

Numerical Ability for IAF AFCAT 1 2022 Download PDF

Q1. A bookseller bought 500 text books for 20,000. He wanted to sell them at a profit so that he get 50 books free. At what profit percent should he sell them?

- (a) 10 %
- (b) 20 %
- (c) 15 %
- (d) 10.5 %

Q2. 20% of a man's salary is paid as rent, 60% are his living expenses and 10% are his savings. If he spends remaining Rs. 30 on the education of his children, find his salary?

- (a) 300
- (b) 900
- (c) 3000
- (d) 9000

Q3. The radius of a sphere and hemisphere are same. The ratio of their total surface area is:

- (a) 3:1
- (b) 2:1
- (c) 3:2
- (d) 4:3

Q4. There are 1400 students in a school, 25% of those wear spectacles and $\frac{2}{7}$ of those wearing spectacles are boys. How many girls in the school wear spectacles?

- (a) 250
- (b) 100
- (c) 200
- (d) 300

Q5. A can do $\frac{1}{3}$ rd of a work in 5 days and B can do $\frac{2}{5}$ th of this work in 10 days. Both A and B, together can do the work in

- (a) $7\frac{3}{8}$ days
- (b) $8\frac{4}{5}$ days
- (c) $9\frac{3}{8}$ days
- (d) 10 days

Q6. The marked price of a ceiling fan is Rs. 1200 and the shopkeeper allows a discount of 5 % on it. Then selling price of the fan is

- (a) Rs. 1410
- (b) Rs. 1400
- (c) Rs. 1140
- (d) Rs. 1104

Q7. A train covers a distance in 50 minutes if it runs at a speed of 48 km/hr on an average. The speed at which the train must run to reduce the time of journey to 40 minutes will be-

- (a) 45 km/hr
- (b) 50 km/hr
- (c) 60 km/hr
- (d) 75 km/hr

Q8. A machine cost Rs. 32000 at present. If the value of the machine depreciates at the rate of 5% compounded annually. What will be its value 3 years hence?

- (a) Rs. 23189
- (b) Rs. 24598
- (c) Rs. 25248
- (d) Rs. 27436

Q9. The slant height of a conical mountain is 2.5 km, and the area of its base is 1.54 km^2 . Find the height of the mountain.

- (a) 2.2 km
- (b) 2.4 km
- (c) 3 km
- (d) 3.11 km

Q10. Among the three numbers, the second is twice the first and is also thrice the third. If the average of three numbers is 55, find the largest number.

- (a) 45
- (b) 54
- (c) 63
- (d) 90

Q11. A sum of Rs. 960 is divided among 4 men, 5 women and 8 boys such that the share of a man, a woman and a boy is in the ratio of 5:4:3 respectively. Find the share of a woman.

- (a) Rs. 30
- (b) Rs. 60
- (c) Rs. 90
- (d) Rs. 120

Q12. In a certain school, 20% of students are below 8 years of age. The number of students of 8 years age or above 8 years of age is 48. What is the total number of students in the school?

- (a) 72
- (b) 80
- (c) 60
- (d) 150

Q13. A man took loan a bank at the rate of 12% p.a simple interest. After 3 years he had to pay Rs. 5400 interests only for the period. The principal amount borrowed by him was:

- (a) Rs. 2000
- (b) Rs. 10,000
- (c) Rs. 15,000
- (d) Rs. 20,000

Q14. If a man were to sell his chair for Rs. 720, he would lose 25%. To gain 25% he should sell it for

- (a) Rs. 1,000
- (b) Rs. 1,200
- (c) Rs. 1,960
- (d) Rs. 1,900

Q15. A man on tour travels first 160 km at 64 km/hr and the next 160 km at 80 km/hr. The average speed for the first 320 km of the tour is:

- (a) 35.55 km/hr
- (b) 36 km/hr
- (c) 71.11 km/hr
- (d) 71 km/hr

Q16. The ratio of boys and girls in a school is 3 : 2. When 6 more boys join, this ratio becomes 7 : 4. How many boys are there in the school after new joining?

- (a) 24
- (b) 30
- (c) 42
- (d) None of these

Q17. A man sold two tables at Rs. 1,200 each. On one he gained 20% and on the other he lost 20%. His gain or loss in the whole transaction is

- (a) 1% loss
- (b) 2% loss
- (c) 4% loss
- (d) 1% gain

Q18. The L.C.M. of two numbers is 48. The numbers are in the ratio 2 : 3. Then sum of the number is:

- (a) 28
- (b) 32
- (c) 40
- (d) 64

Q19. A train running at a speed of 194.4 kilometer per hour passes a man walking in opposite direction at 6 metre per second in 15 second. What is the length of the train?

- (a) 600 metre
- (b) 800 metre
- (c) 900 metre
- (d) 100 metre

Q20. Anoop travels first $\frac{1}{3}$ rd of the total distance at the speed of 10 km/hr and the next $\frac{1}{3}$ rd distance at the speed of 20 km/hr and the last $\frac{1}{3}$ rd distance at the speed of 60 km/hr. The average speed of anoop is :

- (a) 15 km/hr
- (b) 18 km/hr
- (c) 25 km/hr
- (d) 30 km/hr

Q21. The ratio of the quantities of an acid and water in a mixture is 1 : 3. If 5 liters of acid is further added to the mixture, the new ratio becomes 1 : 2. The quantity of new mixture in litres is

- (a) 32
- (b) 40
- (c) 42
- (d) 45

Q22. When a number is divided by 234, the remainder obtained is 26. If the same number is divided by 13, then the remainder obtained will be:

- (a) Zero
- (b) 1
- (c) 5
- (d) 4

Q23. P is thrice as efficient as Q and is therefore able to finish a piece of work in 60 days less than Q. Find the time in which Q can complete work individually.

- (a) 90
- (b) 60
- (c) 40
- (d) None of these

Q24. In what ratio must a grocer mix teas at Rs. 60 a kg, and Rs. 65 a kg, so that by selling the mixture at Rs. 68.20 a kg, he may gain 10%?

- (a) 3 : 2
- (b) 3 : 4
- (c) 3 : 5
- (d) 4 : 5

Q25. A man had 100 kgs of sugar, part of which he sold at 7% profit and rest at 17% profit. He gained 10% on the whole. How much did he sell at 7% profit?

- (a) 65 kg
- (b) 35 kg
- (c) 30 kg
- (d) 70 kg

Q26. The price of rice is reduced by 2%. How many kilograms of rice can now be bought for the money which was sufficient to buy 49 kgs of rice earlier?

- (a) 48 kgs.
- (b) 49 kgs.
- (c) 50 kgs.
- (d) 51 kgs.

Q27. A batsman scored 110 runs which included 3 boundaries and 8 sixes. What per cent of his total score, did he make by running between the wickets?

- (a) 45%
- (b) $45\frac{5}{11}\%$
- (c) $54\frac{6}{11}\%$
- (d) 55%

Q28. If both the radius and height of a right circular cone are increased by 20%, its volume will be increased by

- (a) 20%
- (b) 40%
- (c) 60%
- (d) 72.8%

Q29. If the number 2304ab is completely divisible by 80 then what will be the value a+b?

- (a) 4
- (b) 9
- (c) 6
- (d) 8

Q30. On calculating the H.C.F. of two numbers by division method the last divisor is 75 and quotients from the beginning are 3, 1, 1 and 3. What will be the sum of these two numbers?

- (a) 2400
- (b) 2500
- (c) 825
- (d) None of these

Q31. A work is being completed by a group of 10 men in 12 days. Same work is completed by a group of 10 women in 6 days. In how many days will the work be completed in both the groups work together?

- (a) 4
- (b) 6
- (c) 9
- (d) 18

Q32. A is thrice efficient than B and takes 60 days less than B to complete a work. In how many days can they complete this work if they work together?

- (a) 20 days
- (b) $22\frac{1}{2}$ days
- (c) 25 days
- (d) 30 days

Q33. Mohan and Sohan started a business. Mohan invested Rs. 20,000 for 6 months. Sohan invested for one year. At the end of a year Mohan got Rs. 6,000 in the total profit of Rs. 9,000. How much did Sohan invest initially?

- (a) Rs. 10,000
- (b) Rs. 5,000
- (c) Rs. 12,000
- (d) Rs. 8,000

Q34. A wall clock takes 22 seconds to strike the number of 11 hours at 12 o'clock. The time will it take to strike the number of hours at 6 o'clock is

- (a) 12 sec
- (b) 10 sec
- (c) 11 sec
- (d) 9.16 sec

Q35. A person takes 3 hours 45 minutes to row his boat 15 km downstream in a river and in opposite direction it takes 2 hours 30 minutes to row 5 km. What will be the speed of the stream?

- (a) 0.5 km/h
- (b) 2 km/h
- (c) 1 km/h
- (d) 3 km/h

Q36. The average consumption of rice per person per month in a family of 8 adults and some kids is 10.8 kg, where the average consumption per person for adult is 15 kg and for kids is 6 kg. What is the number of kids in the family?

- (a) 8
- (b) 6
- (c) 7
- (d) 9

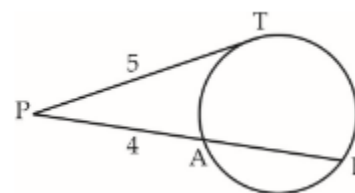
Q37. A merchant purchases a wrist watch for Rs. 450 and fixes its list price in such a way that after allowing a discount of 10%, he earns a profit of 20%. Then the list price of the watch is

- (a) Rs. 650
- (b) Rs. 700
- (c) Rs. 550
- (d) Rs. 600

Q38. Kamal can do a piece of work in 15 days. Bimal is 50 per cent more efficient than Kamal in doing the work. In how many days will Bimal do that work?

- (a) 14 days
- (b) 12 days
- (c) 10 days
- (d) $10\frac{1}{2}$ days

Q39. In the given figure, PAB is a secant and PT is a tangent to the circle from P. If PT = 5 cm, PA = 4 cm and AB = x cm, then x is:



- (a) $\frac{4}{9}$ cm
- (b) $\frac{2}{3}$ cm
- (c) $\frac{9}{4}$ cm
- (d) 5 cm

Q40. In trapezium ABCD, $AB \parallel CD$ and $AB = 2 CD$. Its diagonals intersect at O. If the area of $\Delta AOB = 84 \text{ cm}^2$, then the area of ΔCOD is equal to

- (a) 21 cm^2
- (b) 72 cm^2
- (c) 42 cm^2
- (d) 26 cm^2

Q41. The average of runs scored by a player in 10 innings is 50. How many runs should he score in the 11th innings so that his average is increased by 2 runs?

- (a) 80 runs
- (b) 72 runs
- (c) 60 runs
- (d) 54 runs

Q42. Twinkle bought 30 kg of wheat at the rate of Rs. 9.50 per kg of wheat and the same amount of wheat at the rate of Rs. 8.50 per kg and mixed them. She sold the mixture at the rate of Rs. 8.90 per kg. Her total profit or loss in the transaction was :

- (a) Rs. 2 loss
- (b) Rs. 2 profit
- (c) Rs. 6 loss
- (d) Rs. 6 profit

Q43. A certain number of persons can complete a piece of work in 55 days. If there were 6 persons more, the work could be finished in 11 days less. How many persons were originally there?

- (a) 17
- (b) 24
- (c) 30
- (d) 22

Q44. Points 'A' and 'B' are 70 km apart on a highway and two cars start at the same time. If they travel in the same direction, they meet in 7 hours, but if they travel towards each other they meet in one hour. Find the speed of the two cars (in km/hr).

- (a) 20, 30
- (b) 40, 30
- (c) 30, 50
- (d) 20, 40

Q45. The price of coal is increased by 20%, By what per cent a family should decrease its consumption so that expenditure remains same?

- (a) 40%
- (b) $46\frac{2}{3}\%$
- (c) 20%
- (d) $16\frac{2}{3}\%$

Q46. In an examination, 19% students fail in Mathematics and 10% students fail in English. If 7% of all students fail in both subjects, then the percentage of students passed in both subjects is :

- (a) 36% of all students
- (b) 64% of all students
- (c) 71% of all students
- (d) 78% of all students

Q47. Rakesh buys a watch for Rs. 600 and sells it to Saravana at 10% profit. Saravana sells it to Ajay at 5% profit. For how much does Saravana sell the watch to Ajay?

- (a) Rs. 650
- (b) Rs. 679
- (c) Rs. 693
- (d) Rs. 710

Q48. A train covers a distance of 10 km in 12 minutes. If its speed is decreased by 5 km/hr, find the time taken to cover the same distance.

- (a) 10 minutes
- (b) 11 minutes 20 second
- (c) 13 minutes
- (d) 13 minutes 20 second

Q49. What is the least number which when doubled will be exactly divisible by 12, 14, 18 and 22?

- (a) 1216
- (b) 1286
- (c) 1386
- (d) 1436

Q50. The volumes of two spheres are in the ratio of 64 : 27. Find the ratio of their surface areas.

- (a) 1 : 3
- (b) 1 : 5
- (c) 4 : 3
- (d) 16 : 9

Q51. The sum of two numbers is 70 and the difference of their squares is 1400. Find the difference between the numbers.

- (a) 20
- (b) 35
- (c) 49
- (d) 65

Q52. A man lent Rs. 60,000, partly at 5% and the rest at 4% simple interest. If the total annual interest is Rs. 2560, the money lent at 4% was

- (a) Rs. 30000
- (b) Rs. 40000
- (c) Rs. 44000
- (d) Rs. 45000

Q53. B got 20% marks less than A. What per cent marks did A got more than B?

- (a) 12
- (b) 20
- (c) 25
- (d) 80

Q54. A, B and C can finish a job working alone in 20, 30 and 60 days respectively. They all work together for 1 day, then A and B quit. How many days C working alone will take to finish the remaining part of the job?

- (a) 60
- (b) 54
- (c) 6
- (d) 27

Q55. In a basket, 4 times the number of apples is 30 less than twice the square of the number of apples. How many apples are there in the basket?

- (a) 10
- (b) 5
- (c) 7
- (d) 8

Q56. The average temperature of the first three days of a week is 26.5°C and that of the next three days is 29°C . If the weekly average is 27.4°C , what is the temperature of the last day?

- (a) 26.8°C
- (b) 24.8°C
- (c) 25.3°C
- (d) 26.4°C

Q57. A person buys a watch worth Rs.750 a mobile worth Rs. 3600 and a television worth Rs.10500 and pays duty of 4%, 7% and 9% respectively. Find out the total duty paid by him.

- (a) Rs.1300
- (b) Rs1197
- (c) Rs1227
- (d) Rs.1327

Q58. In a bus, 48%, 20% and 24% of passengers were from Mumbai, Delhi and Hyderabad respectively and remaining 20 were from Bihar. Then how many were from Mumbai?

- (a) 150
- (b) 120
- (c) 125
- (d) 130

Q59. The average of first five readings out of total 9 readings is 12. The average of last 5 readings is 15. The average of 9 readings is 10. Find out the 5th readings.

- (a) 35
- (b) 45
- (c) 63
- (d) 55

Q60. Raj sells a bicycle to Pawan at a profit of 25% and Pawan sells it to Dinkar at a profit of 20%. If Dinkar pays Rs 156, how much does Raj pay for it?

- (a) Rs 134
- (b) Rs 124
- (c) Rs 114
- (d) Rs 104

Q61. A man gains 10% by selling an article for a certain price. If he sells it at half of the price, the percentage loss will be:

- (a) 5%
- (b) 45%
- (c) 100%
- (d) 55%

Q62. If the angel of elevation of the sun is 60° . then the ratio of the height of a wall and its shadow is

- (a) $1 : \sqrt{3}$
- (b) $\sqrt{3} : 1$
- (c) $\sqrt{2} : 3$
- (d) $\sqrt{3} : \sqrt{2}$

Q63. The ratio of the age of Sweta and Santoshi is 9 : 4. If after 10 years, Santoshi's age would be the same as the present age of Sweta, find the present age of Sweta (in years).

- (a) 9
- (b) 36
- (c) 27
- (d) 18

Q64. A, B and C started a business with their investments in the ratio of 1 : 2 : 3. After 6 months, A invested the same amount as before and B and C withdrew half of their investments. The ratio of their profits at the end of the year is:

- (a) 2 : 2 : 3
- (b) 1 : 2 : 2
- (c) 2 : 2 : 1
- (d) 2 : 3 : 2

Q65. A person rows his boat 750 meters upstream in 675 seconds and returns in $7\frac{1}{2}$ minutes. What will be his speed in still water?

- (a) 3 km/h
- (b) 4 km/h
- (c) 5 km/h
- (d) 6 km/h

Q66. The average of 40 observations was 28. It was later found that in two observations, 42 was taken instead of 24 and 12 instead of 62. What is the correct average?

- (a) 26.8
- (b) 23.8
- (c) 28.8
- (d) 25.8

Q67. The respective ratio of boys and girls in a college is 31 : 23. After the admission of 75 more girls in the college, this ratio becomes 124 : 107. How many girls will have to admit in the class to make the number of boys and girls equal in the college ?

- (a) 75
- (b) 90
- (c) 60
- (d) 85

Q68. $(\sqrt{72} - \sqrt{18}) \div \sqrt{12}$ will be equal to

- (a) $\sqrt{6}$
- (b) $\sqrt{\frac{3}{2}}$
- (c) $\sqrt{\frac{2}{3}}$
- (d) $\sqrt{\frac{6}{2}}$

Q69. The sum of present ages of A and B is 7 times the difference of their ages. 5 years hence, their total ages will be 9 times the difference of their ages. What is the present age of elder one (in years) ?

- (a) 25
- (b) 20
- (c) 15
- (d) 18

Q70. The ratio of the income of Ram and Shyam is 7 : 17 and the ratio of the income of Shyam and Sohan is 7 : 17. If the income of Ram is Rs. 490 then what is the income of Sohan ?

- (a) Rs. 1690
- (b) Rs. 2890
- (c) Rs. 1790
- (d) Rs. 1190

Q71.

If $A : B = \frac{1}{2} : \frac{3}{8}$, $B : C = \frac{1}{3} : \frac{5}{9}$ and $C : D = \frac{5}{6} : \frac{3}{4}$ then $A : B :$

- (a) 6 : 4 : 8 : 10
- (b) 6 : 8 : 9 : 10
- (c) 8 : 6 : 10 : 9
- (d) 4 : 6 : 8 : 10

Q72. A trader sold an item at a loss of 20%. Had he sold it for Rs. 100 more, he would have gained a profit of 5%. What is the cost price of the item ?

- (a) Rs. 200
- (b) Rs. 25
- (c) Rs. 400
- (d) Rs. 250

Q73. A car left 3 minutes early than the scheduled time and in order to reach the destination 126 km away in time, it has to slow its speed by 6 km/h from the usual. What is the usual speed (in km/hr) of the car?

- (a) 56
- (b) 63
- (c) 94.5
- (d) 126

Q74. The price of motor cycle depreciates every year by 10%. If the value of the motor cycle after 3 years will be Rs 36450, Then what is the present value (in Rs) of the motor cycle?

- (a) 45000
- (b) 50000
- (c) 48000
- (d) 51000

Q75. The average age of 6 members of a family is 25 years. If the youngest member of the family is 15 years old, then what was the average age (in years) of the family at the time of the birth of the youngest member?

- (a) 9
- (b) 12
- (c) 18
- (d) 24

Q76. A and B together can complete a work in 30 day. They started together but after 6 days A left the work and the work is completed by B after 36 more days. A alone can complete the entire work in how many days?

- (a) 45
- (b) 90
- (c) 60
- (d) 120

Q77. On an article the profit is 210% of the cost price. If the cost price increases by 40% but the selling price remains constant, then approximately what percentage of selling price will be the profit?

