 February 2024 to 21 April 2024.

A. 39

B. 38

C. 40 ✓

D. 41

Q3 Mathematics

If the radius of a sphere is 10 cm, then its surface area is:

A. $341 \pi \text{ cm}^2$ B. $200 \pi \text{ cm}^2$ C. $400 \pi \text{ cm}^2$ ✓D. $336 \pi \text{ cm}^2$

Q4 Mathematics

The average of the first 13 even natural numbers is:

A. 11

B. 13

C. 14 ✓

D. 15

Q5 Mathematics

A mother's age is double her son's age at present. If the difference of their ages after 24 years from now is 20, then find their ages at present (in years), respectively.

A. 46, 23

B. 38, 19

C. 54, 28

D. 40, 20 ✓

Q6 Mathematics

The mode of the observations 26, 26, 22, 21, 31, 24, 21, 28, 28, 30, 33, 22, 25, 23 and 21 is:

A. 21 ✓

B. 22

C. 26

D. 28

Q7 Mathematics

A, B and C can do a piece of work in 2, 15 and 10 days, respectively. How long (in days) will they take to do twice the same work, working together?

A. 6

B. 3 ✓

C. 4

D. 9

Q8 Mathematics

In a test, B got 50 marks while A got 80 marks, out of 85 maximum marks. What percentage of A's marks was B's marks?

A. 62.5% ✓

B. 85%

C. 160%

D. 94.12%

Q9 Mathematics

A shopkeeper buys an article for ₹850, spends ₹200 on repairs and sells it for ₹1,200. What is his profit percentage (rounded off to two decimal places)?

A. 13.79%

B. 14.79%

C. 13.29%

D. 14.29% ✓



Q10 Mathematics

If $5.12 \times 50625 \times 0.5488 = 2^a 3^b 5^c 7^d$, then find the value of $a + b + c + d$.

- A. 14
- B. 23
- C. 10
- D. 12

**Q11 Mathematics**

A contractor agreed to complete a job in 74 days. He employed 21 men to work, but only one-fourth of the work was completed in 32 days. How many additional men must he employ to finish the remaining work within the stipulated time?

- A. 25
- B. 27
- C. 24
- D. 22

**Q12 Mathematics**

Rama made necklaces with either 24 beads, 36 beads or 40 beads, such that no bead was left over. What is the least number of beads Rama could have?

- A. 320
- B. 420
- C. 280
- D. 360

**Q13 Mathematics**

The sum of the first 19 prime numbers is:

- A. 564
- B. 570
- C. 571
- D. 568

**Q14 Mathematics**

₹5,177 is divided among A, B and C in such a way that if ₹72, ₹21 and ₹24 be deducted from their respective shares, they have money in the ratio 3 : 13 : 7. Find the difference between the original shares of B and C.

- A. ₹1,420
- B. ₹1,317
- C. ₹1,220
- D. ₹1,470

**Q15 Mathematics**

A girl goes to school at a speed of 45 km/h. She comes back with a speed of 36 km/h. Find her average speed for the whole journey.

- A. 38 km/h
- B. 42 km/h
- C. 33 km/h
- D. 40 km/h

**Q16 Mathematics**

In $\triangle ABC$, $BD \perp AC$ at D and $\angle DBC = 80^\circ$. E is a point on BC such that $\angle CAE = 37^\circ$. What is the measure of $\angle AEB$?

- A. 49°
- B. 45°
- C. 40°
- D. 47°

**Q17 Mathematics**

If the fourth proportional to P, 22 and 8 is 11, then find the value of P.

- A. 19
- B. 15
- C. 13
- D. 16

**Q18 Mathematics**

A student secured 300 marks out of a maximum of x marks in a test. If the same percentage score were applied to a test of 400 marks, he would have scored 200 marks. What were the maximum marks of the original test?

- A. 500
- B. 600
- C. 800
- D. 700

**Q19 Mathematics**

A chair is marked at ₹4,000 and sold at ₹3,600 after a certain discount. If the shopkeeper still makes a profit of 20%, find the cost price of the chair.

- A. ₹2,800
- B. ₹3,200
- C. ₹3,000
- D. ₹3,400



Q20 Mathematics

If the radius of a sphere is increased by 37.5%, its surface area is increased by $35,112 \text{ cm}^2$. Find the original surface area of the sphere. (Take $\pi = \frac{22}{7}$)

A. $39,444 \text{ cm}^2$

B. $39,424 \text{ cm}^2$ ✓

C. $39,394 \text{ cm}^2$

D. $39,414 \text{ cm}^2$

Q21 Mathematics

Simplify the given expression.

$$(5x + 3y)^2 - (5x - 3y)^2$$

A. $90xy$

B. $60xy$ ✓

C. $120xy$

D. $30xy$

Q22 Mathematics

Simplify: $\left(1 - \frac{1}{\cos\theta}\right)\left(\frac{1 + \sec\theta}{\tan^2\theta}\right)$

A. $-\tan\theta$

B. $\tan\theta$

C. 1

D. -1 ✓

Q23 Mathematics

Walking at $\frac{5}{8}$ of his normal speed from his home, Tarun is 21 minutes late in reaching his office.

The usual time taken by him to cover the distance between his home and his office is:

A. 35 minutes ✓

B. 28 minutes

C. 37 minutes

D. 29 minutes



Q24 Mathematics

In an election, there were 12,000 voters. In the first round, Babita received 40% of the votes, and Ramanlal received 35% of the votes. The remaining votes went to other candidates. In the second round, Babita gained 20% more votes compared to the first round, while Ramanlal gained 10% more votes. How many votes did Babita receive in the second round?

A. 6,000

B. 5,600

C. 6,400

D. 5,760

**Q25** Mathematics

If 40% of 20% of $\frac{4}{7}$ of a number is 336, find the number.

A. 7350

B. 8190

C. 8120

D. 7630



Mathematics

25 Questions • Answer Key

Q1 Mathematics

If the side of a square is measured 4% more than its actual length, what is the percentage error in the area of the square?

- A. 4%
- B. 8.16% ✓
- C. 4.04%
- D. 8.08%

Q2 Mathematics

Find the simple interest (in ₹) on ₹2,000 at 7% per annum rate of interest for the period from 7 February 2023 to 21 April 2023.

- A. 27
- B. 26
- C. 29
- D. 28 ✓

Q3 Mathematics

In a quadrilateral IJKL, $\angle I = 17^\circ$ and $\angle J = 51^\circ$. The bisectors of $\angle K$ and $\angle L$ meet at Z. What is the measure of $\angle LKZ$?

- A. 43°
- B. 34° ✓
- C. 27°
- D. 47°

Q4 Mathematics

An interior designer wants to cover a rectangular wall measuring 36 m × 64 m with square wallpaper tiles, with minimal wastage. What is the maximum possible side length of each square tile that can be used?

- A. 4 m ✓
- B. 24 m
- C. 12 m
- D. 8 m

Q5 Mathematics

$4a2b$ is a four digit number divisible by 3. Select the correct possible values of a and b from the following.

- A. $a=2, b=0$
- B. $a=0, b=0$ ✓
- C. $a=0, b=1$
- D. $a=3, b=1$

Q6 Mathematics

A laptop is sold for ₹48,000 after two successive discounts of 20% and 25% on the marked price. Find the original marked price of the laptop.

- A. ₹75,000
- B. ₹80,000 ✓
- C. ₹88,000
- D. ₹78,000

Q7 Mathematics

One pipe can fill a tank in 3 minutes while another pipe can empty the completely filled tank in 12 minutes. If both the pipes are opened together when the tank is empty, then how many minutes will it take to fill one-half of the tank?

- A. 3 minutes
- B. 2 minutes ✓
- C. 5 minutes
- D. 4 minutes

Q8 Mathematics

Due to water crisis, 38% of the initial population left the village, and 50% of the remaining left the village for pursuing jobs. If presently 1550 people inhabit the village, what is the ratio of the initial population to the present population?

- A. 103:33
- B. 108:33
- C. 100:31 ✓
- D. 100:33



Q9 Mathematics

Two trains are running in opposite directions at the same speed. If the length of each train is 350 m and they cross each other in 14 seconds, then what is the speed of each train?

A. 25 m/s



B. 35 m/s

C. 28 m/s

D. 26 m/s

Q10 Mathematics

If the marked price of a mat is 76% more than its cost price and a discount of 25% is announced on it, then find the profit percentage.

A. 32%



B. 34%

C. 35%

D. 29%

Q11 Mathematics

A cube and a cuboid have equal volumes. If the cube's side is 10 cm and the cuboid's dimensions are in the ratio 1 : 2 : 4, then find the cuboid's longest side.

A. 18 cm

B. 20 cm



C. 14 cm

D. 16 cm

Q12 Mathematics

Suman, Tariq and Neha invest ₹1,71,000, ₹24,000 and ₹1,05,000, respectively, to start a business. If the profit at the end of the year is ₹7,16,200, then what is the share of Neha in the profit?

A. ₹2,50,667

B. ₹2,50,670



C. ₹2,50,668

D. ₹2,50,672

Q13 Mathematics

The amount ₹1,404 is divided among Neeraj, Vidya, and Mohan in such a way that if ₹47, ₹26, and ₹29 be deducted from their respective shares, they have money in the ratio 10 : 14 : 18. Find the actual share of Vidya.

A. ₹534

B. ₹384

C. ₹460



D. ₹284

Q14 Mathematics

A student thinks of a two-digit number. The digits add up to 15, and the greater digit is 3 more than the smaller one. What is the product of the two digits?

A. 54



B. 36

C. 63

D. 45

Q15 Mathematics

Two pipes, A and B, together fill a tank in 8 hours. If they are opened separately, then B would take 12 hours more than A to fill the tank. Find the time taken (in hours) by A to fill the tank separately.

A. 18

B. 24

C. 12



D. 16

Q16 Mathematics

Mohan's monthly income is ₹40,000, and he spend 75% of the income. How much does he save each month?

A. ₹11,000

B. ₹10,000



C. ₹11,500

D. ₹10,500

Q17 Mathematics

The difference between the present ages of Sneha and her younger cousin Aryan is 12 years. Six years ago, Sneha was three times as old as Aryan was at that time. What is Sneha's present age (in years)?

A. 24



B. 30

C. 26

D. 22



Q18 Mathematics

Simplify: $x^2 + 2x + x^2$

A. $2x^2 + 2x$



B. $2x^2 - 2x$

C. $x^2 + 2x$

D. $2x^2 + x$

Q19 Mathematics

For a journey of 600 km, a truck covers the first 300 km at a speed of 42 km/hr. What speed (in km/hr) must it maintain for the remaining distance to achieve an average speed of 60 km/hr?

A. 80

B. 105



C. 85

D. 120

Q20 Mathematics

For 14 innings, a cricketer has an average of 51 runs. In the 15th inning, he scores 209 runs. His average score increased by _____.
(Round off your answer to the nearest whole number.)

A. 10

B. 11



C. 20

D. 15

Q24 Mathematics

If $2^{x-1} + 2^{x+1} = 160$, then the value of $2x + 1$ is:

A. 15

B. 13



C. 11

D. 9

Q21 Mathematics

The mode of the observations 3, 4, 4, 7, 3, 6, 2, 2, 6, 1, 3, 5, 9, 3, 8, 4 and 3 is

A. 4

B. 6

C. 3



D. 7

Q22 Mathematics

An article is sold for ₹240 with a loss of 20%. What is the cost price?

A. ₹300



B. ₹250

C. ₹350

D. ₹400

Q23 Mathematics

In an election with two candidates, 25% of the total votes were invalid. One candidate received 40% of the valid votes. If the total number of votes was 3,75,000, how many valid votes did the other candidate receive?

A. 1,56,350

B. 1,75,450

C. 1,86,250

D. 1,68,750



If $\cos A = \frac{4}{5}$, find the value of $4 + 4 \tan^2 A$.

A. $\frac{25}{4}$



B. $\frac{4}{25}$

C. $\frac{25}{16}$

D. $\frac{16}{25}$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The expenditure of Sudha is 150% more than her savings. If her expenditure decreases by 3% and savings increase by 21.5%, then by what percentage does her income increase?

A. 6%

B. 1%

C. 3%

D. 4% 

Q2 Mathematics

For 15 innings, a cricketer has an average of 94 runs. In the 16th inning, he scores 111 runs. His average score increased by _____. (Round off the answer to the nearest whole number.)

A. 1 

B. 10

C. 2

D. 7

Q3 Mathematics

Sangeeta observes the top of a chimney at an angle of elevation of 45° . She is standing 28.7 metres away from the base of the chimney, and her eye level is 1.3 metres above the ground. What is the total height (in metres) of the chimney?

A. 28.7

B. 60

C. 27.4

D. 30 

Q4 Mathematics

Two engines of trains 28 km apart start towards each other at speeds of 23 km/hr and 89 km/hr, respectively. After how much time will they meet each other? (Assume the length of engine is negligible)

A. 17 minutes

B. 15 minutes 

C. 13 minutes

D. 14 minutes

Q5 Mathematics

Three chairs and two tables together cost ₹600, two chairs and one table together cost ₹350. The cost of four chairs is:

A. ₹400 

B. ₹100

C. ₹200

D. ₹300

Q6 Mathematics

If the listed price of a bag is 85% more than its cost price and a discount of 49% is announced on it, then find the loss percentage.

A. 9.12%

B. 5.65% 

C. 5.42%

D. 9.31%

Q7 Mathematics

In a quadrilateral QRST, $\angle Q = 74^\circ$ and $\angle R = 39^\circ$. The bisectors of $\angle S$ and $\angle T$ meet at E. What is the measure of $\angle TES$?

A. 47° B. 56.5° C. 61.5° D. 43°

Q8 Mathematics

Seven years ago from now, a man was five times as old as his son. Seven years from now, the father will be three times as old as his son. Find the son's present age.

A. 21 years 

B. 38 years

C. 31 years

D. 26 years



Q9 Mathematics

Ravi bought a watch for ₹4,800, spent ₹200 on its repair, and sold it for ₹6,000. What is his profit percentage?

A. 20%



B. 27%

C. 22%

D. 25%

Q10 Mathematics

The number of prime numbers lying between 415 and 428 is:

A. 6

B. 7

C. 2



D. 4

Q11 Mathematics

Priya buys a mobile phone for her child. The phone is marked at ₹34,400 and is offered with two successive discounts of 13% and Z%, respectively. After receiving both discounts, she pays ₹22,446. Find the value of Z.

A. 24

B. 23

C. 26

D. 25

**Q12 Mathematics**

The volume of a rectangular block of wood is $10,368 \text{ cm}^3$. Its length, breadth and height are in the ratio of 3 : 2 : 1. If its entire surface is polished at ₹2/cm², then find the total cost of polishing.

A. ₹7,135

B. ₹6,336



C. ₹6,356

D. ₹6,436

Q13 Mathematics

In an election with two candidates, Candidate A received 75% of the total valid votes. If 10% of the total 14,000 votes were declared invalid, how many valid votes did Candidate B receive?

A. 3750

B. 3500

C. 3150



D. 4450

Q14 Mathematics

The amount on a sum of ₹5,000 at 20% per annum compound interest, compounded annually, in 2 years, will be:

A. ₹6,563

B. ₹7,247

C. ₹7,760

D. ₹7,200

**Q15 Mathematics**

A seasoned marathoner, known for his steady pace, usually runs the first half of a race at 8 km/hr and the second half at 6 km/hr. However, due to fatigue and other factors, his overall speed drops by 30%. How long will it take him to complete a 120 km marathon under these reduced-speed conditions?

A. 15 hours

B. 17.5 hours

C. 12.5 hours

D. 25 hours

**Q16 Mathematics**

The mode of the observations 21, 32, 34, 34, 34, 20, 32, 24, 34, 34, 20, 25, 29, 26 and 20 is:

A. 21

B. 32

C. 20

D. 34

**Q17 Mathematics**

The sum of two numbers is 54 and their LCM is 195. The two numbers are:

A. 37, 17

B. 39, 15



C. 44, 10

D. 32, 22

Q18 Mathematics

₹8,200 is divided among A, B and C in such a way that if ₹19, ₹9 and ₹13 are deducted from their respective shares, they have money in the ratio 12:19:10. Find the difference between B's and C's original shares.

A. ₹1,841

B. ₹1,787



C. ₹1,691

D. ₹1,641



Q19 Mathematics

Preeti, Qadir and Reena invest sum in the ratio 2 : 8 : 13, respectively. If they earned total profit of ₹87,193 at the end of year, then what is the positive difference between share of Preeti and Reena?

A. ₹41,704

B. ₹41,702

C. ₹41,701



D. ₹41,703

Q20 Mathematics

A, B and C can do a piece of work in 3, 3 and 3 days, respectively. How long (in days) will they take to do twice the same work, working together?

A. 6

B. 4

C. 3

D. 2

**Q22 Mathematics**

The radius of a ball of iron is 1.5 cm. Three smaller balls are formed by melting it. If the radii of two smaller balls are 0.75 cm and 1.0 cm, find the diameter of the third ball.

A. 2.5 cm



B. 2.1 cm

C. 2.2 cm

D. 2.3 cm

Q23 Mathematics

If $5^{(x-y)} = 125$ and $5^{(x+y)} = 3125$, find x .

A. 3

B. 4



C. 1

D. 2

Q24 Mathematics

If $a - b = 9$ and $ab = 20$, find the value of $a^2 + b^2$.

A. 127

B. 115

C. 133

D. 121

**Q21 Mathematics**

A, B and C together can complete a piece of work in 12 days, while A alone can complete it in 20 days and C alone can complete it in 36 days. In how many days can B alone complete the work?

A. 180 days



B. 60 days

C. 120 days

D. 150 days



Q25 Mathematics

$\frac{1}{30}$ is what percentage of $\frac{2}{30}$?

A. 100%

B. 65%

C. 60%

D. 50%



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Mathematics

25 Questions • Answer Key

Q1 Mathematics

The amount on a sum of ₹5,200 at 20% per annum compound interest, compounded annually, in 2 years will be:

- A. ₹7,105
- B. ₹6,916
- C. ₹7,488
- D. ₹7,472



Q2 Mathematics

A shopkeeper sells 10 identical watches for ₹10,500, which is the cost price of 8 watches. Find his loss percentage.

- A. 10%
- B. 40%
- C. 20%
- D. 30%



Q3 Mathematics

The cost price of a dress is ₹1,600. The shopkeeper makes a profit of 20% on selling it. If he offers a discount of 25% at the time of sale, find the marked price (in ₹).

- A. 2,050
- B. 1,920
- C. 2,560
- D. 2,380



Q4 Mathematics

The sum of two numbers is 74 and their difference is 12. Find the product of the two numbers.

- A. 1533
- B. 1333
- C. 1233
- D. 1433



Q5 Mathematics

Two trains, Train A and Train B, are traveling towards each other on parallel tracks. Train A is 150 meters long and moves at a speed of 72 km/h. Train B is 100 meters long and moves at a speed of 54 km/h. How much time (rounded off to two decimal places) will it take for Train A to completely pass Train B?

- A. 6.14 seconds
- B. 9.14 seconds
- C. 7.14 seconds
- D. 10.14 seconds



Q6 Mathematics

P and Q together can fill a cistern with water in 15 hours. If P alone can fill the cistern with water in 40 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

- A. 6
- B. 13
- C. 12
- D. 7



Q7 Mathematics

The mean and the mode of a set of data are 20 and 88.7, respectively. Find the median of the data, using the empirical formula.

- A. 42.9
- B. 42.5
- C. 44.5
- D. 43.1



Q8 Mathematics

Two pipes, F and M, can fill a cistern in 25 minutes and 30 minutes, respectively. If both pipes are opened together, after how many minutes should pipe F be closed so that the cistern is completely filled in 15 minutes?

- A. 15 min
- B. 12.5 min
- C. 12 min
- D. 10 min



Q9 Mathematics

The ratio of the ages of a wife and husband is 6 : 7 at present. If the sum of their ages after 20 years from now is 92, then find their present ages (in years), respectively.

A. 24, 28



B. 18, 21

C. 30, 42

D. 42, 49

Q10 Mathematics

The ratio of three numbers is 12:14:4. If 25% of the first number is 18, then what would 30% of the difference between the third and second numbers be?

A. 16

B. 18



C. 17

D. 19

Q11 Mathematics

If $A6B59$ is exactly divisible by 9, then find the least possible value of (A^2+2B) .

A. 13



B. 14

C. 19

D. 21

Q12 Mathematics

The monthly incomes of two friends Chetan and Vipul, are in the ratio 5 : 9, respectively, and each of them saves ₹51,000 every month. If the ratio of their monthly expenditure is 1 : 3, find the monthly income of Chetan(in ₹).

A. 1,19,000

B. 84,000

C. 85,000



D. 86,000

Q13 Mathematics

The distance between points A and B is 663 km. Amit travels from A to B at 131 km/hr and returns at 24 km/hr. Calculate his average speed for the entire journey (rounded off to two decimal places).

A. 40.57 km/hr



B. 43.79 km/hr

C. 46.18 km/hr

D. 39.54 km/hr

Q14 Mathematics

A tower stands vertically on the ground. From a point on the ground which is 29.6 m away from the foot of the tower, the angle of elevation of the top of the tower is found to be 45° . Find the height of the tower.

A. 29.6 m



B. 25.6 m

C. 27.6 m

D. 23.6 m

Q15 Mathematics

Simplify: $86 - (-16) \times (-8 - 20 - 18) \div [1 \times \{10 + (-2) \times (-3)\}]$

A. 40



B. 42

C. 46

D. 31

Q16 Mathematics

Sunita, Javed, and Rani invest ₹13,90,000, ₹4,70,000, and ₹15,40,000, respectively, to start a business. If the profit at the end of the year is ₹4,50,500, then what is the share of Rani in the profit?

A. ₹2,04,048

B. ₹2,04,053

C. ₹2,04,050



D. ₹2,04,052

Q17 Mathematics

An agent sells a turbo cooker with a marked price of ₹6,370 at a discount of 50%. What is the selling price (in ₹) of the turbo cooker?

A. 3,185



B. 2,548

C. 3,158

D. 2,549



Q18 Mathematics

What is the mode of the following data?

53, 53, 40, 49, 50, 48, 53, 50, 41, 40, 53, 45, 40, 47, 43, 52, 51, 42, 51, 53

A. 49

B. 50

C. 53



D. 40

Q19 Mathematics

A metallic sphere of unknown radius is melted and recast into 64 smaller spherical balls. During the recasting process, 20% of the total metal is lost as waste. If the total volume of the 64 smaller spheres after the loss is 10,752 cm³, determine the radius (rounded off to the nearest integer) of the original sphere. (Use $\pi = 3.14$)

A. 15 cm



B. 14 cm

C. 17 cm

D. 16 cm

Q20 Mathematics

The volume (in m³) of a cube with edges of 31 m is:

A. 29959

B. 29595

C. 29791



D. 29898

Q21 Mathematics

In a quadrilateral EFGH, $\angle E = 52^\circ$ and $\angle F = 37^\circ$. The bisectors of $\angle G$ and $\angle H$ meet at X. What is the measure of $\angle HXG$?

A. 44.5°



B. 48.5°

C. 37°

D. 49°

Q22 Mathematics

The price of fuel decreases by 15%, 30% and 60% in three successive months, but increases by 60% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price?

A. Decreases by 67.07%

B. Increases by 66.82%

C. Decreases by 61.92%



D. Increases by 58.55%

Q23 Mathematics

$\frac{1}{30}$ is what percentage of $\frac{2}{20}$ (rounded off to two decimal places)?

A. 48.33%

B. 66.67%

C. 43.33%

D. 33.33%

**Q24 Mathematics**

If the HCF of three numbers is 23 and they are in the ratio 1:2:3, then the numbers are:

A. 23, 46, 92

B. 23, 56, 59

C. 23, 46, 69



D. 13, 46, 92



The value of $\frac{(a^2 - b^2)^3 + (b^2 - c^2)^3 + (c^2 - a^2)^3}{(a - b)^3 + (b - c)^3 + (c - a)^3}$ is:

A. $2(a - b)(b - c)(c - a)$

B. $(a - b)(b - c)(c - a)$

C. $3abc$

D. $(a + b)(b + c)(c + a)$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

If the fourth proportional to 8, X and 15 is 135, then find the value of X.

A. 71

B. 73

C. 74

D. 72



Q2 Mathematics

The amount on a sum of ₹7,300 at 10% per annum compound interest, compounded annually, in 2 years will be:

A. ₹8,444

B. ₹8,833



C. ₹9,391

D. ₹8,251

Q3 Mathematics

A, B and C can do a piece of work in 3, 6 and 2 days, respectively. How long (in days) will they take to do twice the same work, working together?

A. 4

B. 6

C. 3

D. 2



Q4 Mathematics

A dealer allowed a 23% discount on an article and was still able to manage a 44% profit. Find the ratio of the cost price to the listed price.

A. 77 : 144



B. 78 : 151

C. 76 : 146

D. 74 : 149

Q5 Mathematics

For 5 innings, a cricketer has an average of 80 runs. In the 6th inning, he scores 194 runs. His average score increased by _____.

A. 21

B. 29

C. 26

D. 19



Q6 Mathematics

Reena is 5 years older than Meena. Eight years ago from now, Reena's age was twice the age of Meena. Find the present age of Reena.

A. 18 years



B. 21 years

C. 32 years

D. 26 years

Q7 Mathematics

A shopkeeper declares the following three schemes of discounts. Which scheme is the most beneficial to a customer?

