



RRB JE 2025 CBT-1

Junior Engineer, DMS, CMA · CEN 05/2025 · CBT-1 · Mathematics — Topic-wise

Gujarati

28 Chapters · 211 Questions · Official Answer Key

About this Compilation

Every **Mathematics** question asked across all 7 shifts of the **RRB JE 2025 CBT-1** examination (CEN 05/2025), regrouped by **chapter** instead of by shift, so you can revise one topic end to end. The correct option is marked as per the official answer key.

Sections. The JE CBT-1 paper is not divided into sections and the saved paper carries no section labels. In this book the questions of every shift are grouped by subject (Mathematics, General Intelligence and Reasoning, General Awareness, General Science), assigned from our topic tags, so the section counts may differ slightly from the notified pattern.

2 questions without question text. The saved paper record has no question text or figure for them; they are printed with their options and official answer and marked in the text.

158 of these 211 questions are shown in English. RRB did not release them in Gujarati to any candidate whose response sheet we could reach, so the official English version is printed instead and marked with an **ENGLISH** chip. Nothing here is machine translated.

10 duplicate questions removed. RRB repeated these word-for-word across different shifts. They appear once here, so a chapter never prints the same question twice - the complete and section-wise books still carry every occurrence.

How to use

- Use the **Index** to jump to any chapter (clickable).
- Within a chapter, questions on the same idea are placed together.
- The correct answer is highlighted in green with a tick.
- The same paper is also available complete and section-wise.



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Q1 Election votes

બે ઉમેદવારો વચ્ચેની એક ચૂંટણીમાં, 86% નોંધાયેલા મતદારોએ મતદાન કર્યું અને 6% મત અમાન્ય જાહેર થયા. વિજેતા ઉમેદવારને માન્ય મતોના 58% મળ્યા અને તેમણે 202100 મતોની સરસાઇથી ચૂંટણી જીતી લીધી. નોંધાયેલા મતદારોની સંખ્યા શોધો.

A. 1562200

B. 1562500

C. 1562400

D. 1562800

Q2 Income expenditure savings ENGLISH

Ajay spends 80% of his income. His income is increased by 30%, and his expenditure is increased by 10%. Find the percentage increase in his savings.

A. 90%

B. 100%

C. 110%

D. 105%

Q3 Income expenditure savings ENGLISH

Monthly income of Mohit is ₹12800 and his monthly expenditure is ₹ 4000. If his income is decreased by 25% and expenditure is decreased by ₹ 1000, then find the decrease in his monthly savings?

A. ₹ 2600

B. ₹ 2800

C. ₹ 2400

D. ₹ 2200

Q4 Percentage marks ENGLISH

Girish scored 459 marks in an examination and was 81 marks short of 20% of the maximum marks. In the same examination, his friend scored 756 marks. What is the percentage of marks scored by his friend?

A. 27%

B. 28%

C. 29%

D. 30%

Q5 Percentage marks ENGLISH

Mr. Madan got 9 out of 10 marks in English, 15 out of 16 in life sciences and the ratio of the percentage of his marks in English and Mathematics is 15: 16. If the total marks of Mathematics are 20, then find the difference of the percentage of his marks in Mathematics and life sciences.

A. 2.25%

B. 3.5%

C. 5.25%

D. 4.35%

Q6 Percentage marks

ગિરીશે એક પરીક્ષામાં 664 ગુણ મેળવ્યા હતા જે મહત્તમ ગુણના 84% કરતા 8 ગુણ ઓછા હતા. તે જ પરીક્ષામાં, તેના મિત્રએ 472 ગુણ મેળવ્યા હતા. તેના મિત્રએ મેળવેલા ગુણની ટકાવારી કેટલી છે?

A. 59%

B. 56%

C. 61%

D. 58%

Q7 Percentage marks ENGLISH

Girish scored 695 marks in an examination and was 17 marks short of 89% of the maximum marks. In the same examination, his friend scored 688 marks. What is the percentage of marks scored by his friend?

A. 83%

B. 86%

C. 87%

D. 84%



Q8 Percentage savings ENGLISH

The monthly income of Chetan is ₹60,000 and his expenditure is ₹35,000. If his income increases by 25%, and his expenditure increases by 15%, then what will be the percentage increase in his savings?

A. 36%

B. 38%

C. 39%



D. 35%

Q9 Salary percentage ENGLISH

Anwar's salary is ₹19,000 per month. He spends ₹4,500 on house rent, ₹1,500 on bills and the rest of the amount is his monthly savings. Find his savings (in ₹) in a year, if in the month of his birthday, he spent his complete monthly savings for his birthday celebration.

A. 1,17,000

B. 1,30,000

C. 1,56,000

D. 1,43,000

**Q10 Successive percentage** ENGLISH

The price of fuel decreases by 35%, 10% 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?

A. Decreases by 63.97%

B. Decreases by 59.05%



C. Increases by 56.75%

D. Increases by 64.45%

Q11 Successive percentage

ચેતનના પગારમાં પહેલા 40% ઘટાડો કરવામાં આવ્યો અને પછી 24% વધારો કરવામાં આવ્યો. તેનો અંતિમ પગાર તેના શરૂઆતના પગારની સરખામણીમાં કેટલા ટકા ઓછો હતો?

A. 40%

B. 9.6%

C. 24%

D. 25.6%

**Q12 Successive percentage** ENGLISH

The price of fuel decreases by 55%, 55% and 30% 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?

[Give your answer correct to two places after decimal.]

A. Increases by 76.66%

B. Decreases by 81.55%

C. Decreases by 78.74%



D. Increases by 75.63%

Q13 Successive percentage

રૂપેશના પગારમાં પહેલા 44% ઘટાડો કરવામાં આવ્યો અને પછી 15% વધારો કરવામાં આવ્યો. તેમનો અંતિમ પગાર તેમના શરૂઆતના પગારની સરખામણીમાં કેટલા ટકા ઓછો હતો?

A. 35.6%



B. 29%

C. 15%

D. 6.6%



Arithmetic

21 Questions • Answer Key

Q1 Articles CP SP

જો 24 વસ્તુઓની પડતર કિંમત 15 વસ્તુઓની વેચાણ કિંમત જેટલી હોય, તો નફાની ટકાવારી શોધો.

A. 71%

B. 60%

C. 55%

D. 40%

Q2 Cost price mix ENGLISH

A man bought two types of sharpeners, one at ₹18 for 9 sharpeners and the other at ₹8 per sharpener. He purchased an equal number of each type and sold all the sharpeners at ₹8 per piece. Find his percentage profit.

A. 80%

B. 85%

C. 60%

D. 75%

Q3 Cost price mix ENGLISH

A man bought two types of apples, one at ₹2 for 3 apples and the other at ₹6 per apple. He purchased an equal number of each type and sold all the apples at ₹6 per apple. Find his percentage profit.

A. 80%

B. 78%

C. 75%

D. 77%

Q4 Cost selling price ENGLISH

100 apples were bought at ₹1,240 per hundred and were sold at a profit of ₹935. Find the selling price (in ₹) per dozen of apples.

A. 256

B. 271

C. 261

D. 266

Q5 Discount VAT ENGLISH

A shopkeeper marks an article at ₹x and offers a discount of 50% on it. He sells it for ₹287 after charging VAT of 64% on the discounted price. What is the value of x?

A. 300

B. 250

C. 350

D. 200

Q6 Discount free articles ENGLISH

A trader gives 10% discount on the marked price of an article and gives 40 articles free for buying 112 articles and gains 26% in the entire transaction. Assuming a customer pays for 112 articles, the marked price of an article is what percentage more than its cost price?

A. 95%

B. 98%

C. 90%

D. 82%

Q7 Discount scheme

એક દુકાન તમામ વસ્તુઓ પર 16%નું ટ્રેડ ડિસ્કાઉન્ટ આપે છે. વધુમાં, તેઓ ચોક્કસ વસ્તુઓ પર "ચાર ખરીદો અને એક મફત મેળવો" યોજના ઓફર કરે છે. જો કોઈ ગ્રાહક પાંચ વસ્તુઓ ખરીદે, જે દરેકની છાપેલી કિંમત ₹700 હોય, અને "ચાર ખરીદો અને એક મફત મેળવો" યોજના લાગુ થાય, તો પાંચ વસ્તુઓ માટે ગ્રાહકે ડિસ્કાઉન્ટ મેળવ્યા પછીની કુલ કેટલી કિંમત ચૂકવવી પડશે?

A. ₹2352

B. ₹2305

C. ₹2378

D. ₹2336



Q8 False weight profit ENGLISH

A dishonest vendor claims that he is selling goods at their cost price. But he is weighing 902 grams for 1000 grams. What is his profit percentage (rounded off to 2 decimal places)?