- (a) 55
- (b) 62
- (c) 74
- (d) 85

Q78. A boat travels 60 kilometers downstream and 20 kilometers upstream in 4 hours. The same boat travels 40 kilometers downstream and 40 kilometers upstream in 6 hours. What is the speed (in km/hr) of the stream?

- (a) 24
- (b) 16
- (c) 18
- (d) 20

Q79. The average of 5 consecutive odd numbers is 27. What is the product of the first and the last number?

- (a) 621
- (b) 667
- (c) 713
- (d) 725

Q80. 50 trees are standing in a line such that distance between any two consecutive trees is same. A car takes 18 seconds to travel from 13th tree to 34th tree. How much time (in seconds) will it take to reach from 1st tree to 50th tree?

- (a) 42
- (b) 42.85
- (c) 45
- (d) 49



Q81. Three bottles of equal capacity contain mixture of milk and water in ratio 2 : 3, 3 : 5 and 4 : 5 respectively. These three bottles are emptied into a large bottle. What is the ratio of milk and water respectively in the large bottle?

- (a) 439 : 1080
- (b) 439 : 641
- (c) 439 : 360
- (d) 439 : 79

Q82. Ram is five times as efficient as Rohit. Ram can complete a work in 60 days less than Rohit. If both of them work together then in how many days the work would be completed ?

- (a) $33\frac{1}{3}$
- (b) $12\frac{1}{2}$
- (c) 15
- (d) 25

Q83. A boat travels 24 km upstream in 6 hours and 20 km downstream in 4 hours. Then the speed of boat in still water and the speed of water current are respectively.

- (a) 4 kmph and 3 kmph
- (b) 4.5 kmph and 0.5 kmph
- (c) 4 kmph and 2 kmph
- (d) 5 kmph and 2 kmph

Q84. In a college, 40% of the students were allotted group A, 75% of the remaining were given group B and the remaining 12 students were given group C. Then the number of students who applied for the groups is

- (a) 100
- (b) 60
- (c) 80
- (d) 92

Q85. A person borrowed a loan of Rs. 5600 for three years on simple interest. At the end of three years he returned Rs. 7000 to clear the principal and interest. What is the rate of interest per annum?

- (a) 8.33%
- (b) 13%
- (c) 37.5%
- (d) 11%

Q86. Charu borrowed a loan of Rs. 1,00,000 from a bank at 8% per annum simple interest to buy a shop. He rented the shop for Rs. 1875 per month. If he used 80% of the rent amount to discharge the loan, then how much time would he clear the loan including interest?

- (a) 10 years
- (b) 8 years
- (c) 10 years 4 months
- (d) 8 years 4 months

Q87. In what ratio must a grocer mix teas at Rs. 60 a kg, and Rs. 65 a kg, so that by selling the mixture at Rs. 68.20 a kg, he may gain 10%?

- (a) 3 : 2
- (b) 3 : 4
- (c) 3 : 5
- (d) 4 : 5

Q88. The sum of present ages of A and B is 7 times the difference of their ages. 5 years hence, their total ages will be 9 times the difference of their ages. What is the present age of elder one (in years) ?

- (a) 25
- (b) 20
- (c) 15
- (d) 18

Q89. A ball bounces from a hard floor after falling from 10 meter of height. During collision its energy reduces by 20%. Up to what height it will bounce now ?

- (a) 2 m.
- (b) 8 m.
- (c) 4 m.
- (d) 6 m.

Q90. Two ships are sailing in the sea on the two sides of a lighthouse. The angle of elevation of the top of the lighthouse is observed from the ships are 30° and 45° respectively. If the lighthouse is 100 m high, the distance between the two ships is:

- (a) 173 m
- (b) 200 m
- (c) 273 m
- (d) 300 m

Q91. The average weight of 9 items is 15kg. If one more item is added in the series the average becomes 16kg. What is the weight (in kg.) of the 10th item?

- (a) 24
- (b) 25
- (c) 26
- (d) 23

Q92. The ratio of the present ages of the son, mother, father and grandfather is 2:7:8:12 respectively. The average age of the son and mother is 27 years. What will be the age of the mother 7 years later?

- (a) 40 years
- (b) 41 years
- (c) 36 years
- (d) none of these

Q93. Ruchita got 43 in Hindi, 45 in Science, 67 in Math, 89 in social science and 65 marks in English. The maximum marks in each subject are 120. How much is her total percentage marks?

- (a) 55.1%
- (b) 51.5%
- (c) 65%
- (d) 62%

Q94. Ram donated 4% of his income to charity and deposited 10% of the rest in a bank. If now he has Rs. 8640 left with him, then his income is

- (a) Rs.12500
- (b) Rs.7500
- (c) Rs.8000
- (d) Rs. 10000

Q95. The ratio of my income in two consecutive years is 2:3 and that of expenditure is 5:9. If my income in second year is Rs. 45000 and my expenditure in first year is Rs. 25000 then total saving in two years together is

- (a) 0
- (b) Rs. 15000
- (c) Rs. 10000
- (d) Rs. 5000

Q96. After giving two successive discounts of 20% and 25% a cycle is sold for Rs 4200. What is the marked price (in Rs) of the cycle?

- (a) 7200
- (b) 7000
- (c) 6500
- (d) 6200

Q97. In a bag, three types of, Rs.1, 50 paise and 25 paise coins are there whose total number is 175. If the total value of each type of coins is same, then what is the total value of coins in the bag?

- (a) Rs.75
- (b) Rs. 175
- (c) Rs. 300
- (d) Rs. 126

Q98. The difference between the simple interest received from two different sources on Rs. 1500 for 3 years is Rs. 13.50. The difference between their rates of interest is

- (a) 0.1%
- (b) 0.2%
- (c) 0.3%
- (d) 0.4%

Q99. A pole is broken by the storm of wind and its top struck the ground at an angle of 45° and at a distance of 25 m from the foot of the pole. The height of the pole before it was broken was?

- (a) $25\sqrt{2}$ m
- (b) $25(1 + \sqrt{2})$ m
- (c) $20\sqrt{3}$ m
- (d) $\frac{25\sqrt{3}}{3}$ m

Q100. A sum of money at compound interest becomes Rs. 650 at the end of one year and Rs. 676 at the end of second year. The sum of money is

- (a) Rs 600
- (b) Rs 540
- (c) Rs 625
- (d) Rs 560

Q101. Two buses departed for a place respectively at 45 km/h and 60 km/h. If the second bus took $5\frac{1}{2}$ hours less to reach the destination then what was the distance of the journey?

- (a) 100 km
- (b) 945 km
- (c) 990 km
- (d) 1350 km

Q102. The minimum fare of an auto-rickshaw for first 1.2 km is Rs. 6.50 later, 60 paise is added for every 100 m. How much will a person pay for covering 4.8 km?

- (a) Rs 8.66
- (b) Rs 25.20
- (c) Rs 21.50
- (d) Rs 28.10

Q103. A boat covers 30 km upstream and 44 km downstream in 10 hours. The same boat takes 13 hours to cover 40 km upstream and 55 km downstream. What is the speed of the boat in still water?

- (a) 8 km/h
- (b) 3.6 km
- (c) 2.88 km
- (d) 2.4 km

Q104. A and B complete a work alone in 10 hours and 20 hours respectively. After working for 5 hours together A left the work then in how much time would B complete the rest work?

- (a) 5 hrs
- (b) 4 hrs
- (c) 3 hrs
- (d) 20 hrs

Q105. Three taps A, B and C can fill a tank respectively in 12, 15 and 20 hours. If tap A is open through out and taps B & C are opened alternatively for one hour then in how much time will the tank full?

- (a) 6 hours
- (b) $6\frac{1}{2}$ hours
- (c) 7 hours
- (d) $7\frac{1}{2}$ hours

Q106. In an examination a student scored 4 marks for every correct answer and lost 1 mark for every wrong answer. A student attempted all the 200 questions and scored in all, 200 marks. The number of questions he answered correctly was

- (a) 82
- (b) 80
- (c) 68
- (d) 60

Q107. A person was asked to state his age. His reply was – “Take my age 3 years hence, multiply it by 3, subtracts the triple of my age 3 years ago and you will know how old I am.” What is the present age of the person (in years)?

- (a) 24
- (b) 20
- (c) 32
- (d) 18

Q108. In a survey, it was found that 30% of people use cellular phone and 75% of them used computer. If 25% of people have both cellular phone and computer, then what is the percentage of people who have either cellular phone or personal computer or both?

- (a) 60%
- (b) 70%
- (c) 80%
- (d) 100%

Q101. A and B can do a work in 18 and 24 days respectively. They worked together for 8 days and then A left. The remaining work was finished by B in:

- (a) $5\frac{1}{3}$ days
- (b) 5 days
- (c) 8 days
- (d) 10 days.

Q102. The distance between two cities Y and Z is 330 kms. A train starts from Y at 8 a.m. and travels towards Z at 60 kmph. Another train starts from Z at 9 a.m. and travels towards A at 75 kmph. At what time do they meet?

- (a) 10 a.m.
- (b) 10.30 a.m.
- (c) 11 a.m.
- (d) 11:30 a.m.

Q103. The average of 7 numbers is 8. If one number is added, their average is 9. Then the added number is

- (a) 12
- (b) 11
- (c) 16
- (d) 14

Q104. Ten years ago, the average age of a family of 4 members was 25 years, 2 children having been born (with age difference 2 years), the present average age of the family is the same. The present age of the youngest child is –

- (a) 1 year
- (b) 2 year
- (c) 3 year
- (d) 4 years.

Q105. The present age of Ravi's father is four times of Ravi's present age. Five years back he was seven times as old as Ravi was at that time. What is the present age of Ravi's father?

- (a) 84 years
- (b) 70 years
- (c) 40 years
- (d) 35 years

Q106. On selling an article for Rs. 240, a trader loses 4 %. In order to gain 10 %, he must sell the article for

- (a) Rs. 275
- (b) Rs. 280
- (c) Rs. 285
- (d) Rs. 300

Q107. A certain sum at simple interest amounts to Rs. 1350 in 5 years and to Rs. 1620 in 8 years. What is the sum?

- (a) Rs. 700
- (b) Rs. 800
- (c) Rs. 900
- (d) Rs. 1000

Q108. The compound interest on a sum for 2 years is Rs. 832 and the simple interest on the same sum at the same rate for the same period is Rs. 800. What is the rate of interest?

- (a) 6 %
- (b) 8 %
- (c) 10 %
- (d) 12 %

Q109. A and B can do a work in 18 and 24 days respectively. They worked together for 8 days and then A left. The remaining work was finished by B in:

- (a) $5\frac{1}{3}$ days
- (b) 5 days
- (c) 8 days
- (d) 10 days.

Q110. The distance between two cities Y and Z is 330 kms. A train starts from Y at 8 a.m. and travels towards Z at 60 kmph. Another train starts from Z at 9 a.m. and travels towards A at 75 kmph. At what time do they meet?

- (a) 10 a.m.
- (b) 10.30 a.m.
- (c) 11 a.m.
- (d) 11:30 a.m.

Q111. The average of 7 numbers is 8. If one number is added, their average is 9. Then the added number is

- (a) 12
- (b) 11
- (c) 16
- (d) 14

Q112. Ten years ago, the average age of a family of 4 members was 25 years, 2 children having been born (with age difference 2 years), the present average age of the family is the same. The present age of the youngest child is –

- (a) 1 year
- (b) 2 year
- (c) 3 year
- (d) 4 years.

Q113. The present age of Ravi's father is four times of Ravi's present age. Five years back he was seven times as old as Ravi was at that time. What is the present age of Ravi's father?

- (a) 84 years
- (b) 70 years
- (c) 40 years
- (d) 35 years

Q114. On selling an article for Rs. 240, a trader loses 4 %. In order to gain 10 %, he must sell the article for

- (a) Rs. 275
- (b) Rs. 280
- (c) Rs. 285
- (d) Rs. 300

Q115. A certain sum at simple interest amounts to Rs. 1350 in 5 years and to Rs. 1620 in 8 years. What is the sum?

- (a) Rs. 700
- (b) Rs. 800
- (c) Rs. 900
- (d) Rs. 1000

Q116. The compound interest on a sum for 2 years is Rs. 832 and the simple interest on the same sum at the same rate for the same period is Rs. 800. What is the rate of interest?

- (a) 6 %
- (b) 8 %
- (c) 10 %
- (d) 12 %

Q117. A tap supplies 8 litres of water per minute into a cistern. A leak at the bottom of the cistern can empty the cistern in 10 hours. A full tank with the tap open is emptied by the leak in 15 hours. What is the capacity of the tank?

- (a) 15,000 litres
- (b) 12,800 litres
- (c) 14,400 litres
- (d) 13,400 litres

Q118. A motorboat, whose speed is 15 km/hr in still water goes 30 km downstream and comes back in a total of 4 hours 30 minutes. The speed of the stream (in km/hr) is

- (a) 2 km/hr
- (b) 3 km/hr
- (c) 4 km/hr
- (d) 5 km/hr

Q119. Amit can row a boat d km upstream and the same distance downstream in 5 hours 15 minutes. Also, he can row the boat 2d km upstream in 7 hours. How long will it take to row the same distance 2d km downstream for Amit?

- (a) 4 hrs 15 min
- (b) 3 hrs 15 min
- (c) 3 hrs 30 min
- (d) 4 hrs 30 min

Q120. The population of a town increased from 1,75,000 to 2,62,500 in a decade. The average percent increase of population per year is:

- (a) 4.37%
- (b) 5%
- (c) 6%
- (d) 8.75%

Q121. Virat travelled 75 kms in 7 hours. He went some distance at the rate of 12 km/hr and the rest at 10 km/hr. How far did he travel at the rate of 12 km/hr?

- (a) 30 kms
- (b) 25 kms
- (c) 40 kms
- (d) 35 kms.

Q122. Two mixtures have milk and water in the ratio 1 : 4 and 3 : 2 respectively. In what ratio two types of mixtures have to be mixed to get a new mixture having ratio of milk and water as 1 :

- (a) 4 : 3
- (b) 5 : 3
- (c) 3 : 2
- (d) 1 : 3

Q123. The ratio of savings to expenditure of a person is 2 : 3. If his savings increases by 6% while his income increases by 15% then by how much percentage did his expenditure increase?

- (a) 21%
- (b) 24%
- (c) 12%
- (d) 25%

Q124. A started a business with a capital of Rs. 1,00,000. One year later, B joined him with a capital of Rs. 2,00,000. At the end of 3 years from the start of the business, the profit earned was Rs. 84,000. The share of B in the profit exceeded the share of A by.

- (a) Rs. 10,000
- (b) Rs. 12,000
- (c) Rs. 14,000
- (d) Rs. 15,000.

Q125. A certain amount of money is divided among A, B and C. If A receives 25% more than B and B receives 25% less than C, then A : B : C is,

- (a) 12 : 10 : 11
- (b) 10 : 9 : 12
- (c) 15 : 12 : 16
- (d) 14 : 12 : 13

Q126. When the price of rice is increased by 25 percent, a family reduces its consumption such that the expenditure is only 10 percent more than before. If 40 kg of rice is consumed by family before, then find the new consumption of family.

- (a) 37.6k.g
- (b) 35.2k.g
- (c) 36.8k.g
- (d) 34.4k.g

Q127. Delhi Municipal Corporation increases the price of water by 20%, while the consumption of water decreases by 20%. What is the final increase or decrease in the expenditure of a family?

- (a) 4% increase
- (b) 4% decrease
- (c) 8% increase
- (d) 8% decrease

Q128. In an examination the minimum passing marks for reserved and unreserved category is 40% and 54% respectively. A candidate of unreserved category got 300 marks and failed by 24 marks. What is the minimum passing mark for reserved category?

- (a) 280
- (b) 254
- (c) 230
- (d) 240

Q129. A shopkeeper earns a profit of 14% on selling a cycle for Rs 2850. If the profit is kept as 8% then what will be the selling price?

- (a) Rs 2600
- (b) Rs 2700
- (c) Rs 2800
- (d) Rs 3000

Q130. The ratio of the cost price and selling price of an item is 10: 11, and then percentage profit will be

- (a) 8%
- (b) 10%
- (c) 11%
- (d) 15%

Q131. Rice at Rs. 126 per kg and rice at Rs 135 per kg are mixed with a third type of rice in the ratio of 1:1: 2. If the value of this mixture is Rs 153 per kg then what is the price per kg of the third type of rice?

- (a) Rs169.50
- (b) Rs175.50
- (c) Rs175
- (d) Rs185

Q132. A and B enter into a partnership with capitals in the ratio 5 : 6. At the end of 8 months A withdraws his capital, if they receive profits in the ratio 5 : 9; B invested the capital for

- (a) 6 months
- (b) 8 months
- (c) 10 months
- (d) 12 months

Q133. Rs. 2000 amounts to Rs 2600 in five years at a certain rate of simple interest. If the rate of interest is 3% more than the previous rate, then in the same time period, the same sum will amount to

- (a) Rs 2700
- (b) Rs 2800
- (c) Rs 2900
- (d) Rs 3000

Q134. If the difference between SI and CI for 2 years on a sum of money lent at 5% is Rs 6, then the sum is

- (a) Rs 2200
- (b) Rs 2400
- (c) Rs 2600
- (d) Rs 2000

Q135. Train A crosses a pole in 25 sec and another train B crosses a pole in 1 min 15 sec. The length of train A is half of the length of train B. What is the ratio between the speed of Train A and Train B ?

- (a) 3 : 2
- (b) 3: 4
- (c) 4: 3
- (d) None of these



Q136. A boat takes 3 hours to go upstream from B to A and downstream from A to B. If the speed of the boat in still water is 9 km/h and the speed of the stream is 3 km/h then, what is the distance (in km) between A and B?

- (a) 12
- (b) 7.5
- (c) 6
- (d) 4

Q137. Two places A and B are 100 km apart on a highway. One car starts from A and another from B at the same time. If the cars travel in the same direction at constant speed, they meet in 5 hours. If the cars travel towards each other, they meet in one hour. What is the speed of the car running faster?

- (a) 60 km/h
- (b) 50 km/h
- (c) 40 km/h
- (d) 32 km/h

Q138. Hari and Ravi accepted to complete a work in Rs 375. Hari alone can complete that work in 20 hours and Ravi alone can complete that work in 30 days. With the help of Shyam they complete the work in 8 hours then how much labour charge should they give to Shyam?

- (a) Rs 100
- (b) Rs 125
- (c) Rs 175
- (d) none of these

Q139. A pipe can fill a tank completely in 16 hours but due to leakage in the bottom it gets filled in 24 hours. If the tank is full, how many hours would the leak take to empty the cistern?

- (a) 48 hours
- (b) 36 hours
- (c) 44 hours
- (d) 42 hours

Q140. There are some boys and some girls in a room. The square of the number of girls is 28 less than the square of the number of boys. If there were two more girls then the number of boys and girls would have been same. What is the total number of boys and girls in the room?

- (a) 56
- (b) 14
- (c) 10
- (d) 7

Q141. Traffic lights at a road crossing changes in every 25 seconds. On the next crossing the traffic lights changes in every 30 seconds. If they both change simultaneously at the same time, then at what time of interval they again change together?

- (a) $2\frac{1}{2}$ minute
- (b) $1\frac{1}{2}$ minute
- (c) 3 minute
- (d) 5 minute

Q142. The sum of present ages of A and B is 7 times the difference of their ages. 5 years hence, their total ages will be 9 times the difference of their ages. What is the present age of elder one (in years)?