A. Buy 42 items and get 47 of the same items

B. Two successive discounts of 16% and 36%

C. Two successive equal discounts of 46%

A. C and B both

B. Only A

C. Only B

D. Only C



Q8 Mathematics

A water tank can be filled in 13 minutes using 46 identical pipes. How long (in minutes) will it take to fill the same tank if only 27 such pipes are used? (Round off the answer to two decimal places.)

A. 20.82

B. 22.15



C. 15.63

D. 13.33



Q9 Mathematics

The price of fuel decreases by 10%, 45% and 55% in three successive months, but increases by 55% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price? (Round off the answer to two decimal places.)

- A. Increases by 70.18%
- B. Increases by 63.38%
- C. Decreases by 65.47% ✓
- D. Decreases by 64.94%

Q10 Mathematics

A train travels at 84.6 km/hr. How many metres will it travel in 20 minutes?

- A. 26,400
- B. 28,200 ✓
- C. 26,200
- D. 24,600

Q11 Mathematics

Radha has ₹10 and ₹5 coins. She has a total of 15 coins worth ₹85. How many coins of ₹5 does she have?

- A. 8
- B. 5
- C. 13 ✓
- D. 7

Q12 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 18^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 2 : 7, then what is the difference between the measures of $\angle Q$ and $\angle P$?

- A. 20° ✓
- B. 16°
- C. 17°
- D. 13°

Q13 Mathematics

A shopkeeper buys 20 pens for a total of ₹200. He sells each pen for ₹12. What is his total profit?

- A. ₹60
- B. ₹20
- C. ₹40 ✓
- D. ₹30

Q14 Mathematics

In an election, the winner gets 80% of the total valid votes. If 18% are invalid votes out of 2,00,000 votes, then the votes polled in favour of the winner are:

- A. 1,13,200
- B. 1,21,300
- C. 1,32,100
- D. 1,31,200 ✓

Q15 Mathematics

Raj's monthly income is ₹50,000. He spends 40% of his income on household expenses and saves the remaining amount. If his income increases by 10%, and his expenditure on household expenses remains the same percentage of his income, calculate the amount (in ₹) he saves after the increment.

- A. 33,000 ✓
- B. 33,500
- C. 31,500
- D. 31,000

Q16 Mathematics

The length of a rectangular field is $(2x + y^2)$ m and breadth is $(2x - y^2)$ m. Find the area of the rectangular field when $x = 2$ and $y = 1$.

- A. 29 m²
- B. 26 m²
- C. 12 m²
- D. 15 m² ✓

Q17 Mathematics

A total profit of ₹13,800 is to be distributed amongst A, B and C such that $A : B = 20 : 2$ and $B : C = 1 : 4$. The share (in ₹) of B in the profit is:

- A. 820
- B. 920 ✓
- C. 870
- D. 1,070



Q18 Mathematics

The average age of 23 students of a class is 41 years. If the age of the teacher is also included, the average age of the whole group becomes 42 years. The age (in years) of the teacher is:

A. 66

B. 64

C. 62

D. 65

**Q19 Mathematics**

A camp has provisions for 20 pupils for 13 days. In how many days will the same provisions be used up, if the strength of the camp is increased to 65 pupils?

A. 3

B. 7

C. 5

D. 4

**Q20 Mathematics**

Find the HCF of the numbers 4220, 5440 and 6880.

A. 20



B. 80

C. 60

D. 40

Q21 Mathematics

In triangle XYZ, sides XY = 12 cm, YZ = 15 cm and angle $\angle Y = 120^\circ$. What is the length of side XZ?

A. $5\sqrt{61}$ cm

B. $\sqrt{61}$ cm

C. $3\sqrt{61}$ cm



D. $7\sqrt{61}$ cm

Q22 Mathematics

A cylindrical pillar has a diameter of 10 cm and a height of 35 cm. The curved surface is to be painted at a cost of ₹12/cm². If a 10% discount is offered on the total painting cost, how much will be paid? (Use $\pi = \frac{22}{7}$)

A. ₹11,770

B. ₹11,550

C. ₹11,880



D. ₹11,660

Q23 Mathematics

Evaluate: $(5^{\frac{1}{4}})^{\frac{1}{4}} \times (125^{0.25})$

A. 5



B. $5\sqrt{5}$

C. 25

D. $\sqrt{5}$



Q24 Mathematics

The curved surface area of a cylinder is 55.44 m^2 , which is two – thirds of its total surface area.

Find the volume of the cylinder correct to two decimal places (use $\pi = \frac{22}{7}$).

A. 58.21 m³



B. 47.65 m³

C. 36.35 m³

D. 28.31 m³

Q25 Mathematics

Walking at $\frac{3}{4}$ of his normal speed from his home, Abhishek is 30 minutes late in reaching his office. The usual time taken by him to cover the distance between his home and his office is:

A. 85 minutes

B. 91 minutes

C. 90 minutes



D. 93 minutes



Mathematics

25 Questions • Answer Key

Q1 Mathematics

Two trains are running along parallel tracks towards each other at speeds of 40 km/h and 60 km/h, respectively. If the length of each train is 125 metres, then how much time will they take to cross each other?

A. 9 seconds



B. 7 seconds

C. 12 seconds

D. 5 seconds

Q2 Mathematics

A salesman marks his goods 5% above the cost price and gives a discount of 40% on them. Find his loss percentage.

A. 35%

B. 34%

C. 37%



D. 36%

Q3 Mathematics

A person is 3 times as old as their sibling. If the sum of their ages is 40 years, then how old is the person?

A. 40 years

B. 10 years

C. 20 years

D. 30 years



Q4 Mathematics

If 20% of a number is added to 60, then the result is the same number. 75% of the same number is:

A. 86.25

B. 56.25



C. 76.25

D. 66.25

Q5 Mathematics

If Sonali's salary first decreased by 25% and then increased by 12%, what is the percentage effect on her salary?

A. Increases by 16%

B. Decreases by 12%

C. Increases by 12%

D. Decreases by 16%



Q6 Mathematics

The marked price of a painting was ₹7,500, but the shopkeeper offered a double discount in a successive manner of 14% and 28%. Ultimately for how much did he sell the item?

A. ₹4,610

B. ₹4,490

C. ₹4,644



D. ₹4,674

Q7 Mathematics

The market prices of jowar and gram are in the ratio 1 : 3, and a family consumes them in the ratio 5 : 11 by quantity. Find the ratio of expenditure on jowar to that on gram.

A. 9 : 35

B. 5 : 33



C. 6 : 34

D. 7 : 34

Q8 Mathematics

A water tank has two inlet pipes (A and B) and one outlet pipe (C). Pipe A can fill the tank in 4 hours, Pipe B can fill the tank in 6 hours, and Pipe C can empty the tank in 8 hours. If all three pipes are opened for the first 3 hours and then Pipe C is closed, how much total time is required to fill the tank?

A. 5 hours 15 minutes

B. 3 hours 18 minutes



C. 4 hours 15 minutes

D. 4 hours 18 minutes



Q9 Mathematics

A person walked from his house to the market at the rate of 5 km/hr and walked back to his house at the rate of 4 km/hr. The whole journey took 4 hours 30 minutes. Find the distance (in km) from his house to the market.

A. 15

B. 20

C. 25

D. 10

**Q10 Mathematics**

The expenditure of Sudha is 150% more than her savings. If her expenditure decreases by 12% and savings increase by 37%, then by what percentage does her income increase?

A. 3%

B. 5%

C. 7%

D. 2%

**Q11 Mathematics**

One pipe can fill a tank in 7 minutes, while another pipe can empty the completely filled tank in 14 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-half of the tank?

A. 8

B. 7



C. 15

D. 14

Q12 Mathematics

If a father is 30 years older than his son, and his age is currently five times that of his son, how old is the son?

A. 15 years

B. 5 years

C. 10 years

D. 7.5 years

**Q13 Mathematics**

The average of 7 numbers is 25. If each number is decreased by 3, what will the new average be?

A. 22



B. 25

C. 19

D. 7

Q14 Mathematics

A person buys a machine for ₹20,000, and spends ₹2,000 on its repair and ₹3,000 on transportation. He sells it for ₹30,000. What is the profit percentage?

A. 20%



B. 35%

C. 25%

D. 30%

Q15 Mathematics

The average age of 32 students of a class is 21 years. If the age of the teacher is also included, the average age of the whole group becomes 22 years. The age (in years) of the teacher is:

A. 54



B. 57

C. 52

D. 59

Q16 Mathematics

If the radius of a sphere is 35 cm, then its surface area is:

A. $2500 \pi \text{ cm}^2$

B. $4900 \pi \text{ cm}^2$



C. $2400 \pi \text{ cm}^2$

D. $2450 \pi \text{ cm}^2$

Q17 Mathematics

The sum of the first 17 prime numbers is:

A. 439

B. 441

C. 440



D. 436

Q18 Mathematics

In $\triangle ABC$, $BD \perp AC$ at D and $\angle DBC = 33^\circ$. E is a point on BC such that $\angle CAE = 45^\circ$. What is the measure of $\angle AEB$?

A. 93°

B. 89°

C. 102°



D. 95°



Q19 Mathematics

The amount on a sum of ₹6,500 at 10% per annum compound interest, compounded annually, in 2 years will be:

A. ₹8,207

B. ₹8,309

C. ₹7,865



D. ₹7,895

Q20 Mathematics

Due to an earthquake, a pole broke and its top now touches the ground at a distance of 25 m from the foot of the pole making an angle of 45° with the ground. Find the length of the pole before the earthquake.

A. $50\sqrt{2}$ m

B. $25\sqrt{2}$ m

C. $50(\sqrt{2} + 1)$ m

D. $25(\sqrt{2} + 1)$ m

**Q21 Mathematics**

If the volume of a cylindrical vessel is 21.560 litres. If the radius of the base of the cylinder is two – fifth times of its height, find the total surface area of the cylinder (in cm^2). (Take $\pi = \frac{22}{7}$)

A. 4312



B. 4324

C. 4345

D. 4352

Q22 Mathematics

A machine produces two types of widgets. The number of widgets produced per day of Type A is a, and of Type B is b. If $a + b = 50$ and $a^2 + b^2 = 1300$, then find the product of the number of widgets produced per day of the two types.

A. 650

B. 700

C. 600



D. 500

Q23 Mathematics

Three numbers are in the ratio $\frac{1}{5} : \frac{9}{18} : \frac{11}{16}$. The difference between the greatest and the smallest numbers is 78. Find the largest number.

A. 108

B. 110



C. 109

D. 111



Q24 Mathematics

Evaluate: $16 \times 2^5 \times 8 \div \left(\frac{1}{2}\right)^3$

A. 2^9

B. 2^{15}



C. 2^{13}

D. 2^{20}

Q25 Mathematics

$5\frac{1}{2} - \left[2\frac{1}{3} \div \left\{ \frac{3}{4} - \frac{1}{2} \times \frac{8}{3} \right\} \right]$

A. 9

B. $\frac{3}{2}$

C. $\frac{21}{2}$

D. $\frac{19}{2}$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

A taxi service charges a fixed base fare plus a variable rate per kilometre. For a 10 km trip, Raju paid ₹230, and for a 15 km trip, Meena paid ₹330. What is the base fare and the per-kilometre charge?

- A. Base fare = ₹60; Per-kilometre Charge = ₹20
- B. Base fare = ₹30; Per-kilometre Charge = ₹20 ✓
- C. Base fare = ₹40; Per-kilometre Charge = ₹18
- D. Base fare = ₹50; Per-kilometre Charge = ₹18

Q2 Mathematics

If the mean proportional of A and 27 is 18, then find the value of A.

- A. 10
- B. 11
- C. 12 ✓
- D. 13

Q3 Mathematics

In an election held in a city, the voting percentage was 72%. The winner got 27% of the polled votes, while the runner-up got 15% of the polled votes. If there were 1,20,000 voters in that city, by how many votes did the winner win the election?

- A. 11,458
- B. 10,458
- C. 10,368 ✓
- D. 11,358

Q4 Mathematics

Nisha goes to a shop to purchase a toy drum priced at ₹5,000. She is offered 4 discount options by the shopkeeper. Which of the following options should she opt for to gain maximum advantage of the discount offered?

- A. Two successive discounts of 7% and 45%
- B. Two successive discounts of 10% and 39%
- C. A single discount of 64% ✓
- D. Two successive discounts of 23% each

Q5 Mathematics

P and Q together can fill a cistern with water in 8 hours. If P alone can fill the cistern with water in 16 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

- A. 8
- B. 5
- C. 9
- D. 4 ✓

Q6 Mathematics

The amount on a sum of ₹3,500 at 20% per annum compound interest, compounded annually, in 2 years will be:

- A. ₹5,138
- B. ₹6,011
- C. ₹5,564
- D. ₹5,040 ✓

Q7 Mathematics

The average of the first 9 even natural numbers is:

- A. 9
- B. 13
- C. 10 ✓
- D. 11

Q8 Mathematics

A person observes an object on the ground from the top of a tower at an angle of depression 60° . If the distance between the foot of the tower and the object is $10\sqrt{3}$ m, then find the height (in m) of the tower.

- A. 21.5
- B. 30 ✓
- C. $20\sqrt{3}$
- D. $15\sqrt{3}$



Q9 Mathematics

Two trains, A and B, of lengths 457 m and 113 m are running at speeds of 18 m/s and 20 m/s, respectively, towards each other on parallel tracks. In how much time will they cross each other?

- A. 5 seconds
- B. 12 seconds
- C. 15 seconds
- D. 23 seconds

Q10 Mathematics

If the price of rice increases by 20% and a person reduces its consumption by 20%, by what percentage will his total expenditure on rice decrease?

- A. 3%
- B. 2%
- C. 5%
- D. 4%

Q11 Mathematics

P sells an item to R at a profit of 10%, and R sells it to Q at a profit of 5%. What would have been P's profit percentage if he had sold the item directly to Q at the price R sold it?

- A. 15%
- B. 14.5%
- C. 15.5%
- D. 16%

Q12 Mathematics

Find the smallest number which when increased by 20 is completely divisible by 12, 20, 15, 18 and 24.

- A. 320
- B. 340
- C. 330
- D. 310

Q13 Mathematics

The marked price of a toy truck is ₹8,730, and its selling price is ₹5,940. Find the discount percentage. (Round off the answer to two decimal places.)

- A. 28.98%
- B. 31.89%
- C. 35.12%
- D. 31.96%

Q14 Mathematics

If the radius of a sphere is 22 cm, then its surface area is:

- A. $1936 \pi \text{ cm}^2$
- B. $2000 \pi \text{ cm}^2$
- C. $1864 \pi \text{ cm}^2$
- D. $1964 \pi \text{ cm}^2$

Q15 Mathematics

The salaries of X, Y and Z are in the ratio 18:5:10. If the increments of 45%, 86% and 89% are allowed, respectively, in their salaries, then what will be new ratio of their salaries?

- A. 85:38:67
- B. 90:34:66
- C. 89:37:64
- D. 87:31:63

Q16 Mathematics

The present age of a father is two times the age of his son. Fifteen years ago from now, the father was three times as old as his son was at that time. Find the present age of the father.

- A. 60 years
- B. 65 years
- C. 30 years
- D. 40 years

Q17 Mathematics

Which of the following pairs of numbers are relatively prime to each other?

- A. (52, 105)
- B. (102, 153)
- C. (68, 85)
- D. (65, 91)

Q18 Mathematics

The average age of 34 students of a class is 29 years. If the age of the teacher is also included, the average age of the whole group becomes 30 years. The age (in years) of the teacher is:

- A. 64
- B. 66
- C. 70
- D. 68



Q19 Mathematics

Two pipes A and B fill a tank in 32 and 36 minutes, respectively and pipe C empties 13 cubic units per minute. All three pipes together can fill the tank in 20 minutes. Find the capacity (in cubic units) of the tank.

A. 1560

B. 480

C. 720

D. 1440

**Q20 Mathematics**

A cyclist rides a 180 km course consisting of three segments. For the first 60 km, the cyclist rides at a speed of 20 km/hr. For the next 60 km, the cyclist rides at 30 km/hr. For the final 60 km, the cyclist rides at 60 km/hr. What is the cyclist's average speed for the entire journey?

A. 28.57 km/hr

B. 26 km/hr

C. 30 km/hr



D. 29.14 km/hr

Q21 Mathematics

Simplify: $(x + 2)^2 - (x - 3)^2$

A. $2x - 5$

B. $2x + 5$

C. $10x + 5$

D. $10x - 5$

**Q22 Mathematics**

The capacity of a cylindrical vessel is 25.872 litres. If the height of the cylinder is three times the radius of its base, then what is the curved surface area of the cylinder?

(Use $\pi = \frac{22}{7}$)

A. 3945 cm²

B. 3696 cm²



C. 4276 cm²

D. 4122 cm²

Q23 Mathematics

Simplify: $\frac{10 \times a^5 \times b^6}{2 \times a^2 \times b^3}$

A. $5a^3b^3$



B. $5a^2b^3$

C. $2a^3b^3$

D. $10a^3b^3$

Q24 Mathematics

Three candidates contested an election. The first candidate got 40% votes and the second got 30% votes. If the total number of votes polled were 36,000, find the number of votes obtained by the third candidate.

A. 10,900

B. 10,200

C. 10,100

D. 10,800



Q25 Mathematics

If the number of sides of a regular polygon is 18, then what is the measure of the interior angle of the polygon?

A. 140°

B. 150°

C. 120°

D. 160°



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Mathematics

25 Questions • Answer Key

Q1 Mathematics

The sides of a triangle are 41 cm, 84 cm and 85 cm. What is the length of its altitude corresponding to the side with the length of 84 cm?

- A. 24 cm
- B. 40 cm
- C. 20 cm
- D. 14 cm



Q2 Mathematics

A dealer purchased an AC for ₹1,848. After allowing a discount of 58% on its marked price, he still gains 63%. Find the marked price of the AC.

- A. ₹7,172
- B. ₹7,219
- C. ₹7,066
- D. ₹7,216



Q3 Mathematics

P and Q together can fill a cistern with water in 14 hours. If P alone can fill the cistern with water in 28 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

- A. 14
- B. 15
- C. 8
- D. 7



Q4 Mathematics

The expenditure of Sudha is 100% more than her savings. If her expenditure decreases by 2% and savings increase by 22%, then by what percentage does her income increase?

- A. 10%
- B. 6%
- C. 3%
- D. 2%



Q5 Mathematics

How many seconds will a boy take to run one complete round around a square field of side 25 metres, if he runs at a speed of 3 km/hr?

- A. 100
- B. 110
- C. 130
- D. 120



Q6 Mathematics

₹7,085 is divided among X, Y and Z in such a way that if ₹92, ₹9 and ₹48 are deducted from their respective shares, they have money in the ratio 3:15:16. Find the difference between Y's and Z's original shares.

- A. ₹254
- B. ₹104
- C. ₹243
- D. ₹54



Q7 Mathematics

Find the value of $(2x+3)^2 - (2x-3)^2 - 24x$

- A. 0
- B. $2x$
- C. $4x$
- D. 1



Q8 Mathematics

A grandfather is five times as old as his grandson. In ten years, he will be only three times as old as his grandson would then be. If the grandfather's cousin is five years older than him, then how old was the cousin three years ago?

- A. 52 years
- B. 51 years
- C. 55 years
- D. 54 years



Q9 Mathematics

The amount on a sum of ₹3,200 at 10% per annum compound interest, compounded annually, in 2 years will be:

A. ₹3,189

B. ₹3,871

C. ₹4,648

D. ₹3,872

**Q10 Mathematics**

What is the least number that should be added to 517 so that the number obtained is exactly divisible by 15, 25 and 8?

A. 82

B. 81

C. 86

D. 83

**Q11 Mathematics**

The Rajdhani Express and Garib Rath Express run in the same direction with speeds of 115 km/hr and 61 km/hr, respectively, and their lengths are the same. What is the length of the Rajdhani Express if it completely crosses the Garib Rath Express in 116 seconds?

A. 877 m

B. 868 m

C. 870 m



D. 873 m

Q12 Mathematics

If 50 litres of a mixture of milk and water contains 12% of water. How much water should be added to make the water 20% in the new mixture?

A. 5 litres



B. 3 litres

C. 2 litres

D. 6 litres

Q13 Mathematics

Ajeet got a new table at 20% discount. If Ajeet did not get any discount, Ajeet would have to pay ₹6,925 extra. So how much did Ajeet pay for the table?

A. ₹27,698

B. ₹27,701

C. ₹27,702

D. ₹27,700

**Q14 Mathematics**

If the radius of a sphere is 30 cm, then its surface area is:

A. $1800 \pi \text{ cm}^2$

B. $900 \pi \text{ cm}^2$

C. $3600 \pi \text{ cm}^2$



D. $3612 \pi \text{ cm}^2$

Q15 Mathematics

The taxi charges in a city consist of a fixed charge together with the charge for the distance covered. For a distance of 20 km, the charge paid is ₹200 and for a distance of 25 km, the charge paid is ₹245. How much does a person have to pay for covering a distance of 1 km?

A. ₹29



B. ₹31

C. ₹25

D. ₹27

Q16 Mathematics

The average price of three items of furniture is ₹16,650. If their prices are in the ratio 3 : 5 : 7, the price of the costliest item (in ₹) is:

A. 7,770

B. 9,990

C. 23,310



D. 5,550

Q17 Mathematics

If $P : 14 :: 57 : 21$, then find the value of P.

A. 38



B. 35

C. 36

D. 41

Q18 Mathematics

The monthly incomes of two friends Mohan and David, are in the ratio 5 : 9, respectively, and each of them saves ₹48,000 every month. If the ratio of their monthly expenditure is 2 : 4, find the monthly income of Mohan(in ₹).

A. 3,36,000

B. 2,40,000



C. 2,41,000

D. 2,39,000



Q19 Mathematics

A shopkeeper buys a laptop for ₹40,000 and sells it for ₹45,000. What is the percentage profit made by the shopkeeper?

A. 17.5%

B. 13.5%

C. 12.5%



D. 10.5%

Q20 Mathematics

The sum of the first 21 prime numbers is:

A. 712



B. 717

C. 710

D. 709

Q21 Mathematics

If $\sin\theta = \frac{3}{5}$, what is the value of $\cos^2\theta$?

A. $\frac{4}{5}$

B. $\frac{9}{25}$

C. $\frac{3}{5}$

D. $\frac{16}{25}$

**Q22 Mathematics**

Simplify $\sqrt{50} + \sqrt{8}$

A. $\sqrt{58}$

B. $\sqrt{68}$

C. $\sqrt{98}$



D. $\sqrt{78}$

Q23 Mathematics

The length, breadth and height of a cuboid are in the ratio $\frac{2}{3} : \frac{1}{4} : \frac{5}{6}$. If the length, breadth and height of the cuboid are increased by 25%, $33\frac{1}{3}\%$ and 40%, respectively, then the volume of the new cuboid is how many times the volume of original cuboid?

A. $\frac{5}{3}$ times

B. 3 times

C. $\frac{4}{3}$ times

D. $\frac{7}{3}$ times



Q24 Mathematics

Find the mode of the given data 22, 16, 17, 49, 7, 16, 45, 17, 7, 6, 16, 17, 22, 7, 16, and 44.

A. 7

B. 22

C. 17

D. 16 **Q25** Mathematics

A can do a piece of work in 12 days by working 6 hours per day. B can do the same piece of work in 18 days by working 8 hours per day.

If both work together $7\frac{1}{9}$ hours per day, then in how many days they can complete the same piece of work?

A. $6\frac{1}{4}$ B. $5\frac{3}{4}$ C. $6\frac{3}{4}$ D. $5\frac{1}{4}$ 

Mathematics

25 Questions • Answer Key

Q1 Mathematics

If the mean of 25, 29, 25, 32, 24 and x is 26, then the median of the data is:

A. 25



B. 29

C. 27

D. 24

Q2 Mathematics

What is the mode of the following data?

55, 45, 44, 48, 42, 45, 52, 53, 42, 50, 54, 49, 52, 45, 47, 43, 45, 48

A. 55

B. 45



C. 48

D. 44

Q3 Mathematics

A retailer offers the given discount schemes for buyers on an article. Which of the following schemes will be least beneficial to the customer?

- i. A discount of 34%
- ii. A discount of 37% followed by a discount of 8%
- iii. Successive discounts of 7% and 27%

A. Scheme iii



B. Both scheme ii and scheme iii

C. Scheme ii

D. Scheme i

Q4 Mathematics

The amount on a sum of ₹1,800 at 10% per annum compound interest, compounded annually, in 2 years will be:

A. ₹2,178



B. ₹2,506

C. ₹3,118

D. ₹2,820

Q5 Mathematics

If the number $2X73Y5$ is divisible by 11, then find the value of $(X-Y)$.

A. 6

B. 1



C. 3

D. 5

Q6 Mathematics

In $\triangle ABC$, $BD \perp AC$ at D and $\angle DBC = 65^\circ$. E is a point on BC such that $\angle CAE = 30^\circ$. What is the measure of $\angle AEB$?

A. 53° B. 55° C. 56° D. 50°

Q7 Mathematics

The ratio of 38 hours to 2 days is equivalent to what?

A. 21:27

B. 19:24



C. 12:19

D. 22:27

Q8 Mathematics

Poonam sold a book to Mohini at a loss of 5% and Mohini sold it to Rupashi at a profit of 8%. If Rupashi bought the book for ₹1,539, then what was the cost price (in ₹) of the book for Poonam?

A. 1,500



B. 1,650

C. 1,550

D. 1,600

Q9 Mathematics

If the area of a square is 15.21 cm^2 , then the perimeter (in cm) of the square is:

A. 12.4

B. 16.5

C. 13.8

D. 15.6



Q10 Mathematics

Find the greatest number that divides 1005, 244 and 1343, leaving the remainders 5, 4 and 3, respectively.