A. 10.86%



B. 11.82%

C. 12.08%

D. 6.51%

Q9 Gain percent ENGLISH

A shopkeeper bought six identical mobile phones for ₹72,000. He sold two of these mobile phones for ₹42,000. Find his gain percentage.

A. 77%

B. 78%

C. 75%



D. 76%

Q10 Gain percent ENGLISH

A shopkeeper bought six identical mobile phones for ₹45,000. He sold two of these mobile phones for ₹42,000. Find his gain percentage.

A. 180%



B. 181%

C. 179%

D. 178%

Q11 Overall profit loss

વસ્તુઓ X અને Y ની પડતર કિંમતનો ગુણોત્તર અનુક્રમે 3 : 7 છે. એક માણસ X ને 49% નફા સાથે અને Y ને 16% ખોટ સાથે વેચે છે. તો આ સમગ્ર વ્યવહારમાં તેને કેટલા ટકા નફો કે ખોટ થઈ હશે?

A. ખોટ, 5%

B. ખોટ, 3.5%

C. નફો, 3.5%



D. નફો, 3%

Q12 Overall profit loss ENGLISH

The ratio of the cost prices of articles X and Y is 1:2. A man earns a profit of 12% by selling X and incurs a loss of 36% by selling Y. What is his overall gain or loss percentage in the entire transaction?

A. Gain, 26.5%

B. Gain, 20%

C. Loss, 20%



D. Loss, 24.5%

Q13 Profit percent ENGLISH

During a sale 50% of the goods are sold at 19% profit, 20% of the remaining goods are sold at 40% profit and the still remaining goods are sold at a loss of 25%. If there is an overall profit of x%, then what is the value of x?

A. 2

B. 4

C. 3.5



D. 5

Q14 Successive discounts ENGLISH

The list price of a washing machine is ₹87,200. It is sold to a retailer after two successive discounts of 9% and 50%. The retailer wants to earn a profit of 25% on his cost after allowing a 48% discount (on its new list price) to the customer. At what price should he list the washing machine?

A. ₹95,476

B. ₹95,333

C. ₹95,434

D. ₹95,375



Q15 Successive discounts **ENGLISH**

The list price of a refrigerator is ₹15,000. It is sold to a retailer after two successive discounts of 32% and 40%. The retailer wants to earn a profit of 45% on his cost after allowing a 49% discount (on its new list price) to the customer. At what price should he list the refrigerator?

A. ₹17,325

B. ₹17,504

C. ₹17,400



D. ₹17,412

Q16 Articles CP SP

20 પુસ્તકોની વેચાણ કિંમત 31 પુસ્તકોની પડતર કિંમત જેટલી છે. નફા અથવા ખોટની ટકાવારી શોધો.

A. $\frac{100}{11}\%$

B. $\frac{100}{11}\%$

C. 55% નફો



D. 55% ખોટ

Q17 Discount and free

એક વેપારી એક વસ્તુની છાપેલી કિંમત પર 8% ડિસ્કાઉન્ટ આપે છે અને 18 વસ્તુઓ ખરીદવા પર 3 વસ્તુઓ મફત આપે છે અને આ સમગ્ર વ્યવહારમાં 38% નફો મેળવે છે. ધારો કે એક ગ્રાહક 18 વસ્તુઓ માટે ચુકવણી કરે છે, તો વસ્તુની છાપેલી કિંમત તેની પડતર કિંમત કરતાં કેટલા ટકા વધુ છે?

A. 85%

B. 79%

C. 70%

D. 75%

**Q18** Discount profit **ENGLISH**

By selling an article at 76% of its marked price, a trader makes a loss of 20%. What will be the profit percentage, if he sells it at 99% of its marked price?

A. $2\frac{2}{19}\%$

B. $1\frac{1}{19}\%$

C. $4\frac{4}{19}\%$



D. $3\frac{3}{19}\%$



Q19 False weight profit **ENGLISH**

A shopkeeper sells his goods at cost price. If by using false weights he gains $3\frac{19}{27}\%$, then what weight does he use for 1 kg (in g, rounded off to 2 decimal places)?

- A. 954.79
- B. 987.35
- C. 938.99
- D. 964.29

**Q20** Gain loss books **ENGLISH**

The selling price of 45 books is equal to the cost price of 18 books. Find the loss or gain percentage.

- A. $\frac{100}{27}\%$ gain
- B. $\frac{100}{27}\%$ loss
- C. 60 % gain
- D. 60 % loss

**Q21** Profit and Loss **ENGLISH**

A dealer purchases 1,200 eggs at ₹4.50 each. During transit, 8% of the eggs break. The remaining eggs are sold at ₹6.00 each. Find the overall profit percentage.

- A. $22\frac{2}{3}\%$
- B. $22\frac{1}{3}\%$
- C. $21\frac{2}{3}\%$
- D. $21\frac{1}{3}\%$



Arithmetic

7 Questions • Answer Key

Q1 Simple interest ENGLISH

Mahesh has borrowed an amount of ₹4,40,000 from a bank to start a business. How much simple interest (in ₹) will he pay at a rate of 6% per annum after 4 years?

A. 1,03,600

B. 1,05,600 ✓

C. 1,04,600

D. 1,06,600

Q2 Simple interest ENGLISH

Rupesh has borrowed an amount of ₹4,40,000 from a bank to start a business. How much simple interest (in ₹) will he pay at a rate of 7% per annum after 3 years?

A. 91400

B. 92400 ✓

C. 93400

D. 94400

Q3 Simple interest ENGLISH

Mahesh has borrowed an amount of ₹420000 from a bank to start a business. How much simple interest (in ₹) will he pay at a rate of 6% per annum after 2 years?

A. 50400 ✓

B. 49400

C. 51400

D. 53400

Q4 Simple interest ENGLISH

David has borrowed an amount of ₹440000 from a bank to start a business. How much simple interest (in ₹) will he pay at a rate of 6% per annum after 2 years?

A. 51800

B. 54800

C. 53800

D. 52800 ✓

Q5 Simple interest amount

કિરણે એક વ્યવસાય શરૂ કરવા માટે બેંકમાંથી ₹ 4,40,000 ની રકમ ઉધાર લીધી છે. 2 વર્ષ પછી તેણે વાર્ષિક 7% ના દરે કેટલું સાદું વ્યાજ (₹ માં) ચૂકવવું પડશે?

A. 63,600

B. 61600 ✓

C. 62,600

D. 60,600

Q6 Simple interest amount

ગોપાલે એક વ્યવસાય શરૂ કરવા માટે બેંકમાંથી ₹420000 ઉધાર લીધા છે. 4 વર્ષ પછી તેણે વાર્ષિક 5% ના દરે કેટલું સાદું વ્યાજ (₹ માં) ચૂકવવું પડશે?

A. 85000

B. 83000

C. 84000 ✓

D. 82000

Q7 Simple interest amount ENGLISH

Akshay has borrowed an amount of ₹440000 from a bank to start a business. How much simple interest (in ₹) will he pay at a rate of 5% per annum after 4 years?

A. 89000

B. 88000 ✓

C. 78000

D. 87000



Arithmetic

7 Questions • Answer Key

Q1 CI SI difference ENGLISH

The difference between compound interest, compounded annually, and simple interest for 3 years at a rate of 20% per annum is ₹256. What is the principal lent?

A. ₹1,000

B. ₹3,000

C. ₹2,000 ✓

D. ₹4,000

Q2 Depreciation

ગરિમાએ ₹56,000 માં એક મૂળ હાર્ડબાઉન્ડ પુસ્તક ખરીદ્યું. તેનું મૂલ્ય દર વર્ષે 5% ઘટે છે. 3 વર્ષ પછી પુસ્તકની કિંમત (₹માં) કેટલી હશે?

A. 47,052

B. 48,713

C. 48,512

D. 48,013 ✓

Q3 Growth rate

દેશની વસ્તી હાલમાં 10 કરોડ છે અને આગામી ત્રણ વર્ષમાં તે વધીને 17.28 કરોડ થવાની ધારણા છે. મૃત્યુદરને અવગણીને, વૃદ્ધિનો એકસમાન વાર્ષિક ટકાવારી દર શું છે?

A. 10

B. 20 ✓

C. 11

D. 12

Q4 SI CI difference ENGLISH

The difference between simple interest and compound interest, compounded annually, on a certain sum of money for 2 years at 11% per annum is ₹371. Find the sum. [Give your answer rounded off to the nearest integer.]

A. ₹30,672

B. ₹30,661 ✓

C. ₹30,669

D. ₹30,679

Q5 SI CI difference ENGLISH

Amit had invested same amount of sums at simple as well as compound interest, compounded annually. The time period of both the sums was 2 years and rate of interest too was same 10% per annum. At the end, he found a difference of ₹97 in both the interests received. What were the sums (in ₹) invested?