- (a) 25
- (b) 20
- (c) 15
- (d) 18

Q143. Krishnamoorthy earns Rs 15000 per month and spends 80% of it. Due to revise in salary his monthly income has increased by 20% but due to price hike he has to spend 20% more. What is his new savings?

- (a) Rs 3400
- (b) Rs 3000
- (c) Rs 3600
- (d) Rs 4000

Q144. An aero plane when flying at a height of 2500 m from the ground level passes vertically below the another plane at an instant when the angles of elevation of two planes from the same point are 30° & 60° respectively. The distance between the two planes at that instant is –

- (a) 6250 m
- (b) 6000 m
- (c) 5000 m
- (d) 6520 m

Q145. A car left 3 minutes early than the scheduled time and in order to reach the destination 126 km away in time, it has to slow its speed by 6 km/h from the usual. What is the usual speed (in km/hr) of the car?

- (a) 56
- (b) 63
- (c) 94.5
- (d) 126

Q146. The price of motor cycle depreciates every year by 10%. If the value of the motor cycle after 3 years will be Rs 36450, Then what is the present value (in Rs) of the motor cycle?

- (a) 45000
- (b) 50000
- (c) 48000
- (d) 51000

Q147. The average age of 6 members of a family is 25 years. If the youngest member of the family is 15 years old, then what was the average age (in years) of the family at the time of the birth of the youngest member?

- (a) 9
- (b) 12
- (c) 18
- (d) 24

Q148. A and B together can complete a work in 30 day. They started together but after 6 days A left the work and the work is completed by B after 36 more days. A alone can complete the entire work in how many days?

- (a) 45
- (b) 90
- (c) 60
- (d) 120

Q149. On an article the profit is 210% of the cost price. If the cost price increases by 40% but the selling price remains constant, then approximately what percentage of selling price will be the profit?

- (a) 55
- (b) 62
- (c) 74
- (d) 85

Q150. A boat travels 60 kilometers downstream and 20 kilometers upstream in 4 hours. The same boat travels 40 kilometers downstream and 40 kilometers upstream in 6 hours. What is the speed (in km/hr) of the stream?

- (a) 24
- (b) 16
- (c) 18
- (d) 20

Q151. The average of 5 consecutive odd numbers is 27. What is the product of the first and the last number?

- (a) 621
- (b) 667
- (c) 713
- (d) 725

Q152. 50 trees are standing in a line such that distance between any two consecutive trees is same. A car takes 18 seconds to travel from 13th tree to 34th tree. How much time (in seconds) will it take to reach from 1st tree to 50th tree?

- (a) 42
- (b) 42.85
- (c) 45
- (d) 49

Q153. Three bottles of equal capacity contain mixture of milk and water in ratio 2 : 3, 3 : 5 and 4 : 5 respectively. These three bottles are emptied into a large bottle. What is the ratio of milk and water respectively in the large bottle?

- (a) 439 : 1080
- (b) 439 : 641
- (c) 439 : 360
- (d) 439 : 79

Q154. Ram is five times as efficient as Rohit. Ram can complete a work in 60 days less than Rohit. If both of them work together then in how many days the work would be completed ?

- (a) $33\frac{1}{3}$
- (b) $12\frac{1}{2}$
- (c) 15
- (d) 25

Q155. A boat travels 24 km upstream in 6 hours and 20 km down-stream in 4 hours. Then the speed of boat in still water and the speed of water current are respectively.

- (a) 4 kmph and 3 kmph
- (b) 4.5 kmph and 0.5 kmph
- (c) 4 kmph and 2 kmph
- (d) 5 kmph and 2 kmph

Q156. In a college, 40% of the students were allotted group A, 75% of the remaining were given group B and the remaining 12 students were given group C. Then the number of students who applied for the groups is

- (a) 100
- (b) 60
- (c) 80
- (d) 92

Q157. A person borrowed a loan of Rs. 5600 for three years on simple interest. At the end of three years he returned Rs. 7000 to clear the principal and interest. What is the rate of interest per annum?

- (a) 8.33%
- (b) 13%
- (c) 37.5%
- (d) 11%

Q158. Charu borrowed a loan of Rs. 1,00,000 from a bank at 8% per annum simple interest to buy a shop. He rented the shop for Rs. 1875 per month. If he used 80% of the rent amount to discharge the loan, then how much time would he clear the loan including interest?

- (a) 10 years
- (b) 8 years
- (c) 10 years 4 months
- (d) 8 years 4 months

Q159. In what ratio must a grocer mix teas at Rs. 60 a kg, and Rs. 65 a kg, so that by selling the mixture at Rs. 68.20 a kg, he may gain 10%?

- (a) 3 : 2
- (b) 3 : 4
- (c) 3 : 5
- (d) 4 : 5

Q160. The sum of present ages of A and B is 7 times the difference of their ages. 5 years hence, their total ages will be 9 times the difference of their ages. What is the present age of elder one (in years) ?

- (a) 25
- (b) 20
- (c) 15
- (d) 18

Q161. A ball bounces from a hard floor after falling from 10 meter of height. During collision its energy reduces by 20%. Up to what height it will bounce now ?

- (a) 2 m.
- (b) 8 m.
- (c) 4 m.
- (d) 6 m.

Q162. Two ships are sailing in the sea on the two sides of a lighthouse. The angle of elevation of the top of the lighthouse is observed from the ships are 30° and 45° respectively. If the lighthouse is 100 m high, the distance between the two ships is:

- (a) 173 m
- (b) 200 m
- (c) 273 m
- (d) 300 m

Q163. Seats of a cinema hall is increased by 25% and the price of a ticket is increased by 10%. What is the percentage increase in total income?

- (a) 10.5%
- (b) 27.5%
- (c) 37.5%
- (d) 40.5%

Q164. A train crosses a man standing on the platform in 10 sec while an another train coming in from opposite direction crosses the man in 18 sec. If the length of the second train is one and half times of the first train then in what time will they cross each other?

- (a) $13\frac{7}{11}$ sec
- (b) $11\frac{7}{11}$ sec
- (c) $9\frac{7}{11}$ sec
- (d) $15\frac{7}{11}$ sec

Q165. A is twice efficient than B in a work and B is twice efficient than C. If A and B complete a work in 4 days then C alone can complete that work in

- (a) 6 days
- (b) 8 days
- (c) 24 days
- (d) 12 days

Q166. The difference between compound interest (annually) and simple interest on a certain sum at 10% per annum for 2 yrs is Rs 42. What is the sum?

- (a) Rs 5200
- (b) Rs 4200
- (c) Rs 8400
- (d) Rs 2100

Q167.

The value of $\frac{(0.32)^8 + (0.45)^8 - (0.77)^8}{81 (0.32)(0.45)(0.77)}$ will be

- (a) 1
- (b) 0
- (c) $-1/27$
- (d) $1/27$

Q168. Kamal is 5 times older than her sister Geeta, who is 2 yrs younger than her brother Ram. If Ram is 8 yrs old, what will be the age of Kamal?

- (a) 30 yrs
- (b) 24 yrs
- (c) 40 yrs
- (d) 28 yrs

Q169. There are 50 students in a class. One boy among them, whose weight is 51 kg leaves the class and a new boy admits in the class. Due to this the average weight of the class increases by $1\frac{1}{2}$ kg. The weight of newly admitted student is

- (a) 73 kg
- (b) 76 kg
- (c) 74 kg
- (d) 75 kg

Q170. The sum of two numbers is 216 and their HCF is 27. How many such pairs of these numbers are there?

- (a) 1
- (b) 2
- (c) 3
- (d) 0

Q171. Six persons went to a hotel to take launch. Five among them spend Rs 32 each on their food while the 6th person spends Rs 80 more than that of the average expense of 6 persons. How much they spent all together?

- (a) Rs 192
- (b) Rs 240
- (c) Rs 288
- (d) Rs 336

Q172. In a fort there was sufficient food for 24 weeks for 200 soldiers. 80 more soldiers join the group at the end of one week and quantity of food served to each soldier was reduced from 900 gm to 750 gm. How many more days the rest food would last?

- (a) 69
- (b) 138
- (c) 91
- (d) 276

Q173. 4 examiners examines some answer sheets in 10 days working 5 hours daily. If 2 examiners has to examine double of the answer sheets in 20 days then how many hours will they have to work daily?

- (a) 8 hours
- (b) $7\frac{1}{2}$ hours
- (c) 10 hours
- (d) $8\frac{1}{2}$ hours
- (e) None of these

Q174. A sum at simple interest, doubles itself in 10 yrs. In how much time will it become triple of the original sum?

- (a) 15 yrs
- (b) 18 yrs
- (c) 20 yrs
- (d) 30 yrs

Q175. In a bag there are 50 paise and 25 paise coins in equal number. If their total value is Rs 45, then what is the total number of coins in the bag?

- (a) 60
- (b) 120
- (c) 30
- (d) 90

Q176. A person pays Rs 17000 for a motorcar when a single discount of 15% is provide. How much will he have to pay if he gets two successive discount of 10% and 5% are allowed?

- (a) Rs 17,000
- (b) Rs 17,010
- (c) Rs 17,100
- (d) Rs 18,900

Q177. The price of a diamond is directly proportional to the square of its weight. A diamond broke in three pieces in such a way that the ratio of their weight is 2 : 3 : 5. There is a loss of Rs 31000 by selling broken pieces of diamond, then what was the price of unbroken diamond?

- (a) Rs. 25,000
- (b) Rs.1,00,000
- (c) Rs.5,00,000
- (d) Rs.50,000

Q178. A boat (in still water) can row at a speed of 13 km/h. If the speed of the stream is 4 km/h, then how much time will the boat take to row 68 km downstream?

- (a) 2 hours
- (b) 8 hours
- (c) 3 hours
- (d) 4 hours

Q179. 10 is added to a certain number, the sum is multiplied by 7. The product is divided by 5 and 5 is subtracted from the effective value.that value is equal to half of 88. What is the number

- (a) 21
- (b) 20
- (c) 25
- (d) 30

Q180. A minar is 800 m high from sea's surface. A guard sees a yacht of enemy from minar, which makes an angle of depression 60° . Find the distance between yacht and foot of the minar ?

- (a) 600 m
- (b) $180\sqrt{3}$ m
- (c) $800/\sqrt{3}$ m
- (d) $160\sqrt{3}$ m

Q181. $5/7$ of a piece of work was completed by 15 men in one week. Then the number of men, who must be required to complete the remaining work in next week is:

- (a) 8
- (b) 6
- (c) 14
- (d) 5

Q182. The average marks of a student in four subjects is 85. If the student obtained 60 marks in the 5th subject then the new average will be?

- (a) 78
- (b) 80
- (c) 90
- (d) can't be determined

Q183. In a family the ratio of expenses to the savings is 5:4. But his expenses is increased by 40% and income is increased by only 25%. Thus there is increase of Rs 500 in the saving. Find the increased income of the family?

- (a) Rs 22500
- (b) Rs 26500
- (c) Rs 19250
- (d) Rs 11250

Q184. A carriage driving in fog passed a man who was walking at the rate of 4km an hour in the same direction. The man can see the carriage for 1 minute and was visible to him upto a distance of 100m. Find the speed of carriage?

- (a) 8 km/hr
- (b) 11 km/hr
- (c) 10 km/hr
- (d) 4.5 km/hr

Q185. The average age of a group of persons going for a picnic is 17.75 years. 12 new persons with an average age of 14.25 years join them due to which the average age of group becomes 16 years. Find the number of persons initially.

- (a) 11
- (b) 12
- (c) 14
- (d) 10

Q186. The ratio of speeds of a motor boat to that of current is 5:1. The motor boat goes along with the current in 6hr. Find the time to come back of motor boat.

- (a) 7.5 hr.
- (b) 8 hr.
- (c) 6 hr.
- (d) 9 hr.

Q187. On selling an article for Rs 600. The loss accrued is 25%. To make of 20% profit, the article must be sold at?

- (a) Rs 1080
- (b) Rs 880
- (c) Rs 960
- (d) Rs 1040

Q188. Arun bought a scooter for a certain sum of money. He spends 20% of cost price on repair and sold it for a profit of 25% at Rs 30000. What is C.P. of scooter?

- (a) Rs 20000
- (b) Rs 18750
- (c) Rs 22500
- (d) Rs 19500

Q189. Population of Delhi increases 12% every year. If the current population of Delhi is 15680, then what was its population 2 years ago.

- (a) 1250
- (b) 125000
- (c) 12500
- (d) 12050

Q190. In a school $\frac{1}{4}$ th of the boys are same in number as 10% of total boys and girls. Find the ratio of boys and girls?

- (a) 5:2
- (b) 2:3
- (c) 1:2
- (d) 3:4

Q191. What time taken by sum of Rs 9000 to becomes Rs 13500 at the rate of 10% per annum?

- (a) 8 year
- (b) 3.5 year
- (c) 10 year
- (d) 5 year

Q192.

$$(4x^2 - 3y^2) : (2x^2 + 5y^2) = 12 : 19 \text{ find } (x : y)$$

- (a) 3:5
- (b) 2:3
- (c) 5:3
- (d) 3:2

Q193. In an examination, a student was asked to find $\frac{3}{14}$ of a certain number. By mistake, he found $\frac{3}{4}$ of it. His answer was 150 more than the correct answer. Find the number.

- (a) 180
- (b) 280
- (c) 380
- (d) 480

Q194. A worker may claim Rs. 1.5 for each km which he travels by taxi and 50 paise for each km he drives his own car. If in one week he claimed Rs. 50 for travelling 80 km, how many kms did he travel by taxi?

- (a) 20 km
- (b) 14 km
- (c) 12 km
- (d) 10 km

Q195. A can do a piece of work in 10 days. He works at it for 4 days and then B finishes it in 9 days, in how many days can A and B together finish the work?

- (a) 6 days
- (b) 8 days
- (c) $8\frac{1}{2}$ days
- (d) $7\frac{1}{2}$ days

Q196. Two numbers are in the ratio 2: 5. When 4 is added to each, the ratio becomes 1: 2. Then, the numbers are.

- (a) 6 & 15
- (b) 10 & 25
- (c) 8 & 20
- (d) 2.5 & 6.5

Q197. A man, a woman and a boy can together complete a piece of work 3 days. If a man alone can do it in 6 days and a woman in 18 days, how long will a boy alone take to complete the work?

- (a) 9 days
- (b) 12 days
- (c) 7 days.
- (d) 12 days

Q198. Rahul is 15 years younger than Rohan. Rahul's age is 40% of the sum of his and Rohan's age. Find age of Rohan.

- (a) 30 yr
- (b) 45 yr
- (c) 48 yr
- (d) 15 yr



Q199. If a shopkeeper sells 25 articles at Rs. 50 per article after giving 20% discount and earns 20% profit. If the discount is not given then profit gained is.

- (a) 43.34%
- (b) 50.09%
- (c) 49.01%
- (d) 56%

Q200. Arun is travelling on his cycle and has calculated that he will reach at 11 am, if he travel at 10 km/hr. He will reach there at 9 am, if he travel at 12 km/hr. At what speed must he travel to reach there at 10 am.

- (a) $9\frac{9}{11}$ km/h.
- (b) $13\frac{2}{7}$ km/h.
- (c) $10\frac{10}{11}$ km/h.
- (d) 9.5 km/h.

Q201.

If $A = 2^3 \times 3^{10} \times 5$ and $B = 2^5 \times 3 \times 11$. Then HCF of A & B is

- (a) $3^2 \times 2^3$
- (b) 6×2^2
- (c) 6×2^3
- (d) $3 \times 2^2 \times 4$

Q202. What is third proportional to 9 and 15?

- (a) 30
- (b) 35
- (c) 48
- (d) 25

Q203. The difference between the S.I and C.I. obtained on principal at x p.c.p.a after 2 years is Rs.25. If principal is Rs. 625, find x.

- (a) 23%
- (b) 20%
- (c) 24%
- (d) 18%

Q204.

If $\frac{(81)^{4x} \times (27)^x \times 9^7}{(729)^{x+2}} = 3^9$ find x.

- (a) 7/13
- (b) 9/13
- (c) 4/11
- (d) 5/7

Q205. A person can swim in still water at 5 km/hr. If the speed of water is 3 km/hr. How many hours will the man take to swim against the current for 12 km.

- (a) 4 hr.
- (b) 5 hr.
- (c) 6 hr.
- (d) 6.5 hr.

Q206. Three containers contain 273 lit, 315 lit and 336 lit of petrol respectively. Then the minimum capacity of container that can measure the diesel for the three containers in exact number is:

- (a) 27 lit
- (b) 19 lit
- (c) 21 lit
- (d) 31 lit

Q207. Cost Price of 7 books is equal to Selling Price of 5 books. Find profit or loss per cent?

- (a) profit 40%
- (b) loss 40%
- (c) profit 25%
- (d) loss 20%

If $A : B : C = 2 : 3 : 5$, then find $\frac{A}{B} : \frac{B}{C} : \frac{C}{A}$

Q208.

- (a) 20 : 18 : 75
- (b) 2 : 3 : 5
- (c) 18 : 20 : 45
- (d) 10 : 9 : 25

Q209. The salaries of A, B, C are in the ratio 2:3:5. If the increments of 15%, 10% and 20% are allowed respectively in their salaries, then what will be the new ratio of their salaries.

- (a) 3 : 3 : 10
- (b) 10 : 11 : 20
- (c) 23 : 33 : 60
- (d) 25 : 27 : 29

Q210. Profit earned by selling an article at Rs. 1630 is same as the loss incurred by selling the article for Rs 1320. What is the CP?

- (a) Rs 1475
- (b) Rs 1300
- (c) Rs 1350
- (d) Rs 1275

Q211. How many natural numbers less than 1000 are divisible by 5 or 7 but NOT by 35?

- (a) 285
- (b) 313
- (c) 341
- (d) 243

Q212.

What is the value of $\frac{0.74 \times 1.23 \times 0.13}{(0.37)^2 + (0.41)^2 - 8(0.39)^3}$?

- (a) $-\frac{1}{3}$
- (b) 1
- (c) -1
- (d) $\frac{1}{3}$

Q213. Let x be the least number of 4 digits that when divided by 2, 3, 4, 5, 6 and 7 leaves a remainder of 1 in each case. If x lies between 2000 and 2500, then what is the sum of the digits of x ?

- (a) 9
- (b) 15
- (c) 10
- (d) 4

Q214. The total number of students in sections A and B of a class is 72. The ratio of the number of students in A and B is 7 : 5. The average weight (in kg) of the students in section B is 20% more than that of the students in section A. If the average weight of all the students in the class is 52 kg, then what is the average weight (in kg) of the students in section B?

- (a) 58.2
- (b) 57.9
- (c) 57.6
- (d) 56.4

Q215. Raghu sold an article for Rs180 after allowing a 20% discount on its marked price. Had he not allowed any discount; he would have gained 20%. What is the cost price of the article?

- (a) Rs190.40
- (b) Rs192.80
- (c) Rs188.60
- (d) Rs187.50

Q216. A is 40% less than B, and C is 40% of the sum of A and B. The difference between A and B is what percentage of C?

- (a) 60.5%
- (b) 64%
- (c) 62.5%
- (d) 60%

Q217. A can do $\frac{4}{5}$ of a work in 20 days and B can do $\frac{3}{4}$ of the same work in 15 days. They work together for 10 days. C alone completes the remaining work in 1 day. B and C together can complete $\frac{3}{4}$ of the same work in:

- (a) 8 days
- (b) 5 days
- (c) 4 days
- (d) 6 days

Q218. What is the compound interest on a sum of Rs37,500 for $1\frac{1}{3}$ years at a rate of 12% p.a. if the interest is compounded 8-monthly?