- A. 30
- B. 15
- C. 25
- D. 20

**Q11 Mathematics**

P and Q together can fill a cistern with water in 6 hours. If P alone can fill the cistern with water in 12 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

- A. 3
- B. 7
- C. 6
- D. 4

**Q12 Mathematics**

A basket contains 96 fruits consisting of mangoes and oranges. If there are 48 more mangoes than oranges, how many mangoes are there?

- A. 64
- B. 96
- C. 72
- D. 88

**Q13 Mathematics**

In an election, 70% of the total voters cast their votes. Out of these, 60% voted for candidate X and the remaining voted for candidate Y. If candidate Y received 8400 votes, calculate the total number of registered voters.

- A. 30,000
- B. 40,000
- C. 32,000
- D. 25,000

**Q14 Mathematics**

A person saves 50% of his income. If his expenditure is ₹360, then his income (in ₹) is:

- A. 760
- B. 800
- C. 180
- D. 720

**Q15 Mathematics**

A mother is 25 years older than her daughter. In 15 years, the mother will be twice as old as the daughter. Find the daughter's current age.

- A. 20 years
- B. 10 years
- C. 35 years
- D. 25 years

**Q16 Mathematics**

A store is offering 'Buy 5, get 16 free' on household items. What is the net percentage discount (approximately) being offered by the store?

- A. 74.52%
- B. 76.19%
- C. 74.24%
- D. 78.42%

**Q17 Mathematics**

Simplify: $\sqrt{\sqrt{24^2 - 16^2} + 2^2} + \sqrt{2^2 \times 3^2} + \sqrt{169}$

- A. 7
- B. 3
- C. 2
- D. 5



Q18 Mathematics

Solve:
$$\frac{9.73 \times 9.73 \times 9.73 + 7.27 \times 7.27 \times 7.27}{9.73 \times 9.73 - 9.73 \times 7.27 + 7.27 \times 7.27}$$

A. 18

B. 15

C. 16

D. 17

**Q19** Mathematics

If the radius of a sphere is increased by 25%, find the percentage increase in its surface area.

A. 50.48%

B. 42.36%

C. 38.15%

D. 56.25%

**Q20** Mathematics

If 10% of 20% of $\frac{4}{7}$ of a number is 648, find the number.

A. 57140

B. 57580

C. 56700

D. 60230

**Q21** Mathematics

A person covers half the distance of a journey at 60 km/h and the other half at 30 km/h. What is the average speed for the entire journey?

A. 45 km/h

B. 50 km/h

C. 40 km/h

D. 55 km/h

**Q22** Mathematics

The average speed of a car running at 70 km/hr for 1 hour and 'p' km/hr for $1\frac{1}{2}$ hours is 58 km/hr. Find the value of p.

A. 62.5

B. 67.5

C. 50

D. 70



Q23 Mathematics

A tank has three pipes: A, B and C. Pipe A fills the tank in 4 hours, Pipe B fills it in 6 hours and Pipe C empties it in 12 hours. If the three pipes are opened alternatively for 1 hour each (A first, then B, then C), how long will it take to fill the tank?

A. 11 hours

B. $7\frac{1}{2}$



C. 9 hours

D. $10\frac{2}{3}$

Q24 Mathematics

Find the value of $\sec^2 50^\circ - \tan^2 50^\circ$.

A. 1



B. 0

C. 2

D. 0.5

Q25 Mathematics

If 896 bananas were distributed among three monkeys, respectively, in the ratio $\frac{4}{6} : \frac{2}{2} : \frac{2}{2}$, how many bananas did the third monkey get?

A. 338

B. 336



C. 335

D. 334



Mathematics

25 Questions • Answer Key

Q1 Mathematics

In $\triangle ABC$, $BD \perp AC$ at D and $\angle DBC = 21^\circ$. E is a point on BC such that $\angle CAE = 27^\circ$. What is the measure of $\angle AEB$?

- A. 81°
B. 96° ✓
C. 97°
D. 104°

Q2 Mathematics

A retailer offers the following discount schemes for buyers on an article.

- I. Two successive discounts of 14%.
II. A discount of 22% followed by a discount of 29%.
III. Successive discounts of 22% and 7%.
IV. A discount of 14% followed by a discount of 6%.

Which scheme will fetch the maximum selling price?

- A. III
B. II
C. I
D. IV ✓

Q3 Mathematics

Eight years ago, the ratio of Aman's age to Riya's age was 4 : 3. Eight years from now, the ratio of their ages will be 5 : 4. What is Aman's present age?

- A. 72 years ✓
B. 76 years
C. 70 years
D. 56 years

Q4 Mathematics

A person allows a 10% discount for cash payment from the marked price of a toy and still he makes a 10% gain. What is the cost price of the toy which is marked at ₹880?

- A. ₹720 ✓
B. ₹420
C. ₹520
D. ₹620

Q5 Mathematics

In an election, 60% of the total voters cast their votes. Out of these, 75% voted for candidate A and the remaining voted for candidate B. If candidate B received 7500 votes, calculate the total number of registered voters.

- A. 45,000
B. 40,000
C. 50,000 ✓
D. 60,000

Q6 Mathematics

A man receives ₹1,890 per month as salary. He saves 30% of his salary every month. His expenditure per month is:

- A. ₹1,336
B. ₹1,269
C. ₹1,418
D. ₹1,323 ✓

Q7 Mathematics

If three-fifths of a number is 4 more than one-half of the number, what is the number?

- A. 35
B. 40 ✓
C. 30
D. 45

Q8 Mathematics

The surface area of a sphere is 144π square units. What is the radius of the sphere?

- A. 10 units
B. 5 units
C. 6 units ✓
D. 8 units



Q9 Mathematics

Two trains A and B of lengths 496 m and 490 m are running at speeds of 12 m/s and 22 m/s, respectively, towards each other on parallel tracks. In how much time will they cross each other?

A. 22 seconds

B. 26 seconds

C. 29 seconds

D. 30 seconds

Q10 Mathematics

A car travels for 70 km at a speed of 60 km/hr, then for another 80 km at a speed of 80 km/hr, and finally for 50 km at a speed of 40 km/hr. What is the average speed of the entire journey? (Round off the answer to 2 decimal places)

A. 58.54 km/hr

B. 55.63 km/hr

C. 50.45 km/hr

D. 65.75 km/hr

Q11 Mathematics

If 63 is the mean proportion between x and 147, what is the value of x ?

A. 28

B. 29

C. 27

D. 25

Q12 Mathematics

Find the simple interest (in ₹) on ₹2,000 at 7% per annum rate of interest for the period from 9 February 2023 to 23 April 2023.

A. 26

B. 29

C. 28

D. 27

Q13 Mathematics

A person saves 60% of his income. If his expenditure is ₹560, then his income (in ₹) is:

A. 1,440

B. 1,336

C. 1,224

D. 1,400

Q14 Mathematics

If the HCF of two numbers is 12 and their product is 2160, what is the LCM of the two numbers?

A. 180

B. 190

C. 200

D. 184

Q15 Mathematics

The number of prime numbers between 469 and 474 is:

A. 2

B. 3

C. 0

D. 1

Q16 Mathematics

P and Q together can fill a cistern with water in 15 hours. If P alone can fill the cistern with water in 24 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

A. 20

B. 10

C. 11

D. 21

Q17 Mathematics

An item is sold for ₹7,200 after two successive discounts of 36% and 10%. What is the marked price (in ₹) of the item?

A. 12,500

B. 12,594

C. 12,596

D. 12,561

Q18 Mathematics

The arithmetic mean of the observations 47, 71, 82, 59, 22, 43, 46, 96 and 56 is:

A. 64

B. 58

C. 66

D. 60



Q19 Mathematics

What is the difference between the average of prime numbers between 60 and 70 and the average of multiples of 4 between 50 and 58?

A. 11

B. 10



C. 1

D. 9

Q20 Mathematics

A spherical metallic ball of density 3.5 gram/cm³ has total mass 3.168 kg. Find the cost of painting the ball at the rate of ₹5.6 per cm².

(Use $\pi = \frac{22}{7}$, $\text{Volume} = \frac{\text{Mass}}{\text{Density}}$)

A. ₹2,534.40



B. ₹2,830.60

C. ₹3,235.20

D. ₹3,534.70

Q21 Mathematics

If $a + \frac{1}{a} = 6$, then find the value of $a^2 + \frac{1}{a^2}$.

A. 38

B. 36

C. 34



D. 40

Q22 Mathematics

$4\frac{4}{31} - 6\frac{3}{31} - 5\frac{2}{21} + 8\frac{1}{21}$

A. $4\frac{4}{31}$



B. $8\frac{1}{21}$

C. $6\frac{3}{31}$

D. $5\frac{2}{21}$

Q23 Mathematics

If 241 bananas were distributed among three monkeys, respectively, in the ratio $\frac{7}{9} : \frac{3}{2} : \frac{2}{5}$, how many bananas did the third monkey get?

A. 34

B. 35

C. 36



D. 38



Q24 Mathematics

Find the value of $\frac{2\sqrt{\operatorname{cosec}^2 A - 1} \times \sqrt{1 - \cos^2 A}}{\sqrt{1 + \tan^2 A} \times 3\sqrt{1 - \sin^2 A}}$.

A. $\frac{2\sin A}{3}$

B. $\cos A$

C. $\frac{2}{3}$

D. $\frac{2\cos A}{3}$



Q25 Mathematics

Simplify: $\sqrt{144 \times 49} + \sqrt{64 \times 25} - \sqrt{100 \times 36}$

A. 64

B. 48

C. 50

D. 32



Mathematics

25 Questions • Answer Key

Q1 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 44^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 5 : 6, then what is the difference between the measures of $\angle Q$ and $\angle P$?

A. 5° B. 8° ✓C. 13° D. 7°

Q2 Mathematics

A garrison of 1209 men has provisions for 24 days. How long (in days) will the provisions last if the garrison is increased by 403 men?

A. 13

B. 28

C. 38

D. 18 ✓

Q3 Mathematics

Ravi buys a shirt with a marked price of ₹1,620. He receives two successive discounts of 20% and 10%. Calculate the price Ravi paid for the shirt.

A. ₹1,166.40 ✓

B. ₹1,330.50

C. ₹1,288.25

D. ₹1,260.45

Q4 Mathematics

Find the number of bricks required to build a wall 20 m long, 9.9 m high and 30 cm thick, using bricks of size 25 cm $\times$ 11 cm $\times$ 8 cm, if 10% of the wall volume is filled with cement.

A. 24,300 ✓

B. 30,200

C. 25,800

D. 26,500

Q5 Mathematics

The monthly incomes of two friends David and Ashish, are in the ratio 5 : 9, respectively, and each of them saves ₹39,000 every month. If the ratio of their monthly expenditure is 2 : 4, find the monthly income of David (in ₹).

A. 2,73,000

B. 1,96,000

C. 1,95,000 ✓

D. 1,94,000

Q6 Mathematics

The amount on a sum of ₹1,200 at 15% per annum compound interest, compounded annually, in 2 years will be:

A. ₹1,846

B. ₹1,587 ✓

C. ₹1,725

D. ₹1,646

Q7 Mathematics

The sum of two numbers is 45. One number is 5 more than the other. Find the larger number.

A. 35

B. 25 ✓

C. 15

D. 20

Q8 Mathematics

The age of T is 20 years more than the age of R. S's age is 10 years less than the age of P. P's age is half the age of R. The sum of ages of all is 130 years. What is the age of R in years?

A. 30

B. 40 ✓

C. 44

D. 36



Q9 Mathematics

Due to water crisis, 40% of the initial population left the village, and 10% of the remaining left the town for pursuing jobs. If presently, 1080 people inhabit the village, what is the ratio of the initial population to the present population?

A. 57:32

B. 50:23

C. 50:27



D. 52:32

Q10 Mathematics

A shopkeeper marks his goods at 40% above the cost price. He then offers a discount of 20% on the marked price. What is his profit percentage?

A. 15%

B. 10%

C. 18%

D. 12%

**Q11 Mathematics**

P and Q together can fill a cistern with water in 9 hours. If P alone can fill the cistern with water in 36 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

A. 6

B. 4

C. 3



D. 7

Q12 Mathematics

For 6 innings, a cricketer had an average of 100 runs. In the 7th inning, he scored 235 runs. His average score increased by _____. (Round off the answer to the nearest whole number.)

A. 11

B. 21

C. 19



D. 9

Q13 Mathematics

Find a single discount (approximately) equal to three consecutive discounts of 22%, 8% and 17%.

A. 43.24%

B. 43.38%

C. 42.91%

D. 40.44%

**Q14 Mathematics**

₹1,411 is divided among Pooja, Harsh and Madhur in such a way that if ₹12, ₹23 and ₹43 are deducted from their respective shares, they have money in the ratio 21:16:6. Find the actual share of Harsh.

A. ₹596

B. ₹646

C. ₹519



D. ₹546

Q15 Mathematics

A car travels 187 km in the first hour and 273 km in the second hour. What is the average speed (in km/hr) of the car for the whole journey?

A. 230



B. 223

C. 231

D. 222

Q16 Mathematics

A cistern has a hole at the bottom through which water leaks. A tap can fill the cistern in 9 hours and the hole at the bottom can empty the fully filled cistern in 12 hours. If both the tap and the hole are open, then what will be the time taken to completely fill the empty cistern?

A. 27 hours

B. 33.3 hours

C. 36 hours



D. 29.9 hours



Q17 Mathematics

What is the mode of the following data?

47, 51, 51, 48, 53, 54, 47, 52, 51, 46, 43, 47, 52, 40, 47, 41, 43, 43, 46, 47

A. 48

B. 47



C. 43

D. 51

Q18 Mathematics

The fourth proportional to 20, 15 and 8 is the same as the third proportional to A and 30. What is the value of A?

A. 147

B. 153

C. 148

D. 150

**Q19 Mathematics**

The marked price of a washing machine is ₹62,000. A shopkeeper allows a discount of 73% and gets a profit of 20%. What is the cost price of the washing machine?

A. ₹14,058

B. ₹14,038

C. ₹13,950



D. ₹13,966

Q20 Mathematics

What is the greatest volume container (in litres) that can measure 300 litres, 280 litres and 180 litres.

A. 60

B. 20



C. 120

D. 70

Q21 Mathematics

A ladder 10 metres long leans against a wall making an angle of 60° with the ground. Find the height (in metres) of the wall the ladder reaches.

A. $10\sqrt{2}$

B. $5\sqrt{2}$

C. $5\sqrt{3}$



D. $10\sqrt{3}$

Q22 Mathematics

The curved surface area and the height of a right circular cylinder are 924 cm^2 and 14 cm, respectively. Find its diameter (in cm).

Use $\pi = \frac{22}{7}$

A. 21



B. 24

C. 18

D. 20

Q23 Mathematics

A train of length 164 m takes 10 seconds to pass another train, 136 m long, coming from the opposite direction. If the speed of the first train is 82 km/hr, then find the speed of the second train.

A. 19 km/hr

B. 26 km/hr



C. 29 km/hr

D. 34 km/hr



Q24 Mathematics

Simplify the expression: $\frac{3^{(4+x)} \times 9^{(x-4)}}{27^{(x-3)} \times 3^3}$

A. 9



B. 81

C. 3

D. 27

Q25 Mathematics

The product of two numbers is 96 and their sum is 20. Find the value of the square of their difference.

A. 64

B. 4

C. 36

D. 16



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The sides of a triangle ABC are $AB = 5$ cm, $BC = 6$ cm and $CA = 7$ cm, respectively. Another triangle is formed by joining the mid-points of the sides of the triangle ABC. Find the perimeter of the second triangle in cm.

A. 12

B. 9

C. 18

D. 15

Q2 Mathematics

Find the number of all possible distinct pairs of two coprime integers such that their product is 180.

A. 4

B. 3

C. 2

D. 5

Q3 Mathematics

In a quadrilateral WXYZ, $\angle W = 74^\circ$ and $\angle X = 58^\circ$. The bisectors of $\angle Y$ and $\angle Z$ meet at O. What is the measure of $\angle ZOY$?

A. 60° B. 59° C. 66° D. 68°

Q4 Mathematics

Successive discounts of 16% and 7% are equivalent to a single discount of:

A. 21.88%

B. 20.45%

C. 20.42%

D. 25.42%

Q5 Mathematics

The price of fuel decreases by 45%, 60% and 55% in three successive months, but increases by 50% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price?

A. Increases by 91.17%

B. Increases by 82.11%

C. Decreases by 80.63%

D. Decreases by 85.15%

Q6 Mathematics

Two banks, A and B, offered loans at 3.5% and 7% per annum, respectively. Salil borrowed an amount of ₹4,80,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Salil after 4 years.

A. 66,700

B. 68,700

C. 68,200

D. 67,200

Q7 Mathematics

A retailer offers the following discount schemes for buyers on an article. Which scheme will be the LEAST beneficial to the customer?

i. A discount of 37%.

ii. A discount of 33% followed by a discount of 43%.

iii. Successive discounts of 46% and 22%.

A. Scheme ii

B. Scheme i

C. Scheme iii

D. Scheme i and Scheme iii

Q8 Mathematics

P and Q together can fill a cistern with water in 12 hours. If P alone can fill the cistern with water in 14 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

A. 21

B. 43

C. 22

D. 42



Q9 Mathematics

In a test, B got 50 marks while A got 75 marks, out of 95 maximum marks. What percentage of A's marks was B's marks? (Round off the answer to two decimal places.)

A. 78.95%

B. 150.46%

C. 66.67%



D. 95.27%

Q10 Mathematics

A trader buys some goods for ₹200. If the overhead expenses be 10% of the cost price, then at what price should it be sold to earn 25%?

A. ₹285

B. ₹275



C. ₹280

D. ₹270

Q11 Mathematics

Ten years ago, a father was three times as old as his son. Ten years from now, he will be twice as old as his son. What is the son's present age?

A. 25 years

B. 30 years



C. 40 years

D. 45 years

Q12 Mathematics

A cyclist travels 60 km to a town at a speed of 12 km/hr. Find the time taken by the cyclist.

A. 4 hours

B. 4.5 hours

C. 5.5 hours

D. 5 hours

**Q13 Mathematics**

Find the ratio between the fourth proportional of 1, 3 and 6 to the mean proportional of 12 and 3.

A. 1 : 6

B. 3 : 1



C. 3 : 2

D. 2 : 2

Q14 Mathematics

The arithmetic mean of the observations 95, 45, 85, 45, 51, 85, 84, 66 and 47 is:

A. 69

B. 67



C. 71

D. 59

Q15 Mathematics

The volume (in m^3) of a cuboidal tank with dimensions 34 m $\times$ 10 m $\times$ 26 m is:

A. 8868

B. 8886

C. 8840



D. 8835

Q16 Mathematics

Dileep has some hens and some goats. If the total number of animal heads is 33 and the total number of animal feet is 82, how many goats does Dileep have?

A. 7

B. 5

C. 6

D. 8



Q17 Mathematics

If $\cot \theta = \frac{14}{3}$, then what is the value of $\cos \theta$? ($0^\circ < \theta < 90^\circ$)

A. $\frac{14}{\sqrt{205}}$



B. $\frac{3}{14}$

C. $\frac{1}{7}$

D. $\frac{3}{\sqrt{205}}$

Q18 Mathematics

If $a + b + c = 14$, $ab + bc + ca = 47$ and $abc = 15$, then the value of $a^3 + b^3 + c^3$ is:

A. 802

B. 851

C. 859

D. 815



Q19 Mathematics

Pipe A can fill a cistern in 18 hours, and Pipe B can fill it in 12 hours. However, there is a leakage in the cistern that can empty it in 36 hours. If both pipes and the leakage are active, how long will it take to fill $\frac{1}{3}$ rd part of the cistern?

A. 2 hours

B. 3 hours



C. 4 hours

D. 1 hours

Q20 Mathematics

If $2^{3m} \times 8 = 2^9$ and $3^{2n} \times 9 = 3^6$, then find the value $\frac{m}{n}$.

A. 2

B. 1



C. $\frac{2}{3}$

D. $\frac{3}{2}$



Q21 Mathematics

If 80% of 50% of $\frac{3}{8}$ of a number is 537, find the number.

A. 5640

B. 3580 

C. 5110

D. 5610

Q22 Mathematics

If 602 bananas were distributed among three monkeys in the ratio $\frac{1}{2} : \frac{1}{3} : \frac{1}{6}$, how many bananas did the first monkey get?

A. 281

B. 301 

C. 271

D. 311

Q23 Mathematics

If the mode of the given data is 22.75, find the cumulative frequency ($x < 9$).

Class Interval	0-7	7-14	14-21	21-28	28-35	35-42
Frequency	1	7	9	11	X	3

A. 28

B. 50

C. 36 

D. 42

Q24 Mathematics

Simplify:

$$36 - 30 + 300.3 - 0.26$$

A. 305

B. 306.3

C. 306.04 

D. 306

Q25 Mathematics

The average speed of a car running at 70 km/hr for 1 hour and 'p' km/hr for $1\frac{1}{2}$ hours is 55 km/hr. Find the value of p (in km/hr).

A. 65

B. 62.5

C. 45 

D. 57.5



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The monthly incomes of two friends Vipul and Vijay, are in the ratio 5 : 8, respectively, and each of them saves ₹84,000 every month. If the ratio of their monthly expenditure is 1 : 4, find the monthly income of Vipul (in ₹).

- A. 1,06,000
- B. 1,47,000
- C. 1,04,000
- D. 1,05,000



Q2 Mathematics

A cyclist covers a distance of 800 m in 2 minutes. Find the speed (in km/hr) of the cyclist.

- A. 24
- B. 20
- C. 16
- D. 25



Q3 Mathematics

The expenditure of Sudha is 150% more than her savings. If her expenditure decreases by 7% and savings increase by 21%, then by what percentage does her income increase?

- A. 5%
- B. 1%
- C. 6%
- D. 0.03%



Q4 Mathematics

A solid metallic sphere of radius 9 cm is melted and recast into 27 smaller solid spheres of equal size. Find the surface area of one small sphere.

- A. $36\pi \text{ cm}^2$
- B. $24\pi \text{ cm}^2$
- C. $42\pi \text{ cm}^2$
- D. $48\pi \text{ cm}^2$



Q5 Mathematics

The mode of a distribution is 21 and the mean is 60. The value of its median is:

- A. 45
- B. 49
- C. 51
- D. 47



Q6 Mathematics

An item with a marked price of ₹606 was sold for ₹304. What was the percentage of discount given? (Round off your answer to two decimal places.)

- A. 47.63%
- B. 50.65%
- C. 51.58%
- D. 49.83%



Q7 Mathematics

What is the mode of the following data?

53, 47, 53, 48, 53, 53, 40, 41, 50, 50, 55, 48, 54, 49, 49, 51, 46, 45

- A. 48
- B. 40
- C. 53
- D. 47



Q8 Mathematics

Find the single equivalent discount (rounded off to two decimal places) for successive discounts of 23%, 11%, and 29%.

- A. 51.34%
- B. 50.12%
- C. 53.72%
- D. 51.85%



Q9 Mathematics

₹6,874 is to be divided among three persons X, Y and Z. If the shares of X and Y are in the ratio 5 : 9 and that of Y and Z are in the ratio 9 : 7, what is the share (in ₹) of Y?

A. 2,946



B. 2,947

C. 2,945

D. 2,948

Q10 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 48^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 3 : 5, then what is the difference between the measures of $\angle Q$ and $\angle P$?

A. 22°

B. 24°



C. 27°

D. 29°

Q11 Mathematics

Find the value of $5\sec^2\theta - 5\tan^2\theta$.

A. 0

B. 1

C. -5

D. 5

**Q12 Mathematics**

'X' can complete the work order in 15 days and 'Y' can complete the same work order in 12 days. With the help of 'F', the three of them finished the work in 5 days. How many days would 'F' take to complete the work alone?

A. 10 days

B. 20 days



C. 15 days

D. 5 days

Q13 Mathematics

A wholesaler bought goods for ₹15,000 and sold them to a retailer at 20% profit. The retailer then sold the goods to customers at 25% profit. What is the final selling price to customers?

A. ₹22,500



B. ₹23,000

C. ₹22,000

D. ₹23,500

Q14 Mathematics

The sum of twin prime numbers is 36. Find the product of the twin prime numbers.

A. 323



B. 203

C. 155

D. 299

Q15 Mathematics

The sum of two numbers P and Q is 17 and their product is 56. Find the value of $P^2 + Q^2$.

A. 146

B. 158

C. 177



D. 162

Q16 Mathematics

The present age of Ramesh is 3 times that of Mahesh. Five years ago, the ratio of their ages was 4 : 1. What is the present age of Ramesh?

A. 45 years



B. 15 years

C. 30 years

D. 40 years

Q17 Mathematics

A father's current age is three times the age of his son. Five years ago from now, the father's age was four times the age of his son at that time. What are their present ages?

A. 40 years and 13 years

B. 45 years and 15 years



C. 42 years and 14 years

D. 50 years and 17 years

Q18 Mathematics

The amount on a sum of ₹4,900 at 10% per annum compound interest, compounded annually, in 2 years will be:

A. ₹6,509

B. ₹6,684

C. ₹5,988

D. ₹5,929



Q19 Mathematics

The market prices of paddy and jowar are in the ratio 1 : 3, and a family consumes them in the ratio 5 : 7 by quantity. Find the ratio of expenditure on paddy to that on jowar.