A. 8,950

B. 10,050

C. 8,800

D. 9,700 ✓

Q6 SI and CI ENGLISH

If at the same rate of interest, in 2 years, the simple interest is ₹48 and compound interest, compounded annually, is ₹54, then what is the principal (in ₹)?

A. 96 ✓

B. 91

C. 100

D. 89

Q7 SI and CI ENGLISH

Amit had invested same amount of sums at simple interest as well as compound interest, compounded annually. The time period of both the sums was 2 years and rate of interest too was the same 10% per annum. At the end, he found a difference of ₹45 in both the interests received. What were the sums (in ₹) invested in each case?

A. 4,500 ✓

B. 3,750

C. 4,850

D. 3,600



Arithmetic

21 Questions • Answer Key

Q1 Coins ratio **ENGLISH**

A vending machine contains ₹1, 50 paise, and 25 paise coins. In one tray, the number of coins of these denominations is in the ratio 2:3:4, and their total value is ₹180. In another tray, the values of ₹1, 50 paise, and 25 paise coins are in the ratio 13:11:7, and the total number of coins in this tray is 378. How many 50-paise coins are there in total across both trays?

A. 251

B. 252 ☒

C. 253

D. 250

Q2 Combined ratios

સોના, ચાંદી અને કાંસાના ટોકન ધરાવતા પાકીટમાં, સોના અને ચાંદીના ટોકનનો ગુણોત્તર 5:17 હતો જ્યારે કાંસા અને સોનાના ટોકનનો ગુણોત્તર 18:19 હતો. કાંસા અને ચાંદીના ટોકનનો ગુણોત્તર કેટલો હતો?

A. 98:328

B. 93:327

C. 95:330

D. 90:323 ☒

Q3 Direct variation

એક વૃક્ષની ઊંચાઈ તેની ઉંમરના વર્ગમૂળ પ્રમાણે બદલાય છે. જ્યારે વૃક્ષની ઉંમર 324 વર્ષ હોય, ત્યારે તેની ઊંચાઈ 19 ફૂટ છે. તો, 81 વર્ષની ઉંમરે વૃક્ષની ઊંચાઈ (ફૂટમાં) કેટલી હશે?

A. 9.01

B. 9.14

C. 9.5 ☒

D. 8.39

Q4 Earnings ratio **ENGLISH**

Suman's earnings in a month are five-sevenths of Meera's. In the next month, Meera's earnings become five-eighths of Suman's previous month earnings. By what percent are Meera's current earnings less than Suman's current earnings?

A. 25%

B. 20%

C. 35.5%

D. 37.5% ☒Q5 Fourth proportional **ENGLISH**

Find the ratio between the fourth proportional of 8, 12 and 4, and the third proportional of 6 and 9.

A. 7:11

B. 9:13

C. 5:11

D. 4:9 ☒Q6 Fraction ratio sum **ENGLISH**

Rashmi and Varsha together have ₹22576. If $\frac{5}{16}$ of Rashmi's amount is equal to $\frac{3}{7}$ of Varsha's amount, how much money does Rashmi have?

A. ₹13052

B. ₹13054

C. ₹13050

D. ₹13056 ☒Q7 Inverse proportion **ENGLISH**

If x is inversely proportional to y , and $y = 7$ when $x = 16$, find the value of x , when $y = 2$.

A. 55

B. 53

C. 56 ☒

D. 47



Q8 Inverse proportion

એક શિબિરમાં 12 દિવસ માટે 51 વ્યક્તિઓ માટે ભોજન વ્યવસ્થા છે. જો વ્યક્તિઓની સંખ્યા વધારીને 102 કરવામાં આવે, તો આ જ ખાદ્યસામગ્રી કેટલા દિવસ ચાલશે?

A. 9

B. 4

C. 6

D. 5

Q9 Joint variation ENGLISH

If x varies directly as y and inversely as z , and $x = 16$ when $y = 40$ and $z = 3$, then find x when $y = 50$ and $z = 6$.

A. 12

B. 16

C. 15

D. 10

Q10 Mean proportional ENGLISH

Find the mean proportional of 144 and 9.

A. 35

B. 37

C. 39

D. 36

Q11 Mean proportional ENGLISH

If $14.8 : x :: x : 3.7$ and $x > 0$, then find the value of x .

A. 7.4

B. 11.4

C. 12.9

D. 4.1

Q12 Partnership share ENGLISH

A and B jointly start a business. The investment of A is equal to three times the investment of B. Find the share of A in the annual profit of ₹55204.

A. ₹41,403

B. ₹42,403

C. ₹43,403

D. ₹40,403

Q13 Percentage ratio ENGLISH

If 15% of A is equal to 20% of B and 10% of B is equal to 25% of C, what is the ratio of A : B : C?

A. 22:17:11

B. 12:9:7

C. 20:15:6

D. 8:7:6

Q14 Profit sharing ratio ENGLISH

A total profit of ₹14,500 is to be distributed amongst A, B, and C such that A : B = 16 : 3 and B : C = 6 : 20. The share (in ₹) of C in the profit is:

A. 5,100

B. 5,000

C. 4,850

D. 4,950

Q15 Proportion

જો $7 : 21 :: 2.2 : x$ અને $7 : 49 :: 9 : y$ હોય, તો x અને y નો ગુણોત્તર કેટલો હશે?

A. 11 : 105

B. 9 : 106

C. 15 : 115

D. 12 : 103

Q16 Proportion

જો $2 : 4 :: 4.6 : x$ અને $4 : 16 :: 2 : y$ હોય, તો x અને y નો ગુણોત્તર કેટલો હશે?

A. 24 : 18

B. 27 : 30

C. 21 : 21

D. 23 : 20



Q17 Proportion ENGLISH

When x is added to each of 13, 19, 16 and 23, then the numbers so obtained, in this order, are in proportion. Then, if $5x : y :: y : (8x-4)$, and $y > 0$, what is the value of y ?

A. 42

B. 41

C. 30 ☒

D. 37

Q18 Third proportional ENGLISH

If third proportional of 8 and 48 be x , then what is the value of x ?

A. 291

B. 288 ☒

C. 289

D. 286

Q19 Unitary method

એક સરખા 9 કાર્ટનોનું કુલ વજન 72 kg છે. કુલ 168 kg વજન બનાવવા માટે એક જ પ્રકારના કેટલા કાર્ટની જરૂર પડશે?

A. 21 ☒

B. 24

C. 18

D. 20

Q20 Ratio fare passengers ENGLISH

The ratio of fare of a person between Auto and Bus is 2 : 3.5 and the ratio of number of passengers travelled, on a particular day, by Auto and Bus is 4 : 7. By what fraction the total fare collected by Auto on that particular day is less than the total fare collected by Bus?

A. $\frac{1}{3}$ B. $\frac{33}{49}$ ☒C. $\frac{2}{5}$ D. $\frac{3}{5}$ **Q21** Ratio sharing ENGLISH

A sum of money is divided among X, Y and Z in the ratio 4:3:6. If the share of Z is ₹3300 more than Y, then how much amount will X get more than Y?

A. ₹1000

B. ₹1300

C. ₹1100 ☒

D. ₹1200



Arithmetic

4 Questions • Answer Key

Q1 Alligation mixture

એક કરિયાણાનો વેપારી બે જાતના ચોખાનું મિશ્રણ ₹56 પ્રતિ kg વેચવા માંગે છે. જ્યારે એક જાતના ચોખાની કિંમત ₹54 પ્રતિ kg અને બીજી જાતના ચોખાની કિંમત ₹64 પ્રતિ kg હોય ત્યારે આ વેચાણ કિંમત પર પહોંચવા માટે તેણે કયા ગુણોત્તરમાં ચોખાને ભેળવવા પડશે?

A. 3 : 1

B. 4 : 1

C. 2 : 3

D. 3 : 2

Q2 Alligation mixture ENGLISH

In what ratio should sugar costing ₹34/kg be mixed with sugar costing ₹58/kg so that by selling the mixture at ₹52.80/kg, there is a profit of 32%?

A. 5 : 2

B. 5 : 3

C. 7 : 3

D. 3 : 1

Q3 Mixture alligation ENGLISH

In what ratio should sugar costing ₹38 per kg be mixed with sugar costing ₹55 per kg so that by selling the mixture at ₹57.20 per kg, there is a profit of 10%?

A. 12 : 1

B. 3 : 14

C. 12 : 5

D. 15 : 1

Q4 Mixture alligation ENGLISH

In what ratio must a fruit vendor mix two varieties of mangoes costing ₹60/kg and ₹68.40/kg, so that by selling the mixed variety of mangoes at ₹79.80/kg, he may gain 18.75%?