- (a) Rs6,440
- (b) Rs6,240
- (c) Rs6,420
- (d) Rs6,448

Q219. A person invested a sum of Rs18,600 at $x\%$ p.a. and another sum that is twice the former at $(x + 2)\%$ p.a., both at simple interest. If the total interest earned on both investments for $3\frac{1}{2}$ years is Rs23,110.50, then the rate of interest p.a. on the second investment is:

- (a) 11%
- (b) 10.5%
- (c) 13%
- (d) 12.5%

Q220. Sujatha sold 75% of her goods at a profit of 24% and the remaining at a loss of 40%. What is her gain/loss percentage on the whole transaction?

- (a) 8% gain
- (b) 10% gain
- (c) 9% loss
- (d) 7.5% loss

Q221. A man spends $\frac{2}{3}$ rd of his income. If his income increases by 14% and the expenditure increases by 20%, then the percentage increase in his savings will be

- (a) 1%
- (b) 2%
- (c) 4%
- (d) 6%

Q222. An article is sold for Rs680 after two successive discounts of 20% and $x\%$ on its marked price. The marked price of the article is Rs1,000. What is the value of x ?

- (a) 15
- (b) 15.5
- (c) 12.5
- (d) 16

Q223. A and B started travelling towards each other at the same time, from places X to Y and Y to X, respectively. After crossing each other, A and B took 2.45 hours and 4.05 hours to reach Y and X, respectively. If the speed of B was 8.4 km/h, then what was the speed (in km/h) of A?

- (a) 10.8
- (b) 9.9
- (c) 12.6
- (d) 11.7

Q224. In a test consisting of 140 questions, a candidate correctly answered 70% of the first 80 questions. What percentage of the remaining questions does the candidate need to correctly answer to score 60% in the test?

- (a) 40%
- (b) $45\frac{1}{3}\%$
- (c) $46\frac{2}{3}\%$
- (d) 35%

Q225. A train of length 212 m is running at 45 km/h. In what time (in seconds) will it cross a platform of length 188 m?

- (a) 36
- (b) 42
- (c) 32
- (d) 40

Q226. The average of eleven numbers is 68. The average of the first four numbers is 78 and that of the next four numbers is 63. The 9th number is two times the 11th number and the 10th number is 4 less than the 11th number. What is the average of the 9th and 11th numbers?

- (a) 72.6
- (b) 70.1
- (c) 72.2
- (d) 70.5

Q227. A can do $\frac{2}{5}$ of a work in 12 days while B can do $66\frac{2}{3}\%$ of the same work in 16 days. They work together for 10 days. B alone will complete the remaining work in:

- (a) 6 days
- (b) 4 days
- (c) 8 days
- (d) 9 days

Q228. If x is subtracted from each of the numbers 20, 37, 54 and 105, then the numbers so obtained in this order are in proportion. What is the mean proportional between $(7x - 5)$ and $(x + 1)$?

- (a) 8
- (b) 6
- (c) 12
- (d) 9

Q229. When 3738, 5659 and 9501 are divided by the greatest possible number x, the remainder in each case is y. What is the sum of x and y?

- (a) 3738
- (b) 3783
- (c) 3673
- (d) 3637

Q230. If 60% of $(x - y) = 45\%$ of $(x + y)$ and $y = k\%$ of x , then 21% of k is equal to:

- (a) 7
- (b) 6
- (c) 3
- (d) 1

Q231. The compound interest amounts on a certain sum at a certain rate percentage p.a. for the second year and third year are Rs. 3,300 and Rs. 3,630, respectively. What is the amount of the same sum at the same rate in $2\frac{1}{2}$ years, interest compounded yearly?

- (a) Rs. 37,215
- (b) Rs. 36,300
- (c) Rs. 38,115
- (d) Rs. 36,000

Q232. Pipes A and B are emptying pipes and can empty a tank in 6 hours and 16 hours, respectively. C is a filling pipe. All the three pipes were opened together. They took 80 minutes to empty $\frac{5}{18}$ of the tank. Pipe C alone can fill the tank in:

- (a) 48 hours
- (b) 42 hours
- (c) 40 hours
- (d) 36 hours

Q233. In finding the HCF of two numbers by division method, the quotients are 1, 8 and 2 respectively, and the last divisor is 105. What is the sum of the numbers?

- (a) 3570
- (b) 3885
- (c) 3780
- (d) 3675

Q234. By selling an article for Rs.1,134, Anu suffers as much loss as she would have gained by selling it at 10% profit. If she sells it for Rs.1,354.50, then her profit percentage is:

- (a) 9
- (b) 8
- (c) 8.4
- (d) 7.5

Q235.

The value of $\frac{(3\frac{1}{3} - 2\frac{1}{2}) \div \frac{1}{4} \text{ of } 1\frac{1}{4}}{\frac{3}{10} + \frac{1}{6} \times \frac{1}{3}}$ of $\frac{4}{15} \div \frac{\frac{1}{3} \div \frac{1}{3} \text{ of } \frac{1}{9}}{\frac{1}{9} \times \frac{1}{3} \div \frac{1}{6}}$ is:

- (a) $\frac{9}{2}$
- (b) $\frac{2}{9}$
- (c) $\frac{4}{81}$
- (d) $\frac{27}{8}$

Q236. In a school, 60% of the number of students are boys and the rest are girls. If 20% of the number of boys failed and 65% of the number of girls passed the examination, then the percentage of the total number of students who passed is:

- (a) 68
- (b) 72
- (c) 74
- (d) 78

Q237. A, B and C can do a piece of work in 30 days, 45 days and 90 days, respectively. A starts the work and he is assisted by B and C together on every third day. In how many days will the work be completed?

- (a) 23
- (b) 24
- (c) $22\frac{1}{2}$
- (d) 30

Q238. The average score of 42 students in a test is 69. The ratio of the number of boys to that of girls is 10 : 11. The average score of the boys is 20% more than that of the girls. The average score of the boys is:

- (a) 73.5
- (b) 75.2
- (c) 82.8
- (d) 75.6

Q239. A person invested a sum of Rs. 10,500 at x% per annum at simple interest and a sum of Rs. 13,500 at (x + 2)% p.a. at simple interest. If the total interest earned on both the investments for 3 years is Rs. 7,650, then the rate of interest on the first investment is:

- (a) 8%
- (b) 8.5%
- (c) 9%
- (d) 9.5%

Q240. A, B and C started a business with their capitals in the ratio 4 : 2 : 9. At the end of every quarter, A halves his capital, whereas B doubles his capital and C leaves his capital unchanged. If at the end of a year, A's profit was Rs. 24,000, then what is the total profit (in Rs.)?

- (a) Rs. 2,16,000
- (b) Rs. 2,30,400
- (c) Rs. 2,35,200
- (d) Rs. 2,25,600

Q241. If r is the remainder when each of 6454, 7306 and 8797 is divided by the greatest number d (d > 1). then (d - r) is equal to:

- (a) 126
- (b) 64
- (c) 137
- (d) 149

Q242. The marked price of an article is Rs. 250. After allowing two successive discounts of 20% and x% on the marked price, it is sold for Rs. 185.60. what is the value of x?

- (a) 8.4%
- (b) 7.2%
- (c) 6.8%
- (d) 7.6%

Q243. The speed of train A is 16 km/h less than the speed of train B. To cover a distance of 384 km, B takes 4 hours less time than A. What is the speed (in km/h) of train B?

- (a) 50
- (b) 45
- (c) 32
- (d) 48

Q244. A person can save 25% of his income. If his income increases by 20% and still he saves the same amount as before, the percentage increase in his expenditure is _____.

- (a) $26\frac{2}{3}$
- (b) 24
- (c) $25\frac{1}{3}$
- (d) 25

Q245.

The value of $\frac{(0.13)^2 + (0.21)^2}{(0.39)^2 + 81(0.07)^2} \div \frac{(2.4)^4 + 3 \times (11.52) + 9}{(2.4)^6 + 6(2.4)^4 + 3 \times (17.28)}$ lies between

- (a) 0.4 and 0.5
- (b) 0.7 and 0.8
- (c) 0.5 and 0.6
- (d) 0.6 and 0.7

Q246. Let x be the least number which when divided by 8, 9, 12, 14 and 36 leaves a remainder of 4 in each case, but x is divisible by 11. The sum of the digits of x is _____.

- (a) 5
- (b) 6
- (c) 9
- (d) 4

Q247. An observer who is 1.62 m tall is 45 m away from a pole. The angle of elevation of the top of the pole from his eyes is 30°. The height (in m) of the pole is closest to:

- (a) 26.2
- (b) 26.8
- (c) 27.6
- (d) 25.8

Q248. A vessel contains a solution of two liquids A and B in the ratio 5 : 3. When 10 litres of the solution is taken out and replaced by the same quantity of B, the ratio of A and B in the vessel becomes 10 : 11. The quantity (in litres) of the solution, in the vessel was _____.

- (a) 42
- (b) 48
- (c) 52
- (d) 44

Q249. In an office, 70% of the total number of employees are females. 80% of the total number of employees, including 85 males, got promotion. If there are 105 female employees, then what percentage of female employees got promotion?

- (a) 30%
- (b) $33\frac{1}{3}\%$
- (c) 40%
- (d) 35%

Q250. pipes A and B can fill a tank in 18 minutes and 22 $\frac{1}{2}$ minutes, respectively while pipe C can empty the full tank in 12 minutes. A and B are opened together for 6 minutes and then closed. Now C is opened. C alone will empty the tank in _____.

- (a) 5 minutes
- (b) $8\frac{2}{5}$ minutes
- (c) $7\frac{1}{5}$ minutes
- (d) 6 minutes

Q251. If a discount of 10% is allowed on the marked price of an article, a shopkeeper gets a profit of 25%. If he offers a discount of 25% on the marked price of the same article, then his percentage profit/loss will be:

- (a) 4% loss
- (b) 4% profit
- (c) $4\frac{1}{6}\%$ profit
- (d) $4\frac{1}{6}\%$ loss

Q252.

The value of $\frac{4-3+2 \times (4-2)-3+4 \times 3+2+4}{4+3+4 \times (2-4) \times 4+3+4}$ of 3 is _____.

- (a) -32
- (b) 32
- (c) $\frac{-32}{7}$
- (d) $\frac{32}{7}$

Q253. If $66\frac{2}{3}\%$ of 75% of one-eighth of a certain number is 179, then $33\frac{1}{3}\%$ of three-fourth of that number is:

- (a) 537
- (b) 716
- (c) 787.6
- (d) 859.2

Q254. A is twice as efficient as B and C is thrice as efficient as B. working together, they can finish a certain work in 5 days. A and C worked together for 5 days. B alone would complete the remaining work in _____.

- (a) 8 days
- (b) 5 days
- (c) 6 days
- (d) 4 days

Q255. If the 5-digit number 538xy is divisible by 3, 7 and 11, then the value of $(x^2 + y^2)$ is:

- (a) 10
- (b) 17
- (c) 25
- (d) 13

Q256.

The value of $\sqrt{6 - \sqrt{17 - 2\sqrt{72}}}$ is closest to:

- (a) 2.4
- (b) 2.7
- (c) 2.1
- (d) 1.7

Q257. If $66\frac{2}{3}\%$ of 75% of one-eighth of a certain number is 179, then $33\frac{1}{3}\%$ of three-fourth of that number is:

- (a) 537
- (b) 716
- (c) 787.6
- (d) 859.2

Q258. A sum of Rs.5,000 amounts to Rs.7,200 in 8 years at a certain rate per cent p.a, interest compounded yearly. What will be the compound interest on a sum of Rs.6,550 in 4 years at the same rate of interest?

- (a) Rs.1,415
- (b) Rs.1,310
- (c) Rs.1,290
- (d) Rs.1,285

Q259. Pipes A and B together can fill a tank in 16 hours, whereas pipe C alone can empty the full tank in 24 hours. A and B were opened together for 10 hours and then closed. Pipe C was then opened. The tank will now be emptied by C in:

- (a) 18 hours
- (b) 10 hours
- (c) 15 hours
- (d) 12 hours

Q260.

If $2\sin\theta + 15\cos^2\theta = 7$, $0^\circ < \theta < 90^\circ$, then what is the value

- (a) $\frac{1}{4}$
- (b) $\frac{1}{2}$
- (c) $\frac{5}{8}$
- (d) $\frac{3}{4}$

Q261. A can finish one-third of a work in 5 days, B can finish $\frac{2}{5}$ th of the same work in 10 days and C can finish 75% of the same work in 15 days. They work together for 6 days. The remaining work will be finished by B alone in:

- (a) 5 days
- (b) 3 days
- (c) 2 days
- (d) $1\frac{1}{2}$ days

Q262. A is 40% more than B and B is 60% less than C. If C is 60% more than D, then which of the following is true?

- (a) D is 10.4% more than A.
- (b) A is 54% less than C.
- (c) B is 36% less than D.
- (d) C is 60% more than B.



Q263. Let x be the least number divisible by 13, such that when x is divided by 4, 5, 6, 7, 8 and 12, the remainder in each case is 2. The sum of the digits of x is:

- (a) 11
(b) 8
(c) 9
(d) 10

Q264. In $\triangle ABC$, $\angle C = 90^\circ$ and D is a point on CB such that AD is the bisector of $\angle A$. If $AC = 5$ cm and $BC = 12$ cm, then what is the length of AD ?

- (a) $\frac{10}{3}$ cm
(b) $\frac{5\sqrt{13}}{6}$ cm
(c) $\frac{5\sqrt{13}}{3}$ cm
(d) $\frac{20}{3}$ cm

Q265. The marked price of an article is Rs.800. A retailer buys it for Rs.540 after getting two successive discounts. The first discount is 25%. What is the second discount?

- (a) 8%
(b) 12%
(c) 15%
(d) 10%

Q266. A started a business with a capital of Rs.1,12,000. After 2 months, B joined the business with a capital of Rs.80,000, and after another 2 months, C joined the business with a capital of Rs.72,000. After 10 months from the start of the business, B withdrew Rs.8,000 and C also withdrew Rs.8,000. If B received Rs.9,800 as his share in the profit at the end of a year, then the total profit was:

- (a) Rs.32,400
(b) Rs.35,800
(c) Rs.30,800
(d) Rs.33,600

Q267. The profit on selling an article for Rs.1,100 is equal to three times the amount of loss on selling it for Rs.700. To gain 12.5%, the article must be sold for:

- (a) Rs.900
(b) Rs.787.50
(c) Rs.956
(d) Rs.877.50

Q268. Seven years ago, the ages (in years) of A and B were in the ratio 4 : 5 and 7 years hence, their ages will be in the ratio 5 : 6. What will be the ratio of their ages 5 years from now?

- (a) 34 : 41
(b) 33 : 40
(c) 31 : 33
(d) 33 : 34

Q269. A person rows a distance of $3\frac{3}{4}$ km upstream in $1\frac{1}{2}$ hours and a distance of 13 km downstream in 2 hours. How much time (in hours) will the person take to row a distance of 90 km in still water?

- (a) 15
(b) 20
(c) 18
(d) 24

Q270. A certain sum (in Rs.) is invested at simple interest at $x\%$ p.a. for 5 years. Had it been invested at $(x + 5)\%$ p.a., the simple interest would have been Rs.9,200 more than the earlier one. What is the sum?

- (a) Rs.36,800
(b) Rs.40,000
(c) Rs.36,400
(d) Rs.35,800

Solutions

S1. Ans.(a)

Sol.

$$\text{Price of 1 text book} = \frac{20000}{500} = \text{Rs. 40}$$

$$\text{Price of free 50 text books} = 50 \times 40 = \text{Rs. 2000}$$

$$\text{So, profit} = \frac{2000}{20000} \times 100 = 10\%$$

S2. Ans.(a)

Sol.

$$\text{Total expenditure} = 20 + 60 + 10 = 90\%$$

$$\text{so, remaining salary} = [100 - 90]\% = 10\%$$

$$\Rightarrow 10\% = 30$$

$$\therefore 100\% = 300$$

S3. Ans.(d)

Sol.

$$\text{ratio of surface area} = \frac{\text{sphere}}{\text{hemisphere}}$$

$$= \frac{4\pi r^2}{3\pi r^2} = \frac{4}{3}$$

S4. Ans.(a)

Sol.

$$\text{Total students} = 1400$$

$$\text{Number of students who wear specs} = 350$$

$$\Rightarrow \text{Girls wear specs} = 350 - 350 \times \frac{2}{7} = 250$$

S5. Ans.(c)

Sol.

Since A can complete $1/3^{\text{rd}}$ work in 5 days

\therefore A can complete whole work in $5 \times 3 = 15$ days

Similarly, B can complete the whole work in $10 \times \frac{5}{2} =$

\therefore Total number of days taken by them working together

S6. Ans.(c)

Sol.

Marked Price = 1200

Discount = 5% of 1200 = 60

So, selling price = 1200 - 60 = Rs. 1140

S7. Ans.(c)

Sol.

Required speed = $\frac{48 \times \frac{50}{60}}{\frac{40}{60}} = 60 \text{ km/hr}$

S8. Ans.(d)

Sol.

Machine's value after 3 years = $32000 \times \left(1 - \frac{5}{100}\right)^3$
= Rs 27,436

S9. Ans.(b)

Sol.

Area of base = $\pi r^2 = 1.54$

$\Rightarrow r^2 = 0.49$

$\Rightarrow r = 0.7 \text{ km}$

Height of mountain = $\sqrt{(2.5)^2 - (0.7)^2} = 2.4 \text{ km}$

S10. Ans.(d)

Sol.

$$\begin{array}{ccc} N_1 & N_2 & N_3 \\ 1 & : & 2 & : \\ & : & 3 & : & 1 \\ \hline 3 & : & 6 & : & 2 \end{array}$$

\therefore larger number = $\frac{55 \times 3}{(3+6+2)} \times 6 = 90$

S11. Ans.(b)

Sol. Let the share of a man, a woman and a boy be $5x$, $4x$ and $3x$ respectively.

ATQ,

$$4 \times 5x + 5 \times 4x + 8 \times 3x = 960$$

$$20x + 20x + 24x = 960$$

$$x = 15$$

\therefore share of a woman = $4x = \text{Rs } 60$

S12. Ans.(c)

Sol.

Let the number of students be x . Then,

Number of students above 8 years of age or of 8 years age = $(100 - 20)\%$ of $x = 80\%$ of x .

$$\therefore 80\% \text{ of } x = 48$$

$$\Rightarrow x = 60$$

S13. Ans.(c)

Sol.

$$\text{Principal} = \text{Rs.} \left(\frac{100 \times 5400}{12 \times 3} \right) = \text{Rs. } 15000.$$

S14. Ans.(b)

Sol.

$$\text{CP of chair} = \frac{100}{75} \times 720 = \text{Rs. } 960$$

$$\text{To gain } 25\%, \text{ SP} = \frac{125}{100} \times 960 = \text{Rs. } 1200$$

S15. Ans.(c)

Sol.

$$\text{Total time taken} = \left(\frac{160}{64} + \frac{160}{80} \right) \text{ hrs.} = \frac{9}{2} \text{ hrs.}$$

$$\therefore \text{Required average speed} = \frac{320}{\frac{9}{2}} = 71.11 \text{ kmph}$$

S16. Ans.(c)

Sol.

Let the boys and girls be $3x$ and $2x$ respectively.

Then,

$$\frac{3x+6}{2x} = \frac{7}{4} \Rightarrow 12x + 24 = 14x$$

$$\Rightarrow 2x = 24 \Rightarrow x = 12$$

$$\therefore \text{Number of boys} = 3x + 6 = 3 \times 12 + 6 = 42.$$

S17. Ans.(c)

Sol. If two articles are sold at the same S.P. and there is a gain of $x\%$ on one table and a loss of $x\%$ on the other, then there is always a loss in this transaction and

$$\text{loss}\% = \frac{x^2}{100} = \frac{20 \times 20}{100} = 4\%.$$

S18. Ans.(c)

Sol.