A. 5 : 21



B. 9 : 25

C. 6 : 22

D. 7 : 23

Q20 Mathematics

P and Q together can fill a cistern with water in 7 hours. If P alone can fill the cistern with water in 56 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

A. 4

B. 5

C. 3

D. 2

**Q21 Mathematics**

Keshav spends 70% of his income. If he saves ₹18,000, then his income (in ₹) is:

A. 12,600

B. 59,000

C. 60,000



D. 61,000

Q22 Mathematics

What is the volume of the largest sphere that can be carved out of a cube of edge 3 cm?

A. $2.5\pi \text{ cm}^3$

B. $4.5\pi \text{ cm}^3$



C. $7.4\pi \text{ cm}^3$

D. $6.5\pi \text{ cm}^3$

Q23 Mathematics

What is the Highest Common Factor (HCF) of 252 and 378?

A. 63

B. 126



C. 84

D. 42

Q24 Mathematics

If $(0.04)^2 \div (0.008) \times (0.2)^6 = (0.2)^x$, then find x.

A. 17

B. 6

C. 16

D. 7



Q25 Mathematics

Walking at $\frac{5}{6}$ th of his normal speed from his home, Lakshya is 24 minutes late in reaching his office.

The usual time taken by him to cover the distance between his home and his office is:

A. 120 minutes



B. 117 minutes

C. 121 minutes

D. 129 minutes



Mathematics

25 Questions • Answer Key

Q1 Mathematics

If 20% of a number is added to 66, then the result is the same number. 80% of the same number is:

A. 86

B. 76

C. 96

D. 66



Q2 Mathematics

The marked price of a painting was ₹6,400, but the shopkeeper offered a double discount in a successive manner of 25% and 12%. Ultimately for how much did he sell the item?

A. ₹4,161

B. ₹4,291

C. ₹4,224

D. ₹4,320



Q3 Mathematics

The fourth proportional to 12, a, and 2a is 54. What is the positive value of a?

A. 17

B. 20

C. 19

D. 18



Q4 Mathematics

Rohit goes to a shop to purchase a truck priced at ₹6,900. He is offered 4 discount options by the shopkeeper. Which of these options should he opt for to gain maximum advantage of the discount offered?

A. Single discount of 14%

B. Two successive discounts of 14% and 8%

C. Two successive discounts of 38% and 46%

D. Two successive discounts of 14% each



Q5 Mathematics

Two trains, A and B, of lengths 402 m and 286 m are running at speeds of 6 m/s and 37 m/s, respectively, towards each other on parallel tracks. In how much time will they cross each other?

A. 16 seconds

B. 14 seconds

C. 8 seconds

D. 21 seconds



Q6 Mathematics

The mode and median of a data are 27.5 and 23, respectively. What is the mean of the data? (Use empirical formula.)

A. 30.7

B. 26.8

C. 20.75

D. 11.95



Q7 Mathematics

A, B and C can do a piece of work in 3, 4 and 12 days, respectively. How long (in days) will they take to do twice the same work, working together?

A. 9

B. 6

C. 4

D. 3



Q8 Mathematics

The age of Ajay is 16 years more than that of Vijay. The sum of their ages 6 years ago was 56 years. Find Vijay's present age.

A. 26 years

B. 56 years

C. 18 years

D. 42 years



Q9 Mathematics

The arithmetic mean of the observations 85, 73, 89, 29, 20, 52, 22, 25 and 55 is:

- A. 56
- B. 57
- C. 54
- D. 50

**Q10 Mathematics**

Two banks, A and B, offered loans at 3.5% and 7% per annum, respectively. Gopal borrowed an amount of ₹5,00,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Gopal after 3 years.

- A. 52,500
- B. 53,500
- C. 54,000
- D. 52,000

**Q11 Mathematics**

A room is one and a half times as long as it is wide. The cost of carpeting the floor at ₹18 per square metre is ₹3,888, and the cost of whitewashing the four walls at ₹9 per square metre is ₹4,320. Find the volume of the room in cubic metres.

- A. 1654
- B. 1782
- C. 1696
- D. 1728

**Q12 Mathematics**

The price of fuel decreases by 55%, 40% and 15% in three successive months, but increases by 60% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price?

- A. Increases by 60.37%
- B. Increases by 67.93%
- C. Decreases by 68.69%
- D. Decreases by 63.28%

**Q13 Mathematics**

A person who spends 60% of his monthly income is able to save ₹8,242 per month. His monthly expenses (in ₹) are:

- A. 12,285
- B. 12,268
- C. 12,363
- D. 12,379

**Q14 Mathematics**

A car covers 100 km in the first hour, 150 km in the second hour, and 50 km in the third hour. If it continues at a speed of 60 km/hr for the next 2 hours, what is the average speed for the entire journey?

- A. 86 km/hr
- B. 82 km/hr
- C. 80 km/hr
- D. 84 km/hr

**Q15 Mathematics**

There are some rabbits and parrots in a farmhouse. The total number of animal heads is 180 and the total number of legs is 520. Find the number of rabbits in the farmhouse.

- A. 60
- B. 80
- C. 100
- D. 120

**Q16 Mathematics**

Pipes A and B can fill an empty cistern in 46 minutes and 32 minutes, respectively. Both Pipe A and Pipe B are opened together. After how much time should Pipe B be turned off so that the empty cistern is completely filled in a total of 23 minutes?

- A. 16 minutes
- B. 12 minutes
- C. 20 minutes
- D. 10 minutes

**Q17 Mathematics**

Each exterior angle of a regular polygon is 24° . Find the number of diagonals in this polygon.

- A. 90
- B. 70
- C. 60
- D. 80



Q18 Mathematics

The salaries of P, Q and R are in the ratio 10:8:2. If the increments of 11%, 20% and 35% are allowed, respectively, in their salaries, then what will be the new ratio of their salaries?

A. 37:32:9



B. 37:23:19

C. 40:39:14

D. 34:34:15

Q19 Mathematics

If a four – digit number $34X1$ is divisible by 7, then X^2 is:

A. 49

B. 25



C. 36

D. 16

Q20 Mathematics

If $x = \sqrt{30 + \sqrt{30 + \sqrt{30 + \sqrt{30 + \dots \infty}}}}$ and $y = \sqrt{30 - \sqrt{30 - \sqrt{30 - \sqrt{30 - \dots \infty}}}}$, then what will the remainder be when the product of x and y is divided by 7?

A. 2



B. 4

C. 3

D. 1

Q21 Mathematics

By selling a bicycle for ₹1,425, a shopkeeper gains 14%. If the profit is reduced to 8%, then the selling price will be:

A. ₹1,360

B. ₹1,390

C. ₹1,410

D. ₹1,350

**Q22 Mathematics**

A circle of radius 3 cm is drawn with its centre at one of the vertices of a regular hexagon of side 6 cm. What is the area (in cm^2) of the hexagon which is NOT overlapping with the circle?

A. $54\sqrt{2} + 2\pi$

B. $54\sqrt{3} - 3\pi$



C. $54\sqrt{3} + 3\pi$

D. $54\sqrt{2} - 2\pi$



Q23 Mathematics

Simplify the expression: $(7a + 4b)(7a - 4b)$

A. $49a^2 + 16b^2$

B. $21a^2 - 16b^2$

C. $49a^2 - 8b^2$

D. $49a^2 - 16b^2$ ✓

Q24 Mathematics

What is the fractional value of $3.627272727\dots$?

A. $\frac{351}{99}$

B. $\frac{399}{111}$

C. $\frac{359}{11}$

D. $\frac{399}{110}$ ✓

Q25 Mathematics

Simplify $\left(\frac{1}{1 - \sin A} + \frac{1}{1 + \sin A}\right) \times \cos^2 A$.

A. $\sec^2 A$

B. $2 \cos^2 A$

C. 2 ✓

D. $2 \sec^2 A$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

For 7 innings, a cricketer has an average of 90 runs. In the 8th inning, he scores 176 runs. His average score increased by _____. (Round off your answer to the nearest whole number.)

A. 11



B. 7

C. 14

D. 20

Q2 Mathematics

₹13,403 is divided among S, B and C in such a way that if ₹40, ₹83 and ₹68 be deducted from their respective shares, they have money in the ratio 21:11:4. Find the difference between the original shares of B and C.

A. ₹2,584



B. ₹2,719

C. ₹2,669

D. ₹2,519

Q3 Mathematics

Which of the following is the correct model for finding the Highest Common Factor (HCF) of two numbers?

A. Division Model: Divide both numbers by a common number to find the highest factor.

B. Prime Factorization Model: Find the prime factorization of both numbers, then multiply the common prime factors with the lowest powers.



C. Addition Model: Add the two numbers and check the common factors of the sum.

D. Subtraction Model: Subtract both the numbers and check the common factor.

Q4 Mathematics

What is the simple interest on a sum of ₹5,500, if the rate of interest for the first 4 years is 6% per annum and for the last 2 years is 5% per annum?

A. ₹1,870



B. ₹1,750

C. ₹1,660

D. ₹1,920

Q5 Mathematics

Two lines are planned such that the equations representing their paths are: $(k-4)x + 2y = 6$ and $2x + y = 4$. If the lines are to be constructed parallel to each other, what value of k will ensure that?

A. 8



B. 6

C. 7

D. 10

Q6 Mathematics

If third proportional of 75 and Z be 12, then what is the value of Z?

A. 27

B. 28

C. 30



D. 32

Q7 Mathematics

The number 8,33,525 is NOT divisible by:

A. 55

B. 15



C. 25

D. 35

Q8 Mathematics

The price of fuel decreases by 10%, 50% and 10% in three successive months, but increases by 45% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price? (Round off your answer to two decimal places.)

A. Increases by 46.86%

B. Decreases by 41.28%



C. Increases by 42.91%

D. Decreases by 44.56%



Q9 Mathematics

A dealer allowed a 77% discount on an article and was still able to manage a 49% profit. Find the ratio of the cost price to the listed price.

- A. 26 : 152
- B. 20 : 150
- C. 25 : 154
- D. 23 : 149

**Q10 Mathematics**

The average age of 24 students of a class is 17 years. If the age of the teacher is also included, the average age of the whole group becomes 18 years. The age (in years) of the teacher is:

- A. 45
- B. 43
- C. 42
- D. 44

**Q11 Mathematics**

A leaves point X at 9:00 AM and reaches point Y at 1:00 PM. B leaves point Y at 9:00 AM and reaches point X at 3:00 PM. At what time will they meet?

- A. 1:24 PM
- B. 10:24 AM
- C. 11:24 AM
- D. 12:36 PM

**Q12 Mathematics**

In a test, B got 50 marks while A got 75 marks, out of 80 maximum marks. What percentage of A's marks was B's marks? (Round off the answer to two decimal places.)

- A. 66.67%
- B. 93.75%
- C. 80.33%
- D. 150.46%

**Q13 Mathematics**

Two pipes, P and Q, can fill a cistern in 30 hours and 40 hours, respectively. If pipe P is opened alone for 15 hours and then closed, after which pipe Q fills the cistern until it is full, then what percentage of the cistern is filled by pipe P relative to the portion filled by pipe Q?

- A. 150%
- B. 50%
- C. 100%
- D. 120%

**Q14 Mathematics**

One pipe can fill a tank in 7 minutes while another pipe can empty the completely filled tank in 56 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-half of the tank?

- A. 9
- B. 5
- C. 8
- D. 4

**Q15 Mathematics**

A vendor buys a washing machine for ₹12,000. He sells it to a retailer at 10% profit, and the retailer sells it to a customer at 15% loss. What is the final selling price?

- A. ₹11,000
- B. ₹11,220
- C. ₹11,620
- D. ₹11,420

**Q16 Mathematics**

The ages of Renu and Kashish are in the ratio 9 : 8. After 5 years, the ratio of their ages will be 10 : 9. Find the difference between their present ages.

- A. 6 years
- B. 4 years
- C. 7 years
- D. 5 years



Q17 Mathematics

A grocer marked his goods at 50% above their cost price and sold them at a discount of X%. If he gained 35% profit, then find the value of X.

A. 11

B. 9

C. 12

D. 10 **Q18 Mathematics**

The measure of each interior angle of a regular pentagon is:

A. 78° B. 108° C. 128° D. 118° **Q19 Mathematics**

If 20% of a number is added to 66, then the result is the same number. 60% of the same number is:

A. 69.5

B. 49.5 

C. 79.5

D. 59.5

Q20 Mathematics

If $2x + \frac{2}{x} = 3$, what is $x^2 + \frac{1}{x^2}$?

A. $\frac{1}{3}$ B. $\frac{1}{4}$ C. $\frac{1}{2}$

D. 1

Q21 Mathematics

What is the volume (in cm^3 , rounded off to 1 decimal place) of a spherical shell whose internal and external diameters are 10 cm and 12 cm, respectively?

(Take $\pi = \frac{22}{7}$)

A. 323.9

B. 381.3 

C. 401.5

D. 345.7



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Q22 Mathematics

The perimeter of a square is equal to the one-half of radius of a circle whose area is 39424 cm^2 . What is the area of the square?

(Take $\pi = \frac{22}{7}$).

A. 196 cm²



B. 204 cm²

C. 169 cm²

D. 135 cm²

Q23 Mathematics

Find the value of x in the following expression.

$$(0.49)^4 \times (0.343)^4 \div (0.2401)^4 = (7 \div 10)^{x+2}$$

A. 2



B. 1

C. 4

D. 3

Q24 Mathematics

Walking at $\frac{3}{4}$ th of his normal speed from his home, Abhishek is 11 minutes late in reaching his office.

The usual time taken by him to cover the distance between his home and his office is:

A. 29 minutes

B. 26 minutes

C. 32 minutes

D. 33 minutes

**Q25** Mathematics

Which of the following is equal to K if $\sin^2 x + K = 1$?

A. $\cot^2 x$

B. $\tan^2 x$

C. $\cos^2 x$



D. $\sec^2 x$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

What is the least number that should be added to 443 so that the number obtained is exactly divisible by 12, 5 and 6?

A. 40

B. 41

C. 37



D. 33

Q2 Mathematics

The amount on a sum of ₹2,600 at 10% per annum compound interest, compounded annually, in 2 years will be:

A. ₹3,356

B. ₹3,928

C. ₹3,146



D. ₹3,269

Q3 Mathematics

If $63 : A :: A : 175$, then find the positive value of A.

A. 105



B. 108

C. 103

D. 104

Q4 Mathematics

The expenditure of Sudha is 100% more than her savings. If her expenditure decreases by 4% and savings increase by 26%, then by what percentage does her income increase?

A. 9%

B. 6%



C. 5%

D. 8%

Q5 Mathematics

An agent sells a pan with a marked price of ₹6,420 at a discount of 20%. What is the selling price (in ₹) of the pan?

A. 5,137

B. 5,136



C. 5,135

D. 5,138

Q6 Mathematics

The average of the squares of the first 4 natural numbers is:

A. 9.5

B. 7.5



C. 6.5

D. 8.5

Q7 Mathematics

In a quadrilateral IJKL, $\angle I = 35^\circ$ and $\angle J = 24^\circ$. The bisectors of $\angle K$ and $\angle L$ meet at Z. What is the measure of $\angle LKZ$?

A. 29.5° B. 34° C. 19.5° D. 27°

Q8 Mathematics

The number 77,792 is divisible by:

A. 14

B. 15

C. 12

D. 13



Q9 Mathematics

One pipe can fill a tank in 4 minutes while another pipe can empty the completely filled tank in 8 minutes. If both the pipes are opened together when the tank is empty, then how many minutes will it take to fill one-half of the tank?

A. 9 minutes

B. 5 minutes

C. 4 minutes



D. 8 minutes



Q10 Mathematics

The arithmetic mean of the observations 31, 36, 83, 84, 93, 47, 17, 45 and 50 is:

A. 47

B. 54



C. 61

D. 48

Q11 Mathematics

Pipes A and B can fill an empty cistern in 20 min and 35 min, respectively. Both Pipe A and Pipe B are opened together. After how much time should Pipe A be turned off so that the empty cistern is completely filled in a total of 28 min?

A. 4 min



B. 5 min

C. 10 min

D. 20 min

Q12 Mathematics

Train A departs from station X at 8:00 AM and travels towards station Y at a speed of 50 km/hr. Train B departs from station Y at 9:00 AM and travels towards station X at a speed of 60 km/hr. If the two trains meet at 9:45 AM, find one-fourth of the distance between stations X and Y (in km).

A. 33.225

B. 32.125

C. 33.125



D. 33.175

Q13 Mathematics

₹2,288 is divided among Pankaj, Meera, and Ashok in such a way that if ₹39, ₹47, and ₹40 are deducted from their respective shares, they have money in the ratio 17:15:14. Find the actual share of Meera.

A. ₹855

B. ₹605

C. ₹805

D. ₹752

**Q14 Mathematics**

A bookstore sells 2 maths books and 3 science books for ₹1,980. It also sells 3 mathsbooks and 2 science books for ₹1,920. What is the total cost of one maths book and one science book?

A. ₹760

B. ₹780



C. ₹800

D. ₹820

Q15 Mathematics

Find the effective price percentage of the marked price after three consecutive discounts of 20%, 5% and 21% (rounded off to two decimal places).

A. 63.04%

B. 62.04%

C. 60.04%



D. 58.66%

Q16 Mathematics

An uncle is currently six times as old as his nephew. In 20 years from now, he will be only twice as old. Find the nephew's current age.

A. 30 years

B. 5 years



C. 25 years

D. 15 years

Q17 Mathematics

A shopkeeper bought 20 kg of rice at ₹50 per kg and sold it at ₹45 per kg. What is his loss percentage?

A. 11%

B. 13%

C. 10%



D. 12%



Q18 Mathematics

What is the volume (in cm^3) of a sphere having diameter 18 cm?

(Use $\pi = 3.1$)

A. 2504.6

B. 1506.6

C. 3013.2



D. 1807.2

Q19 Mathematics

If $\tan \theta = \sqrt{3}$, where θ is an acute angle, then what is the value of $\sec \theta$?

A. 2



B. 3

C. 0.5

D. 1.5

Q20 Mathematics

Two successive increase of 40% each is by what percent more than two successive decrease of 40% each?

A. 52 %

B. 50 %



C. 43 %

D. 48 %

Q21 Mathematics

Solve: $\frac{(11)^3 - (10)^3}{(11)^2 + 11 \times 10 + (10)^2}$

A. 1



B. 2

C. 4

D. 3

Q22 Mathematics

If 30% of 10% of $\frac{2}{3}$ of a number is 577, find the number.

A. 32310

B. 28850



C. 30300

D. 32490



Q23 Mathematics

Water flows through a horizontal cylindrical pipe of internal radius 3.5 cm at 2 m per second. If the pipe is always half full, then what is the volume of water (in litres) discharged in 5 minutes?

(Use $\pi = \frac{22}{7}$)

A. 1455

B. 1275

C. 1155



D. 1045

Q24 Mathematics

A 300 m long train moving with a speed of 126 km/h crosses a platform in 12 seconds. A boy crosses the same platform in 15 seconds. What is the speed of the boy in m/s?

A. 5

B. 6

C. 7

D. 8

**Q25 Mathematics**

Simplify: $18 - [6 - \{4 - (8 - 6 - 3)\}]$

A. 16

B. 17



C. 19

D. 9



Mathematics

25 Questions • Answer Key

Q1 Mathematics

During the festive season, one large laddoo having radius 32 cm is made as prashad. After pooja, it is decided to make small laddoos from one large laddoo so as to distribute to the devotees. How many laddoos of radius 2 cm can be made?

A. 3896

B. 4096

C. 4132

D. 3964

Q2 Mathematics

In a town with 75,000 voters, 95% cast their votes, all of which were valid. There were three candidates: A, B, and C. Candidate A received 40% of the valid votes, while candidate B received 12% fewer votes than A. What percentage of the valid votes did candidate C receive?

A. 15.2%

B. 48%

C. 24.8%

D. 52%

Q3 Mathematics

If $P : 17 :: 42 : 6$, then find the value of P.

A. 122

B. 118

C. 116

D. 119

Q4 Mathematics

The average of first 6 odd natural numbers, is:

A. 7

B. 6

C. 5.5

D. 6.5

Q5 Mathematics

A, B and C can do a piece of work in 3, 9 and 18 days, respectively. How long (in days) will they take to do twice the same work, working together?

A. 4

B. 8

C. 12

D. 5

Q6 Mathematics

The volume of a sphere is numerically equal to its surface area. Find its radius (in units).

A. 4

B. 6

C. 3

D. 5

Q7 Mathematics

The mode of the observations 22, 21, 22, 20, 33, 34, 22, 29, 29, 31, 23, 23, 28, 32, 22, 26 and 27 is:

A. 22

B. 21

C. 20

D. 33

Q8 Mathematics

The difference between the present ages of two sisters is 3 years. After 2 years, the elder sister will be twice as old as the younger sister was 2 years ago. Find the sum of their ages after 8 years from now.

A. 31 years

B. 33 years

C. 39 years

D. 37 years



Q9 Mathematics

If 4 lines of a print, in a column of a book, contain 36 words, how many words will a column of 50 lines contain?

- A. 460
- B. 450
- C. 454
- D. 446

**Q10 Mathematics**

A dealer marks his goods at 25% above the cost price and allows a discount of 28% on the marked price. What is his gain or loss percentage?

- A. 10% loss
- B. 11% loss
- C. 8% loss
- D. 7% gain

**Q11 Mathematics**

The ratio of three numbers is 12 : 21 : 5. If 50 percent of the first number is 78, then what would be 50 percent of the absolute difference of third and second number?

- A. 104
- B. 103
- C. 102
- D. 105

**Q12 Mathematics**

A computer printed 1,76,400 lines in a given day. If the printer was in operation for 6 hours during the day, how many lines did it print per minute?

- A. 450
- B. 420
- C. 490
- D. 460

**Q13 Mathematics**

Two trains are running in opposite directions at the same speed. If the length of each train is 444 m and they cross each other in 37 seconds, then what is the speed of each train?

- A. 10 m/s
- B. 8 m/s
- C. 9 m/s
- D. 12 m/s

**Q14 Mathematics**

Find the effective price percentage of the marked price after three consecutive discounts of 11%, 18% and 20% (rounded off to two decimal places).

- A. 58.88%
- B. 61.4%
- C. 62.14%
- D. 58.38%

**Q15 Mathematics**

Find the simple interest (in ₹) on ₹4,000 at 6% per annum rate of interest for the period from 22 February 2024 to 23 April 2024.

- A. 41
- B. 39
- C. 38
- D. 40

**Q16 Mathematics**

Rahul covers a distance of 225 km in 15 hours. How many hours will he take to cover 40% less distance if he drives 20% faster than his original speed?

- A. 7
- B. 7.5
- C. 8.5
- D. 8

**Q17 Mathematics**

In $\triangle ABC$, $BD \perp AC$ at D and $\angle DBC = 66^\circ$. E is a point on BC such that $\angle CAE = 35^\circ$. What is the measure of $\angle AEB$?

- A. 65°
- B. 47°
- C. 59°
- D. 66°

**Q18 Mathematics**

A vertical stick 15 m long casts a shadow 5 m long on the ground. At the same time, a tower casts a shadow of 46.5 m long on the ground. The height of the tower is:

- A. 139.5 m
- B. 141.5 m
- C. 137.5 m
- D. 135.5 m



Q19 Mathematics

A person saves 10% of his income. If his expenditure is ₹360, then his income (in ₹) is:

- A. 324
- B. 400
- C. 440
- D. 36

Q20 Mathematics

X, Y and Z together can complete a piece of work in 8 days, while X alone can complete it in 24 days and Y alone can complete it in 36 days. Find in how many days Z alone can complete the work?

- A. 48 days
- B. 12 days
- C. 18 days
- D. 28 days

Q21 Mathematics

What is the LCM of 13, 65, and 91?

- A. 455
- B. 1825
- C. 5005
- D. 650

Q22 Mathematics

By how much is 60% of 45 greater than $\frac{1}{5}$ of 55?

- A. 13
- B. 16
- C. 14
- D. 10

Q23 Mathematics

A man bought some oranges at the rate of 10 for ₹300 and sold them at the rate of 5 for ₹175. What is his profit percentage (correct to two decimal places)?

- A. 16.67%
- B. 15.67%
- C. 18.67%
- D. 14.67%

Q24 Mathematics

The value of the expression $\frac{1.1^2 - 0.9^2}{0.011^2 - 0.009^2} \times 0.1^2$ is ____.

- A. 10
- B. 100
- C. 0.1
- D. 1



Find the value of $\left\{ \frac{25 \times (4)^{-4}}{(5)^{-3} \times 10 \times (4)^{-8}} \right\} \div \left\{ \frac{(3)^{-5} \times (10)^{-5} \times 125}{(5)^{-7} \times (6)^{-5}} \right\}$.

A. $\frac{149}{9}$

B. $\frac{89}{6}$

C. $\frac{73}{4}$

D. $\frac{128}{5}$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The arithmetic mean of the observations 17, 64, 55, 37, 65, 12, 51, 18 and 59 is:

A. 42



B. 44

C. 51

D. 37

Q2 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 27.5^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 5 : 6, then what is the difference between the measures of $\angle Q$ and $\angle P$?

A. 2° B. 5° C. 3° D. 8°

Q3 Mathematics

The area of a rectangle is 100.64 cm^2 . If its breadth is 7.4 cm, find the perimeter of the rectangle.

A. 50.32 cm

B. 46 cm

C. 38.25 cm

D. 42 cm



Q4 Mathematics

A solid cylinder of base diameter 4 cm is taken to cast a hollow cylinder of external diameter 12 cm, thickness 0.5 cm and height 15 cm. Find the height (in cm) of the solid cylinder (rounded off to 2 decimal places).