A. 1 : 6

B. 6 : 1

C. 7 : 3

D. 3 : 7



Arithmetic

10 Questions • Answer Key

Q1 Average multiples ENGLISH

The average of the first 18 positive multiples of 10 is:

A. 18

B. 10

C. 95



D. 90

Q2 Average multiples ENGLISH

The average of the first 18 positive multiples of 9 is:

A. 9

B. 85.5



C. 18

D. 81

Q3 Average multiples ENGLISH

The average of the first 18 positive multiples of 8 is:

A. 18

B. 8

C. 72

D. 76



Q4 Average multiples ENGLISH

The average of the first 18 positive multiples of 14 is:

A. 14

B. 133



C. 18

D. 126

Q5 Average of multiples

15 ના પ્રથમ 18 ધન અવયવી (Positive multiples) નું સરેરાશ _____ છે.

A. 135

B. 142.5



C. 18

D. 15

Q6 Average of multiples

7 ના પ્રથમ 18 ધન અવયવીની સરેરાશ _____ છે.

A. 7

B. 18

C. 66.5



D. 63

Q7 Average of multiples ENGLISH

The average of the first 18 positive multiples of 11 is:

A. 18

B. 11

C. 104.5



D. 99

Q8 Weighted average ENGLISH

In a factory, the average daily wage of 12 skilled workers and 18 unskilled workers is ₹604. If the average wage of the skilled workers is ₹754, then find the average wage of the unskilled workers.

A. ₹524

B. ₹514

C. ₹504



D. ₹534

Q9 Weighted average

માર્ચ મહિનામાં શનિવાર અને રવિવારને બાદ કરતા ડીલર દ્વારા કારનું દૈનિક સરેરાશ વેચાણ 151 છે. રવિવારના દિવસે, રોજનું કારનું સરેરાશ વેચાણ 129 છે. જો 3 માર્ચે પહેલો શનિવાર હોય અને આખા મહિનામાં કારનું સરેરાશ દૈનિક વેચાણ 148 થયું હોય, તો શનિવારના દિવસે, રોજનું કારનું સરેરાશ વેચાણ કેટલું થશે?

A. 155

B. 145

C. 153

D. 150



Q10 Weighted average **ENGLISH**

In a seminar, 5 teachers and 7 students spent money on books. The average spending of all of them together was ₹260. The average spending of the teachers alone was ₹400. Find the average spending amount of the students.

A. ₹120

B. ₹160



C. ₹140

D. ₹180

Blackbook



Arithmetic

7 Questions • Answer Key

Q1 Alternate-hour work

અનિરુદ્ધ અને બ્રહ્માજીને એક દિવાલ બનાવવાનું કામ સોંપવામાં આવ્યું. અનિરુદ્ધ એકલો એ કામ 60 કલાકમાં કામ કરી શકે છે, જ્યારે બ્રહ્માજી એ કામ ત્રણ ગણી ઝડપથી કામ કરી શકે છે. અનિરુદ્ધ પહેલા કલાક દરમિયાન કામ શરૂ કરે છે અને બ્રહ્માજી બીજા કલાક દરમિયાન કામ કરે છે. ત્રીજા કલાક દરમિયાન બંને એક સાથે કામ કરે છે. જો તેઓ આ રીતે કામ ચાલુ રાખશે, તો તેમને આ કામ પૂર્ણ કરવામાં કેટલો સમય લાગશે?

A. 21.5 કલાક

B. 7.5 કલાક

C. 22.5 કલાક

D. 23 કલાક



Q2 Men days absent ENGLISH

X people were given a contract for doing a piece of work in 32 days. 8 people did not turn up to work due to sickness, and the rest of the people completed the work in 40 days. What is the value of X?

A. 42

B. 40



C. 38

D. 44

Q3 Men days absent ENGLISH

X people were given a contract for doing a piece of work in 18 days. 2 people did not turn up to work due to sickness, and the rest of the people completed the work in 27 days. What is the value of X?

A. 2

B. 10

C. 14

D. 6



Q4 Men hours days ENGLISH

If 25 people, working for 10 hours a day, can complete 2 units of work in 5 days, then how many days will be required for 15 people to complete 18 units of work, if each person works for 10 hours a day?

A. 70

B. 75



C. 60

D. 85

Q5 Work and days ENGLISH

A and B can complete a work in 15 days and 10 days, respectively. They started doing the work together but after 4 days, B had to leave, and A completed the remaining work alone. The entire work was completed in _____ days.

A. 10

B. 6

C. 9



D. 5

Q6 Work and leaving

એક કામને A અને B અનુક્રમે 15 દિવસ અને 10 દિવસમાં પૂર્ણ કરી શકે છે. તેઓએ સાથે મળીને કામ કરવાનું શરૂ કર્યું, પરંતુ 2 દિવસ પછી, B એ કામ છોડી દેવું પડ્યું, અને બાકીનું કામ A એકલાએ પૂર્ણ કર્યું. સમગ્ર કામ કેટલા દિવસોમાં પૂર્ણ થયું હશે?

A. 11

B. 10

C. 13

D. 12



A can do a work in 9 days and B in 12 days. They work on alternate days, beginning with B. In how many days will the work be completed?

A. $8\frac{1}{3}$

B. $12\frac{1}{3}$

C. $9\frac{1}{3}$

D. $10\frac{1}{3}$ 



Arithmetic

6 Questions • Answer Key

Q1 Fill and empty ENGLISH

A tap can fill a cistern in 32 hours, while another tap can empty the full cistern in 64 hours. If the cistern is initially empty and both taps are opened together, find the time (in hours) required to fill one-fourth of the cistern.

A. 64

B. 16



C. 32

D. 48

Q2 Filling and emptying ENGLISH

A tap can fill a cistern in 27 hours, while another tap can empty the full cistern in 36 hours. If the cistern is initially empty and both taps are opened together, find the time (in hours) required to fill one-fourth of the cistern.

A. 108

B. 54

C. 81

D. 27



Q3 Pipe and Cistern

પાણી ભરવા માટેના 2 ઇનલેટ પાઇપ A અને B, અને પાણી ખાલી કરવા માટેનો એક આઉટલેટ પાઇપ O છે, તે ત્રણેને એક ટાંકી સાથે જોડવામાં આવે છે. પાઇપ A ટાંકીને 8 કલાકમાં ભરે છે, અને પાઇપ B ટાંકીને 12 કલાકમાં ભરે છે અને આઉટલેટ પાઇપ O એ પૂર્ણ ભરેલી ટાંકીને 24 કલાકમાં ખાલી કરી શકે છે. જો તે ત્રણ પાઇપને એકસાથે ખોલવામાં આવે તો, ટાંકીને ભરવામાં કેટલો સમય લાગશે?

A. 6 કલાક



B. 5.5 કલાક

C. 6.5 કલાક

D. 6.8 કલાક

Q4 Pipes cistern ENGLISH

P and Q together can fill a cistern with water in 24 hours. If P alone can fill the cistern with water in 96 hours, then in how many hours will Q alone fill three-fourth of the same cistern with water?

A. 49

B. 48

C. 25

D. 24



Q5 Pipes cistern ENGLISH

P and Q together can fill a cistern with water in 24 hours. If P alone can fill the cistern with water in 72 hours, then in how many hours will Q alone fill three-fourth of the same cistern with water?

A. 28

B. 54

C. 55

D. 27



Q6 Pipes with outlet ENGLISH

Two water supply lines A and B can fill a reservoir individually in 10 hours and 12 hours, respectively. A discharge outlet D can empty the reservoir completely in 6 hours. If all three are opened together at 7:00 A.M., at what time will one-fourth of the reservoir be filled?

A. 11 A.M.

B. 11 P.M.

C. 10 P.M.



D. 10 A.M.



Arithmetic

17 Questions • Answer Key

Q1 Average speed

રાઉન્ડ-ટ્રીપ મુસાફરી દરમિયાન એક વ્યક્તિ કોઈ એક સ્થળ સુધી 5 km/hની ઝડપે ચાલીને જાય છે અને 3 km/hની ઝડપે પાછો ફરે છે. તેની સરેરાશ ઝડપ વિશે કયું વિધાન સાચું છે?

- A. સરેરાશ ઝડપ 5 km/h અને 3 km/hના સમાંતર મધ્યક કરતાં ઓછી હશે. ✓
- B. સરેરાશ ઝડપ 5 km/h અને 3 km/hના સમાંતર મધ્યક જેટલી છે.
- C. સરેરાશ ઝડપ 5 km/h છે.
- D. સરેરાશ ઝડપ 3 km/h છે.

Q2 Average speed

એક ટ્રેન 60 km/hની ઝડપે 120 km ચાલે છે અને પછી 30 km/hની ઝડપે બીજા 60 km ચાલે છે. સમગ્ર મુસાફરીની સરેરાશ ઝડપ કેટલી છે?