Let the numbers be $2x$ and $3x$.

Then, their L.C.M. = $6x$.

$$\text{So, } 6x = 48 \text{ or } x = 8.$$

\therefore The numbers are 16 and 24.

$$\text{Hence, required sum} = (16 + 24) = 40.$$

S19. Ans.(c)

Sol.

$$\text{Relative Speed} = (194.4 \times (5/18) + 6) = 60 \text{ m/s}$$

$$\text{Time} = 15 \text{ sec}$$

$$\therefore \text{length} = 60 \times 15 = 900 \text{ metre.}$$

S20. Ans.(b)

Sol.

Since all the three distances are same,
hence the average speed

$$= \frac{3 \times 10 \times 20 \times 60}{(200+1200+600)} \left(\frac{3uvw}{uv+vw+wu} \right)$$

$$= \frac{36000}{2000} = 18 \text{ km/hr}$$

S21. Ans.(d)

Sol.

Let the quantities of acid and water
were x litre and 3x liters respectively

$$(x+5) : 3x = 1 : 2$$

$$3x \times 1 = (x+5) \times 2 = 2x + 10 \Rightarrow x = 10$$

The quantity of new mixture = x + 3x + 5

$$= 4x + 5 = 40 + 5 = 45 \text{ litres}$$

S22. Ans.(a)

Sol. The required number will be 234k+26. Now when this
number is divided by 13, the remainder will be same as
remainder when 26 is divided by 13, i.e zero.

S23. Ans.(a)

Sol.

Efficiency of P : Q = 3 : 1

Required number of days of P : Q = 1 : 3

i.e. If P requires x days then Q requires 3x days.

but $3x - x = 60$

$$\Rightarrow x = 30$$

Thus so,

Q can finish the work in 90 days.

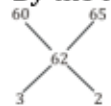
S24. Ans.(a)

Sol.

Given that 110% gain \Rightarrow 68.20

$$\text{So } 100\% = \frac{68.20}{110} \times 100 = 62 \text{ Rs}$$

By the mixture & Allegation rule.



So, ratio is = 3 : 2

S25. Ans.(d)

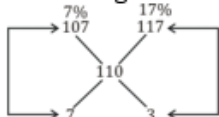
Sol.

By mixture & Allegation -

Suppose whole sugar sell out on 7% = 107

Suppose whole sugar sell out on 17% = 117

total gain = 10% = 110



so, 7% sell out the amount 7 : 3 = 10

10 ratio = 100 kg,

1 ratio = 10 kg.

so, 7% $\rightarrow 7 \times 10 = 70 \text{ kg}$

S26. Ans.(c)

Sol.

Let the original price per kg. be \rightarrow 100 Rs

Reduced price = 90 Rs

$$\therefore \text{Amount to be bought} = \frac{4900}{98} = 50 \text{ kg}$$

S27. Ans.(b)

Sol.

Batsman scored by running = $110 - [3 \times 4 + 8 \times 6]$
 $= 50$

$$\therefore \text{Req. Percentage} = \frac{50}{110} \times 100 = 45 \frac{5}{11} \%$$

S28. Ans.(d)

Sol.

$$\text{successive percentage of } 20\% = \left[20 + 20 + \frac{20 \times 20}{100} \right] = 44\%$$

$$\text{successive of } 20\% \text{ \& } 44\% = \left[44 + 20 + \frac{44 \times 20}{100} \right] = 72.8\%$$

because volume proportional to radius³

S29. Ans.(d)

Sol. It is clear that b will be zero. The last three digit 4ao will be
divisible by 8. If a+b=0 or 8, so, a+b=0 or 8

S30. Ans.(a)

Sol. We known that,

Dividend=Divisor \times quotient + remainder.

$$(i) \rightarrow 75 \times 3 = 225$$

$$(ii) \rightarrow 225 \times 1 + 75 = 300$$

$$(iii) \rightarrow 300 \times 1 + 225 = 525$$

(iv) $\rightarrow 525 \times 3 + 300 = 1875$, the req. no. will be the dividend of first
and second step. $\rightarrow 525 + 1875 = 2400$

S31. Ans.(a)

Sol.

$$10M \times 12 = 10W \times 6$$

$$2M = 1W$$

$$\text{So, } (10M + 10W) \text{ days} = 10W \times 6$$

$$15W \times \text{days} = 10W \times 6$$

$$\text{Days} = 4$$

S32. Ans.(b)

Sol.

$$\frac{A}{B} = \frac{3}{1} \text{ difference} \rightarrow 2 \text{ ratio} = 60 \text{ days}$$

1 Ratio = 30 days

$$\text{So, time} = \frac{3x \cdot x}{3x + x} = \frac{30 \times 90}{120} = 22 \frac{1}{2} \text{ day}$$

S33. Ans.(b)

Sol.

Out of total profit Mohan got Rs. 6000
and Sohan got Rs. 3000

$$\therefore \frac{20000 \times 6}{x \times 12} = \frac{6000}{3000}$$

$$\Rightarrow x = \text{Rs. } 5000$$

S34. Ans.(b)

Sol.

12 O'clock watch needs 11 times interval takes 22 sec.
The watch is taking 2 sec in each interval.
6 o'clock watch needs 5 equal intervals = $5 \times 2 = 10$ sec

S35. Ans.(c);

Sol.

$$(u+v) \times 3 \frac{3}{4} = 15 \text{ and } (u-v) \times \frac{5}{2} = 5$$

$$U = 3 \text{ km/h}$$

$$V = 1 \text{ km/h}$$

S36. Ans.(c)

Sol.

$$8 \times 15 + x \times 6 = (8+x) \times 10.8$$

$$120 + 6x = 10.8x + 86.4$$

$$4.8x = 33.6$$

$$x = 7$$

S37. Ans.(d)

Sol.

According to question,

$$\frac{MP}{SP} \frac{10}{9} \downarrow 10\% \text{ discount}$$

$$\frac{CP}{SP} \frac{5}{6} \downarrow 20\% \text{ profit}$$

To make SP same

CP	SP	MP
45	54	60
$\downarrow \times 10$		$\downarrow 10 \times$
450 (Actual CP)		600 (Marked Price)

$\therefore MP = \text{Rs. } 600$

S38. Ans.(c);

Sol.

ATQ,

If kamal is 100% efficient, then Bimal 150% efficient (50% more),

$$\left[\frac{B}{K} = \frac{150}{100} = \frac{3}{2} \right]$$

$$\text{Kamal: Bimal} \rightarrow \text{efficiency} \rightarrow 2 \frac{\text{units}}{\text{day}} : 3 \frac{\text{units}}{\text{day}}$$

$$\text{Total Work} = 15 \times 2 = 30$$

$$\text{Bimal can do it in} = \frac{30}{3} = 10 \text{ days}$$

S39. Ans.(c)

Sol.

According to the question,

$$PT = 5 \text{ cm.}$$

$$PA = 4 \text{ cm.}$$

$$PB = (4+x) \text{ cm.}$$

As we know that,

$$PT^2 = PA \times PB$$

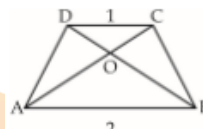
$$25 = 4(4+x)$$

$$25 = 16 + 4x$$

$$x = \frac{9}{4} \text{ cm.}$$

S40. Ans.(a)

Sol.



$$\frac{\text{area of } \triangle COD}{\text{area of } \triangle AOB} = \frac{CD^2}{AB^2}$$

$$\frac{\text{area of } \triangle COD}{84} = \left(\frac{1}{2} \right)^2 \Rightarrow \frac{1}{4}$$

$$\text{Area of } \triangle COD = 21 \text{ cm}^2$$

S41. Ans.(b)

Sol.

Average run of 10 innings = 50 runs

Increased run in 11 inning = $11 \times 2 = 22$ runs

Total runs = $50 + 22 = 72$ runs

S42. Ans.(c);

Sol.

According to question,

$$CP = 30 \times 9.50 + 30 \times 8.5$$

$$= 30 [9.5 + 8.5]$$

$$= 30 \times 18 = \text{Rs. } 540$$

$$SP = 60 \times 8.90$$

$$= \text{Rs. } 534$$

$$\text{Loss} = CP - SP$$

$$= 540 - 534 = \text{Rs. } 6$$

S43. Ans.(b)

Sol.

Let no. of persons be 'N'

$$\frac{N \times 55}{1} = \frac{(N+6) \times 44}{1}$$

$$5N = 4N + 24$$

$$N = 24$$

S44. Ans.(b)

Sol.

Let the speed of the cars be S_1 and S_2

$$= S_1 - S_2 = \frac{70}{7} = 10 \quad \dots (i)$$

$$\text{And } S_1 + S_2 = \frac{70}{1} = 70 \dots (ii)$$

From equation (i) and (ii)

$$S_1 = 40 \text{ km/hr}$$

$$S_2 = 30 \text{ km/hr}$$

= Required speeds are 40 km/hr and 30 km/hr

S45. Ans.(d)

Sol.

According to question,

	Old		New
Price	5	20% increase	6
Consumption	6	Decrease	5
Expenditure	30		30
% decrease	$= \frac{1}{6} \times 100 = 16\frac{2}{3}\%$		

S46. Ans.(d)

Sol.

Fail in Mathematics = 19%

Fail in English = 10%

$$\Rightarrow \text{Total Fail Students \%} = (19 + 10) - 7 = 22$$

$$\therefore \text{Students passed in Both the Subjects} = 100 - 22 = 78\%$$

S47. Ans.(c)

Sol.

$$\text{Required selling price} = 600 \times \frac{110}{100} \times \frac{105}{100} = \text{Rs } 693$$

S48. Ans.(d)

Sol.

Speed to cover 10 km in 12 min

$$= \frac{10}{12} \times 60 = 50 \text{ km/hr}$$

$$\text{Required time} = \frac{10}{50-5} \text{ hr}$$

$$= \frac{10}{45} \times 60 \text{ min} = \frac{40}{3} \text{ min}$$

$$= 13 \text{ min } 20 \text{ sec}$$

S49. Ans.(c)

Sol.

$$\text{Required number} = \frac{1}{2} \times \text{LCM of } (12, 14, 18, 22)$$

$$= \frac{1}{2} \times 2772$$

$$= 1386$$

S50. Ans.(d)

Sol.

ATQ,

$$\frac{\frac{4}{3}\pi R_1^3}{\frac{4}{3}\pi R_2^3} = \frac{64}{27} \Rightarrow \frac{R_1}{R_2} = \frac{4}{3}$$

$$\text{Ratio of their surface area} = \frac{4\pi R_1^2}{4\pi (R_2)^2} = 16 : 9$$

S51. Ans.(a)

Sol.

Let the two numbers be x and y

$$\therefore x + y = 70$$

$$\text{And } (x^2 - y^2) = 1400$$

$$(x + y)(x - y) = 1400$$

$$x - y = 20$$

S52. Ans.(c)

Sol.

Let the amount lent at 4% be Rs. x .

$$\therefore \text{Amount lent at 5\%} = \text{Rs. } (60000 - x)$$

According to the question.

$$\frac{(60000-x) \times 5 \times 1}{100} + \frac{x \times 4 \times 1}{100} = 2560$$

$$\Rightarrow 300000 - 5x + 4x = 256000$$

$$\Rightarrow x = 300000 - 256000 = \text{Rs. } 44000.$$

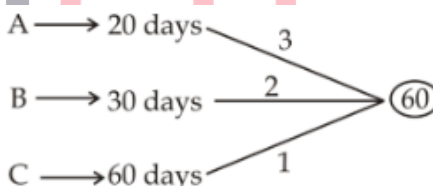
S53. Ans.(c)

Sol.

$$\text{Required per cent} = \frac{20}{100-20} \times 100 = 25\%.$$

S54. Ans.(b)

Sol.



Work done by $(A + B + C)$ in 1 day = $(3 + 2 + 1) = 6$ units

C, alone finish the remaining work in $= \frac{54}{1} = 54$ days

S55. Ans.(b)

Sol.

Let the number of apples be x

$$\therefore 4x = 2x^2 - 30 \Rightarrow (x - 5)(2x + 6) = 0 \Rightarrow x = 5, -3$$

$$\therefore x = 5$$

S56. Ans.(c)

Sol.

Temperature of last day

$$7 \times (27.4 - (3 \times 26.5 + 3 \times 29)) = 25.3^\circ\text{C}$$

S57. Ans.(c)

Sol.

$$\text{Total duty paid} = 750 \times 4\% + 3600 \times 7\% + 10500 \times 9\% \\ = 30 + 252 + 945 = \text{'1227}$$

S58. Ans.(b)

Sol.

The number of passengers from Mumbai

$$= \frac{20 \times 100 \times 48}{(100 - (48 + 20 + 24)) \times 100} \\ = (48 \times 20) / 8 \\ = 120$$

S59. Ans.(b)

Sol.

$$5\text{th reading} = (5 \times 12) + (5 \times 15) - (9 \times 10) = 45$$

S60. Ans.(d)

Sol.

Let Raj paid Rs x for the bicycle.

$$\text{Pawan paid} = 1.25x, \text{Dinkar paid} = 1.25x \times 1.2 = 156 \\ \Rightarrow 1.50x = 156 \Rightarrow x = \text{'Rs 104}$$

S61. Ans.(b)

Sol.

$$\text{Let the CP} = 100, \text{SP} = 100 \times 1.1 = 110$$

$$\text{half of SP} = \text{Rs } 55, \Rightarrow \text{Loss} = 100 - 55 = \text{Rs.45}$$

$$\% \text{ loss} = \frac{45 \times 100}{100} = 45\%$$

S62. Ans.(b)

Sol.

In the shown figure AB is a wall and BC is its shadow where angle of elevation of the sun, $\angle ACB = 60^\circ$



Shadow where angle of elevation of the sun, $\angle ACB = 60^\circ$

$$\tan 60 = AB/BC \Rightarrow \frac{\sqrt{3}}{1} = \frac{AB}{BC}$$

$$AB : BC = \sqrt{3} : 1$$

$$\text{Height : Shadow} = \sqrt{3} : 1$$

S63. Ans.(d)

Sol.

Let the ages of Swetha and Santoshi be $9x$ and $4x$

$$\Rightarrow 4x + 10 = 9x \Rightarrow x = 2$$

$$\therefore \text{Swetha's age} = 9 \times 2 = 18 \text{ years}$$

S64. Ans.(a)

Sol. Let the initial investments of A, B and C be $x, 2x, 3x$ respectively.

A's investment for 6 months = $6x$ and remaining 6 months = $2x \times 6 = 12x$

B's investment for 6 months = $2x \times 6 = 12x$ and remaining 6 months = $x \times 6$

C's investment for 6 months = $3x \times 6 = 18x$ and remaining 6 months = $4.5x \times 9x$

Required ratio of profits = ratio of investments = $(6x + 12x) : (12x + 6x) : (18x + 9x)$

$$= 2 : 2 : 3$$

S65. Ans.(c)

Sol.

$$(U - V) \times 675 = 750, 9(U - V) = 10 \text{ _____ (i)}$$

$$\& (U + V) \times \frac{15}{2} \times 60 = 750, 3(U + V) = 5 \text{ _____ (ii)}$$

From (i) & (ii)

$$U = \frac{25}{18} \times \frac{18}{5} = 5 \text{ km/h.}$$

S66. Ans.(c)

Sol.

$$\text{Sum of 40 observation} = 40 \times 28 = 1120$$

$$\& \text{Difference} = 32$$

$$\text{So, } 1120 + 32 = 1152$$

$$\text{Correct Avg. } \frac{1152}{40} = 28.8$$

S67. Ans.(d)

Sol.

$$\begin{matrix} B & G \\ 31 & : & 23 \\ 124 & : & 107 \end{matrix}$$

$$124 : 92$$

$$15 \text{ R'atio} = 75$$

$$124 : 107$$

$$1 \text{ Ratio} = 5$$

$$\text{Diff.} = 17$$

$$\text{So, Req. No.} = 17 \times 5 = 85$$

$$124 : 92$$

$$15 \text{ R'atio} = 75$$

$$124 : 107$$

$$1 \text{ Ratio} = 5$$

$$\text{Diff.} = 17$$

$$\text{So, Req. No.} = 17 \times 5 = 85$$

S68. Ans.(b)

Sol.

$$(6\sqrt{2} - 3\sqrt{2}) / 2\sqrt{3}$$

$$= \frac{3\sqrt{2}}{2\sqrt{3}} = \sqrt{\frac{3}{2}}$$

S69. Ans.(b)

Sol.

$$x + y = 7(x - y) \text{ or } 6x - 8y = 0 \text{ _____ (i)}$$

$$x + 5 + y + 5 = 9(x - y)$$

$$8x - 10y = 10 \text{ _____ (ii)}$$

After solving (i) & (ii)

$$x = 20 \text{ year}$$

$$y = 15 \text{ year}$$

S70. Ans.(b)

Sol.

$$\text{Ram : Shyam : Sohan} = \frac{7}{17} \times \frac{7}{17} : \frac{7}{17} : 1$$

$$= 49 : 119 : 289$$

$$\text{Sohan is income} = \frac{289}{49} \times 490 = 2890$$

S71. Ans.(c)

Sol.

$$A : B = \frac{\frac{1}{2}}{\frac{2}{8}} = \frac{4}{3}$$

$$B : C = \frac{3}{5} \text{ and } C : D = \frac{\frac{5}{6}}{\frac{1}{4}} = \frac{10}{9}$$

$$A : B : C : D = 8 : 6 : 10 : 9$$

S72. Ans.(c)

Sol.

25% of the cost Price = 100

$$\text{Cost price} = \frac{100 \times 100}{25} = 400$$

S73. Ans.(d)

Sol.

Let the usual time be 't' hrs and usual speed be 'x' km/h

ATQ,

$$126 = xt \quad \dots(i)$$

$$\text{And } 126 = (x-6) \times (t + \frac{3}{60})$$

$$126 = (x-6) \times (\frac{126}{x} + \frac{1}{20}) \quad \dots(ii)$$

Solving eqn (i) and eqn (ii), we get

$$x = 126 \text{ km/h}$$

S74. Ans.(b)

Sol.

$$100 \xrightarrow{-10\%} 90 \xrightarrow{-10\%} 81 \xrightarrow{-10\%} 72.9\%$$

$$\text{If } 72.9\% = 36450$$

$$\begin{array}{c} \uparrow \\ \times 500 \end{array}$$

$$\text{Then } 100\% \Rightarrow 100 \times 500 = \text{Rs } 50000$$

S75. Ans.(b)

Sol.

Sum of the age of the family = $6 \times 25 = 150$ years

The sum of age of the family at the time of the birth of the youngest member

$$= 150 - 90$$

$$= 60$$

$$\text{Average (age)} = \frac{60}{5} = 12 \text{ years}$$

S76. Ans.(b)

Sol.

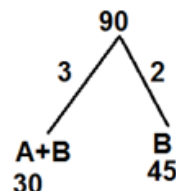
A + B _____ 30 days

1/5 work has been done by (A & B)

Now, 4/5 work is done by B in 36 days

$$\therefore 1 \text{ work is done by B in } \frac{36 \times 5}{4} = 45 \text{ days}$$

So,

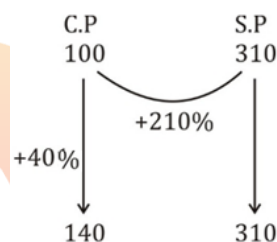


So, efficiency of A = 1

$$\text{So, A alone can do work in } = \frac{90}{1} = 90 \text{ days}$$

S77. Ans.(a)

Sol.



$$\therefore \text{Profit \% on S.P} = \frac{310-140}{310} \times 100$$

$$= \frac{170}{310} \times 100$$

$$\approx 55\%$$

S78. Ans.(b).