A. 20.85

B. 21.56



C. 18.65

D. 22.54

Q5 Mathematics

The number of prime numbers between 445 and 456 is:

A. 3

B. 1



C. 0

D. 2

Q6 Mathematics

Due to water crisis, 28% of the initial population left the village and 50% of the remaining population left the village for pursuing jobs. If presently, 4450 people inhabit the village, what is the ratio of the initial population to the present population?

A. 25:11

B. 106:83

C. 25:9



D. 107:87

Q7 Mathematics

Two banks, A and B, offered loans at 3.5% and 7% per annum, respectively. Manjit borrowed an amount of ₹5,00,000 from each bank. Find the positive difference (in ₹) between the amounts of simple interest paid to the two banks by Manjit after 2 years.

A. 36,000

B. 35,000



C. 36,500

D. 34,500

Q8 Mathematics

An item with a marked price of ₹889 was sold for ₹278. What was the percentage of discount given? (Round off the answer to two decimal places.)

A. 67.57%

B. 68.73%



C. 70.88%

D. 67.92%



Q9 Mathematics

Find the mean proportional of 17 and 272?

A. 71

B. 68



C. 70

D. 67

Q10 Mathematics

A grocer marked his goods at 75% above their cost price and sold them at a discount of X%. If he gained 33% profit, then find the value of X.

A. 27

B. 24



C. 26

D. 23

Q11 Mathematics

A man buys apples at ₹15 per apple and plans to sell them at a 13% profit. How many apples must he sell to make a total profit of ₹195?

A. 110

B. 195

C. 100



D. 95

Q12 Mathematics

A sum of ₹33,600 is divided among X, Y and Z. X gets ₹4,000 more than Y and Z gets ₹8,000 more than Y. Find the ratio of the amount received by X, Y and Z.

A. 14 : 10 : 17

B. 14 : 11 : 20

C. 13 : 11 : 18

D. 14 : 9 : 19

**Q13 Mathematics**

Two trains of lengths 346 m and 319 m are running with speeds of 67 km/h and 59 km/h, respectively, towards each other on parallel tracks. In how many seconds will they cross each other?

A. 18

B. 19



C. 12

D. 15

Q14 Mathematics

P and Q together can fill a cistern with water in 9 hours. If P alone can fill the cistern with water in 36 hours, then in how many hours will Q alone fill three-fourth of the same cistern with water?

A. 19

B. 10

C. 18

D. 9

**Q15 Mathematics**

The average of 7 numbers is 23. If each number is increased by 4, what will the new average be?

A. 23

B. 31

C. 7

D. 27

**Q16 Mathematics**

If $5^{x+y} = 3125$ and $3^{3x-y} = 2187$, then the value of $41x - 32y$ is:

A. 55

B. 53

C. 57

D. 59

**Q17 Mathematics**

Find a number such that when 8 is subtracted from 4 times the number, the result is 6 more than thrice the number.

A. 9

B. 14



C. 18

D. 23

Q18 Mathematics

A train, 150 m long, takes 30 seconds to cross a platform 350 m long. Find the speed (in km/hr) of the train.

A. 45

B. 40

C. 50

D. 60



Q19 Mathematics

Find the greatest number that exactly divides 46, 98 and 74.

- A. 5
- B. 2
- C. 1
- D. 3

**Q20 Mathematics**

A father's current age is three times his son's age. Together, their ages add up to 48 years. How old is the son?

- A. 14 years
- B. 10 years
- C. 12 years
- D. 16 years

**Q21 Mathematics**

$\frac{1}{30}$ is what percentage of $\frac{2}{40}$? (Round off the answer to two decimal places.)

- A. 133.33%
- B. 81.67%
- C. 66.67%
- D. 76.67%

**Q22 Mathematics**

If $\frac{x^2 - 1}{x} = 4$, then find the value of $\frac{x^6 - 1}{x^3}$.

- A. 66
- B. 82
- C. 80
- D. 76

**Q23 Mathematics**

Simplify: $\frac{\sin^2\theta(1 + \cot^2\theta)}{\sec^2\theta - 1}$

- A. $1 - \cot^2\theta$
- B. $\cot^2\theta$
- C. $\tan^2\theta$
- D. $\operatorname{cosec}^2\theta$



Q24 Mathematics

Three pipes A, B and C can fill an empty tank in 30 minutes, 40 minutes and 45 minutes, respectively. All three pipes are opened at the same time to disperse liquid chemicals X, Y and Z from pipes A, B and C respectively. After 5 minutes, what is the proportion of chemical Y in the tank?

A. $\frac{9}{29}$



B. $\frac{29}{72}$

C. $\frac{1}{6}$

D. $\frac{1}{8}$

Q25 Mathematics

If 20% of 50% of $\frac{5}{9}$ of a number is 364, find the number.

A. 6200

B. 6552



C. 6540

D. 5670



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Mathematics

25 Questions • Answer Key

Q1 Mathematics

The amount on a sum of ₹2,800 at 20% per annum compound interest, compounded annually, in 2 years will be:

A. ₹3,279

B. ₹4,968

C. ₹4,032



D. ₹4,341

Q2 Mathematics

A shopkeeper offers the following four schemes.

A) Two successive discounts of 18% and 10%

B) Buy 2, get 8

C) Discount of 24%

D) Two successive discounts of 42% and 45%

Which scheme is best for customers?

A. D

B. C

C. A

D. B



Q3 Mathematics

If the radius of a sphere is 6 cm, then its surface area is:

A. $288\pi\text{ cm}^2$ B. $72\pi\text{ cm}^2$ C. $144\pi\text{ cm}^2$ D. $36\pi\text{ cm}^2$

Q4 Mathematics

The sides of a triangle are 80 cm, 44 cm, and 52 cm. What is the length of its altitude corresponding to the side with a length of 44 cm?

A. 94 cm

B. 48 cm



C. 61 cm

D. 49 cm

Q5 Mathematics

The cost of 3 apples and 5 bananas is ₹75. The cost of 4 apples and 2 bananas is ₹86. Find the cost of a banana.

A. ₹5

B. ₹10

C. ₹20

D. ₹3



Q6 Mathematics

In an election, there are three candidates: A, B, and C. Candidate A gets 40% of the total valid votes, Candidate B gets 30%, and Candidate C gets the remaining votes. If 12% of the total votes were declared invalid and the total number of voters was 25,000, find the number of votes received by Candidate C.

A. 4400

B. 5500

C. 6600



D. 8800

Q7 Mathematics

The present age of Arman is four times the present age of his cousin, Riya. In 8 years, Arman's age will be three times Riya's age at that time. What is Arman's current age?

A. 48 years

B. 64 years



C. 72 years

D. 56 years

Q8 Mathematics

The average age of 31 students of a class is 35 years. If the age of the teacher is also included, the average age of the whole group becomes 36 years. The age (in years) of the teacher is:

A. 72

B. 69

C. 68

D. 67



Q9 Mathematics

If the mean proportional of P and 169 is 104, then find the value of P.

- A. 66
- B. 64
- C. 67
- D. 65

**Q10 Mathematics**

104 men have provisions for 12 weeks. They are joined by 52 men. How long (in weeks) will the provisions last?

- A. 8
- B. 12
- C. 6
- D. 10

**Q11 Mathematics**

Simplify: $[(3x + 4y)^2 - (3x - 4y)^2] \div (24xy)$

- A. 2
- B. 1
- C. -2
- D. -1

**Q12 Mathematics**

Amit purchases an old scooter for ₹5,600. He spends ₹1,400 on its repairs and sells it to Sumit for ₹7,700. Find the profit percentage of Amit.

- A. 12%
- B. 10%
- C. 9%
- D. 14%

**Q13 Mathematics**

The sum of three numbers is 840. If the ratio of the second number to the first number is 3 : 13 and that of the third number to the second number is 8 : 12, then find the second number.

- A. 140
- B. 142
- C. 141
- D. 139

**Q14 Mathematics**

Two trains, each 230 meters long, are running parallel to each other in the same direction. The speed of the faster train is 102 km/h and the speed of the slower train is 66 km/h. How long will it take for the faster train to completely pass the slower train?

- A. 56 seconds
- B. 36 seconds
- C. 42 seconds
- D. 46 seconds

**Q15 Mathematics**

Solve : $3 \times (10 \times (2^2)) \div 20 + 13 - 3$

- A. 13
- B. 17
- C. 25
- D. 16

**Q16 Mathematics**

The marked price of a toy truck is ₹3,050, and its selling price is ₹2,220. Find the discount percentage. (Round off the answer to two decimal places.)

- A. 26.88%
- B. 25.98%
- C. 29.73%
- D. 27.21%

**Q17 Mathematics**

Two trains started from station A to B with speeds of 68 km/h and 82 km/h on parallel lines. Find the distance (in km) between the two trains after 2.5 hours.

- A. 40
- B. 15
- C. 25
- D. 35

**Q18 Mathematics**

P and Q together can fill a cistern with water in 9 hours. If P alone can fill the cistern with water in 12 hours, then in how many hours will Q alone fill three-fourth of the same cistern with water?

- A. 55
- B. 27
- C. 54
- D. 28



Q19 Mathematics

A cricketer has an average of 54 runs for 9 innings. In the 10th inning, he scores 191 runs. By how many runs did his average increase? (Round off the answer to the nearest whole number.)

A. 5

B. 16

C. 14



D. 17

Q20 Mathematics

$\frac{1}{30}$ is what percentage of $\frac{2}{50}$? (Round off the answer to two decimal places.)

A. 83.33%



B. 166.67%

C. 98.33%

D. 93.33%

Q21 Mathematics

A cylindrical water tank with an internal radius of 70 cm and a height of 1.5 m is completely filled with water. Water is being pumped out at a rate of 5 litres per second. How long will it take for the water level to drop by 50 cm?

$\left(\text{Use } \pi = \frac{22}{7} \right)$

A. 154 seconds



B. 168 seconds

C. 176 seconds

D. 142 seconds

Q22 Mathematics

Evaluate: $\frac{\sec 33^\circ}{\operatorname{cosec} 57^\circ} + \sqrt{3} \cot 13^\circ \cot 21^\circ \cot 60^\circ \cot 69^\circ \cot 77^\circ - 2(\sin^2 41^\circ + \sin^2 49^\circ)$

A. 5

B. 0



C. 1

D. 2



Q23 Mathematics

Simplify $\frac{(5.9)^3 + (0.1)^3}{(5.9)^2 + (0.1)^2 - 5.9 \times 0.1}$.

A. 600

B. 60

C. 6000

D. 6

**Q24** Mathematics

A and B can complete a job in 18 days and 24 days, respectively. They worked together for 5 days, and then A left the job. In how many days will B finish the remaining work?

A. $15\frac{2}{3}$ daysB. $10\frac{2}{3}$ daysC. $12\frac{1}{3}$ daysD. $14\frac{1}{3}$ days**Q25** Mathematics

If 20% of 50% of $\frac{5}{9}$ of a number is 409, find the number.

A. 7700

B. 7362

C. 10140

D. 7110



Mathematics

25 Questions • Answer Key

Q1 Mathematics

A vertical pole stands on level ground. From a point 20 metres (m) away from the base of the pole, the angle of elevation to the top is 45° . What is the height of the pole?

A. 20 m



B. 25 m

C. 10 m

D. 15 m

Q2 Mathematics

For 10 innings, a cricketer has an average of 76 runs. In the 11th innings, he scores 193 runs. His average score increased by (rounded off to the nearest whole number):

A. 6

B. 11



C. 8

D. 9

Q3 Mathematics

The length of each side of a rhombus is 20 cm, and the length of one of the diagonals is 24 cm. Find the area (in cm^2) of the rhombus.

A. 384



B. 268

C. 356

D. 284

Q4 Mathematics

What is the minimum value that must be assigned to A so that the 8-digit number 130A1568 is divisible by 8?

A. 3

B. 0



C. 5

D. 2

Q5 Mathematics

A man buys a watch for ₹1,200 and sells it at a 10% loss. What is the selling price?

A. ₹1,180

B. ₹1,080



C. ₹1,220

D. ₹1,240

Q6 Mathematics

The distance between points A and B is 964 km. Kamlesh travels from A to B at 48 km/hr and returns at 52 km/hr. Find his average speed for the entire journey.

A. 51.85 km/hr

B. 48.86 km/hr

C. 49.92 km/hr



D. 50.69 km/hr

Q7 Mathematics

The price of fuel decreases by 35%, 40% and 50% in three successive months, but increases by 45% in the fourth month. What is the percentage increase/decrease in the price of fuel in the fourth month as compared to its original price? (Round off your answer to two decimal places.)

A. Increases by 77.27%

B. Decreases by 71.73%



C. Decreases by 70.64%

D. Increases by 76.37%

Q8 Mathematics

A brother is 2 years younger than his sister, and together their ages sum to 26 years. How old is the sister?

A. 12 years

B. 14 years



C. 18 years

D. 16 years



Q9 Mathematics

Find the value of r , if $25^{(r-1)} + 100 = 5^{(2r-1)}$

A. 2



B. 3

C. 4

D. 1

Q10 Mathematics

The arithmetic mean of the observations 18, 74, 33, 16, 35, 96, 40, 68 and 43 is:

A. 43

B. 47



C. 41

D. 44

Q11 Mathematics

The ratio of three numbers is 10 : 21 : 16. If 60 percent of the first number is 12, then what would be 40 percent of the difference of third and second number?

A. 5

B. 6

C. 2

D. 4

**Q12 Mathematics**

What price should Amit mark on a pair of jeans which cost him ₹7,700, so as to gain 32% after allowing successive discounts of 16% and 20%?

A. ₹14,993

B. ₹15,125



C. ₹15,183

D. ₹14,997

Q13 Mathematics

If $54 : A :: A : 150$, then find the positive value of A .

A. 87

B. 90



C. 93

D. 89

Q14 Mathematics

The monthly incomes of two friends, Vijay and Mohan, are in the ratio 5 : 9, respectively, and each of them saves ₹4,2000 every month. If the ratio of their monthly expenditure is 2 : 4, find the monthly income of Vijay (in ₹).

A. 2,11,000

B. 2,10,000



C. 2,09,000

D. 2,94,000

Q15 Mathematics

The amount on a sum of ₹7,100 at 10% per annum compound interest, compounded annually, in 2 years, will be:

A. ₹8,591



B. ₹8,468

C. ₹8,828

D. ₹9,031

Q16 Mathematics

Successive discounts of 20% and 29% are equivalent to a single discount of:

A. 43.2%



B. 42.5%

C. 46.66%

D. 46.44%

Q17 Mathematics

In a quadrilateral ABCD, $\angle A = 62^\circ$ and $\angle B = 19^\circ$. The bisectors of $\angle C$ and $\angle D$ meet at O. What is the measure of $\angle DOC$?

A. 28.5°

B. 34°

C. 40.5°



D. 50°

Q18 Mathematics

Find the product of two numbers whose sum is 24 and whose difference is 8.

A. 118

B. 128



C. 132

D. 124



Q19 Mathematics

A, B and C can do a piece of work in 3, 8 and 24 days, respectively. How long (in days) will they take to do twice the same work, working together?

A. 5

B. 12

C. 4



D. 8

Q20 Mathematics

From a solid cylinder of height 48 cm and radius 14 cm, a conical cavity of radius 7 cm and height 24 cm is drilled out from one end of the cylinder. A hemisphere of radius 14 cm is scooped out from the other end. Find the total surface area (in cm^2) of the remaining solid.

(Take $\pi = \frac{22}{7}$)

A. 6463

B. 6864

C. 6468



D. 6870

Q21 Mathematics

If $x^2 - 3x - 1 = 0$, find the value of $x^2 + \frac{1}{x^2} - 6$.

A. 3

B. 7

C. 9

D. 5

**Q22 Mathematics**

$\frac{1}{30}$ is what percentage of $\frac{1}{100}$ (rounded off to two decimal places)?

A. 666.67%

B. 343.33%

C. 333.33%



D. 348.33%

Q23 Mathematics

The value of $\left(\frac{75983 \times 75983 - 45983 \times 45983}{30000} \right)$ is:

A. 121966



B. 145214

C. 131325

D. 141669



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Q24 Mathematics

250m 150m 300m 270m

A. 150m

B. 250m

C. 300m



D. 270m

Q25 Mathematics

Three taps, A, B and C, can fill a tank in 12 hours, 15 hours and 18 hours, respectively. If tap A is open all the time and tap B and C are opened for one-one hour each alternately starting with tap B first, in how many hours will the tank be filled?

A. $5\frac{2}{11}$ hours

B. $6\frac{8}{9}$ hours



C. $3\frac{5}{7}$ hours

D. $4\frac{3}{8}$ hours



Mathematics

25 Questions • Answer Key

Q1 Mathematics

If 42 is the mean proportion between x and 294, what is the value of x ?

A. 6



B. 8

C. 4

D. 7

Q2 Mathematics

A 6-digit number 648XYZ is divisible by 4, 9 and 10. Find the value of $X + Z - Y$, where Y is the smallest possible number.

A. 5

B. 2

C. 0



D. 7

Q3 Mathematics

The points scored by a basketball team in a series of matches are as follows: 17, 2, 7, 27, 25, 5, 14, 18, 10, 24, 10, 8, 10, 12, 11. The value of the median is:

A. 12

B. 10

C. 14

D. 11



Q4 Mathematics

₹1,287 is divided among Rahul, Monika, and Yuvraj in such a way that if ₹36, ₹22, and ₹29 are deducted from their respective shares, they have money in the ratio 17:7:16. Find the actual share of Monika.

A. ₹160

B. ₹60

C. ₹260

D. ₹232



Q5 Mathematics

The amount on a sum of ₹2,400 at 20% per annum compound interest, compounded annually, in 2 years will be:

A. ₹3,280

B. ₹3,705

C. ₹3,206

D. ₹3,456



Q6 Mathematics

A shopkeeper offers the following four schemes.

A) Two successive discounts of 19% and 25%

B) Buy 7, get 6 free

C) Single discount of 50%

D) Two successive discounts of 3% and 39%

Which scheme is the best for the shopkeeper?

A. B

B. A



C. D

D. C

Q7 Mathematics

In a test, B got 50 marks while A got 75 marks, out of 90 maximum marks. What percentage of A's marks was B's marks? (Round off the answer to two decimal places.)

A. 150.91%

B. 90.33%

C. 83.33%

D. 66.67%



Q8 Mathematics

A cuboid of dimensions $18\text{ cm} \times 12\text{ cm} \times 8\text{ cm}$ is melted and recast into smaller cubes each having an edge of 4 cm. Find the ratio of the total surface area of one small cube to that of the original cuboid.

A. 3 : 19

B. 2 : 21

C. 1 : 10

D. 2 : 19



Q9 Mathematics

P and Q together can fill a cistern with water in 12 hours. If P alone can fill the cistern with water in 18 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

A. 10

B. 9



C. 19

D. 18

Q10 Mathematics

Two pipes can fill a cistern, individually, in 100 min and 25 min, respectively. There is a pipe located at the bottom of the cistern to empty it. If all the three pipes are opened simultaneously, then the empty cistern gets filled in 40 min. How long will the pipe at the bottom of the tank take to empty the completely filled cistern if no other pipe is then open?

A. 38 min

B. 39 min

C. 40 min



D. 37 min

Q11 Mathematics

Sachin bought 52 books for ₹1,120 from one shop and 47 books for ₹910 from another. What is the average price (in ₹, rounded off to two decimal places) he paid per book?

A. 21.51

B. 22.51

C. 20.51



D. 23.51

Q12 Mathematics

A man buys a sofa set for ₹24,000. He spends ₹3,000 on repairs and sells it for ₹30,000. He again buys it back for ₹28,000 and sells at a loss of ₹1,200. What is the overall profit?

A. ₹1,600

B. ₹1,800



C. ₹1,400

D. ₹1,200

Q13 Mathematics

If 8 years ago from now, a grandmother's age was 13 times the age of her granddaughter and after 12 years from now, the grandmother's age will be 3 times her granddaughter's age, then what is the difference of their ages at present (in years)?

A. 52

B. 48



C. 56

D. 68

Q14 Mathematics

The value of $16^3 - 10^3$ is:

A. 2837

B. 3096



C. 2957

D. 3064

Q15 Mathematics

In the first round of elections, Amit received 63% of the votes. In the second round, his support decreased by 24%. What percentage of the total votes did Amit receive after the second round?

A. 49%

B. 57.88%

C. 39%

D. 47.88%

**Q16 Mathematics**

The monthly incomes of two friends Ashish and Kiran, are in the ratio 5 : 8, respectively, and each of them saves ₹75,000 every month. If the ratio of their monthly expenditure is 2 : 4, find the monthly income of Ashish (in ₹).

A. 1,86,500

B. 1,88,500

C. 1,87,500



D. 2,62,500



Q17 Mathematics

The distance between points A and B is 966 km. Kamlesh travels from A to B at a speed of 52 km/hr and returns at a speed of 118 km/hr. Calculate Kamlesh's average speed for the entire journey (round off the answer to two decimal places).

A. 83.02 km/hr

B. 72.19 km/hr

C. 69.63 km/hr

D. 80.53 km/hr

Q18 Mathematics

A train can travel 60% faster than a car. Both start from point A at the same time and reach point B, which is 60 km away, simultaneously. However, the train loses 20 minutes due to stops at stations. What is the speed of the car?

A. 67.5 km/h

B. 57.5 km/h

C. 62.5 km/h

D. 52.5 km/h

Q19 Mathematics

Successive discounts of 12% and 13% are equivalent to what single discount?

A. 21.91%

B. 22.2%

C. 20.7%

D. 23.44%

Q20 Mathematics

If regular polygons of side 6 and 5 are inscribed in a circle of radius R, then what is the ratio of their areas?

A. $12\sqrt{3}:5\sqrt{10+2\sqrt{5}}$

B. $4\sqrt{3}:5\sqrt{10+2\sqrt{5}}$

C. $3\sqrt{3}:5\sqrt{10-2\sqrt{5}}$

D. $4\sqrt{3}:5\sqrt{10-2\sqrt{5}}$

Q21 Mathematics

If $43 \times 43 = 1849$, then 4.3×4.3 equals to:

A. 1.849

B. 0.1849

C. 18.49

D. 184.9



Q22 Mathematics

The numerator of a fraction is 6 less than the denominator. If 2 is added to both its numerator and denominator, it becomes $\frac{2}{3}$.

Find the simplest form of the fraction.

A. $\frac{4}{5}$

B. $\frac{7}{13}$

C. $\frac{5}{8}$



D. $\frac{6}{11}$

Q23 Mathematics

Evaluate $\sqrt{16} + \sqrt{900} + \sqrt{\frac{9.5 \times 0.0085 \times 18.9}{0.021 \times 0.0017 \times 1.9}}$.

A. 174

B. 154

C. 164

D. 184

**Q24 Mathematics**

The respective ratios between the numerical values of a curved surface area and the volume of a right circular cylinder is 1 : 7. If the respective ratio between the diameter and height of the cylinder is 7 : 6, what is the total surface area of the cylinder?

Use $\pi = \frac{22}{7}$

A. 3434 unit²

B. 4343 unit²

C. 4433 unit²

D. 3344 unit²

**Q25 Mathematics**

A ladder is placed against a vertical wall such that it makes an angle of 60° with the ground. If the foot of the ladder is 8.5 m away from the wall, then what is the height (in m) at which the ladder touches the wall?

(Use $\sqrt{3} = 1.7$)

A. 10.5

B. 15.54

C. 5

D. 14.45



Mathematics

25 Questions • Answer Key

Q1 Mathematics

Find the effective price percentage of the marked price after three consecutive discounts of 10%, 27% and 8% (rounded off to two decimal places).

A. 60.44%



B. 58.28%

C. 59.64%

D. 62.64%

Q2 Mathematics

A is three times as old as B. If six years are subtracted from B's age and four years are added to A's age, then A's age will be five times B's age. How old was A two years ago?

A. 54 years

B. 36 years

C. 49 years



D. 40 years

Q3 Mathematics

In a basketball game, a player scored 36 points using only 2-point shots and 3-point shots. She made 14 successful shots in total. How many 2-point and how many 3-point shots did she make?

A. Number of 2-point shots = 7; Number of 3-point shots = 7

B. Number of 2-point shots = 10; Number of 3-point shots = 4

C. Number of 2-point shots = 6; Number of 3-point shots = 8



D. Number of 2-point shots = 8; Number of 3-point shots = 6

Q4 Mathematics

The sum of the first 13 prime numbers is:

A. 238



B. 241

C. 243

D. 235

Q5 Mathematics

One pipe can fill a tank in 6 minutes, while another pipe can empty the completely filled tank in 7 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-half of the tank?

A. 43

B. 21



C. 22

D. 42

Q6 Mathematics

If the fourth proportion to 5, X and 3 is 63, then find the value of X.

A. 106

B. 107

C. 108

D. 105



Q7 Mathematics

A and B can complete a piece of work in 8 days and 12 days, respectively. A starts working on the task and after 3 days, B joins him. How many more days will it take to finish the work after B joins?

A. 5 days

B. 4 days

C. 3 days



D. 2 days

Q8 Mathematics

A dealer marks his goods at 25% above the cost price and allows a discount of 68% on the marked price. What is his gain or loss percentage?