- A. 45 km/h ✓
- B. 40 km/h
- C. 30 km/h
- D. 50 km/h

Q3 Boat and stream ENGLISH

Ajay can row at 4.5 km/h in still water. It takes him twice the time to row up as it takes for him to row down the same distance. Find the speed of the stream (in km/h).

- A. 0.5
- B. 2
- C. 3
- D. 1.5 ✓

Q4 Boat and stream ENGLISH

If Chandu covers 285 km in a boat in 45 hours against the stream while he takes 18 hours to cover the same distance downstream, then find the speed of the stream.

- A. 5.16 km/h
- B. 4.75 km/h ✓
- C. 1.39 km/h
- D. 5.78 km/h

Q5 Boat and stream ENGLISH

A boat travels 36 km downstream in 3 hours and returns upstream covering the same distance in 5 hours. What is the speed of boat in still water?

- A. 9.6 km/hour ✓
- B. 8.5 km/hour
- C. 10.2 km/hour
- D. 11.7 km/hour

Q6 Race head start ENGLISH

In a 100-meter race, X runs at 5 m/s and Y at 4 m/s. How much head start should X give Y (in meters) so that the race ends in a tie?

- A. 25
- B. 20 ✓
- C. 15
- D. 10

Q7 Race head start

600 m દોડમાં P એ Q ને 10 સેકન્ડનો હેડ-સ્ટાર્ટ આપે છે, પરંતુ બંને એક જ સમયે દોડ પૂર્ણ કરે છે. જો Q ની ઝડપ 4 m/sec હોય, તો P ને દોડ પૂર્ણ કરવામાં કેટલો સમય લાગે છે તે શોધો.

- A. 146 સેકન્ડ
- B. 140 સેકન્ડ ✓
- C. 144 સેકન્ડ
- D. 142 સેકન્ડ

Q8 Race start ENGLISH

Three persons, A, B and C, took part in a 2000 m race. To reach the finish line at the same time, A can give to B a start of 500 m and to C a start of 300 m. How many metres of start can C give to B in a 3400 m race?

- A. 200
- B. 400 ✓
- C. 800
- D. 600



Q9 Race start ENGLISH

A is faster than B. In a 2500 m race, A gives B a start of 200 meters. A runs at 25 m/s. Who wins and by how much if B runs at 23 m/s?

A. They finish together ☒

B. B wins by 100 meters

C. A wins by 50 meters

D. A wins by 100 meters

Q10 Relative speed cars ENGLISH

If two cars start at the same point and move along a straight road, Car X at a constant speed of 40 km/h and Car Y at a constant speed of 60 km/h, which statement correctly compares their motions after 2 hours?

A. Both cars will have traveled the same distance after 2 hours.

B. Car Y will be 40 km ahead of Car X after 2 hours. ☒

C. Car Y will be 20 km ahead of Car X after 2 hours.

D. Car X will be 40 km ahead of Car Y after 2 hours.

Q11 Speed time distance ENGLISH

In covering a distance of 130 km, Amit takes 4 hours more than Vinay. If Amit doubles his speed, then he would take 9 hour less than Vinay. Amit's original speed is:

A. 5 km/h ☒

B. 9 km/h

C. 6 km/h

D. 14 km/h

Q12 Train crossing

430 m અને 120 mની લંબાઈ ધરાવતી બે ટ્રેન એક જ દિશામાં અનુક્રમે 70 km/h અને 100 km/hની ઝડપે દોડે છે. તો, પાછળથી આવતી વધુ ઝડપી ટ્રેનને બીજી ટ્રેનને સંપૂર્ણપણે પાર કરવામાં કેટલો સમય (મિનિટમાં) લાગશે?

A. 1.6

B. 4.1

C. 1.1 ☒

D. 3.2

Q13 Train relative speed ENGLISH

A 200 m long train crosses a man walking at a speed of 6.6 km/h in the opposite direction in 15 seconds. What is the speed (in km/h) of the train?

A. 42.2

B. 37.2

C. 41.4 ☒

D. 46.3

Q14 Average speed ENGLISH

Mr. Y travelled 438 km, 820 km and 972 km at a speed of 6 km/hr, 20 km/hr and 27 km/hr, respectively. Find his average speed in km/hr.

A. $14\frac{11}{15}$

B. $14\frac{8}{15}$

C. $14\frac{13}{15}$ ☒

D. $14\frac{14}{15}$



Q15 Average speed ENGLISH

Mr. W travelled 425 km, 946 km and 340 km at a speed of 5 km/hr, 43 km/hr and 34 km/hr, respectively. Find his average speed in km/hr.

A. $14\frac{70}{117}$

B. $14\frac{73}{117}$ ✓

C. $14\frac{75}{117}$

D. $14\frac{71}{117}$

Q16 Circular track meeting

બે માણસો A અને B એક 1300 મીટરના પરિઘવાળા વર્તુળની આસપાસ ચાલે છે. A 150 મીટર પ્રતિ મિનિટ અને B 80 મીટર પ્રતિ મિનિટના દરે ચાલે છે. જો તે બંને એક જ સમયે એક જ બિંદુથી શરૂ કરે છે અને એક જ દિશામાં ચાલે છે, તો તેઓ કેટલા સમય પછી એકબીજાને મળશે?

A. $18\frac{4}{7}$ ✓

B. $16\frac{5}{7}$

C. $17\frac{8}{7}$

D. $15\frac{4}{7}$

Q17 Time, Speed and Distance ENGLISH

While covering a distance of 36 km, a man noticed that after cycling for 2 hour 5 minutes, the distance covered by him was $\frac{6}{7}$ of the remaining distance. What was his approximate speed in km/h?

A. 8.7

B. 8 ✓

C. 6.7

D. 7.4



Q1 Age ratio ENGLISH

Five years ago, the ratio of the ages of Amit and Bhanu was 2 : 3. Fifteen years from now, their ages will be in the ratio of 5 : 6. Find the sum of their present ages. (Give your answer in years and months, if relevant.)

- A. 43 years
- B. 80 years
- C. 43 years, 4 months ☒
- D. 43 years, 3 months

Q2 Family ages ENGLISH

Sujit is three times as old as his son, and his daughter is 3 years younger than the son. If the sum of the ages of these three people 3 years ago from now was 88 years, then Sujit's present age (in years) is

- A. 48
- B. 60 ☒
- C. 56
- D. 66



Algebra

15 Questions • Answer Key

Q1 Consecutive numbers

બે ક્રમિક પ્રાકૃતિક સંખ્યાઓનો ગુણાકાર 506 છે. બે સંખ્યાઓમાંથી મોટી સંખ્યા _____ છે.

A. 17

B. 18

C. 23

D. 21

Q2 Consecutive numbers

બે ક્રમિક બેકી પ્રાકૃતિક સંખ્યાઓના વર્ગોનો સરવાળો 3700 છે. સંખ્યાઓનો સરવાળો _____ છે.

A. 72

B. 80

C. 96

D. 86

Q3 Consecutive odd numbers ENGLISH

The sum of the squares of two consecutive odd natural numbers is 3530. The sum of the numbers is:

A. 98

B. 100

C. 80

D. 84

Q4 Polynomial remainder ENGLISH

What is the remainder when $(x^2 - 4x + 7)$ is divided by $(x - 2)$?

A. 7

B. 3

C. 1

D. -1

Q5 Quadratic common root

સમીકરણો $x^2 - 5x + 6 = 0$ અને $x^2 + ax + b = 0$, માં બરાબર એક સામાન્ય બીજ છે, અને બીજા સમીકરણનું બીજું બીજ -4 છે. નીચેનામાંથી, a અને b ના સંભવિત મૂલ્યો કયા છે?

A. $a=3, b=-6$ B. $a=5, b=-20$ C. $a=2, b=-8$ D. $a=1, b=12$

Q6 Rectangle area equation ENGLISH

The length of a rectangular field is 34 m more than its breadth. Its area is 5040 m^2 . Its breadth (in m) is:

A. 54

B. 44

C. 56

D. 37

Q7 Equations ENGLISH

The quadratic equation whose roots are $\frac{1}{\sqrt{2}}$ and $\frac{1}{\sqrt{2}}$ is:

A. $2x^2 - (4\sqrt{2})x - 1 = 0$ B. $3x^2 - (2\sqrt{2})x - 1 = 0$ C. $2x^2 + (2\sqrt{5})x + 1 = 0$ D. $2x^2 - (2\sqrt{2})x + 1 = 0$ 

Q8 Equations ENGLISH

Solve the following linear equations.

$$x + y - 2z = 10, \quad 3x + y - z = 12, \quad x + 2y - z = 5$$

A. $x = -3, y = 1, z = 4$

B. $x = 4, y = -1, z = -3$

C. $x = 3, y = -1, z = -4$ ✓

D. $x = -4, y = 1, z = 3$

Q9 Equations ENGLISH

Find the discriminant of the equation $\frac{x-3}{x-4} + \frac{x-6}{x-5} = \frac{5}{2}$.