Sol.

Let the speed of Boat = B km/hr

And the speed of stream = S km/hr

$$\therefore \frac{60}{B+S} + \frac{20}{B-S} = 4$$

$$\frac{40}{B+S} + \frac{40}{B-S} = 6$$

$$\therefore \text{By solving, } B = 24, S = 16$$

$$\therefore \text{Speed of the stream} = 16 \text{ km/hr.}$$



S79. Ans.(c)

Sol.

5 consecutive odd numbers are-

23, 25, 27, 29, 31

∴ Product of First and last number

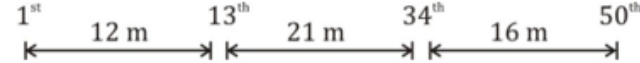
$$= 23 \times 31$$

$$= 713$$

S80. Ans.(a)

Sol.

Let the distance b/w two consecutive trees = 1m



∴ 21 → 18 sec.

$$(12 + 21 + 16) = 49m \rightarrow \frac{18}{21} \times 49$$

$$= 42 \text{ sec.}$$

S81. Ans.(b)

Sol.

$$2 : 3 = 5 \times 72$$

$$144 : 216$$

$$3 : 5 = 8 \times 45$$

$$135 : 225$$

$$4 : 5 = 9 \times 40$$

$$160 : 200$$

$$439 : 641$$

S82. Ans.(b)

Sol.

$$\text{Ram} = 5x \text{ Rohit}$$

$$\text{Rohit} \times x = \text{Ram} \times x - 60$$

$$\text{Or Rohit} \times x = 5x \text{ Rohit} (x - 60)$$

$$\text{Or } x = 5x - 300$$

$$\text{Or } 4x = 300$$

$$\text{Or } x = 75$$

∴ Rohit completes work in 75 days

∴ Ram completes work in 15 days

$$\text{So, together} = \frac{75 \times 15}{90} = \frac{5}{6} \times 15$$

$$= \frac{5}{2} \times 5 = 12\frac{1}{2} \text{ Days}$$

S83. Ans.(b)

Sol.

$$\text{Upstream speed, } U = \frac{24}{6} = \frac{12}{3} = 4 \text{ km/h}$$

$$\text{Downstream speed, } D = \frac{20}{4} = 5 \text{ km/h}$$

$$\therefore \text{ speed of boat in still water, } x = \frac{D+U}{2} = \frac{9}{2} = 4.5 \text{ km/h}$$

$$\text{Speed of water current, } y = \frac{D-U}{2} = \frac{1}{2} = 0.5 \text{ km/h.}$$

S84. Ans.(c)

Sol.

$$\text{Group A} = 40\%$$

$$\text{Group B} = \frac{60 \times 75}{100} = 45\%$$

$$\text{Group C} = 15\%$$

$$15\% = 12 \text{ students.}$$

$$\text{Then } 100\% = 80 \text{ students}$$

S85. Ans.(a)

Sol.

we have

$$1400 = \frac{5600 \times R \times 3}{100}, R = 8.33\%$$

S86. Ans.(a)

Sol.

$$\text{Amount paid to bank} = 100000 + \frac{100000 \times 8 \times t}{100}$$

$$= 100000 + 8000t$$

$$80\% \text{ of the amount of rent} = 1875 \times 12t \times \frac{80}{100}$$

$$= 18000t$$

From the question,

$$100000 + 8000t = 18000t$$

$$t = 10 \text{ years}$$

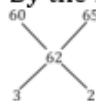
S87. Ans.(a)

Sol.

$$\text{Given that } 110\% \text{ gain} \Rightarrow 68.20$$

$$\text{So } 100\% = \frac{68.20}{110} \times 100 = 62 \text{ Rs}$$

By the mixture & Allegation rule.



$$\text{So, ratio is } = 3 : 2$$

S88. Ans.(b)

Sol.

$$x + y = 7 (x - y) \text{ or } 6x - 8y = 0 \text{ (i)}$$

$$x + 5 + y + 5 = 9 (x - y)$$

$$8x - 10y = 10 \text{ (ii)}$$

After solving (i) & (ii)

$$x = 20 \text{ year}$$

$$y = 15 \text{ year}$$

S89. Ans.(b)

Sol. Now it will bounce 20% of 10 = 2 meter less

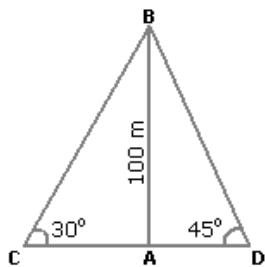
$$= 10 - 2 = 8 \text{ m}$$

S90. Ans.(c)

Sol.

Let AB be the lighthouse and C and

D be the positions of the ships.



Then, $AB = 100$ m, $\angle ACB = 30^\circ$ and $\angle ADB = 45^\circ$.

$$AB = \tan 30^\circ = \frac{1}{\sqrt{3}}$$

$$\Rightarrow AC = AB \times \sqrt{3} = 100\sqrt{3} \text{ m.}$$

$$\frac{AB}{AD} = \tan 45^\circ = 1 \Rightarrow AD = AB = 100 \text{ m.}$$

$$\therefore CD = (AC + AD) = (100\sqrt{3} + 100) \text{ m}$$

$$= 100(\sqrt{3} + 1)$$

$$= (100 \times 2.73) \text{ m}$$

$$= 273 \text{ m.}$$

S91. Ans.(b)

Sol. Sum of weight of 9 items = $15 \times 9 = 135$ kg

Sum of weight of 10 items = $16 \times 10 = 160$ kg

10th item = $160 - 135 = 25$ kg

S92. Ans.(d)

Sol. Let the present age of son & Mother = $2x$ & $7x$

Sum of ages of son & mother = $2x + 7x = 27 \times 2$

$$\Rightarrow 9x = 54$$

$$x = 6$$

\therefore Present age of Mother = $7x = 42$

Age of mother 7 years later = $42 + 7 = 49$ yrs.

S93. Ans.(b)

Sol.

Total marks obtained by Ruchita = $43 + 45 + 67 + 89 + 65$
= 309

Sum of maximum marks = $5 \times 120 = 600$

$$\therefore \text{required percentage} = \frac{309}{600} \times 100 = 51.5\%$$

S94. Ans.(d)

Sol.

Let the income of Ram = 100%

After donating to charity, remaining = 96%

& after deposition, remaining = $96 - 9.6 = 86.4\%$

We have $86.4\% = 86.40$

$$\therefore \text{Income of Ram} = \frac{8640}{86.4} \times 100 = \text{Rs. } 10000$$

S95. Ans.(d)

Sol.

	Income	:	Expenditure
I	2	:	5
II	3	:	9

2nd year income = 45000

\therefore 1st year income = 30,000

1st year exp. = 25,000

2nd year exp. = 45000

Total saving in two years together = $5000 + 0 = \text{Rs. } 5000$

S96. Ans.(b)

Sol.

$$\text{Net discount} = 20 + 25 - \frac{20 \times 25}{100}$$

$$= 45 - 5$$

$$= 40\%$$

$$\therefore 0.6x = 4200$$

$$x = 7000$$

S97. Ans.(a)

Sol. Total value of 1 rupee coins = Rs x

\therefore Total no. of 1 rupee coins = x

Total value of 50 paise coins = Rs x

Total number of 50 paise coins = $2x$

Total value of 25 paise coins = Rs x

Total number of 25 paise coins = $4x$

$$\text{ATQ} \rightarrow x + 2x + 4x = 175 \Rightarrow x = 25$$

Total value of coins = $3x = 25 \times 3 = 75$

S98. Ans.(c)

Sol.

$$\text{Required difference in rates} = \frac{13.50 \times 100}{1500 \times 3} = 0.3\%$$

S99. Ans.(b)

Sol.



In $\triangle ACB$,

$$\tan 45^\circ = \frac{AC}{BC}$$

$$\Rightarrow AC = 25 \text{ m}$$

Now,

$$(AB)^2 = (BC)^2 + (AC)^2$$

$$= (25)^2 + (25)^2$$

$$AB = 25\sqrt{2}$$

∴ Height of the pole

$$= 25 + 25\sqrt{2} = 25(\sqrt{2} + 1) \text{ Meter}$$

S100. Ans.(c)

Sol.

$$\text{We have } \frac{P(1+\frac{r}{100})^2}{P(1+\frac{r}{100})} = \frac{676}{650} = \frac{26}{25}$$

$$\left(1 + \frac{r}{100}\right) = \frac{26}{25}$$

$$\text{Now } P\left(1 + \frac{r}{100}\right) = 650$$

$$P \times \frac{26}{25} = 650$$

$$P = \frac{650 \times 25}{26} = \text{Rs } 625$$

S101. Ans.(c)

Sol.

$$S \rightarrow 45 : 60$$

$$3 : 4$$

$$T \rightarrow 4 : 3$$

$$\text{We have, 1 unit} = \frac{11}{2} \text{ hrs.}$$

$$\therefore 4 \text{ unit} = \frac{11}{2} \times 4 = 22 \text{ hrs.}$$

$$\text{Required distance} = 45 \times 22 = 990 \text{ km}$$

S102. Ans.(d)

Sol.

$$\text{Fare for first 1.2 km} = \text{Rs } 6.50$$

$$\text{Remaining distance} = 4.8 - 1.2 = 3.6 \text{ km}$$

$$\text{So, extra fare for rest of the travel} = \frac{3600}{100} \times \frac{60}{100} = \text{Rs } 21.6$$

$$\text{Total fare} = 6.50 + 21.60 = \text{Rs } 28.10$$

S103. Ans.(a)

Sol.

We have,

$$\frac{30}{(x-y)} + \frac{44}{(x+y)} = 10$$

&

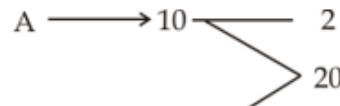
$$\frac{40}{(x-y)} + \frac{55}{(x+y)} = 13$$

After solving we get,

$$x = 8 \text{ km/h}$$

S104. Ans.(a)

Sol.



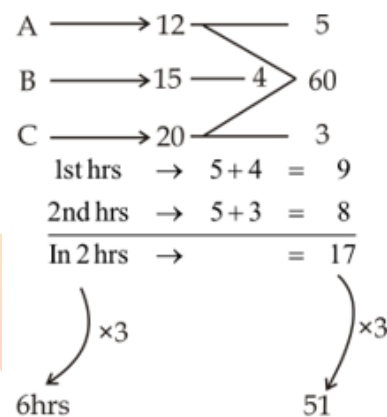
$$\text{Work done in 5 hrs} = 5 \times 3 = 15$$

Remaining work will be done by B

$$= \frac{5}{1} = 5 \text{ hours}$$

S105. Ans.(c)

Sol.



S106. Ans.(b)

Sol.

Let student answer x questions correct & y questions wrong.

$$\therefore x + y = 200$$

$$\& 4x - y = 200$$

$$5x = 400$$

$$x = 80$$

S107. Ans.(d)

Sol.

Let the present age of person = x

$$\Rightarrow (x+3)3 - 3(x-3) = x$$

$$3x+9 - 3x+9 = x$$

$$\Rightarrow x = 18 \text{ years}$$

S108. Ans.(c)

Sol.

From the given

Venn diagram

Cellular phone Computer



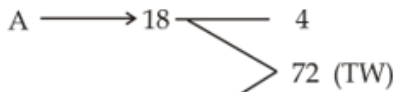
Required percentage

$$= 5 + 25 + 50$$

$$= 80\%$$

S109. Ans.(a)

Sol.



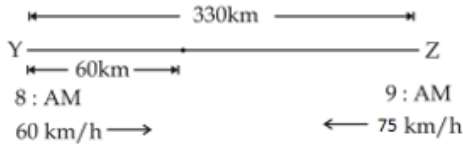
B' \rightarrow 24 \rightarrow 3
8 days' work of A & B $\rightarrow 8 \times (4 + 3) = 56$

Remaining work = $72 - 56 = 16$

Remaining work finished by B = $\frac{16}{3} = 5\frac{1}{3}$ days

S110. Ans.(c)

Sol.



In 1 hour, first train travels = 60 km

Relative speed = 135 km/h

Time required to coverage remaining $(330 - 60) = 270$ km

$$= \frac{270}{135} = 2 \text{ hrs}$$

\therefore they meet at 9am + 2hrs = 11 am

S111. Ans.(c)

Sol.

Average of 7 numbers = 8

Sum of 7 numbers = $7 \times 8 = 56$

Average of 8 numbers = 9

Sum of 8 numbers = $9 \times 8 = 72$

\therefore Required number = $72 - 56 = 16$

S112. Ans.(d)

Sol.

10 years ago, sum of age of the family = $25 \times 4 = 100$ years

\therefore present sum of age of the family of 4 members = $100 + 40 = 140$

& present sum of age of the family of 6 members = $25 \times 6 = 150$ years

\therefore sum of age of two children = $150 - 140$

= 10 years

$$x + y = 10 \quad (\text{Say})$$

$$x - y = 2 \quad (\text{Given})$$

$$\frac{2x}{2} = \frac{12}{2}$$

$$x = 6 \text{ \& } y = 4$$

\therefore The present age of the youngest child = 4 year

S113. Ans.(c)

Sol.

Let present age of ravi be Y

And present age of ravi's father be X

$$\text{A.T.Q- } X = 4Y$$

$$X - 5 = 7(Y - 5)$$

$$7Y - 4Y = 35 - 5$$

$$3Y = 30$$

$$Y = 10$$

\therefore present age of father = 4×10

= 40 years

S114. Ans.(a)

Sol.

We have, $96\% = \text{Rs } 240$

$$\Rightarrow 110\% = \frac{240}{96} \times 110 = \frac{1100}{4} = \text{Rs } 275$$

S115. Ans.(c)

Sol.

We have, simple interest of 3 years = $1620 - 1350 = 270$

\therefore SI of 1 year = Rs 90

\Rightarrow SI of 5 year = Rs 450

Sum = $1350 - 450 = \text{Rs } 900$

S116. Ans.(b)

Sol.

Simple interest for 2 years = Rs 800

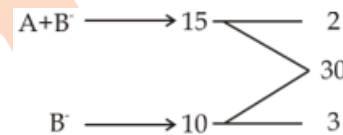
SI for 1 year = 400

For CI additional interest of Rs 32 is due to interest of first year

$$\therefore \text{Rate of interest} = \frac{32}{400} \times 100 = 8\%$$

S117. Ans.(c)

Sol.



$\therefore A \rightarrow 1$

Tap will fill the tank in = $\frac{30}{1} = 30$ hrs

\therefore capacity of tank = $8 \times 30 \times 60 = 14400$ liters

S118. Ans.(d)

Sol.

We have,

$$\frac{30}{15 + y} + \frac{30}{15 - y} = \frac{9}{2}$$

$$\frac{30 \times 30}{225 - y^2} = \frac{9}{2}$$

$$\Rightarrow 225 - y^2 = 200$$

$$\Rightarrow y = 5 \text{ km/h}$$



S119. Ans.(c)

Sol.

We have

$$\frac{d}{x+y} + \frac{d}{x-y} = \frac{21}{4} \quad \dots (i)$$

$$\& \frac{2d}{x-y} = 7 \Rightarrow \frac{d}{x-y} = \frac{7}{2}$$

$$\text{From (i)} \rightarrow \frac{d}{x+y} + \frac{7}{2} = \frac{21}{4} \Rightarrow \frac{d}{x+y} = \frac{7}{4}$$

$$\text{Required time} = \frac{2d}{x+y} = \frac{7}{2} = 3 \text{ hrs } 30 \text{ min}$$

S120. Ans.(b)

Sol.

Percent increase of population

$$= \frac{2,62,500 - 1,75,000}{1,75,000} \times 100$$

$$= \frac{87500}{175000} \times 100$$

$$= 50\%$$

Average percent increase of population per year

$$= \frac{50}{10} = 5\%$$

S121. Ans.(a)

Sol.

$$\begin{array}{ccc} 12 & & 10 \\ =84 & & 70 \\ & \swarrow \quad \searrow & \\ & 75 & \\ & \swarrow \quad \searrow & \\ 5 & & 9 \end{array} \quad \begin{array}{c} 7 \text{ hrs} \\ \times \frac{1}{2} \\ = 14 \end{array}$$

Time ratio = 5 : 9 = 14 $\times \frac{1}{2}$

He travel at the rate of 12 km/h = $5 \times \frac{1}{2} = \frac{5}{2}$ hrs

$$\text{Required distance} = 12 \times \frac{5}{2} = 30 \text{ km}$$

S122. Ans.(d)

Sol.

$$\begin{array}{ccc} \frac{1}{5} = 2 & & \frac{3}{5} = 6 \\ & \swarrow \quad \searrow & \\ & 5 & \\ & \swarrow \quad \searrow & \\ 1 & & 3 \end{array}$$

Required ratio 1 : 3

S123. Ans.(a)

Sol.

Savings: Expenditure = 2: 3

Let,

$$\text{Savings} = 200 \xrightarrow{+6\%} 212$$

$$\therefore \text{Income} = 500 \xrightarrow{+15\%} 575$$

Expenditure increased by $\rightarrow 575 - 212 = 363 - 300 = 63$

$$\text{Percentage increase in expenditure} = \frac{63}{300} \times 100 = 21\%$$

S124. Ans.(b)

Sol.

Profit ratio of A & B

$$A: B = 100000 \times 3 : 200000 \times 2$$

$$= 3: 4$$

We have total profit = 7 unit = Rs 84000

Share of B in the profit exceeded the share of A by $(4 - 3) = 1$ unit

$$\therefore 1 \text{ unit} = \frac{84000}{7} = \text{Rs } 12000$$

S125. Ans.(c)

Sol.

$$\text{We have } 25\% = \frac{1}{4}$$

ATQ \rightarrow

$$A : B = 5 : 4$$

$$B : C = 3 : 4$$

$$A : B : C = 15 : 12 : 16$$

S126. Ans.(b)

Sol.

Suppose initially price per kg of rice is 100

Then their expenditure = 4000

Now, their expenditure is only increased by 10% i.e., 4400

Increased price of rice = 125

$$\text{So, new consumption} = \frac{4400}{125} = 35.2 \text{ kg}$$

S127. Ans.(b)

Sol.

Expenditure = price \times consumption

Now,

$$\text{Now, Tax} \rightarrow 5 : 6$$

$$\text{Cons.} \rightarrow 5 : 4$$

$$\text{Exp.} \rightarrow 25 : 24$$

$$\text{Decrease in consumption} = \frac{1}{25} \times 100 = 4\%$$

S128. Ans.(d)

Sol.

Minimum marks required for unreserved

$$\text{candidate} = 300 + 24 = 324$$

We have 54% = 324

$$\therefore \text{Minimum passing marks required for reserved category} = 40\% = \frac{324}{54} \times 40 = 240$$

S129. Ans.(b)

Sol.

We have, 114% = 2850

$$\therefore 108\% = \frac{2850}{114} \times 108 = \text{Rs. } 2700$$

S130. Ans.(b)

Sol.

$$\text{We have, } \frac{CP}{SP} = \frac{10}{11}$$

$$\text{Profit percentage} = \frac{1}{10} \times 100 = 10\%$$

S131. Ans.(b)

Sol.

We have,

$$126 \times 1 + 135 \times 1 + x \times 2 = 153 \times 4$$

$$\Rightarrow 2x = 351$$

$$\Rightarrow x = 175.50\text{Rs.}$$

S132. Ans.(d)

Sol.