A. 63% gain

B. 57% loss

C. 60% loss



D. 58% loss



Q9 Mathematics

The mode of given list of numbers 115, 190, 110, 185, 85, 110, 115, 102, 90, 95, 85, 68, 85 is:

- A. 92
- B. 68
- C. 110
- D. 85

**Q10 Mathematics**

A person's monthly income is ₹60,000. He spends 25% of his income on rent, 15% on groceries, 10% on transportation and saves the rest. How much money does he save every month?

- A. ₹30,000
- B. ₹25,000
- C. ₹45,000
- D. ₹40,000

**Q11 Mathematics**

Simplify: $(x + 5)(x - 5)$

- A. $x^2 + 25$
- B. $x^2 - 25$
- C. $x^2 + 10x + 25$
- D. $x^2 - 10x + 25$

**Q12 Mathematics**

The amount on a sum of ₹5,000 at 18% per annum compound interest, compounded annually, in 2 years will be:

- A. ₹6,984
- B. ₹7,068
- C. ₹6,962
- D. ₹7,015

**Q13 Mathematics**

The cost of a washing machine is 25% less than the cost of a TV. If the cost of the washing machine increases by 75% and that of the TV decreases by 49%, then what is the percentage change in the total cost of 6 washing machines and 3 TVs?

- A. Decrease by 26.4%
- B. Increase by 25.4%
- C. Decrease by 19.5%
- D. Increase by 24.5%

**Q14 Mathematics**

Two trains of lengths 316 m and 349 m are running at speeds of 58 km/h and 68 km/h, respectively, on parallel tracks in opposite directions. In how many seconds will they cross each other?

- A. 19 seconds
- B. 27 seconds
- C. 30 seconds
- D. 22 seconds

**Q15 Mathematics**

₹5,403 is divided among A, B, and C in such a way that if ₹79, ₹25, and ₹19 be deducted from their respective shares, they have money in the ratio 14:5:11. Find the difference between the B's and C's original shares.

- A. ₹1,206
- B. ₹1,156
- C. ₹1,050
- D. ₹956

**Q16 Mathematics**

Bibha bought a number of bananas at 2 for a rupee and an equal number at 3 for a rupee. To make a profit of 40%, she should sell a dozen for ₹_.

- A. 8
- B. 5
- C. 6
- D. 7

**Q17 Mathematics**

For 7 innings, a cricketer had an average of 59 runs. In the 8th inning, he scored 217 runs. His average score increased by _____. (Round off the answer to the nearest whole number.)

- A. 29
- B. 19
- C. 11
- D. 20



Q18 Mathematics

The volume of the cube is 1728 cm^3 . Find its total surface area.

A. 664 cm^2

B. 144 cm^2

C. 464 cm^2

D. 864 cm^2

**Q19 Mathematics**

Walking at $\frac{5}{7}$ th of his normal speed from his home, Shahid is 12 minutes late in reaching his office.

The usual time taken by him to cover the distance between his home and his office is:

A. 23 minutes

B. 34 minutes

C. 30 minutes

D. 28 minutes

**Q20 Mathematics**

$$\frac{x^3}{y^2} \times \frac{1}{x^{-1}} \div y^{-2} \times \left(\frac{1}{x^2}\right)^2$$

A. $\frac{x^2}{y^2}$

B. x^2

C. 1

D. x

**Q21 Mathematics**

Water flows through a cylindrical pipe of internal diameter 14 cm at 5 metre per second. Calculate the time (in minutes) the pipe would take to fill an empty rectangular tank $8 \text{ m} \times 6 \text{ m} \times 4.62 \text{ m}$.

$$\left(\text{Take } \pi = \frac{22}{7}\right)$$

A. 48

B. 44

C. 50

D. 46



Q22 Mathematics

If 90% of 80% of $\frac{2}{7}$ of a number is 576, find the number.

A. 2800



B. 3710

C. 6740

D. 5180

Q23 Mathematics

Simplify: $\frac{2}{5} + 1.4$

A. 1.8



B. 5.4

C. 2.8

D. 3.9

Q24 Mathematics

If regular polygons of sides 6 and 5 are inscribed in a circle of radius R, then what is the ratio of their areas?

A. $4\sqrt{3} : 5\sqrt{10 - 2\sqrt{5}}$

B. $4\sqrt{3} : 5\sqrt{10 + 2\sqrt{5}}$

C. $12\sqrt{3} : 5\sqrt{10 + 2\sqrt{5}}$



D. $3\sqrt{3} : 5\sqrt{10 - 2\sqrt{5}}$

Q25 Mathematics

If $\cos t = x$ and t is an acute angle, find the value of $\sin t$.

A. $\frac{x}{\sqrt{1-x^2}}$

B. $\sqrt{1-x^2}$



C. $x\sqrt{1-x^2}$

D. $\frac{1}{\sqrt{1-x^2}}$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The amount on a sum of ₹4,200 at 10% per annum compound interest, compounded annually, in 2 years will be:

A. ₹5,938

B. ₹5,082 ✓

C. ₹5,102

D. ₹5,942

Q2 Mathematics

Find the single equivalent discount (rounded off to two decimal places) for successive discounts of 18%, 6% and 25%.

A. 42.07%

B. 42.19% ✓

C. 42.89%

D. 41.85%

Q3 Mathematics

The marked price of a washing machine is ₹45,000. A shopkeeper allows a discount of 44% and gets a profit of 80%. What is the cost price of the washing machine?

A. ₹14,000 ✓

B. ₹13,850

C. ₹14,154

D. ₹14,042

Q4 Mathematics

The sum of three numbers is 270. If the ratio of the second number to the first number is 2:12 and that of the third number to the second number is 5:10, then find the second number.

A. 34

B. 36 ✓

C. 35

D. 37

Q5 Mathematics

A car goes to a place at a speed of 24 km/hr and returns from there at a speed of 28 km/hr. The average speed (in km/hr, rounded off to 2 decimal places) of the car in the entire journey is:

A. 25.85 ✓

B. 27.34

C. 24.82

D. 22.12

Q6 Mathematics

The ratio of numbers of girls and boys participating in sports of a school is 1 : 7. If the number of girls is 300, determine the number of boys participating in the sports.

A. 2100 ✓

B. 2120

C. 2130

D. 2075

Q7 Mathematics

An employee claims ₹20 for each kilometre when he travels by taxi and ₹10 for each kilometre if he travels by his own car. In one week, he claimed ₹2,200 for travelling 120 km. How many kilometres did he travel by taxi?

A. 90

B. 95

C. 100 ✓

D. 80

Q8 Mathematics

The ratio of length, breadth and height of a cuboid box is in the ratio 5 : 4 : 4 while the areas of the three adjacent faces of a cuboidal box are 160 cm^2 , 64 cm^2 and 40 cm^2 , respectively. Find the lateral surface area of the box (in cm^2).

A. 396

B. 288 ✓

C. 298

D. 306



Q9 Mathematics

A, B and C can do a piece of work in 3, 6 and 6 days, respectively. How long (in days) will they take to do twice the same work, working together?

A. 3



B. 4

C. 9

D. 6

Q10 Mathematics

A shopkeeper buys a toy for ₹388 and sells it for ₹485. Find his profit percentage.

A. 8%

B. 12%

C. 25%



D. 19%

Q11 Mathematics

If Akhil is as much older than Vijay as he is younger than Karthik, and sum of the ages of Vijay and Karthik is 84 years, then find the age of Akhil.

A. 40 years

B. 44 years

C. 42 years



D. 46 years

Q12 Mathematics

The product of two numbers is 324 and their HCF is 3. Then their LCM will be:

A. 102

B. 321

C. 36

D. 108

**Q13 Mathematics**

If the length of a cuboid is 21 cm, breadth is 2 cm and the volume of the cuboid is 9198 cm^3 , then find the height of the cuboid.

A. 212 cm

B. 219 cm



C. 228 cm

D. 223 cm

Q14 Mathematics

In a quadrilateral IJKL, $\angle I = 11^\circ$ and $\angle J = 79^\circ$. The bisectors of $\angle K$ and $\angle L$ meet at Z. What is the measure of $\angle LKZ$?

A. 31°

B. 55°

C. 51°

D. 45°

**Q15 Mathematics**

The average age of 48 students of a class is 19 years. If the age of the teacher is also included, the average age of the whole group becomes 20 years. The age (in years) of the teacher is:

A. 65

B. 69

C. 68



D. 67

Q16 Mathematics

In an election, there are two candidates. The winner obtains 49% votes of the total number of voters in the electoral list and defeats the other contestant by 120 votes. If 10% of the voters did not vote, find the total number of voters in the electoral list.

A. 1420

B. 1450

C. 1500



D. 1590

Q17 Mathematics

The number of prime numbers lying between 376 and 384 is:

A. 4

B. 3

C. 2



D. 1

Q18 Mathematics

The average of first 8 odd natural numbers, is:

A. 8



B. 7.5

C. 9

D. 8.5



Q19 Mathematics

A car covers three successive 20 km distances at speeds of 10 km/hr, 20 km/hr and 40 km/hr, respectively. Its average speed (in km/hr) is:

A. $15\frac{3}{7}$

B. $13\frac{2}{5}$

C. $19\frac{1}{5}$

D. $17\frac{1}{7}$ ✓

Q20 Mathematics

Solve:
$$\frac{(6.9)^3 + (2.8)^3 + (6.3)^3 - 3 \times 6.9 \times 2.8 \times 6.3}{(6.9)^2 + (2.8)^2 + (6.3)^2 - 6.9 \times 2.8 - 2.8 \times 6.3 - 6.9 \times 6.3}$$

A. 14

B. 18

C. 12

D. 16 ✓

Q21 Mathematics

From the top of a 60 – metre – high tower, the angle of depression to a car on the ground is 30° . Find the distance from the tower to the car. (Use $\sqrt{3} = 1.7$)

A. 128 m

B. 102 m ✓

C. 98 m

D. 118 m

Q22 Mathematics

By how much is 60% of 45 greater than $\frac{2}{5}$ of 15?

A. 15

B. 21 ✓

C. 19

D. 18



Q23 Mathematics

$\frac{1}{30}$ is what percentage of $\frac{2}{60}$?

A. 100%



B. 110%

C. 115%

D. 200%

Q24 Mathematics

A contractor employed 24 men to build a wall, and they completed the work in 12 days. After working together for 5 days, 6 men leave the job and do not return. How many days more will the remaining men take to complete the work?

A. $8\frac{2}{3}$ days

B. $10\frac{1}{2}$ days

C. $9\frac{2}{3}$ days

D. $9\frac{1}{3}$ days

**Q25** Mathematics

Find the simplified value of $(\sqrt{48} + \sqrt{75}) \div \sqrt{3}$.

A. 9



B. 8

C. 7

D. 10



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Mathematics

25 Questions • Answer Key

Q1 Mathematics

In a region 86% of registered voters participated in voting. If the total registered voters are 18,000 in that region, then how many voters participated in voting?

A. 15,480 voters



B. 18,000 voters

C. 15,490 voters

D. 15,080 voters

Q2 Mathematics

After allowing a discount of 75% on the marked price of an article, it is sold for ₹69,356. Find its marked price (in ₹).

A. 2,77,594

B. 2,77,431

C. 2,77,424



D. 2,77,339

Q3 Mathematics

The arithmetic mean of the observations 25, 92, 48, 17, 38, 93, 37, 90 and 73 is:

A. 57



B. 67

C. 58

D. 55

Q4 Mathematics

P and Q together can fill a cistern with water in 12 hours. If P alone can fill the cistern with water in 21 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

A. 15

B. 8

C. 7



D. 14

Q5 Mathematics

Two trains, X and Y, are running along parallel tracks towards each other. The length of train X is 150 m, and the length of train Y is 250 m. Train X is running at a speed of 60 km/hr, and train Y is running at a speed of 90 km/hr. How much time will it take for train X to cross train Y?

A. 7.6 seconds

B. 10.6 seconds

C. 9.6 seconds



D. 8.6 seconds

Q6 Mathematics

There were two candidates in an election. One candidate got 28% of the total valid votes and lost by 13,200 votes. Find the total number of valid votes.

A. 40,000

B. 60,000

C. 50,000

D. 30,000



Q7 Mathematics

The number of prime numbers between 368 and 376 is:

A. 1



B. 3

C. 0

D. 2

Q8 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 33^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 3 : 8, then what is the difference between the measures of $\angle Q$ and $\angle P$?

A. 34° B. 30° C. 26° D. 32° 

Q9 Mathematics

In a race, an athlete covers a distance of 390 m in 65 sec in the first lap. He covers the second lap of the same length in 195 sec. What is the average speed (in m/sec) of the athlete?

A. 12

B. 1

C. 3



D. 9

Q10 Mathematics

A sells to B at 20% profit, B sells to C at 25% loss, C sells to D at 40% profit. D pays ₹252. How much did A pay originally?

A. ₹180

B. ₹175

C. ₹200



D. ₹210

Q11 Mathematics

Sarah's age is 5 years more than twice her sister Emma's age. If the sum of their ages is 29 years, how old is Sarah?

A. 21 years



B. 18 years

C. 26 years

D. 23 years

Q12 Mathematics

A total profit of ₹28,800 is to be distributed amongst P, Q and R such that $P : Q = 17 : 5$ and $Q : R = 6 : 12$. The share (in ₹) of Q in the profit is:

A. 4,500



B. 4,600

C. 4,650

D. 4,400

Q13 Mathematics

A cricketer has an average of 77 runs over 12 innings. If he scores 266 runs in the 13th inning, by how many runs (rounded off to the nearest whole number) does his average score increase?

A. 6

B. 15



C. 9

D. 19

Q14 Mathematics

In a test, B got 50 marks while A got 75 marks, out of 115 maximum marks. What percentage of A's marks was B's marks? (Round off your answer to two decimal places.)

A. 65.22%

B. 150.24%

C. 66.67%



D. 115.32%

Q15 Mathematics

A cistern has a hole in the bottom through which water is leaking. A tap can fill the cistern in 3 hours and the hole in the bottom can empty the fully filled cistern in 5 hours. If both the tap and the hole are open, then what will be the time taken to completely fill the empty cistern?

A. 8 hours

B. 7.5 hours



C. 12.8 hours

D. 5.6 hours

Q16 Mathematics

What price should Kunal mark on a hoodie which cost him ₹8,400, so as to gain 25% after allowing successive discounts of 20% and 25%?

A. ₹17,648

B. ₹17,509

C. ₹17,500



D. ₹17,676

Q17 Mathematics

Find the simple interest (in ₹) on ₹2,000 at 7% per annum rate of interest for the period from 8 February 2023 to 22 April 2023.

A. 29

B. 27

C. 28



D. 26

Q18 Mathematics

The sum of two numbers is 86 and their difference is 12. Find the product of the two numbers.

A. 1613

B. 1813



C. 1913

D. 1713



Q19 Mathematics

The sides of a triangle are in the ratio 3 : 4 : 5. A square has its perimeter equal to the perimeter of the triangle. If the difference between their areas is 48 cm^2 , find the perimeter of the triangle.

A. 52 cm

B. 42 cm

C. 48 cm ✓

D. 56 cm

Q20 Mathematics

Suman, Tariq and Neha invest sums in the ratio 8 : 25 : 15, respectively. If they earned a total profit of ₹44,544 at the end of the year, then what is the positive difference between the shares of Suman and Neha?

A. ₹6,498

B. ₹6,496 ✓

C. ₹6,493

D. ₹6,497

Q21 Mathematics

Evaluate: $3^5 \times 7^5 \div 21^3$

A. 341

B. 541

C. 21

D. 441 ✓

Q22 Mathematics

$-88 - 66$

A. 6

B. 8 ✓

C. -8

D. -6

Q23 Mathematics

A metallic cylindrical tube is open at both ends. The external diameter of the tube is 12 cm, and its length is 63 cm. The thickness of the metal tube everywhere is 0.4 cm. What is the total surface area (in cm^2) of the tube?

(Take $\pi = \frac{22}{7}$, and round off the answer to the nearest multiple of 5.)

A. 4625 ✓

B. 4615

C. 4630

D. 4620

Q24 Mathematics

If $5^{x+1} = 1$, what is the value of x?

A. 1

B. 0

C. -1 ✓

D. -5



The value of $\frac{3}{4}(\sin^2 3x - \tan^2 3x) + \frac{3}{4}(\cos^2 3x + \sec^2 3x)$ is _____.

A. 1

B. 1.5



C. 0.75

D. 0.5



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The number of prime numbers between 358 and 368 is:

- A. 3
B. 4
C. 2
D. 1



Q2 Mathematics

Two pipes can fill a cistern, individually, in 99 min and 36 min, respectively. There is a pipe located at the bottom of the cistern to empty it. If all the three pipes are opened simultaneously, then the empty cistern gets filled in 44 min. How long will the pipe at the bottom of the tank take to empty the completely filled cistern if no other pipe is then open?

- A. 66 min
B. 44 min
C. 93 min
D. 37 min



Q3 Mathematics

Evaluate $2\cot^2 45^\circ + 3\sec^2 30^\circ - 4\sin^2 30^\circ$.

- A. 6
B. 5
C. 7
D. 8



Q4 Mathematics

If the height of a triangle is increased by 20% and its base is decreased by 15%, then what will be the percentage change in its area?

- A. Decrease by 3%
B. Increase by 3%
C. Decrease by 2%
D. Increase by 2%



Q5 Mathematics

The cost of a washing machine is 25% less than the cost of a TV. If the cost of the washing machine increases by 88% and that of the TV decreases by 57%, then what is the percentage change in the total cost of 6 washing machines and 3 TVs?

- A. Increase by 30%
B. Increase by 36%
C. Decrease by 31%
D. Decrease by 23%



Q6 Mathematics

One pipe can fill a tank in 3 minutes, while another pipe can empty the completely filled tank in 6 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-half of the tank?

- A. 6
B. 4
C. 3
D. 7



Q7 Mathematics

A man bought goods worth ₹8,000 and sold half of them at a gain of 10%. At what gain percentage must he sell the remaining goods so as to gain 20% on the whole?

- A. 28%
B. 32%
C. 30%
D. 25%



Q8 Mathematics

In quadrilateral PQRS, the bisectors of $\angle R$ and $\angle S$ meet at the point T (inside the quadrilateral) and $\angle STR = 25.5^\circ$. If the ratio of $\angle P$ to $\angle Q$ is 8 : 9, then what is the difference between the measures of $\angle Q$ and $\angle P$?

- A. 5°
B. 3°
C. 1°
D. 6°



Q9 Mathematics

The volume (in m^3) of a cube with edges of 41 m, is:

- A. 68987
- B. 69087
- C. 68753
- D. 68921

**Q10 Mathematics**

The amount on a sum of ₹8,300 at 10% per annum compound interest, compounded annually, in 2 years will be:

- A. ₹10,479
- B. ₹10,043
- C. ₹10,985
- D. ₹9,983

**Q11 Mathematics**

A person saves 20% of his income. If his expenditure is ₹320, then his income (in ₹) is:

- A. 440
- B. 400
- C. 64
- D. 256

**Q12 Mathematics**

The perimeter of a square is 68 m. What is the length (in m) of one side?

- A. 17
- B. 16
- C. 15
- D. 18

**Q13 Mathematics**

Laxmi, Dhruv and Gauri started a business in partnership investing in the ratio of 13:6:12, respectively. At the end of the year, they earned a profit of ₹37,200, which is 75% of their total investment. How much did Dhruv invest (in ₹)?

- A. 9,766
- B. 9,692
- C. 9,600
- D. 9,336

**Q14 Mathematics**

The Rajdhani Express and Garib Rath Express run in the same direction with speeds of 114 km/hr and 60 km/hr, respectively, and their lengths are the same. What is the length of the Rajdhani Express if it completely crosses the Garib Rath express in 144 seconds?

- A. 1078 m
- B. 1070 m
- C. 1080 m
- D. 1084 m

**Q15 Mathematics**

If the marked price of a bedcover is 80% more than its cost price and a discount of 35% is announced on it, then find the profit percentage.

- A. 15%
- B. 16%
- C. 19%
- D. 17%

**Q16 Mathematics**

A car travels 158 km in the first hour and 110 km in the second hour. What is the average speed (in km/hr) of the car for the whole journey?

- A. 137
- B. 134
- C. 127
- D. 141

**Q17 Mathematics**

A salesman marks his goods 10% above the cost price and gives a discount of 80% on them. Find his loss percentage.

- A. 77%
- B. 79%
- C. 70%
- D. 78%

**Q18 Mathematics**

Chetan bought 52 books for ₹1,120 from one shop and 47 books for ₹905 from another. What is the average price (in ₹, rounded off to two decimal places) he paid per book?

- A. 20.45
- B. 22.45
- C. 21.45
- D. 23.45



Q19 Mathematics

The mode and median of a data are 70.2 and 58, respectively. What is the mean of the data? (Use empirical formula.)

A. 48.2

B. 45.5

C. 59.4

D. 51.9

**Q20 Mathematics**

If 10% of 40% of $\frac{1}{3}$ of a number is 512, find the number.

A. 40870

B. 38610

C. 37410

D. 38400

**Q21 Mathematics**

Three numbers are in the ratio $\frac{4}{10} : \frac{20}{18} : \frac{20}{11}$. The difference between the greatest and the smallest numbers is 39. Find the largest number.

A. 50

B. 51

C. 49

D. 48

**Q22 Mathematics**

If $\sqrt{x} + \frac{1}{\sqrt{x}} = 5$, find $x + \frac{1}{x}$.

A. 15

B. 32

C. 25

D. 23

**Q23 Mathematics**

Simplify the expression $\frac{(49)^n \times 7}{7^{2n}}$. If n is a positive integer, what is the result in terms of powers of 7?

A. 7^1

B. 7^{2n+1}

C. 7^0

D. 7^n



Q24 Mathematics

The sum of the present ages of a father and his two sons is 72 years. If the father's age is twice the age of the elder son, and the age of the younger son is 8 years less than the age of the elder son, find the age of the father.

A. 42 years

B. 40 years 

C. 35 years

D. 39 years

Q25 Mathematics

Simplify: $\frac{(0.45)^3 + (0.2)^3}{(0.45)^2 - 0.45 \times 0.2 + (0.2)^2}$

A. $\frac{13}{20}$ B. $\frac{65}{10}$ C. $\frac{43}{100}$ D. $\frac{1}{4}$ 

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Mathematics

25 Questions • Answer Key

Q1 Mathematics

₹10,896 is divided among A, B and C in such a way that if ₹91, ₹4 and ₹57 are deducted from their respective shares, they have money in the ratio 3:8:6. Find the difference between B's and C's original shares.

A. ₹1,414

B. ₹1,211

C. ₹1,164

D. ₹1,364

Q2 Mathematics

The mode and median of a data is 72.8 and 31, respectively. What is the mean of the data? (Use empirical formula)

A. 15.8

B. 5.8

C. 10.1

D. 7.2

Q3 Mathematics

What is the mode of the following data?

75, 70, 80, 70, 80, 71, 80, 66, 87, 82, 68, 73, 80, 75, 66, 64, 66, 87, 90, 68, 89, 82, 81, 81, 65, 81, 80

A. 75

B. 70

C. 80

D. 90

Q4 Mathematics

6336 is divisible by 9. What should be added to or subtracted from this number so that it will be divisible by 11?

A. 0

B. -1

C. 1

D. 3

Q5 Mathematics

A bus travels 240 km in 6 hours. If it travels at the same speed, how far will it travel in 4.5 hours?

A. 180 km

B. 140 km

C. 160 km

D. 175 km

Q6 Mathematics

A, B, and C can do a piece of work in 3, 3, and 12 days respectively. How long (in days) will they take to do thrice the same work, working together?

A. 5

B. 8

C. 12

D. 4

Q7 Mathematics

Find the ratio between the fourth proportional of 10, 15 and 18 to the mean proportional of 9 and 4.

A. 9:2

B. 10:5

C. 12:9

D. 7:4

Q8 Mathematics

Successive discounts of 16% and 22% are equivalent to what single discount?

A. 31.71%

B. 34.48%

C. 34.23%

D. 36.95%

Q9 Mathematics

The ratio of income to expenditure of a person is 8:5. What percentage of his income is his saving?

A. 37.5%

B. 25.4%

C. 31.3%

D. 20.8%



Q10 Mathematics

A dealer purchased an oven for ₹651. After allowing a discount of 86% on its marked price, he still gains 68%. Find the marked price of the oven.

A. ₹7,940

B. ₹7,978

C. ₹7,812

D. ₹7,740

Q11 Mathematics

A solid metallic cylinder of radius 5 cm and height 12 cm is melted and recast into smaller solid cylinders each of radius 2 cm and height 3 cm. Find the ratio of the total surface area of one small cylinder to the total surface area of the original cylinder.

A. 2 : 17

B. 1 : 7

C. 1 : 8

D. 2 : 15

Q12 Mathematics

The amount on a sum of ₹7,500 at 16% per annum compound interest, compounded annually, in 2 years will be:

A. ₹10,092

B. ₹10,861

C. ₹9,117

D. ₹10,160

Q13 Mathematics

A boy bought 4 long and 5 short notebooks for ₹305. If the difference in prices of the long and short notebooks is ₹20, then find the price (in ₹) of each long and short notebook, respectively.

A. 62; 42

B. 39; 19

C. 45; 25

D. 44.50; 24.50

Q14 Mathematics

Sarah's age is 5 years more than twice her sister Emma's age. If the sum of their ages is 29 years, how old is Emma?

A. 7 years

B. 8 years

C. 5 years

D. 6 years

Q15 Mathematics

A man buys 9 identical articles for a total of ₹16. If he sells each of them for ₹2, then his profit percentage will be ____%.