A. 6

B. -6

C. 7

D. -7 ✓

Q10 Equations ENGLISH

The roots of the equation $ax^3 - 24x^2 + 188x - 480 = 0$ are three consecutive even natural numbers. The value of a is _____.

A. 3

B. 2

C. 1 ✓

D. 4

Q11 Linear equations ENGLISH

Solve the following linear equations.

$$2x + 3y - 5z = 4,$$

$$x + 3y - 2z = 12,$$

$$2x + y - 3z = 5$$

A. $x = \frac{43}{8}, y = \frac{-65}{8}, z = \frac{-39}{8}$

B. $x = \frac{43}{8}, y = \frac{65}{8}, z = \frac{39}{8}$

C. $x = \frac{-43}{8}, y = \frac{-65}{8}, z = \frac{39}{8}$

D. $x = \frac{65}{8}, y = \frac{39}{8}, z = \frac{43}{8}$ ✓



Q12 Quadratic equations ENGLISH

Consider a quadratic equation $3x^2 + 4x - 8 = 0$. Which of the following quadratic equations will have both roots common with the given quadratic equation?

A. $-1.5x^2 - 2x + 4 = 0$ ✓

B. $3x^2 + 4x + 8 = 0$

C. $3x^2 - 4x + 8 = 0$

D. $-1.5x^2 + 2x + 4 = 0$

Q13 Quadratic roots ENGLISH

One root of the quadratic equation $2x^2 + (k+3)x + 2k = 0$ is reciprocal of the other. Find the roots.

A. -1 and 1

B. 1 and 1

C. $\frac{1}{2}$ and 2

D. -1 and -1 ✓

Q14 Quadratic roots ENGLISH

Let a and b be roots of the equation $x^2 - 7x + c = 0$, and the roots of the equation $x^2 - dx + 216 = 0$ are a^2b and b^2a . The value of d is ____.

A. 45

B. 42 ✓

C. 48

D. 40

Q15 Quadratic roots ENGLISH

Find the roots of the quadratic equation $15x^2 - x - 2 = 0$

A. $x = \frac{-1}{3}$ or $x = \frac{-2}{5}$

B. $x = \frac{1}{3}$ or $x = \frac{2}{5}$

C. $x = \frac{-1}{3}$ or $x = \frac{2}{5}$ ✓

D. $x = \frac{1}{3}$ or $x = \frac{-2}{5}$



Algebra

3 Questions • Answer Key

Q1 Algebraic identities ENGLISH

If $\frac{x}{x^2 - 4x + 1} = \frac{1}{9}$, then the value of $x^3 + \frac{1}{x^3}$ is:

A. 2158



B. 1256

C. 1839

D. 729

Q2 Algebraic identities

જો $(5x+1)^3 + (x+3)^3 + 8(3x-4)^3 = 6(5x+1)(x+3)(3x-4)$, તો x નું મૂલ્ય શોધો.

A. $\frac{1}{2}$ B. $\frac{2}{3}$ C. $\frac{1}{3}$ D. $\frac{1}{4}$

Q3 Algebraic identities ENGLISH

If $x + \frac{1}{17x} = 3$, then the value of $17x^3 + \frac{1}{289x^3}$ is:

A. 345

B. 435

C. 534

D. 450



Algebra

6 Questions • Answer Key

Q1 Roots and surds ENGLISH

If $x = \sqrt[3]{512}$, $y = \sqrt[6]{64}$ and $z = 6^3 - 2 \times 10^2$, then $\sqrt[3]{10(x^2 + y^3 + z + 12)}$ is equal to:

- A. 20
- B. 30
- C. 40
- D. 10



Q2 Roots and surds ENGLISH

The value of $\sqrt{\left(42 + \sqrt{\left(46 + \sqrt{\left(3 + \sqrt{\left(34 + \sqrt{(4)}\right)}\right)}\right)}\right)}$ is:

- A. 9
- B. 11
- C. 8
- D. 7



Q3 Roots and surds ENGLISH

The value of $\sqrt{\left(77 + \sqrt{\left(12 + \sqrt{\left(10 + \sqrt{\left(32 + \sqrt{(16)}\right)}\right)}\right)}\right)}$ is:

- A. 13
- B. 9
- C. 8
- D. 11



Q4 Roots and surds

$\frac{\sqrt[3]{5832}}{\sqrt[4]{1296}} \times \frac{3}{54} \times 168$ ને સાદું રૂપ આપો.

A. 36

B. 18

C. 25

D. 28 ☒**Q5** Roots and surds **ENGLISH**

The value of $\sqrt{\left(17 + \sqrt{\left(57 + \sqrt{\left(45 + \sqrt{\left(7 + \sqrt{(81)}\right)}\right)}\right)}\right)}$ is:

A. 1

B. 2

C. 7

D. 5 ☒**Q6** Roots and surds

$\sqrt{\left(90 + \sqrt{\left(97 + \sqrt{\left(4 + \sqrt{\left(19 + \sqrt{(36)}\right)}\right)}\right)}\right)}$ નું મૂલ્ય શોધો.

A. 7

B. 10 ☒

C. 9

D. 12



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Algebra

9 Questions • Answer Key

Q1 BODMAS simplification ENGLISHThe simplified value of $178 - 7 \times (3 + 17) + 22$ is:

A. 67

B. 58

C. 60 ☒

D. 66

Q2 BODMAS simplification

નીચેનાને સાદું રૂપ આપો.

 $294 \div [10 \div 5 \times \{11 + 12 - (8 + 5 - (10 + 1))\}]$

A. 2

B. 7 ☒

C. 15

D. 4

Q3 Bracket simplification ENGLISH

Simplify the following.

 $112 \div [16 \div 8 \times \{18 + 12 - (3 + 10 - (4 + 7))\}]$

A. 4

B. 3

C. 11

D. 2 ☒Q4 Bracket simplification ENGLISHSimplify: $23 - [3 - \{9 - (4 + 5)\}]$

A. 24

B. 27

C. 20 ☒

D. 17

Q5 Bracket simplification ENGLISHSimplify: $52 - \{38 \div (4 \times 7 - 9)\}$

A. 46

B. 50 ☒

C. 55

D. 57

Q6 Simplification ENGLISH*[Question text / figure not saved in the source paper record. Options and official answer as released.]*A. $\frac{31}{40}$ B. $\frac{41}{40}$ ☒C. $\frac{37}{40}$ D. $\frac{47}{40}$ 

Q7 Simplification

$88 - 1 \times (5 + 12) - 19$ ને સાદું રૂપ આપો.

A. 60

B. 54

C. 62

D. 52



Q8 Simplification **ENGLISH**

The value of $4^3 - 7^2 + \left(\frac{16}{4}\right)^2 - 4 + 9 \times 1 =$ _____

A. 44

B. 36

C. 42

D. 33



Q9 Simplification **ENGLISH**

Simplify: $110 - 42 \times (5 + 6) - 6$

A. -350

B. -363

C. -358

D. -348



Geometry

3 Questions • Answer Key

Q1 Incircle area

ત્રિકોણની ત્રણેય બાજુઓની લંબાઈ અનુક્રમે 13 cm, 14 cm અને 15 cm છે. આ ત્રિકોણના અંતઃવર્તુળનું ક્ષેત્રફળ (cm^2 માં) શોધો. [$\pi = 3.14$ નો ઉપયોગ કરો]

A. 47.10

B. 56.52

C. 50.24



D. 53.38

Q2 Triangle centres ENGLISH

O and C are respectively the orthocentre and the circumcentre of an acute angled triangle ΔPQR . $\angle QCR = 138^\circ$. A perpendicular PM is dropped from P on side QR. If $\angle PQR = 52^\circ$, what is the degree measure of $\angle RPM$?

A. 69

B. 42

C. 31



D. 38

Q3 Triangle properties

નીચે આપેલા વિધાનોમાંથી ત્રિકોણ વિશે સાચુ/સાચા વિધાન પસંદ કરો:

A. 9 cm, 13 cm, 3 cm બાજુઓ ધરાવતો ત્રિકોણ બનાવી શકાય છે.

B. જો ΔPQR માં, $\angle P = 50^\circ$, $\angle Q = 30^\circ$ હોય, તો QR એ ત્રિકોણની સૌથી મોટી બાજુ છે.

C. 6 cm બાજુ ધરાવતા સમબાજુ ત્રિકોણનું ક્ષેત્રફળ $18\sqrt{3} \text{ cm}^2$ છે.

D. ΔDEF અને ΔPQR માં, $\angle D = \angle P$, $\angle E = \angle Q$ અને $DF = PR$ છે, તો ΔDEF એ ΔPQR ને એકરૂપ છે.

A. માત્ર A, B, C

B. માત્ર D



C. માત્ર B, C, D

D. માત્ર A



Geometry

3 Questions • Answer Key

Q1 Tangents to circle ENGLISH

Let C be a circle with center O . Let AB be a tangent to C , such that AB touches the circle at P . Let X and Y be any two points on C . If $\angle APX = 60^\circ$ and $\angle BPY = 30^\circ$, find $\angle PYX$ and $\angle PXY$, respectively.