As, profit = Investment \times time

Now,

$$\frac{5 \times 8}{6 \times x} = \frac{5}{9}$$

$$x = 12 \text{ months}$$

S133. Ans.(c)

Sol.

Simple interest for 5 years = Rs 600

\therefore simple interest for 1 year = 120

$$\text{Rate of interest} = \frac{120}{2000} \times 100 = 6\%$$

Now rate of interest = 6 + 3 = 9%

$$\text{New interest} = \frac{2000 \times 9 \times 5}{100} = 900$$

$$\text{Amount} = 2000 + 900 = \text{Rs } 2900$$

S134. Ans.(b)

Sol.

$$\text{We have, } 5\% = \frac{1}{20}$$

$$\text{Let principal} = 400 \rightarrow 20$$

$$\frac{20}{20} \quad 1$$

Difference between SI & CI = 1 unit

We have, 1 unit = Rs 6

$$\therefore \text{principal} = 400 \text{ unit} = 40 \times 6 = \text{Rs } 2400$$

S135. Ans.(a)

Sol.

Let, length of train B = 2x

\therefore length of train A = x

$$\text{Required ratio} = \frac{x}{25} : \frac{2x}{75} = 3 : 2$$

S136. Ans.(a)

Sol.

Let distance between A & B = D

Now,

$$\frac{D}{9+3} + \frac{D}{9-3} = 3$$

$$\frac{D}{12} + \frac{D}{6} = 3$$

$$\frac{D+2D}{12} = 3$$

$$3D = 36$$

$$D = 12 \text{ km}$$

S137. Ans.(a)

Sol.

When the cars travel in the same direction

$$\frac{100}{S_1 - S_2} = 5 \Rightarrow S_1 - S_2 = 20 \quad \dots(i)$$

When the cars travel in opposite direction

$$\frac{100}{S_1 + S_2} = 1 \Rightarrow S_1 + S_2 = 100 \quad \dots(ii)$$

Solving (i) & (ii) we get,

$$S_1 = 60 \text{ km/h} \text{ \& } S_2 = 40 \text{ km/h}$$

\therefore speed of the car running faster = 60 km/h

S138. Ans.(b)

Sol.

$$\begin{array}{lcl} \text{H} & \longrightarrow & 20 \longrightarrow 6 \\ \text{R} & \longrightarrow & 30 \longrightarrow 4 \\ \text{H+R+S} & \longrightarrow & 8 \longrightarrow 15 \\ \text{S} & \longrightarrow & 5 \end{array} \quad \left. \begin{array}{l} \\ \\ \\ \end{array} \right\} 120$$

Efficiency ratio

$$\text{H:R:S} = 6:4:5$$

We have, 15 unit = 375

$$\text{Shyam} = 5 \text{ unit} = \frac{375}{15} \times 5 = 25 \times 5 = \text{Rs } 125$$

S139. Ans.(a)

Sol.

$$\begin{array}{lcl} \text{P}^* & \longrightarrow & 16 \longrightarrow 3 \\ & & \searrow \\ & & 48 \\ \text{P}^* + \text{L}^* & \longrightarrow & 24 \longrightarrow 2 \\ & & \nearrow \\ \text{L}^* & \longrightarrow & 1 \end{array}$$

$$\text{Leakage would empty the tank} = \frac{48}{1} = 48 \text{ hours}$$

S140. Ans.(b)

Sol.

We have

$$G^2 = B^2 - 28$$

$$\Rightarrow B^2 - G^2 = 28 \quad \dots(i)$$

$$\& G + 2 = B$$

$$\therefore B - G = 2 \quad \dots(ii)$$

From (i)

$$(B - G)(B + G) = 28$$

$$2(B + G) = 28$$

$$\Rightarrow B + G = 14$$

S141. Ans.(a)

Sol.

Traffic lights would again change together after

= LCM of 25 & 30

$$= 150 \text{ sec}$$

$$= 2\frac{1}{2} \text{ min}$$

S142. Ans.(b)

Sol.

Let the age of elder one = A

And age of younger one = B

We have,

$$A + B = 7(A - B)$$

$$\Rightarrow B = \frac{3}{4}A$$

$$\& (A + B + 10) = 9(A - B)$$

$$A + B + 10 = 9A - 9B$$

$$10B + 10 = 8A$$

$$10 \times \frac{3}{4}A + 10 = 8A$$

$$\Rightarrow A = 20 \& B = 15$$

Present age of elder one = 20 yrs

S143. Ans.(c)

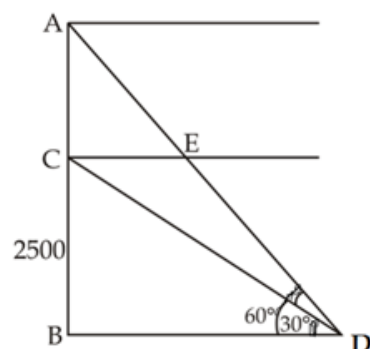
Sol.

Income	Exp.	Savings
15000	12000	3000
↓ +20%	↓ +20%	↓
18000	14400	3600

New savings = Rs.3600

S144. Ans.(c)

Sol.



$$\tan 30^\circ = \frac{BC}{BD}$$

$$\Rightarrow \frac{1}{\sqrt{3}} = \frac{2500}{BD}$$

$$BD = 2500\sqrt{3}m$$

$$\tan 60^\circ = \frac{AB}{2500\sqrt{3}}$$

$$\sqrt{3} = \frac{AB}{2500\sqrt{3}}$$

$$\Rightarrow AB = 7500 m$$

$$\therefore AC = AB - BC$$

$$= 7500 - 2500$$

$$= 5000 m$$

S145. Ans.(d)

Sol.

Let the usual speed be 'x' km/h

ATQ,

$$\frac{126}{x-6} - \frac{126}{x} = \frac{3}{60}$$

$$126x - 126x + 126 \times 6 = \frac{x(x-6)}{20}$$

$$126 \times 6 \times 20 = x(x-6)$$

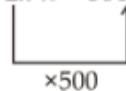
$$x = 126 \text{ km/h}$$

S146. Ans.(b)

Sol.

$$100 \xrightarrow{-10\%} 90 \xrightarrow{-10\%} 81 \xrightarrow{-10\%} 72.9\%$$

$$\text{If } 72.9\% = 36450$$



$$\text{Then } 100\% \Rightarrow 100 \times 500 = \text{Rs } 50000$$

S147. Ans.(b)

Sol.

Sum of the age of the family = $6 \times 25 = 150$ years

The sum of age of the family at the time of the birth of the youngest member

$$= 150 - 90$$

$$= 60$$

$$\text{Average (age)} = \frac{60}{5} = 12 \text{ years}$$

S148. Ans.(b)

Sol.

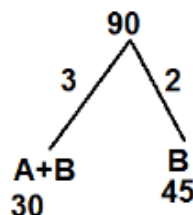
A + B _____ 30 days

$\frac{1}{5}$ work has been done by (A & B)

Now, $\frac{4}{5}$ work is done by B in 36 days

$$\therefore 1 \text{ work is done by B in } \frac{36 \times 5}{4} = 45 \text{ days}$$

So,

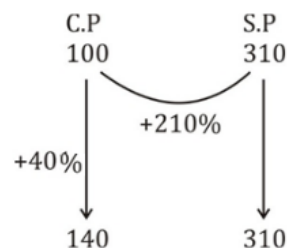


So, efficiency of A = 1

$$\text{So, A alone can do work in } = \frac{90}{1} = 90 \text{ days}$$

S149. Ans.(a)

Sol.



$$\therefore \text{Profit \% on S.P} = \frac{310-140}{310} \times 100$$

$$= \frac{170}{310} \times 100$$

$$\approx 55\%$$

S150. Ans.(b).

Sol.

Let the speed of Boat = B km/hr

And the speed of stream = S km/hr

$$\therefore \frac{60}{B+S} + \frac{20}{B-S} = 4$$

$$\frac{40}{B+S} + \frac{40}{B-S} = 6$$

$$\therefore \text{By solving. } B = 24, S = 16$$

$$\therefore \text{Speed of the stream} = 16 \text{ km/hr.}$$

S151. Ans.(c)

Sol.

5 consecutive odd numbers are-

23, 25, 27, 29, 31

\therefore Product of First and last number

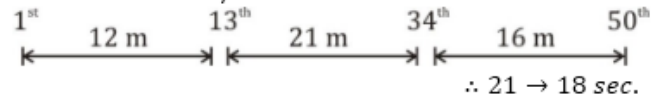
$$= 23 \times 31$$

$$= 713$$

S152. Ans.(a)

Sol.

Let the distance b/w two consecutive trees = 1m



$$(12 + 21 + 16) = 49m \rightarrow \frac{18}{21} \times 49$$

$$= 42 \text{ sec.}$$

S153. Ans.(b)

Sol.

$$2 : 3 = 5 \times 72$$

$$144 : 216$$

$$3 : 5 = 8 \times 45$$

$$135 : 225 =$$

$$4 : 5 = 9 \times 40$$

$$160 : 200$$

$$439 : 641$$

S154. Ans.(b)

Sol.

$$\text{Ram} = 5 \times \text{Rohit}$$

$$\text{Rohit} \times x = \text{Ram} \times x - 60$$

$$\text{Or Rohit} \times x = 5 \times \text{Rohit} (x - 60)$$

$$\text{Or } x = 5x - 300$$

$$\text{Or } 4x = 300$$

$$\text{Or } x = 75$$

\therefore Rohit completes work in 75 days

\therefore Ram completes work in 15 days

$$\text{So, together} = \frac{75 \times 15}{90} = \frac{5}{6} \times 15$$

$$= \frac{5}{2} \times 5 = 12 \frac{1}{2} \text{ Days}$$

S155. Ans.(b)

Sol.

$$\text{Upstream speed, } U = \frac{24}{6} = \frac{12}{3} = 4 \text{ km/h}$$

$$\text{Downstream speed, } D = \frac{20}{4} = 5 \text{ km/h}$$

$$\therefore \text{speed of boat in still water, } x = \frac{D+U}{2} = \frac{9}{2} = 4.5 \text{ km/h}$$

$$\text{Speed of water current, } y = \frac{D-U}{2} = \frac{1}{2} = 0.5 \text{ km/h.}$$

S156. Ans.(c)

Sol.

$$\text{Group A} = 40\%$$

$$\text{Group B} = \frac{60 \times 75}{100} = 45\%$$

$$\text{Group C} = 15\%$$

$$15\% = 12 \text{ students.}$$

$$\text{Then } 100\% = 80 \text{ students}$$

S157. Ans.(a)

Sol.

we have

$$1400 = \frac{5600 \times R \times 3}{100}, R = 8.33\%$$

S158. Ans.(a)

Sol.

$$\text{Amount paid to bank} = 100000 + \frac{100000 \times 8 \times t}{100}$$

$$= 100000 + 8000t$$

$$80\% \text{ of the amount of rent} = 1875 \times 12t \times \frac{80}{100}$$

$$= 18000t$$

From the question,

$$100000 + 8000t = 18000t$$

$$t = 10 \text{ years}$$

S159. Ans.(a)

Sol.

Given that 110% gain \Rightarrow 68.20

$$\text{So } 100\% = \frac{68.20}{110} \times 100 = 62 \text{ Rs}$$

By the mixture & Allegation rule.



So, ratio is = 3 : 2

S160. Ans.(b)

Sol.

$$x + y = 7 \text{ (x-y) or } 6x - 8y = 0 \text{ (i)}$$

$$x + 5 + y + 5 = 9 \text{ (x-y)}$$

$$8x - 10y = 10 \text{ (ii)}$$

After solving (i) & (ii)

$$x = 20 \text{ year}$$

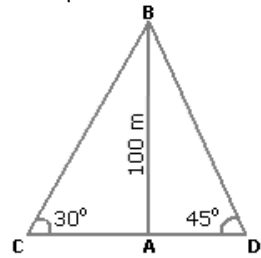
$$y = 15 \text{ year}$$

S161. Ans.(b)

Sol. Now it will bounce 20% of 10 = 2 meter less = 10 - 2 = 8m

S162. Ans.(c)

Sol. Let AB be the lighthouse and C and D be the positions of the ships.



Then, AB = 100 m, $\angle ACB = 30^\circ$ and $\angle ADB = 45^\circ$.

$$\frac{AB}{AC} = \tan 30^\circ = \frac{1}{\sqrt{3}} \Rightarrow AC = AB \times \sqrt{3} = 100\sqrt{3} \text{ m.}$$

$$\frac{AB}{AD} = \tan 45^\circ = 1 \Rightarrow AD = AB = 100 \text{ m.}$$

$$\therefore CD = (AC + AD) = (100\sqrt{3} + 100) \text{ m}$$

$$= 100(\sqrt{3} + 1)$$

$$= (100 \times 2.73) \text{ m}$$

$$= 273 \text{ m}$$

S163. Ans.(c)

Sol.

As total income = No. of seats \times Price of a ticket

$$\text{No. of seats} \rightarrow 4 : 5$$

$$\text{Price} \rightarrow \frac{10}{40} : \frac{11}{55}$$

Percentage increase in total income

$$= \frac{15}{40} \times 100 = 37.5\%$$

S164. Ans.(a)

Sol.

Let, the length of first train is $2x$

\therefore length of 2nd train = $3x$

& S_1 & S_2 be the speeds of respective trains

Now,

$$\frac{2x}{S_1} = 10 \Rightarrow S_1 = \frac{x}{5}$$

$$\& \frac{3x}{S_2} = 18 \Rightarrow S_2 = \frac{x}{6}$$

ATQ \rightarrow

$$\text{Required time} = \frac{2x+3x}{\frac{x}{5} + \frac{x}{6}} = \frac{150}{11} = 13 \frac{7}{11} \text{ sec}$$

S165. Ans.(c)

Sol.

We have,

$$A : B = 2 : 1$$

$$B : C = 2 : 1$$

$$\text{Efficiency ratio} = A : B : C = 4 : 2 : 1$$

Total work = Efficiency \times time

$$= (4 + 2) \times 4 = 24$$

$$C, \text{ alone can complete the work} = \frac{24}{1} = 24 \text{ days}$$

S166. Ans.(b)

Sol.

$$\text{We have } 10\% = \frac{1}{10}$$

$$\text{Let, the sum} = (10)^2 = 100$$

$$\text{Then, } 100 \rightarrow 10$$

$$10 \quad 1$$

$$\text{We have } 1 \text{ unit} = 42$$

$$\therefore 100 \text{ unit} = 42 \times 100 = 4200$$

S167. Ans.(c)

Sol.

When,

$$a + b + c = 0 \text{ then, } a^3 + b^3 + c^3 = 3abc$$

here,

$$a = 0.32, b = 0.45 \& c = -0.77$$

So,

$$\frac{1}{27} \times \frac{(0.32)^3 + (0.45)^3 + (-0.77)^3}{3(0.32)(0.45)(-0.77)} = -\frac{1}{27} \times 1$$

$$= -\frac{1}{27}$$

S168. Ans.(a)

Sol.

Ram's age = 8 yrs

Geeta's age = 8 - 2 = 6 yrs

\therefore kamal's age = 6 \times 5 = 30 yrs

S169. Ans.(b)

Sol.

The weight of newly admitted student
 $= 51 + \frac{50}{2} = 51 + 25 = 76\text{kg}$

S170. Ans.(b)

Sol.

Let a & b be prime numbers

$$\therefore 27a + 27b = 216$$

$$27(a + b) = 216$$

$$\therefore a + b = 8$$

Then possible pairs = (1, 7), (7, 1), (3, 5), (5, 3)

There are 2 common pairs among them

\therefore required answer = 2

S171. Ans.(c)

Sol.

Let 6th person spends Rs x

Then,

$$x = \frac{5 \times 32 + x}{6} + 80$$

$$\Rightarrow x = 128$$

$$\text{Total expense} = 5 \times 32 + 128$$

$$= \text{Rs } 288$$

S172. Ans.(b)

Sol.

We have

$$900 \times 23 \times 200 = 280 \times 750 \times W$$

$$\Rightarrow W = \frac{138}{7}$$

$$\text{No. of days} = \frac{138}{7} \times 7 = 138$$

S173. Ans.(c)

Sol.

We have

$$\frac{4 \times 10 \times 5}{x} = \frac{2 \times 20 \times y}{2x}$$

$$\Rightarrow y = 10\text{hours}$$

S174. Ans.(c)

Sol.

$$\text{We have } P = \frac{P \times R \times 10}{100}$$

$$\Rightarrow R = 10\%$$

$$\text{Now, } 2P = \frac{P \times 10 \times T}{100}$$

$$T = 20 \text{ yrs}$$

S175. Ans.(b)

Sol.

$$50x + 25x = 4500$$

$$x = \frac{4500}{75} = 60$$

$$\text{So, total no. of coins} = 60 + 60 = 120$$

S176. Ans.(c)

Sol.

$$\text{MRP of motor car} = \frac{17000}{85} \times 100 = 20,000$$

Equivalent discount of 10% & 5%

$$= -10 - 5 + \frac{10 \times 5}{100} = 14.5\%$$

$$\text{New SP} = \frac{20,000 \times 85.5}{100} = \text{Rs } 17100$$

S177. Ans.(d)

Sol.

Let the price of diamond = x

& weight is y which become 2z, 3z & 5z respectively.

As

$$x \propto y^2 \text{ or } x = ky^2$$

$$\text{where, } y = 2z + 3z + 5z$$

i.e.,

$$x = k(10z)^2$$

total price of broken pieces of diamond

$$= k\{(2z)^2 + (3z)^2 + (5z)^2\} = 38kz^2$$

ATQ,

$$k(10z)^2 - 38kz^2 = 31000$$

$$\therefore 62kz^2 = 31000$$

$$\text{Or, } kz^2 = 500$$

$$\text{So, price of unbroken diamond} = 100kz^2$$

$$= 100 \times 500 = 50,000$$

S178. Ans.(d)

Sol.

We have D = 68 km

$$x = 13 \text{ km/h \& } y = 4 \text{ km/h}$$

$$\text{Required time} = \frac{D}{x+y} = \frac{68}{13+4} = \frac{68}{17}$$

$$= 4 \text{ hrs}$$

S179. Ans.(c)

Sol.