A. 12.5

B. 12.11

C. 11.11

D. 13.5

Q16 Mathematics

The cost of a washing machine is 25% less than the cost of a TV. If the cost of the washing machine increases by 30% and that of the TV decreases by 19%, then what is the percentage change in the total cost of 8 washing machines and 4 TVs?

A. Decrease by 13%

B. Increase by 11.2%

C. Decrease by 6%

D. Increase by 10.4%

Q17 Mathematics

Which is the greatest number that divides 47, 59 and 74 to leave the same remainder?

A. 7

B. 2

C. 3

D. 5

Q18 Mathematics

In $\triangle ABC$, $BD \perp AC$ at D and $\angle DBC = 76^\circ$. E is a point on BC such that $\angle CAE = 53^\circ$. What is the measure of $\angle AEB$?

A. 53°

B. 78°

C. 67°

D. 55°

Q19 Mathematics

If six cubes of 10 cm edge are joined end to end, the surface area (in cm^2) of the resulting solid will be:

A. 2350

B. 1300

C. 2600

D. 3900



Q20 Mathematics

Two pipes, A and B, can fill a tank in 30 minutes and 45 minutes, respectively, while a third pipe, C, can empty the tank in 24 minutes. Pipes A and B are opened together, and after 6 minutes, pipe C is also opened. What will be the total time required to fill the tank?

A. 51 minutes

B. 54 minutes ☒

C. 57 minutes

D. 48 minutes

Q21 Mathematics

A pendulum makes an angle of swing A (in degrees), such that $\sin A = 1/2$. Find the value of $\sin 3A$.

A. $\frac{3}{2}$

B. 1 ☒

C. $\frac{1}{2}$

D. $\frac{5}{8}$

Q22 Mathematics

Walking at $\frac{5}{6}$ th of his normal speed from his home, Shahid is 25 minutes late in reaching his office.

The usual time taken by him to cover the distance between his home and his office is:

A. 119 minutes

B. 125 minutes ☒

C. 128 minutes

D. 118 minutes

Q23 Mathematics

If $a + b = 4$ and $ab = 3$, find the value of $a^3 + b^3$.

A. 36

B. 28 ☒

C. 38

D. 32



Q24 Mathematics

The value of the square root of the expression $32 \times 64^{-2} \times \frac{2}{16^3} \times 4^{m+3}$ is 2. Then the value of m is _____.

A. 8

B. 6

C. 4

D. 7

**Q25** Mathematics

If 80% of 10% of $\frac{2}{3}$ of a number is 748, find the number.

A. 14420

B. 14025

C. 17790

D. 15470



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The LCM of two numbers 216 and 120 is 1080. Find the HCF of these numbers.

A. 24



B. 36

C. 32

D. 48

Q2 Mathematics

If ₹2,443 is divided among 363 children such that each girl and each boy get ₹6 and ₹7, respectively, then how many boys are there?

A. 285

B. 325

C. 225

D. 265



Q3 Mathematics

The marked price of a jeans was ₹7,750 but the shopkeeper offered successive discounts of 20% and 30%. Ultimately for how much did he sell the item?

A. ₹4,397

B. ₹4,224

C. ₹4,340



D. ₹4,356

Q4 Mathematics

A basket contains 96 fruits consisting of mangoes and oranges. If there are 42 more mangoes than oranges, then how many mangoes are there?

A. 79

B. 49

C. 59

D. 69



Q5 Mathematics

The price of a faucet and a wash basin are ₹860 and ₹2900, respectively. If the price of the faucet and that of the wash basin is increased by 5% and 10%, respectively, then find the price of 6 faucets and 6 wash basins.

A. ₹20,550

B. ₹36,500

C. ₹22,560

D. ₹24,558



Q6 Mathematics

If $(4^2)^a \times (16^2)^{2a} \times (3^4)^b \times (9^2)^{2b} = 2^{20} \times (9^2)^6$, find the values of a and b, respectively.

A. 2, 1

B. 3, 2

C. 2, 3

D. 1, 2



Q7 Mathematics

₹12,986 is divided among A, B and C in such a way that if ₹33, ₹70 and ₹19 are deducted from their respective shares, they have money in the ratio 14:8:2. Find the difference between B's and C's original shares.

A. ₹3,267



B. ₹3,166

C. ₹3,116

D. ₹3,366

Q8 Mathematics

The amount on a sum of ₹8,400 at 15% per annum compound interest, compounded annually, in 2 years will be:

A. ₹10,837

B. ₹11,668

C. ₹11,109



D. ₹11,339



Q9 Mathematics

The average of the first 10 odd natural numbers is:

- A. 9.5
- B. 10
- C. 10.5
- D. 11

**Q10 Mathematics**

The arithmetic mean of the observations 67, 76, 97, 34, 38, 63, 95, 95 and 74 is:

- A. 68
- B. 62
- C. 71
- D. 63

**Q11 Mathematics**

A shopkeeper offers the following four schemes.

- A) Two successive discounts of 19% and 19%
- B) Buy 2, get 10
- C) Discount of 11%
- D) Two successive discounts of 25% and 17%

Which scheme is best for customers?

- A. A
- B. C
- C. B
- D. D

**Q12 Mathematics**

A person covers a certain distance with a speed of 17 km/h in 8 min. If he wants to cover the same distance in 5 min, what should be his speed?

- A. 26.2 km/h
- B. 27.2 km/h
- C. 28.2 km/h
- D. 29.2 km/h

**Q13 Mathematics**

The income of Amit in 2019 was ₹22,200. He gets an increment of 10% every year. What was his income (in ₹) in 2021?

- A. 24,420
- B. 22,200
- C. 26,862
- D. 26,640

**Q14 Mathematics**

In an equilateral triangle ABC, point D lies on side BC such that, $3BD = BC$. Which of the following relations is correct?

- A. $7AD^2 = 9AB^2$
- B. $4AD^2 = 3AB^2$
- C. $3AD^2 = 4AB^2$
- D. $9AD^2 = 7AB^2$

**Q15 Mathematics**

One pipe can fill a tank in 9 minutes, while another pipe can empty the completely filled tank in 12 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-half of the tank?

- A. 36
- B. 19
- C. 18
- D. 37

**Q16 Mathematics**

A person earns ₹40,000 per month. He allocates 25% of his income to rent, 15% to food, and 10% to transportation, and saves the remainder. How much does he save every month?

- A. ₹10,000
- B. ₹24,000
- C. ₹12,000
- D. ₹20,000

**Q17 Mathematics**

A garrison of 1200 men has provisions for 13 days. How long (in days) will the provisions last if the garrison is increased by 360 men?

- A. 20
- B. 10
- C. 30
- D. 5



Q18 Mathematics

If $\sin \theta = 3/5$, then find the value of $\cos \theta$.

A. $3/5$

B. $5/4$

C. $4/5$



D. $\frac{\sqrt{3}}{2}$

Q19 Mathematics

The volume of a solid cylinder is 6776 cm^3 and its height is 44 cm. What is the total surface area of the solid cylinder?

(Use $\pi = \frac{22}{7}$)

A. 2273 cm²

B. 2221 cm²

C. 2244 cm²



D. 2227 cm²

Q20 Mathematics

The simplified value of $\left(x - \frac{1}{x}\right)\left(x + \frac{1}{x}\right)\left(x^2 + \frac{1}{x^2}\right)\left(x^4 + \frac{1}{x^4}\right)$ is:

A. $\left(x^7 + \frac{1}{x^7}\right)$

B. $\left(x^7 - \frac{1}{x^7}\right)$

C. $\left(x^8 + \frac{1}{x^8}\right)$

D. $\left(x^8 - \frac{1}{x^8}\right)$

**Q21 Mathematics**

The selling price of an item including GST is ₹1,680. The rate of GST is 20%. If the shopkeeper made a profit of 12%, then what is the cost price of the article (in ₹)?

A. 1,520

B. 1,280

C. 1,250



D. 1,205



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Q22 Mathematics

4 km/h 7 km/h 2 km/h 5 km/h

A. 4 km/h



B. 5 km/h

C. 2 km/h

D. 7 km/h

Q23 Mathematics

Four times the present age of Anil is equal to five times the present age of Bhavya. After 6 years, the age of Bhavya will be 6 years less than twice the present age of Anil. What is the difference (in years) between their present ages?

A. 4

B. 5

C. 3

D. 2

**Q24** Mathematics

A cistern has a leak at the bottom. A pipe can fill the cistern in 6 hours, but due to the leak, it takes 8 hours to fill the cistern. How long would the leak take to empty the full cistern?

A. 30 hours

B. 36 hours

C. 24 hours



D. 18 hours

Q25 Mathematics

Find the perimeter of the minor sector of a circle of radius 21 m subtending an angle of 45° at the centre. (Use $\pi = \frac{22}{7}$)

A. 56.5 m

B. 52.5 m

C. 58.5 m



D. 50.5 m



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The average of the first 14 odd natural numbers, is:

- A. 13.5
- B. 14.5
- C. 15
- D. 14



Q2 Mathematics

Which of the following numbers is divisible by 45?

- A. 306999
- B. 20475
- C. 555555
- D. 25436



Q3 Mathematics

A company earns a profit that is distributed among the company's three partners in the ratio of 7 : 13 : 9. If the difference between the smallest and the largest shares is ₹58,326, the total profit of the company is:

- A. 2,81,934
- B. 2,81,811
- C. 2,81,955
- D. 2,81,909



Q4 Mathematics

Keshav bought 52 books for ₹1,120 from one shop and 47 books for ₹915 from another. What is the average price (in ₹, rounded off to two decimal places) he paid per book?

- A. 22.56
- B. 21.56
- C. 23.56
- D. 20.56



Q5 Mathematics

In an election, 8640 people or 72% of the eligible voters cast their votes. If the number of eligible voters increases by 8% next year, how many eligible voters will there be in total next year?

- A. 13,860
- B. 13,960
- C. 12,860
- D. 12,960



Q6 Mathematics

Tom has been saving money for a new bike and has ₹12,000 in his saving account. He decides to save an additional ₹1,500 each week. How many weeks will it take for Tom to have a total of ₹21,000?

- A. 5 weeks
- B. 7 weeks
- C. 6 weeks
- D. 8 weeks



Q7 Mathematics

The ratio of Ratnesh's monthly income to expenditure is 12 : 7. His income is increased by 40% and expenditure is increased by 50%. What is the new ratio of income to expenditure?

- A. 4 : 3
- B. 10 : 7
- C. 11 : 6
- D. 8 : 5



Q8 Mathematics

A shopkeeper marks an article at ₹x and offers a discount of 63% on the marked price. He sells it for ₹481 after charging VAT of 25% on the discounted price. What is the value of x?

- A. 1,040
- B. 1,100
- C. 1,200
- D. 1,300



Q9 Mathematics

The amount on a sum of ₹6,200 at 20% per annum compound interest, compounded annually, in 2 years will be:

A. ₹9,928

B. ₹8,670

C. ₹8,036

D. ₹8,928 ✓

Q10 Mathematics

One pipe can fill a tank in 6 minutes, while another pipe can empty the completely filled tank in 24 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-half of the tank?

A. 9

B. 5

C. 4 ✓

D. 8

Q11 Mathematics

Two bells in a school ring at 8 am. One bell rings after every 30 minutes and the other after every 40 minutes. If the school gets over at 2 pm, how many times in a day do the bells ring together?

A. 3

B. 4 ✓

C. 2

D. 5

Q12 Mathematics

Find the single discount equivalent to two successive discounts of 29% and 28%.

A. 47.39%

B. 46.03%

C. 48.88% ✓

D. 51.29%

Q13 Mathematics

A, B and C are three candidates in an election. A got 18% votes and B got 43% votes, whereas C was on second rank. If B won the election by 6,996 votes, then find the total number of votes.

A. 1,55,545

B. 1,61,230

C. 1,74,900 ✓

D. 1,57,980

Q14 Mathematics

A shopkeeper marks an article at ₹2,000 and offers a discount of 10%. What is the selling price?

A. ₹1,900

B. ₹1,850

C. ₹1,800 ✓

D. ₹1,950

Q15 Mathematics

The lengths of the parallel sides of a trapezium are 20 cm and 10 cm, respectively. The lengths of the two non-parallel sides are 13 cm each. Find the area (in cm^2) of the trapezium.

A. 160

B. 180 ✓

C. 140

D. 120

Q16 Mathematics

A metallic cylindrical pipe has outer radius 7 cm, inner radius 5 cm, and length 14 cm. Find the volume of the metal used in the pipe.

A. $352\pi \text{ cm}^3$ B. $336\pi \text{ cm}^3$ ✓C. $342\pi \text{ cm}^3$ D. $346\pi \text{ cm}^3$ **Q17 Mathematics**

Pipe A and Pipe B can fill a cistern together in 8 hours. Pipe B is 25% more efficient than Pipe A. Find the capacity of the cistern, if it is given that pipe A fills the cistern at a speed of 5 litres per minute.

A. 5400 litres ✓

B. 8240 litres

C. 4200 litres

D. 7000 litres

Q18 Mathematics

The ratio of the ages of A and B at present is 5 : 1. Five years earlier from now, the ratio was 6 : 1. Find the present age of B.

A. 25 years ✓

B. 35 years

C. 20 years

D. 30 years



Q19 Mathematics

A car travels from city X to city Y, covering the first 120 km at a speed of 50 km/h and the remaining 180 km at a speed of 80 km/h. Calculate the average speed for the entire journey. (round off your answer to two decimal places).

- A. 63.52 km/h
- B. 64.12 km/h
- C. 64.92 km/h
- D. 64.52 km/h

**Q20 Mathematics**

$(x - 2)^2$ is equal to:

- A. $x^2 - 2x + 4$
- B. $x^2 - 4x + 2$
- C. $x^2 - 4x + 4$
- D. $x^2 + 4x + 4$

**Q21 Mathematics**

Compare P and Q, if $P = 5:2$ and $Q = 3:7$.

- A. $P = Q$
- B. $P < Q$
- C. $P > Q$
- D. $P = 2Q$

**Q22 Mathematics**

Simplify: $\sqrt{2061 - \sqrt{1268 + \sqrt{850 - 66}}}$

- A. 45
- B. 46
- C. 44
- D. 47

**Q23 Mathematics**

Simplify: $\tan^4 \theta + \tan^2 \theta$

- A. $\sec^4 \theta + 2\sec^2 \theta$
- B. $\sec^4 \theta - 2\sec^2 \theta$
- C. $\sec^4 \theta - \sec^2 \theta$
- D. $\sec^4 \theta + \sec^2 \theta$

**Q24 Mathematics**

A person has to cover a distance of 40 km in 5 hour. If he covers one – fourth of the distance in one – third of the total time, then what should his speed (in km/h) be to cover the remaining distance in the remaining time so that the person reaches the destination exactly on time?

- A. 9
- B. 13
- C. 4
- D. 6



The sum of all the interior angles of a polygon is 4500° . How many sides does the polygon have?

A. 24

B. 26

C. 27



D. 25



Mathematics

25 Questions • Answer Key

Q1 Mathematics

A shopkeeper marks an article at ₹ x and offers a discount of 54% on the marked price. He sells it for ₹437 after charging VAT of 52% on the discounted price. What is the value of x ?

A. 200

B. 500

C. 600

D. 625



Q2 Mathematics

The average price of three items of furniture is ₹16,425. If their prices are in the ratio 3 : 5 : 7, the price of the costliest item (in ₹) will be:

A. 7,665

B. 5,475

C. 9,855

D. 22,995



Q3 Mathematics

Find the single discount equivalent to two successive discounts of 5% and 8%.

A. 14.63%

B. 10.8%

C. 12.6%

D. 14.67%



Q4 Mathematics

P and Q together can fill a cistern with water in 8 hours. If P alone can fill the cistern with water in 20 hours, then in how many hours will Q alone fill three-fourth of the same cistern with water?

A. 10

B. 11

C. 21

D. 20



Q5 Mathematics

The compound interest on ₹5,625 for 6 months at 16% per annum, interest being compounded quarterly is:

A. ₹746

B. ₹459

C. ₹955

D. ₹702



Q6 Mathematics

A field is in the shape of a quadrilateral. One of its diagonals is 10 m long. The perpendicular distances from the other two vertices to this diagonal are 12 m and 13 m, respectively. What is the area of the field?

A. 125 m²B. 130 m²C. 110 m²D. 100 m²

Q7 Mathematics

What is the L.C.M. of 45, 63 and 81?

A. 2835

B. 2385

C. 2545

D. 2455



Q8 Mathematics

₹8,442 is divided among S, B, and C in such a way that if ₹7, ₹73, and ₹68 be deducted from their respective shares, they have money in the ratio 6 : 7 : 16. Find the difference between the B's and C's original shares.

A. ₹2,524

B. ₹2,624

C. ₹2,674

D. ₹2,569



Q9 Mathematics

The average of 6.5, 10.7, 20.2 and a is 17. The value of a is:

- A. 32.6
- B. 29.6
- C. 31.6
- D. 30.6

**Q10 Mathematics**

Simplify $(6pq + 14q)^2 - (6pq - 14q)^2$.

- A. $168p^2q^2$
- B. $336p^2q$
- C. $336pq^2$
- D. $168pq^2$

**Q11 Mathematics**

A sold an article to B at a loss of 12%. B sold it to C at a profit of 20%. If C paid ₹1,122 to B, find the cost price of the article for A.

- A. ₹1,062.50
- B. ₹1,038.80
- C. ₹985.30
- D. ₹999.70

**Q12 Mathematics**

The volume (in m^3) of a cube with edges of 19 m is:

- A. 6957
- B. 6859
- C. 6696
- D. 6748

**Q16 Mathematics**

If the ages of 2 members of a family are in the ratio 6:1, and the average of their ages is 35 years. Find the total of their ages after 11 years.

- A. 88 years
- B. 83 years
- C. 92 years
- D. 82 years

**Q13 Mathematics**

A store originally sold a jacket for ₹120. After a 15% increase in price, what is the new price of the jacket?

- A. ₹138
- B. ₹18
- C. ₹102
- D. ₹120

**Q14 Mathematics**

The ratio of the present ages of two friends, A and B, is 3:4. Four years ago, the ratio of their ages was 7:10. Find their present ages.

- A. 18 years and 24 years
- B. 12 years and 16 years
- C. 15 years and 20 years
- D. 21 years and 28 years

**Q15 Mathematics**

An 11-digit number 8732326687X is divisible by 18. What is the value of X?

- A. 1
- B. 3
- C. 5
- D. 2



Q17 Mathematics

Solve the following.

$$\left[\frac{1}{6} \times \{(36 \div 6) + (9 \div 3) - 3\} + 18\right]$$

A. 26

B. 23

C. 19



D. 20

Q18 Mathematics

The volume of a solid cylinder is 2926 cm^3 and its height is 19 cm. What is the total surface area of the solid cylinder?

$$\left(\text{Use } \pi = \frac{22}{7}\right)$$

A. 1175 cm²

B. 1121 cm²

C. 1106 cm²

D. 1144 cm²

**Q19 Mathematics**

Arman runs 8.8 km in 1 hour 20 minutes. How long will he take to run 26.4 km at double the previous speed?

A. 3 hours

B. 2 hours



C. $2\frac{3}{4}$ hours

D. $1\frac{1}{2}$ hours

Q20 Mathematics

A runs $\frac{5}{2}$ times as fast as B. If A gives B a start of 80 meters, how far from A's starting point should the winning post be so that A and B reach it at the same time?

A. 170 m

B. $133\frac{1}{3}$ m



C. 176 m

D. $181\frac{2}{3}$ m



Q21 Mathematics

The angle of elevation of the top of a tower from a point on the ground 48 m from the foot of the tower is 30° . Find the height of the tower in metres.

A. $16\sqrt{3}$



B. $14\sqrt{3}$

C. $12\sqrt{3}$

D. $4\sqrt{3}$

Q22 Mathematics

By how much is 60% of 45 greater than $\frac{1}{5}$ of 45?

A. 15

B. 16

C. 12

D. 18

**Q23 Mathematics**

If the numerator of a fraction is increased by 25% and the denominator is decreased by 9%, the value of new fraction becomes $\frac{5}{7}$. Which of the following is the correct statement w.r.t. the original fraction?

A. The difference between denominator and numerator is 12



B. The value of denominator is 13

C. The sum of numerator and denominator is 37

D. The numerator is greater than denominator by 10

Q24 Mathematics

Three people, X, Y and Z, are working together to plant trees in a garden. X and Y together can complete the job in 20 days. Y and Z together can complete the job in 24 days. Z and X together can complete the job in 30 days. How long will it take for X, Y and Z working together to complete the job?

A. 18 days

B. 12 days

C. 16 days



D. 14 days

Q25 Mathematics

The cost of 4 keychains and 3 wallets is ₹75. The cost of 2 keychains and 2 wallets is ₹48. What is the cost of 3 keychains and 1 wallet?

A. ₹32

B. ₹34

C. ₹30



D. ₹24



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The difference between a single discount of 46% and two successive discounts of 30% and 20% on the marked price of an article is ₹256. Find the marked price of the article (in ₹).

A. 12,200

B. 12,800

C. 12,600

D. 12,400

Q2 Mathematics

There are 156 boy students and 143 girl students in a school. The principal wants to divide them in sections, such that a section can have only boys or only girls. If all sections should have the same number of students, and the principal wants to have as fewer sections as possible, how many sections would be there in the school?

A. 23

B. 25

C. 43

D. 45

Q3 Mathematics

Find the volume of a cuboid whose length, breadth and height are in the ratio 4 : 3 : 2 and total surface area is 832 cm².

A. 1586 cm³B. 1556 cm³C. 1536 cm³D. 1516 cm³

Q4 Mathematics

₹13,525 is divided among A, B, and C in such a way that if ₹29, ₹70, and ₹28 be deducted from their respective shares, they have money in the ratio 19 : 6 : 8. Find the difference between the B's and C's original shares.

A. ₹712

B. ₹662

C. ₹762

D. ₹770

Q5 Mathematics

Successive discounts of 40% and 15% are equivalent to a single discount of _____.

A. 49%

B. 50%

C. 52%

D. 51%

Q6 Mathematics

The value of $13^3 - 8^3$ is:

A. 1685

B. 1725

C. 1430

D. 1769

Q7 Mathematics

In a quadrilateral ABCD, $\angle A = 36^\circ$ and $\angle B = 93^\circ$. The bisectors of $\angle C$ and $\angle D$ meet at O. What is the measure of $\angle DOC$?

A. 68° B. 62° C. 64.5° D. 69.5°

Q8 Mathematics

The number of two-digit numbers divisible by 6 is:

A. 18

B. 15

C. 16

D. 12

Q9 Mathematics

Find the single discount equivalent to two successive discounts of 28% and 16%.

A. 43.51%

B. 39.52%

C. 43.38%

D. 39.92%



Q10 Mathematics

The ratio of incomes of two persons is 8:5 and the ratio of their expenditure is 2:1. If each of them manages to save ₹160 per month, find the difference of their monthly income.

A. ₹220

B. ₹260

C. ₹240 ✓

D. ₹200

Q11 Mathematics

Evaluate the given expression.

$$35 - [25 - \{31 - (21 - 11 + 9)\}]$$

A. 19

B. 22 ✓

C. 25

D. 21

Q12 Mathematics

If the radius of a sphere is 3 cm, then its surface area is:

A. $36 \pi \text{ cm}^2$ ✓B. $98 \pi \text{ cm}^2$ C. $49 \pi \text{ cm}^2$ D. $72 \pi \text{ cm}^2$ **Q13 Mathematics**

If 66% of the first number is equal to three-fifths of the second number, what is the ratio of the first number to the second number?

A. 9 : 14

B. 10 : 11 ✓

C. 5 : 7

D. 8 : 11

Q14 Mathematics

What is the mode of the following data?

85, 73, 89, 82, 67, 61, 78, 69, 86, 68, 64, 76, 64, 85, 68, 85, 68, 81, 68, 72, 64, 72, 76, 84, 88

A. 73

B. 68 ✓

C. 85

D. 89

Q15 Mathematics

Rishi can do a piece of work in 11 days. Shan is 10% more efficient than Rishi. The number of days taken by Shan to do the same piece of work is:

A. 15

B. 11

C. 10 ✓

D. 20

Q16 Mathematics

A sum of ₹15,000 is lent at the rate of 15% per annum compound interest, compounded annually for two years. What is the interest received (in ₹) after two years?

A. 5,137.25

B. 4,738.25

C. 4,973.75

D. 4,837.50 ✓

Q17 Mathematics

The average of the first 16 odd natural numbers, is:

A. 15.5

B. 16 ✓

C. 16.5

D. 17

Q18 Mathematics

Nine years ago, Asha was thrice as old as Bhawna. Seven years from now, Asha will be twice as old as Bhawna. Find the present age of Bhawna.

A. 30 years

B. 28 years

C. 26 years

D. 25 years ✓

Q19 Mathematics

A man loses 20% of his money. He then spends 25% of what remains. If he is left with ₹525, what was his original amount?

A. ₹890

B. ₹885

C. ₹880

D. ₹875 ✓



Q20 Mathematics

A girl goes to school at a speed of 10 km/hr. She comes back with a speed of 40 km/hr. Find her average speed for the whole journey.

A. 6 km/hr

B. 16 km/hr



C. 21 km/hr

D. 13 km/hr

Q21 Mathematics

Pipe A can fill a cistern in 15 minutes and Pipe B can fill it in 35 minutes, while Pipe C can empty the full cistern in 1 hour. If all the pipes are turned on at the same time, in how much time (in minutes) will the cistern be full?