A. $60^\circ, 30^\circ$ ✓B. $30^\circ, 60^\circ$ C. $90^\circ, 30^\circ$ D. $90^\circ, 60^\circ$

Q2 Tangents to circle ENGLISH

Let C be a circle with centre O , and R be an external point to C . Let RP and RQ be two tangents to circle C with P and Q being the points of tangency, respectively. If $\angle PRQ = 60^\circ$, then find $\angle POQ$.

A. 100° B. 60° C. 80° D. 120° ✓

Q3 Tangents to circles ENGLISH

Two circles, having their centres at A and at B , touch externally at a point M . From a point P on a tangent at M , tangents PQ and PR are drawn to the circles with points of contact Q and R , respectively. If $AP = 13$ cm and $AM = 5$ cm, find the value of $PQ + PR - PM$.

A. 10 cm

B. 13 cm

C. 12 cm ✓

D. 14 cm



Q1 Hexagon in circle ENGLISH

A regular hexagon is inscribed in a circle. If the length of the shortest diagonal of the hexagon is 12 cm, find one-sixth of the area (in cm^2) of the region lying between the circle and the hexagon.

A. $6(2\pi - 3\sqrt{3})$

B. $4(3\pi - 2\sqrt{3})$

C. $6(3\pi - 2\sqrt{3})$

D. $4(2\pi - 3\sqrt{3})$



Q1 Parallelogram area ENGLISH

The base and the corresponding height of a parallelogram are 93 cm and 29 cm, respectively. The area of the parallelogram (in cm^2) is:

A. 2697



B. 2696

C. 2701

D. 2714

Q2 Rectangle area

એક લંબચોરસ મેદાનની લંબાઈ તેની પહોળાઈ કરતા 21 m વધુ છે. તેનું ક્ષેત્રફળ $31,042 \text{ m}^2$ છે. તેની પહોળાઈ (m માં) _____ છે.

A. 182

B. 166



C. 151

D. 161



Mensuration

14 Questions • Answer Key

Q1 Cone filling from pipe ENGLISH

Water flows at the rate of 10 m/min from a cylindrical pipe 6 mm in diameter. How long will it take to fill up a conical vessel whose diameter at the base is 60 cm and depth 21 cm?

- A. 1 hour, 20 minutes
- B. 1 hour, 12 minutes
- C. 1 hour, 10 minutes ✓
- D. 1 hour, 6 minutes

Q2 Cone surface area

એક લંબ વૃત્તીય શંકુની ત્રિજ્યા 24 cm અને ઊંચાઈ 32 cm છે. શંકુનું કુલ પૃષ્ઠફળ કેટલું છે?

- A. 1536π cm²
- B. 960π cm² ✓
- C. 576π cm²
- D. 1728π cm²

Q3 Cube surface area ENGLISH

A cubical gift box has each side measuring 12.4 cm. It is to be wrapped all over with a gift paper. Find the area to be wrapped.

- A. 1022.45 cm²
- B. 822.75 cm²
- C. 922.56 cm² ✓
- D. 1082.50 cm²

Q4 Cube surface area

એક સમઘન, જેની દરેક ધાર 285 m છે, તેનું કુલ પૃષ્ઠફળ (m² માં) _____ છે.

- A. 487350 ✓
- B. 487344
- C. 487362
- D. 487308

Q5 Cuboid dimensions ENGLISH

The length of a cuboid is three times its height, and the breadth is twice the height. If the height is $(x^2 + 2)$ cm, find the lateral surface area of the cuboid at $x = 2$.

- A. 360 cm² ✓
- B. 420 cm²
- C. 240 cm²
- D. 300 cm²

Q6 Cuboid surface area ENGLISH

The internal surface area (in m²) of an open cuboidal tank whose internal length, internal breadth and internal height are given as 3 m, 11 m, and 9 m, respectively, is:

- A. 285 ✓
- B. 314
- C. 303
- D. 295

Q7 Sphere to cones ENGLISH

A solid sphere is melted and recast into 18 identical cones, each having a base radius of 3 cm and height of 18 cm. Find the radius of the sphere.

- A. 9 cm ✓
- B. 8 cm
- C. 7 cm
- D. 10 cm



Q8 3D Mensuration **ENGLISH**

Find the volume of a hemisphere, the circumference of whose base is 35.2 cm

(rounded off to two places of decimals; use $\pi = \frac{22}{7}$).

A. 363.56 cm³

B. 369.34 cm³

C. 367.96 cm³



D. 361.25 cm³

Q9 Cone surface area **ENGLISH**

The radius and slant height of a cone are 59.5 cm and 85 cm, respectively. Find its total surface area.

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

A. 27,021.5 cm²



B. 28,021.5 cm²

C. 27,000.5 cm²

D. 30,021.5 cm²

Q10 Cone tent cloth **ENGLISH**

How many metres of cloth 2 metres wide will be required to make a conical tent with the diameter of the base being 14 metres and its slant height being 9.5 metres?

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

A. 109.5

B. 114.5

C. 124.5

D. 104.5

**Q11** Cone toy volume **ENGLISH**

A toy manufacturer originally makes a conical toy with a base radius of 3 cm and a height of 7 cm. Due to customer demand, he now wants to produce a similar toy that has 75% of the original volume, while keeping the same base radius as before. What should be the height of the new toy? (Take $\pi = \frac{22}{7}$)

A. 5.25 cm



B. 5.5 cm

C. 5.75 cm

D. 5.125 cm



Q12 Cylinder rolling **ENGLISH**

A road roller of diameter 2.24 m and length 1 m has to press a ground of area 880 m². How many revolutions does it make to complete the work?

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

A. 109

B. 100

C. 114

D. 125

**Q13** Cylinder volume

એક નળાકાર પાત્રમાં 154 લિટર પાણી છે. જો પાયાની ત્રિજ્યા 14 cm હોય, તો પાત્રમાં પાણીના સ્તંભની ઊંચાઈ (cm માં) શોધો.

($\pi = \frac{22}{7}$ લો)

A. 240 cm

B. 275 cm

C. 250 cm

D. 260 cm

**Q14** Sphere volume **ENGLISH**

What is the volume (in cm³) of a solid sphere whose radius is 2.1 cm (rounded off to two decimal places)? (Use $\pi = \frac{22}{7}$)

A. 32.80

B. 38.81

C. 36.80

D. 34.81



Trigonometry

2 Questions • Answer Key

Q1 Trig identities ENGLISH

If $\operatorname{cosec}^2\theta + 4\sin^2\theta = 4$, where $0^\circ \leq \theta \leq 90^\circ$, then find the value of θ .

A. 60° B. 45° ✓C. 90° D. 30°

Q2 Trig identities ENGLISH

[Question text / figure not saved in the source paper record. Options and official answer as released.]

A. $\frac{-6 - \sqrt{5}}{31}$ ✓B. $\frac{-7 - \sqrt{5}}{31}$ C. $\frac{-6 - \sqrt{5}}{36}$ D. $\frac{-6 - \sqrt{5}}{41}$ 

Trigonometry

3 Questions • Answer Key

Q1 Angle of depression ENGLISH

From the top of a cliff the angle of depression of a point on the ground 240 feet away from the bottom of the cliff is 30° . Find the height of the cliff (in feet, rounded off to the nearest integer).

(Use $\sqrt{3} = 1.732$)

A. 146

B. 124

C. 130

D. 139

Q2 Height of tower

ટાવરના પાયાથી 20 મીટર દૂર ઊભેલી વ્યક્તિએ જોયું કે ટાવરની ટોચ સુધીનો ઉન્નયન કોણ 60° છે. ટાવરની ઊંચાઈ શોધો. (બે દશાંશ સ્થાનો સુધી આવરી લીધેલો.)

A. 38.38 m

B. 36.67 m

C. 34.64 m

D. 32.60 m

Q3 Height and Distance ENGLISH

A man, 1.8 m tall, is standing on a 1.0 m high platform near its edge, to observe the top of a building.