A. $14\frac{10}{11}$

B. $12\frac{8}{11}$



C. $10\frac{7}{11}$

D. $13\frac{9}{11}$

Q22 Mathematics

$10 : 6 : 15$ $10 : 15 : 66$ $10 : 15 : 10 : 6$

A. $6 : 10 : 15$

B. $10 : 15 : 6$

C. $10 : 6 : 15$

D. $15 : 10 : 6$

**Q23 Mathematics**

In an election held between two candidates, 75% voters cast their votes. Out of them 2% votes were declared invalid. One candidate got 9261 votes which was 75% of valid votes. In this election what was the total number of registered voters?

A. 17,800

B. 17,500

C. 16,800



D. 17,560

Q24 Mathematics

A shopkeeper bought 10 kg wheat at ₹20 per kg and 15 kg wheat at ₹30 per kg and mixed them. At what price per kg should he sell the mixed variety of wheat to earn 10% profit?

A. ₹28.60



B. ₹29.60

C. ₹27.60

D. ₹26.60



Q25 Mathematics

Find the value of $\sec^2 18^\circ - \cot^2 72^\circ + \sin^2 30^\circ + \operatorname{cosec}^2 60^\circ - \operatorname{cosec}^2 18^\circ + \tan^2 72^\circ$.

A. $\frac{12}{19}$

B. $\frac{19}{12}$ 

C. $\frac{19}{10}$

D. $\frac{10}{19}$



Mathematics

25 Questions • Answer Key

Q1 Mathematics

The speed of a train 200 m long is 50 km/hr. How much time will it take to pass a platform 600 m long?

A. 57.6 sec



B. 57 sec

C. 56 sec

D. 55 sec

Q2 Mathematics

A rectangular water tank 5 m long and 3 m wide contains water up to a depth of 1.50 m. The area of the wet surface is:

A. 54 m²B. 36 m²C. 39 m²D. 24 m²

Q3 Mathematics

A table is bought for ₹1,400 and sold at a loss of 6%. Find its selling price.

A. ₹1,310

B. ₹1,314

C. ₹1,312

D. ₹1,316



Q4 Mathematics

What is the smallest natural number that should be added to 9054 such that a remainder of 6 is left when the resulting number is divided by each of the numbers 28, 24, 56 and 29?

A. 678

B. 696



C. 695

D. 710

Q5 Mathematics

An item is sold for ₹8,900 after two successive discounts of 20% and 11%. What is the marked price (in ₹) of the item?

A. 12,495

B. 12,525

C. 12,670

D. 12,500



Q6 Mathematics

A man receives ₹9475 per month as salary. He saves 88% of his salary every month. His expenditure per month is:

A. ₹1053

B. ₹1168

C. ₹1137



D. ₹1114

Q7 Mathematics

If 66 is the mean proportion between x and 99, what is the value of x?

A. 43

B. 42

C. 44



D. 46

Q8 Mathematics

The expenditure of Sudha is 100% more than her savings. If her expenditure decreases by 4% and savings increase by 35%, then by what percent does her income increase?

A. 14%

B. 9%



C. 11%

D. 12%



Q9 Mathematics

A and B started moving at the same time towards each other from points X and Y, respectively. After meeting on the way, A and B took 95.4 hours and p hours, respectively, to reach Y and X, respectively. If the speed of B is 50% more than that of A, then what is the value of p ?

A. 40.4

B. 43.8

C. 42.4



D. 44.5

Q10 Mathematics

The area of a rectangle gets reduced by 21 m^2 if its length is reduced by 7 m and breadth is increased by 5 m and if its length is increased by 4 m and breadth is increased by 5 m, the area is increased by 67 m^2 . Find the original area of the rectangle.

A. 21 m^2



B. 15.6 m^2

C. 21.8 m^2

D. 12.8 m^2

Q11 Mathematics

The amount on a sum of ₹9,400 at 20% per annum compound interest, compounded annually, in 2 years will be:

A. ₹14,133

B. ₹13,189

C. ₹12,838

D. ₹13,536

**Q12 Mathematics**

The sum of the first pair of two-digit twin prime numbers is:

A. 28

B. 24



C. 26

D. 22

Q13 Mathematics

In an election with three candidates, M, N and R, candidate M secured 42% of the total votes, while candidate R obtained 34%. If the total number of votes polled was 37,700 and all were valid, how many votes did candidate N receive?

A. 9048



B. 9100

C. 9000

D. 9164

Q14 Mathematics

A shopkeeper fixed the marked price of an article as ₹2,40,000. He gave 30% and 18% successive discounts on one article and 48% discount on another article of the same marked price. On which of the two articles did the shopkeeper get more benefit and how much more was it?

A. Second article; ₹12,800

B. First article; ₹12,960



C. Second article; ₹10,960

D. First article; ₹11,560

Q15 Mathematics

If the mode of a data exceeds its mean by 34.8, then the mode exceeds the median by _____. (Use empirical formula to find the answer)

A. 19.3

B. 21.6

C. 23.2



D. 26.9

Q16 Mathematics

₹9,975 is divided among A, B, C and D in such a way that the shares of A and B, B and C, and C and D are in the ratios of 2 : 3, 4 : 5 and 6 : 7, respectively. The share of A (in ₹) is:

A. 1,560

B. 1,520



C. 1,490

D. 1,460



Q17 Mathematics

What is the mode of the following data?

65, 86, 86, 85, 69, 90, 71, 60, 86, 71, 86, 65, 81, 82, 67, 72, 84, 66, 75, 85, 68, 78, 61, 64, 74, 90

A. 86



B. 85

C. 69

D. 65

Q18 Mathematics

Rishi can do a piece of work in 12 days. Shan is 20% more efficient than Rishi. The number of days taken by Shan to do the same piece of work is:

A. 10



B. 12

C. 20

D. 15

Q19 Mathematics

Pipe A can fill a tank in 33 minutes and Pipe B can fill it in 22 minutes. Pipe C empties it. If all of the pipes are opened together, the tank will be full in 55 minutes. In how many minutes will pipe C empty the full tank?

A. $16\frac{6}{19}$

B. $15\frac{5}{19}$

C. $14\frac{4}{19}$

D. $17\frac{7}{19}$

**Q20 Mathematics**

Simplify: $\sqrt{121 \times 49} + \sqrt{64 \times 36} - \sqrt{100 \times 16}$

A. 72

B. 95

C. 85



D. 51

Q21 Mathematics

Find the value of $\tan 10^\circ \tan 18^\circ \tan 72^\circ \tan 80^\circ$

A. $\tan 18^\circ$

B. $\tan 80^\circ$

C. 1



D. -1



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Q22 Mathematics

Let A and B be the angles of regular polygons of sides 8 and 10 respectively. Then what is the value of $\sin^2\left(\frac{A}{3}\right) + \cos^3\left(\frac{5B}{6}\right)$?

A. $\frac{3}{8}$



B. $\frac{3}{4}$

C. $\frac{5}{8}$

D. $\frac{1}{4}$

Q23 Mathematics

Simplify the following.

$$(3x^2 + 4x^2) \div 7x$$

A. x



B. $\frac{12x}{7}$

C. $7x^2$

D. x^2

Q24 Mathematics

The present age of a father is 4 times the age of his daughter. Five years ago, the father was 7 times as old as his daughter. What is the present age of the daughter?

A. 10 years



B. 18 years

C. 15 years

D. 20 years

Q25 Mathematics

The cost of 2 chocolates and 3 cookies is ₹36. The cost of 1 chocolate and 2 cookies is ₹23. What is the cost of 4 chocolates and 5 cookies?

A. ₹52

B. ₹62



C. ₹66

D. ₹56



Mathematics

25 Questions • Answer Key

Q1 Mathematics

If the marked price of a fan is ₹775 and a discount of 12% is given on it, then what is the selling price of the fan?

A. ₹682



B. ₹680

C. ₹684

D. ₹686

Q2 Mathematics

A rare book dealer sells a vintage novel to a collector for ₹1,440. The collector later auctions it at a 25% profit. What price does the final buyer pay at the auction?

A. ₹1,860

B. ₹1,620

C. ₹1,800



D. ₹360

Q3 Mathematics

The ratio of the sum of exterior angles to the sum of interior angles of a regular polygon of n sides is $2 : 43$. What is the measure of an interior angle of the regular polygon?

A. 176° B. 174° C. 172° D. 170°

Q4 Mathematics

In a race, an athlete covers a distance of 450 m in 150 sec in the first lap. He covers the second lap of the same distance in 75 sec. What is the average speed (in m/sec) of the athlete?

A. 11

B. 4



C. 10

D. 5

Q5 Mathematics

Suman, Tariq and Neha invest sums in the ratio $6 : 11 : 12$, respectively. If they earned a total profit of ₹79,721 at the end of the year, then what is the positive difference between the shares of Suman and Neha?

A. ₹16,491

B. ₹16,494



C. ₹16,492

D. ₹16,493

Q6 Mathematics

In an election between two candidates, 78% of the voters cast their votes, out of which 4% votes were declared invalid. A candidate got 13,572 votes, out of which 58% were valid votes. Find the total number of voters enrolled in that election.

A. 28,680

B. 31,250



C. 30,150

D. 33,540

Q7 Mathematics

The amount on a sum of ₹6,400 at the rate of 15% per annum compound interest, compounded annually, in 2 years will be:

A. ₹8,375

B. ₹8,413

C. ₹8,464



D. ₹8,078

Q8 Mathematics

Three workers, A, B, and C, are assigned to paint a wall. A can complete the task in 8 hours, B in 12 hours, and C in 16 hours. If they all start together but C leaves after 2 hours, how much time in total will it take to finish the task?

A. 3 hours

B. 6 hours

C. 4.2 hours



D. 5.5 hours



Q9 Mathematics

The average of the first 12 odd natural numbers is:

- A. 12.5
- B. 12
- C. 13
- D. 11.5

**Q10 Mathematics**

Shivam spends 50% of his income. If he saves ₹42,000, then his income (in ₹) is:

- A. 83,000
- B. 21,000
- C. 85,000
- D. 84,000

**Q11 Mathematics**

The population of a village was 1,60,000. It increased by 15% in the first year and increased by 30% in the second year. Its population after two years will be _____.

- A. 2,39,200
- B. 2,08,000
- C. 2,32,000
- D. 1,84,000

**Q12 Mathematics**

Find the median for the data 9, 6, 8, 11, 16, and 22.

- A. 9
- B. 10
- C. 11
- D. 12

**Q13 Mathematics**

The price of each article of types P, Q, and R is ₹280, ₹185, and ₹105, respectively. Yogesh buys articles of each type in the ratio 4 : 2 : 5 and spends a total of ₹8,060. How many articles of type Q did he purchase?

- A. 12
- B. 4
- C. 8
- D. 6

**Q14 Mathematics**

What is the minimum value that must be assigned to A so that the 8-digit number 322A4828 is divisible by 4?

- A. 5
- B. 4
- C. 3
- D. 0

**Q15 Mathematics**

Amit can do a piece of work in 13 days. Gopal is 30% more efficient than Amit. The number of days taken by Gopal to do the same piece of work is:

- A. 13
- B. 20
- C. 10
- D. 15

**Q16 Mathematics**

Simplify $(5pq + 16q)^2 - (5pq - 16q)^2$.

- A. $160p^2q^2$
- B. $320p^2q$
- C. $320pq^2$
- D. $160pq^2$

**Q17 Mathematics**

A retailer offers the following discount schemes for buyers on an article. Which scheme will fetch the maximum selling price?

- A. A discount of 12% followed by a discount of 46%
- B. A discount of 23% followed by a discount of 15%
- C. Successive discounts of 25% and 36%
- D. Two successive discounts of 10%



Q18 Mathematics

If the total surface area of a cylinder is 3080 m^2 and its radius is 14 m , then what is the curved surface area of the cylinder? (Take $\pi = \frac{22}{7}$)

- A. 2048 cm^2
- B. 1978 cm^2
- C. 1798 cm^2
- D. 1848 cm^2

**Q19** Mathematics

What is the smallest natural number which when divided by 18, 35 and 140 leaves remainder 7 in each case?

- A. 1300
- B. 1270
- C. 1267
- D. 1337

**Q20** Mathematics

A mother is currently twice as old as her daughter. Ten years ago, the mother was three times as old as her daughter. What is the present age of the mother?

- A. 42 years
- B. 40 years
- C. 28 years
- D. 48 years

**Q21** Mathematics

If $x = 3 + \sqrt{8}$, find the value of $\sqrt{x} - \frac{1}{\sqrt{x}}$.

- A. 1
- B. $\frac{1}{\sqrt{2}}$
- C. 2
- D. $\sqrt{2}$



Q22 Mathematics

If the length of a rectangle is 5 cm more than the breadth and if the perimeter of the rectangle is 40 cm, then the length and breadth of the rectangle will be:

A. 11.4 cm , 8.6 cm

B. 12.4 cm , 7.6 cm

C. 12.5 cm , 7.5 cm



D. 10.5 cm , 9.5 cm

Q23 Mathematics

By decreasing the radius of a sphere by 25% whose surface area is 616 cm^2 , a new sphere is formed. Find the volume of the newly formed sphere. (Take $\pi = \frac{22}{7}$)

A. 616.475 cm³

B. 506.475 cm³

C. 556.375 cm³

D. 606.375 cm³

**Q24 Mathematics**

Find the value of : $\cos^2 30^\circ + \cos^2 60^\circ + \cos^2 90^\circ$

A. 1.25

B. 2

C. 1



D. 1.5

Q25 Mathematics

A man has to cover a distance of 228 km in 8 hours. If he covers two — thirds of this distance in $\frac{5}{8}$ th of the time, then what should be his speed (in km/hr, correct to one decimal place) to cover the remaining distance in the time left?

A. 23.3

B. 25.3



C. 22.2

D. 14.1



Mathematics

25 Questions • Answer Key

Q1 Mathematics

A man walks 684 m in 19 minutes, 1078 m in 22 minutes and 2198 m in 31 minutes. His average speed (in m/min) for the whole journey is:

A. 50

B. 53

C. 55



D. 49

Q2 Mathematics

An item is sold for ₹660 after allowing a discount of 20% on its marked price. Find the marked price of the item.

A. ₹835

B. ₹825



C. ₹830

D. ₹840

Q3 Mathematics

A shopkeeper offers the following four schemes.

- A) Two successive discounts of 28% and 28%
- B) Buy 1, get 4
- C) Discount of 35%
- D) Two successive discounts of 27% and 26%

Which scheme is best for the customer?

A. C

B. D

C. A

D. B



Q4 Mathematics

The population of a village was 10500. In a year with the increase in population of males by 10% and that of females by 15%, the population of the village becomes 11,718. What was the difference in the number of males and females in the village initially?

A. 3500

B. 3780



C. 3608

D. 3850

Q5 Mathematics

One pipe can fill a tank in 2 minutes, while another pipe can empty the completely filled tank in 4 minutes. If both the pipes are opened together when the tank is empty, how many minutes will it take to fill one-half of the tank?

A. 3

B. 2



C. 5

D. 4

Q6 Mathematics

The amount on a sum of ₹2,800 at the rate of 5% per annum compound interest, compounded annually, in 2 years will be:

A. ₹3,087



B. ₹3,384

C. ₹3,227

D. ₹3,089

Q7 Mathematics

A shopkeeper buys a toy for ₹500 and spends ₹50 on packaging. He then sells it to a customer at 10% profit. Find the selling price of the toy.

A. ₹650

B. ₹600

C. ₹550

D. ₹605



Q8 Mathematics

A car travelling at a speed of 42 km/hour can complete a journey in 12 hours. How long will it take to travel the same distance at 63 km/hour?

A. 7 hours

B. 5 hours

C. 8 hours



D. 3 hours



Q9 Mathematics

The average of the squares of the first 5 natural numbers is:

A. 13

B. 11



C. 12

D. 10

Q10 Mathematics

How many diagonals can be there in a regular polygon with 37 sides?

A. 640

B. 740

C. 629



D. 729

Q11 Mathematics

10 skilled persons can complete a work in 8 days and 10 semi-skilled persons take 12 days to complete the work. How many days will 4 skilled persons and 6 semi-skilled persons together take to complete the work?

A. 14 days

B. 8 days

C. 12 days

D. 10 days

**Q12 Mathematics**

Let a , b , α and β be prime numbers. n is the number of ordered pairs of a and b where $2 < a < b < 50$ and $b - a = 2$. Also, α and β are the least and the greatest prime numbers less than 50. What is the value of $n(\alpha + \beta)$?

A. 598

B. 354

C. 294



D. 493

Q13 Mathematics

A car's price is reduced by 10% in the first year and then increased by 10% in the second year. If the car's initial price was ₹25,000, what is its final price after both changes?

A. ₹25,000

B. ₹25,500

C. ₹24,500

D. ₹24,750

**Q14 Mathematics**

₹12,405 is divided among P, Q, and R in such a way that if ₹53, ₹88, and ₹76 be deducted from their respective shares, they have money in the ratio 15 : 20 : 9. Find the difference between Q's and R's original shares.

A. ₹2,997

B. ₹3,059



C. ₹3,097

D. ₹3,147

Q15 Mathematics

The average of 6.5, 10.7, 20.2 and a is 18. The value of a is:

A. 34.6



B. 33.6

C. 35.6

D. 36.6

Q16 Mathematics

Find the HCF of 148, 172, and 198.

A. 6

B. 3

C. 12

D. 2

**Q17 Mathematics**

Simplify:
 $(2^3)^2 \div 2^4$

A. 16

B. 4



C. 8

D. 2

Q18 Mathematics

A cylindrical water tank has a base radius of 7 m and a height of 10 m. Water is filled into the tank at a constant rate. After filling the tank completely, 5% of the water leaks out due to a crack at the bottom. The remaining water is transferred into another cylindrical tank whose base radius is 5 m. Find the height of water in the second tank.

A. 18.62 m



B. 18.26 m

C. 16.82 m

D. 12.68 m



Q19 Mathematics

If the areas of three adjacent faces of a cuboid are x , y , z square units, respectively, then the volume of the cuboid is:

A. $\sqrt{xyz}$ cubic units



B. $\sqrt{\frac{xyz}{2}}$ cubic units

C. xyz cubic units

D. $\sqrt[3]{xyz}$ cubic units

Q20 Mathematics

If $\tan \theta = \frac{3}{4}$ and θ is an acute angle, find the value of $\operatorname{cosec} \theta$.

A. $\frac{5}{3}$



B. $\frac{2}{5}$

C. $\frac{5}{2}$

D. $\frac{3}{5}$

Q21 Mathematics

The cost of 2 balls and 3 bats is ₹84. The cost of 3 balls and 1 bat is ₹63.

What is the cost of 5 balls and 3 bats?

A. ₹126

B. ₹96

C. ₹129



D. ₹111

Q22 Mathematics

If $x + y + z = 0$, where none of x , y and z is equal to 0, then find the value of $\frac{x^2}{yz} + \frac{y^2}{zx} + \frac{z^2}{xy}$.

A. -3

B. 4

C. 2

D. 3



Q23 Mathematics

If 60% of 80% of $\frac{3}{5}$ of a number is 216, find the number.

A. 3040

B. 1990

C. 2090

D. 750

**Q24** Mathematics

Which number should replace both the question marks in the following equation?

$$\frac{?}{34} = \frac{306}{?}$$

A. 87

B. 112

C. 102

D. 119

**Q25** Mathematics

The sum of the present ages of a man and his son is 50 years. After five years, the man's age will be three times that of his son. Find the present age of the son.

A. 12 years

B. 10 years

C. 11 years

D. 14 years



Mathematics

25 Questions • Answer Key

Q1 Mathematics

Five years ago, the ratio of Priya's age to Meera's age was 3 : 2. The difference of their present ages is 10 years. What is Meera's current age?

- A. 29 years
- B. 25 years
- C. 20 years
- D. 35 years



Q2 Mathematics

The mode and median of a data are 46.2 and 40, respectively. What is the mean of the data? (Use empirical formula.)

- A. 38.8
- B. 36.9
- C. 47.6
- D. 45.2



Q3 Mathematics

Bina sells an article to Shyam at a 19% loss for ₹4,860. Shyam then sells it to Hari for the price Bina would have needed to sell to make a 17% profit. What is Shyam's profit?

- A. ₹1,260
- B. ₹2,160
- C. ₹1,740
- D. ₹2,520



Q4 Mathematics

Two pipes, M and N, can fill a tank in 10 minutes and 15 minutes, respectively. Both pipes are opened together but after 5 minutes, pipe M is turned off. What is the total time required to fill the tank?

- A. 10 minutes
- B. 5 minutes
- C. 5.5 minutes
- D. 7.5 minutes



Q5 Mathematics

A and B started moving at the same time towards each other from points X and Y, respectively. After meeting on the way, A and B took 90.9 hours and p hours, respectively, to reach Y and X, respectively. If the speed of B is 50% more than that of A, then what is the value of p?

- A. 42.4
- B. 40.4
- C. 39.7
- D. 38.9



Q6 Mathematics

The amount on a sum of ₹3,300 at 10% per annum compound interest, compounded annually, in 2 years will be:

- A. ₹3,583
- B. ₹3,826
- C. ₹4,939
- D. ₹3,993



Q7 Mathematics

The average of 6.5, 10.7, 20.2 and a is 15. The value of a is:

- A. 22.6
- B. 24.6
- C. 23.6
- D. 21.6



Q8 Mathematics

If $\sec^2 A + \operatorname{cosec}^2 A = 13$, and A is an acute angle, then find the value of $\tan^2 A + \cot^2 A$.

- A. 11
- B. 12
- C. 15
- D. 9



Q9 Mathematics

The expenditure of Sudha is 175% more than her savings. If her expenditure decreases by 12% and savings increase by 40.5%, then by what percentage does her income increase?

A. 2%



B. 6%

C. 4%

D. 7%

Q10 Mathematics

Rashmi buys 34 mobile stands for ₹6,800. Now, she decides to start a small business by selling these stands. How many mobile stands can she buy for ₹13,600?

A. 66

B. 65

C. 67

D. 68

**Q11 Mathematics**

Successive discounts of 2% and 21% are equivalent to what single discount?

A. 23.24%

B. 22.58%



C. 26.37%

D. 24.52%

Q12 Mathematics

Rahul's monthly expenditure is 75% of his monthly income. If the monthly savings are ₹10,000, calculate his monthly income.

A. ₹50,000

B. ₹45,000

C. ₹30,000

D. ₹40,000

**Q13 Mathematics**

If the surface area of a sphere is 5544 cm^2 , then find its diameter (in cm). (Use $\pi = 22/7$)

A. 36

B. 40

C. 42



D. 21

Q14 Mathematics

If ₹2,239 is divided among 269 children such that each girl and each boy get ₹7 and ₹9, respectively, then how many boys are there?

A. 138

B. 218

C. 238

D. 178

**Q15 Mathematics**

A farmer wants to prepare 20 kg of fertiliser mixture containing 42% nitrogen by mixing two types of fertilisers, A and B. Fertiliser A contains 30% nitrogen, and fertiliser B contains 50% nitrogen. How many kilograms of each fertiliser should he mix?

A. 10 kg of A, 10 kg of B

B. 8 kg of A, 12 kg of B



C. 12 kg of A, 8 kg of B

D. 6 kg of A, 14 kg of B

Q16 Mathematics

From the salary of an officer, 10% is deducted as house rent. Of the remaining amount, he spends 20% on conveyance, 20% of the rest on income tax, and 10% of the balance on clothes. He is left with ₹23,328. What is his total salary?

A. ₹35,000

B. ₹45,000



C. ₹30,000

D. ₹40,000

Q17 Mathematics

The H.C.F. and the L.C.M. of two numbers are 18 and 1296, respectively. If one of the numbers is 162, find the other one.

A. 108

B. 180

C. 126

D. 144



Q18 Mathematics

The outer and inner diameters of a hollow cylindrical pipe are 10 cm and 6 cm, respectively. If its length is 21 cm, then its total surface area is:

A. $368\pi \text{ cm}^2$



B. $154\pi \text{ cm}^2$

C. $168\pi \text{ cm}^2$

D. $472\pi \text{ cm}^2$

Q19 Mathematics

P and Q together can fill a cistern with water in 3 hours. If P alone can fill the cistern with water in 12 hours, then in how many hours will Q alone fill one-fourth of the same cistern with water?

A. 2

B. 3

C. 1



D. 4

Q20 Mathematics

₹5,398 is divided among X, Y, and Z in such a way that if ₹16, ₹15, and ₹75 be deducted from their respective shares, they have money in the ratio 2 : 21 : 4. Find the difference between the Y's and Z's original shares.

A. ₹3,232

B. ₹3,272



C. ₹3,182

D. ₹3,282

Q21 Mathematics

Simplify: $\frac{(p-q)^3 + (q-r)^3 + (r-p)^3}{(p-q)(q-r)(r-p)}$

A. 1

B. pqr

C. (p - q)

D. 3

**Q22 Mathematics**

A shopkeeper earns a profit of 10% after allowing a discount of 20% on the marked price. The cost price of the article whose marked price is ₹880 is:

A. ₹680

B. ₹774

C. ₹704

D. ₹640

**Q23 Mathematics**

If $2^{3y+x} = 16$ and $2^{2y-x} = 64$, then the value of y is:

A. 2



B. -2

C. 1

D. 3



Q24 Mathematics

In a regular polygon, the number of diagonals is 9. Find the difference between one interior angle and one exterior angle of the polygon.

A. 48°

B. 55°

C. 60°



D. 70°

Q25 Mathematics

In a 100 – m race, A covers the distance in 36 seconds and B covers the same distance in 45 seconds. In this race A beats B by:

A. 22 metres

B. 20 metres



C. 23 metres

D. 17 metres