The building is at distance of $25\sqrt{3}$ m away from the platform. The angle of elevation from his eye to the top of the building is 30° . The height (in m) of the building is:

A. 26.8

B. 27.8

C. 25.8

D. 28.8



Number System

2 Questions • Answer Key

Q1 Consecutive numbers ENGLISH

The product of two consecutive natural numbers is 12.
The greater of the two numbers is:

A. 6

B. 3

C. 2

D. 4



Q2 HCF rows ENGLISH

A farmer wants to plant 95 mango trees, 171 banyan trees, and 152 banana trees in equal rows (in terms of the number of trees). Also, he wants to create distinct rows of trees, with only one type of tree in each row. Find the minimum number of rows required.

A. 23

B. 19

C. 18

D. 22



Number System

10 Questions • Answer Key

Q1 Divisibility by 9

7-અંકની સંખ્યા 93A562B એ 9 વડે વિભાજ્ય છે, તો $(A + B)$ નું ન્યુનતમ મૂલ્ય શોધો.

A. 4

B. 7

C. 5

D. 2

Q2 Divisibility by 9 ENGLISH

The 7-digit number 57A001B is divisible by 9. What is the minimum value of $(A + B)$?

A. 8

B. 2

C. 3

D. 5

Q3 Divisibility rules ENGLISH

The number 343264 is divisible by:

A. 27

B. 43

C. 29

D. 32



Q4 Divisibility tests

નીચેનામાંથી કઈ સંખ્યા 9 અને 43 બંને વડે વિભાજ્ય છે?

A. 7230

B. 7095

C. 8901



D. 10710

Q5 LCM ENGLISH

Find the LCM of 8, 12, and 20.

A. 180

B. 120



C. 60

D. 150

Q6 LCM of intervals ENGLISH

Three bells ring at intervals of 4, 6, and 9 minutes, respectively. If they all ring together at 9:00 a.m., at what time will they ring together again?

A. 9:54 a.m.

B. 9:36 a.m.



C. 9:42 a.m.

D. 9:48 a.m.

Q7 LCM of products ENGLISH

The LCM of $2^3 \times 6^2 \times 11$, $2^2 \times 11^2 \times 17$ and $6^3 \times 11^2 \times 17^2$ is:

A. $25 \times 33 \times 112 \times 172$ B. $24 \times 34 \times 112 \times 172$ C. $24 \times 33 \times 112 \times 172$ D. $25 \times 34 \times 112 \times 172$ Q8 LCM of products ENGLISH

The LCM of $5^3 \times 8^2 \times 12$, $5^2 \times 12^2 \times 16$ and $8^3 \times 12^2 \times 16^2$ is:

A. $220 \times 32 \times 53$ B. $219 \times 32 \times 53$ C. $221 \times 32 \times 53$ D. $222 \times 32 \times 53$

Q9 LCM remainder

એવી સૌથી નાની સંખ્યા શોધો જેને જ્યારે 5, 6, 3 અને 4 વડે વિભાજિત કરવામાં આવે ત્યારે શેષ 2 રહે છે, પરંતુ જ્યારે 7 વડે વિભાજિત કરવામાં આવે ત્યારે કોઈ શેષ રહેતો નથી.

A. 147

B. 198

C. 168

D. 182



Q10 Remainder power **ENGLISH**

What is the remainder when 3^{939} is divided by 8?

A. 3



B. 5

C. 0

D. 2

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Number System

8 Questions • Answer Key

Q1 Number series ENGLISH

What should come in place of '?' in the given series?

23 34 45 56 67 ?

A. 75

B. 76

C. 78



D. 77

Q2 Number series ENGLISH

What should come in place of the question mark (?) in the given series?

7 10 16 25 37 ?

A. 52



B. 50

C. 51

D. 53

Q3 Number series ENGLISH

What should come in place of '?' in the given series?

3 8 6 11 9 14 ?

A. 17

B. 16

C. 12



D. 15

Q4 Number series ENGLISH

What should come in place of the question mark (?) in the given series?

10 13 19 28 40 ?

A. 53

B. 52

C. 55



D. 54

Q5 Number series ENGLISH

What should come in place of '?' in the given series?

115, 119, 127, 139, 155, ?

A. 177

B. 175



C. 171

D. 173

Q6 Number series ENGLISH

What should come in place of '?' in the given series?

250 200 160 130 ?

A. 110



B. 120

C. 90

D. 100

Q7 Number series ENGLISH

What should come in place of the question mark (?) in the given series?

6 19 45 97 201 ?

A. 403

B. 400

C. 406

D. 409



Q8 Number series ENGLISH

What should come in place of '?' in the given series?

145 129 113 97 81 ?

A. 64

B. 63

C. 65



D. 61



Q1 Number System

બે સંખ્યાઓનો ગુ.સા.અ. અને લ.સા.અ. અનુક્રમે 15 અને 300 છે. જો એક સંખ્યા બીજી સંખ્યાના $\frac{5}{4}$ ગણી હોય, તો મોટી સંખ્યા કઈ હશે?

A. 88

B. 110

C. 75



D. 84



Statistics

12 Questions • Answer Key

Q1 Assumed mean **ENGLISH**

In the Assumed Mean Method, if the assumed mean (A) = 55 and an observed value $x = 40$, what is the deviation d ?

A. 1.5

B. -15



C. -1.5

D. 15

Q2 Data central tendency **ENGLISH**

The following data represents the number of goals scored by a football team in 10 matches.

2, 3, 1, 4, 2, 5, 2, 3, 2, 4

The mode of the above data is x . If one more match is played, and the team scores 3 goals, what will be the difference between the previous mode and the new mode?

A. 2

B. 0



C. 3

D. 1

Q3 Harmonic mean **ENGLISH**

The harmonic mean of 4, 8 and 16 is (Rounded off to four decimal places)

A. 6.8517

B. 6.5817

C. 6.5871

D. 6.8571



Q4 Mean median mode

નીચે આપેલ વિતરણના સરેરાશ ગુણ કેટલા હશે?

મેળવેલ ગુણ	વિદ્યાર્થીઓની સંખ્યા
36	12
35	11
93	18
17	5

A. 75

B. 72

C. 56



D. 60

Q5 Median **ENGLISH**

Find the median of the following data.

7, 19, 88, 20, 19, 26, 90, 81, 44, 34.

A. 30



B. 28

C. 32

D. 34

Q6 Mode **ENGLISH**

The marks scored by 10 students are given below.

12, 12, 20, 12, 12, 17, 17, 18, 18, 13

The mode of the data is:

A. 12



B. 20

C. 17

D. 15



Q7 Weighted mean

એક વિદ્યાર્થીએ ત્રણ વિષયોમાં અનુક્રમે 2, 3 અને 5ના ભાર સાથે 60, 70 અને 80 સ્કોર કર્યા હોય તો ભારિત સરેરાશ સ્કોર શું છે?

A. 71

B. 75

C. 73



D. 77

Q8 Mean median mode ENGLISH

If the mode and median of a certain data are 24 and 18, respectively, then the mean of the data is:

A. 15



B. 20

C. 22

D. 24

Q9 Mean median mode ENGLISH

Find the median from the following data.

Age in years	15-25	25-35	35-45	45-55	55-65	65-75	75-85
No. of patients	10	17	22	26	30	24	21

A. 70 years

B. 55 years



C. 47 years

D. 65 years

Q10 Mean median mode ENGLISH

What is the mean of the following distribution?

Marks	10	28	48	69	87
No. of Students	15	34	37	44	12

A. 78

B. 34

C. 49



D. 71



Q11 Mean median mode **ENGLISH**

Assertion (A): If the median of the given data (provided in ascending order): 26, 29, 42, 53, x , $x + 2$, 70, 75, 82, 93, is 60 then the value of x is 59

Reason (R): When the number of observations (n) is even the median is the value of the $\frac{1}{2}$ (sum of middle terms)

provided data is arranged in ascending order.

A. Both Assertion (A) and Reason are true and R is the correct explanation of A.

B. Both Assertion (A) and Reason are true and R is not the correct explanation of A.

C. Assertion (A) is true but Reason (R) is false.

D. Assertion (A) is false but Reason (R) is true.

Q12 Mode grouped data

આપેલ ડેટાનો બહુલક શોધો (દર્શાવેલા બે સ્થાનો સુધી આવરો).

વર્ગ અંતરાલ	0-6	6-12	12-18	18-24	24-30
આવૃત્તિ	8	7	5	9	4

A. 20.67

B. 22.45

C. 21.36

D. 19.24



Q1 Standard deviation ENGLISH

Standard deviation of 10, 12, 9, 8, 21 is (correct to two decimals):

A. 4.69



B. 4.89

C. 4.59

D. 4.79

Q2 Standard deviation ENGLISH

Calculate the population standard deviation of the data 13, 17, 23, 26, 31, 28, 15, 34, 17, and 26.

(Round off your answer to two decimal places.)

A. 6.81



B. 7.18

C. 6.19

D. 7.26