Let the required number = x

Now,

$$\frac{7(x+10)}{5} - 5 = \frac{88}{2}$$

$$\frac{7x+70}{5} - 5 = 44$$

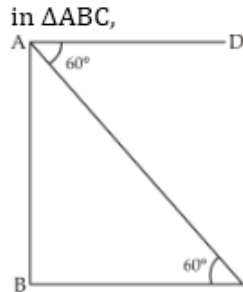
$$7x+70-25=220$$

$$7x=175$$

$$X=25$$

S180. Ans.(c)

Sol.



$$\begin{aligned}\tan 60^\circ &= \frac{AB}{BC} \\ \sqrt{3} &= \frac{800}{BC} \\ \Rightarrow BC &= \frac{800}{\sqrt{3}}\end{aligned}$$

S181. Ans.(b)

Sol.

$$\begin{aligned}\frac{M_1 D_1}{W_1} &= \frac{M_2 D_2}{W_2} \\ \text{remaining work} &= 1 - \frac{5}{7} = \frac{2}{7} \\ \frac{\frac{15 \times 1}{5}}{7} &= \frac{\frac{M_2 \times 1}{2}}{7} \\ \therefore M_2 &= 6\end{aligned}$$

S182. Ans.(b)

Sol.

$$\begin{aligned}\text{Total marks of four subjects} &= 4 \times 85 = 340 \\ \text{Total marks of all subjects} &= 340 + 60 = 400 \\ \therefore \text{New Average} &= \frac{400}{5} = 80\end{aligned}$$

S183. Ans.(a)

Sol.

$$\begin{aligned}\text{Expenditure: Saving} &= 5x: 4x \\ \text{Total income} &= \text{expenditure} + \text{saving} = 9x \\ \text{Change Expenditure} &= \frac{40}{100} \times 5x + 5x = 7x \\ \text{Changed Income} &= \frac{25}{100} + 9x + 9x = \frac{45}{4}x \\ \therefore \text{New Saving} &= \text{Changed Income} - \text{Changed Expenditure} \\ &= \frac{45}{4}x - 7x = \frac{17}{4}x \\ \text{Changed in saving} &= \frac{17x}{4} - 4x = \frac{x}{4} \\ \therefore \frac{x}{4} &= 500 \\ \text{New income} &= \frac{45}{4} \times 500 \times 4 = 22500\end{aligned}$$

S184. Ans.(c)

Sol.

$$\begin{aligned}\text{Let the speed of carriage be } x \text{ km/hr.} \\ \text{Relative speed} &= (x - 4) \text{ km/hr.} = (x - 4) \frac{5}{18} \text{ m/s.} \\ \text{A/Q, In 1 minutes difference b/w them was 100m.} \\ \therefore \text{Distance} &= \text{Relative speed} \times \text{time} \\ 100 &= (x - 4) \frac{5}{18} \times 1 \times 60. \\ x &= 10 \text{ km/hr}\end{aligned}$$

S185. Ans.(b)

Sol.

$$\begin{aligned}\text{let initial number of persons be } x. \\ \text{A/Q, } 17.75x + 12 \times 14.25 &= (x + 12) \times 16 \\ 17.75x + 171 &= 16x + 192 \\ x &= 12\end{aligned}$$

S186. Ans.(d)

Sol.

$$\begin{aligned}\text{Speed along the stream} &= 5x + x = 6x \\ \therefore \text{Distance} &= 6x \times 6 = 36x \text{ hr.} \\ \text{Required time} &= \frac{36x}{5x - x} = \frac{36}{4} = 9 \text{ hr.}\end{aligned}$$

S187. Ans.(c)

Sol.

$$\begin{aligned}\text{cost price} &= \frac{100}{100 - 25} \times 600 = \text{Rs } 800 \\ \text{SP} &= \frac{100 + 20}{100} \times 800 = \frac{120}{100} \times 800 \\ &= 960.\end{aligned}$$

S188. Ans.(a)

Sol.

$$\begin{aligned}\text{Let original cost price be Rs } x. \\ \text{cost price after repair} &= x + 20\% \text{ of } x = \frac{6}{5}x \\ \text{Profit} &= \frac{1}{4} \times \frac{6}{5}x = \frac{3x}{10} \\ \therefore \text{Profit} &= \text{SP} - \text{CP} \\ \frac{3x}{10} &= 30000 - \frac{6}{5}x \\ \frac{15}{10}x &= 30000 \\ x &= 20000.\end{aligned}$$

S189. Ans.(c)

Sol.

$$\begin{aligned}\text{Population 2 years ago} &= \frac{15680}{\left(1 + \frac{12}{100}\right)^2} \\ &= \frac{15680}{\left(\frac{28}{25}\right)^2} = 12500\end{aligned}$$

S190. Ans.(b)

Sol.

$$\begin{aligned}\text{A/Q, } \frac{1}{4}B &= \frac{1}{10}(B + G) \\ 10B &= 4B + 4G \\ \frac{B}{G} &= \frac{2}{3}\end{aligned}$$

S191. Ans.(d)

Sol.

$$\begin{aligned}\text{SI} &= 13500 - 9000 = \text{Rs } 4500 \\ \text{A/Q, } 4500 &= 9000 \times \frac{r \times 10}{100} \\ r &= 5\end{aligned}$$

S192. Ans.(d)
Sol.

$$\frac{4x^2 - 3y^2}{2x^2 + by^2} = \frac{2}{19}$$

$$76x^2 - 57y^2 = 24x^2 + 60y^2$$

$$52x^2 = 117y^2$$

$$4x^2 = 9y^2$$

$$\frac{x}{y} = \frac{3}{2}$$

S193. Ans.(b)
Sol.

Let the number be x

$$A/Q \quad \frac{3x}{4} - \frac{3x}{14} = 150$$

$$\frac{3x}{2} \left[\frac{1}{2} - \frac{1}{7} \right] = 150$$

$$x = \frac{150 \times 2 \times 14}{3 \times 5} = 280.$$

S194. Ans.(d)
Sol. Distance travelled by car & taxi be x km & y km respectively

$$x + y = 80 \quad (1)$$

$$5x + 1.5y = 50$$

$$y = 10 \text{ km.}$$

S195. Ans.(a)
Sol.

$$A's \text{ 1 day's work} = \frac{1}{10}$$

$$A's \text{ 4 day's work} = \frac{4}{10} = \frac{2}{5}$$

Let B can complete the whole work in x days.

$$B's \text{ 1 day's work} = \frac{1}{x}$$

$$B's \text{ 9 day's work} = \frac{9}{x}$$

$$A/Q, \quad \frac{2}{5} + \frac{9}{x} = 1$$

$$5x = 2x + 45$$

$$X = 15 \text{ days}$$

$$1 \text{ day's work of A and B} = \frac{1}{10} + \frac{1}{15} = \frac{1}{6}$$

Total time taken by both = 6 days.

S196. Ans.(c)
Sol.

ratio of two numbers = 2x : 5x

$$\frac{2x+4}{5x+4} = \frac{1}{2}$$

$$4x + 8 = 5x + 4$$

$$x = 4$$

 \therefore numbers are 8 and 20.

S197. Ans.(a)
Sol.

$$\text{Work done by boy in 1 day} = \frac{1}{3} - \frac{1}{18} - \frac{1}{6}$$

$$= \frac{6-1-3}{18} = \frac{1}{9}$$

Time taken by boy alone = 9 days

S198. Ans.(b)
Sol.

Let age of Rahul and Rohan be x & y yrs respectively.

$$A/Q, \quad x = \frac{2}{5}(x + y)$$

$$3x = 2y \quad \dots(i)$$

Also,

$$y - x = 15 \quad \dots(ii)$$

from eq(ii) & (i)

$$y = 45$$

S199. Ans.(b)
Sol.

$$\text{Total S.P} = \text{Rs. } 25 \times 50 = \text{Rs. } 1250.$$

$$\text{Marked price} = \frac{100}{80} \times 1250 = \text{Rs. } 1562.5$$

$$\text{and cost price} = \frac{100}{120} \times 1250 = \text{Rs. } 1041.6$$

when discount is not given :

$$\therefore \text{S.P.} = \text{M.P.} = \text{Rs. } 1562.5$$

$$\therefore \text{Req. profit\%} = \frac{520.9}{1041.6} \times 100 = 50.09\%$$

S200. Ans.(c)
Sol.

Let the distance to be travelled by d km.

$$\therefore \frac{d}{10} - \frac{d}{12} = 2$$

$$d = \frac{10 \times 12 \times 2}{2} = 120 \text{ km.}$$

$$\text{Now, time} = \frac{120}{10} = 12 \text{ hour (when he reaches at 11 am)}$$

$$\therefore \text{Speed required to each at 10 am} = \frac{120}{11} = 10 \frac{10}{11} \text{ km/h.}$$

S201. Ans.(b)
Sol.

$$\text{HCF} = 3 \times 2^3 = 6 \times 2^2$$

S202. Ans.(d)
Sol.

$$\text{Third proportional} = \frac{15 \times 15}{9}$$

$$= 25$$

S203. Ans.(b)
Sol.

$$\text{Difference} = \text{principal} \left(\frac{R}{100} \right)^2$$

$$25 = 625 \left(\frac{x}{100} \right)^2$$

$$\left(\frac{1}{5} \right)^2 = \left(\frac{x}{100} \right)^2$$

$$x = 20$$

S204. Ans.(a)
Sol.

$$\frac{(3)^{16x} \times (3)^{3x} \times (3)^{14}}{3^6} = 3^9$$

$$\therefore 3^{(16x+3x+14)-6x-12} = 3^9$$

$$13x = 7$$

$$x = \frac{7}{13}$$

S205. Ans.(c)

Sol.

$$\text{Speed} = 5 - 3 = 2 \text{ km/hr.}$$

$$\text{Time} = \frac{12}{2} = 6 \text{ hr.}$$

S206. Ans.(a)

Sol. LCM of 273, 315, 336 = 27

Hence, minimum capacity of container required is 27 lit.

S207. Ans.(a)

Sol.

CP of 7 books = SP of 5 books

$$\frac{CP}{SP} = \frac{5}{7}$$

$$\text{Hence, Profit per cent} = \frac{2}{5} \times 100 = 40\%$$

S208. Ans.(a)

Sol.

$$\frac{2}{3} : \frac{3}{5} : \frac{5}{2}$$

$$\text{LCM of } 3, 5, 2 = 30$$

$$2 \times 10 : 3 \times 6 : 5 \times 15$$

$$\therefore \frac{A}{B} : \frac{B}{C} : \frac{C}{A} = 20 : 18 : 75$$

S209. Ans.(c)

Sol.

Ratio of salaries $\rightarrow A : B : C = 2 : 3 : 5$

$A \rightarrow 2x, B \rightarrow 3x, C \rightarrow 5x$

$$A + 15\% \text{ of } A = 2x + \frac{15 \times 2x}{100} = \frac{46x}{10}$$

$$B + 10\% \text{ of } B = 3x + \frac{10 \times 3x}{100} = \frac{33x}{10}$$

$$C + 20\% \text{ of } C = 5x + \frac{20 \times 5x}{100} = 6x$$

\downarrow multiply by 20

$$46x : 66x : 120x \Rightarrow 23x : 33x : 60x \Rightarrow 23 : 33 : 60$$

S210. Ans.(a)

Sol.

Here, profit = loss (i)

\Rightarrow Here, profit = $(SP)_1 - (CP)$

And, Loss = $(CP) - (SP)_2$

Now putting these values in (i)

$$(SP)_1 - (CP) = (CP) - (SP)_2$$

$$CP = \frac{(SP)_1 + (SP)_2}{2} = Rs \frac{1630 + 1320}{2} = Rs 1475$$

S211. Ans.(a)

Sol.

Total number's divisible by 5 less than 1000 are.

Less the 1000 no divisible is 995

$$= \frac{995}{5} = 199$$

Total number's divisible by 7 less than 1000 are.

$$= \frac{994}{7} = 142$$

Total number's divisible by 35 less than 1000 are.

$$= \frac{980}{35} = 28$$

28 number's repeated two times

A.T.Q =

$$199 + 142 - (28)2$$

$$= 285$$

S212. Ans.(a)

Sol.

We know $a + b + c = 0$

$$a^3 + b^3 + c^3 = 3abc$$

$$a = 0.37, b = .41, c = -.78$$

$$\frac{0.74 \times 1.23 \times 0.13}{(0.37)^3 + (0.41)^3 - (0.78)^3} = \frac{-1}{3}$$

S213. Ans.(d)

Sol.

LCM of 2, 3, 4, 5, 6 and 7 is 420.

A.T.Q

$$420 \times 5 + 1$$

2101 is the least number of 4 digits

When divided by 2, 3, 4, 5, 6 and 7

Leaves a remainder 1.

Sum of digits.

$$2 + 1 + 0 + 1 = 4.$$

S214. Ans.(c)

Sol.

A B

7 : 5

Avg.

$$5x : 6x$$

A.T.Q

$$\frac{35x + 30x}{12} = 52$$

$$= \frac{65x}{12} = 52$$

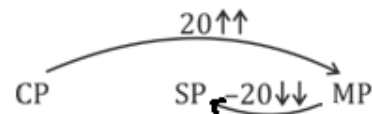
$$x = \frac{48}{5} = 9.6$$

$$\text{avg of } B = 9.6 \times 6$$

$$= 57.6$$

S215. Ans.(d)

Sol.



$$\text{Over all} = \frac{20 \times 20}{100} = -4\%$$

$$4\% = \frac{1}{25} \rightarrow \text{loss}$$

ATQ.

$$24 \rightarrow 180$$

$$25 \rightarrow \frac{180}{24} \times 25$$

$$= \frac{30}{4} \times 25$$

$$= \frac{750}{4} = 187.50$$

S216. Ans.(c)

Sol.

$$\begin{aligned} A &: B \\ 3x &: 5x \\ A + B &: C \\ (3x + 5x) &: 3.2x \\ \text{ATQ,} \\ B - C &= 2x \\ \frac{2x}{3.2x} \times 100 &= 62.5\% \end{aligned}$$

S217. Ans.(b)

Sol.

$$\begin{aligned} A &\rightarrow 4 \rightarrow 20 \\ 5 &\rightarrow 25 \\ B &\rightarrow 3 \rightarrow 15 \\ 4 &\rightarrow 20 \\ A &\rightarrow 25 \left| 100 \right| 4 \\ B &\rightarrow 20 \left| 100 \right| 5 \\ \text{ATQ,} \\ A + B &= 9 \\ 9 \times 10 &= 90 \text{ unit} \\ \text{C's one day work} &= 10 \text{ unit} \\ \text{C's efficiency} &= 10 \text{ unit} \\ B + C &= 15 \rightarrow \text{one day work} \\ 100 \times \frac{3}{4} &= \frac{75}{15} = 5 \text{ days} \end{aligned}$$

S218. Ans.(b)

Sol.

$$\text{Rate for 8 months} = \frac{12}{12} \times 8 = 8\%$$

$$\text{Time} = 1\frac{1}{3} \text{ years} = \text{two 8 monthlies}$$

ATQ,

$$8\% = \frac{2}{25}$$

$$\begin{array}{r} 25 \quad 27 \\ 25 \quad 27 \\ \hline 625 \quad 729 \\ \hline 37500 \quad 60 \quad 104 \quad 6240 \\ \quad \quad \quad \times 60 \end{array}$$

Interest = 6240 Rs.

S219. Ans.(d)

Sol.

$$\begin{aligned} \text{ATQ,} \\ \frac{7}{2} \times 186(x + 2(2 + x)) &= 23110.5 \\ 3x + 4 &= \frac{23110.5}{651} \\ 3x &= 35.5 - 4 \\ x &= \frac{31.5}{3} = 10.5 \\ \text{Rate for 2nd Sum is} &= 10.5 + 2 = 12.5 \end{aligned}$$

S220. Ans.(a)

Sol.

$$\begin{aligned} 75\% &= \frac{3}{4} \\ 300 \quad 100 &= 400 \\ \downarrow \times 24\% \quad \downarrow -40\% \\ 372 \quad + \quad 60 &= 432 \end{aligned}$$

ATQ,

$$\begin{aligned} &= \frac{432 - 400}{400} \times 100 \\ &= 8\% \end{aligned}$$

S221. Ans.(b)

Sol.

$$\begin{aligned} \text{Income } 300 &\xrightarrow{+14\%} 342 \\ \text{expenditure } 200 &\xrightarrow{+20\%} 240 \\ \text{Saving } 100 &\xrightarrow{\quad} 102 \\ \% \text{ Increase in saving} &= \frac{102 - 100}{100} \times 100 \\ &= 2\% \end{aligned}$$

S222. Ans.(a)

Sol.

$$\begin{aligned} \text{ATQ,} \\ 1000 \times \frac{4}{5} &= 800 \\ \frac{800 - 680}{800} \times 100 &= \frac{120}{800} \times 100 \\ x &= 15\% \end{aligned}$$

S223. Ans.(a)

Sol.

$$\begin{aligned} \frac{S_A}{S_B} &= \sqrt{\frac{T_1}{T_2}} \\ S_A &= \sqrt{\frac{405}{245}} \times S_B \\ S_A &= \frac{9}{7} \times 8.4 \\ S_A &= 10.8 \text{ km/h.} \end{aligned}$$

S224. Ans.(c)

Sol.

$$\begin{aligned} \frac{140 \times 60}{100} &= 84 \\ \frac{70 \times 80}{100} &= 56 \\ \% \text{ of remaining equations} &= \frac{84 - 56}{60} \times 100 \\ &= \frac{28}{60} \times 100 \\ &= 46\frac{2}{3}\% \end{aligned}$$

S225. Ans.(c)

Sol.

$$\begin{aligned} \text{Speed of train} &= 45 \times \frac{5}{18} \\ &= 12.5 \text{ m/sec.} \\ \text{A.T.Q,} \\ &= \frac{212 + 188}{12.5} \\ &= \frac{400}{12.5} = 32 \text{ sec.} \end{aligned}$$

S226. Ans.(d)

Sol. Avg. of 1st four number = 78

Total sum more than net avg.

$$4(78 - 68) = +40 \dots(i)$$

Avg. of next four number = 63

Total sum less than net avg. =

$$4(63 - 68) = -20 \dots(ii)$$

From (i) and (ii)

Sum of 9th, 10th and 11th number is

$$= 68 \times 3 - 20$$

$$= 204 - 20$$

$$= 184$$

A.T.Q

$$9^{\text{th}} 10^{\text{th}} 11^{\text{th}}$$

$$2x + x - 4x$$

$$2x + x - 4x = 184$$

$$4x - 4 = 184$$

$$4x = 188$$

$$x = 47$$

Avg. of 9th and 11th number is

$$\frac{94 + 47}{2} = 70.5$$

S227. Ans.(a)

Sol.

$$A \rightarrow 30 \quad \left| \begin{array}{c} 120 \\ 4 \end{array} \right.$$

$$B \rightarrow 24 \quad \left| \begin{array}{c} 120 \\ 5 \end{array} \right.$$

$$\frac{120 - 9 \times 10}{5} = \frac{30}{5} = 6 \text{ days}$$

S228. Ans.(a)

Sol.

Let $x = 3$

$$\Rightarrow \frac{20-3}{37-3} = \frac{54-3}{105-3}$$

$$\Rightarrow \frac{17}{34} = \frac{51}{102} \Rightarrow \frac{1}{2} = \frac{1}{2}$$

$$7x - 5 \Rightarrow (7 \times 3) - 5 = 16 \dots(i)$$

$$x + 1 \Rightarrow 3 + 1 = 4$$

mean proportional between 16 and 4 $\Rightarrow 8$

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S229. Ans.(a)

Sol.

H.C.F of difference of 3738, 5659 and 9501

$$\begin{array}{r} 3738 \\ 5659 \\ 9501 \end{array} \rightarrow \begin{array}{l} 1921 \\ 3842 \end{array} \rightarrow 1921$$

$$x = 1921$$

$$y = 3738 - 1921$$

$$= 1817$$

$$x + y = 3738.$$

S230. Ans.(c)

Sol.

$$\frac{60}{100}(x - y) = \frac{45}{100}(x + y)$$

$$4(x - y) = 3(x + y)$$

$$4x - 4y = 3x + 3y \Rightarrow \frac{x}{y} = \frac{7}{1} \dots(i)$$

$$y = \frac{K}{100} \times x \text{ (given)}$$

$$K = \frac{100}{7} \text{ (by putting value of } x \text{ and } y)$$

$$21\% \text{ of } K = \frac{100}{7} \times \frac{21}{100} = 3$$

S231. Ans.(c)

Sol.

$$\text{Rate} = \frac{3630 - 3300}{3300} \times 100 = 10\%$$

$$\text{Amount} = \frac{3300 \times 100}{11} = 30000$$

$$\text{Interest of 2 year} = 3000 + 3300 = 6300$$

$$\text{Interest of next } \frac{1}{2} \text{ year} = 36300 \times \frac{5}{100} = 1815$$

$$\text{Amount} = 30000 + 6300 + 1815 = 38115$$

S232. Ans.(a)

Sol.

$$A \rightarrow 6 \quad \left\{ \begin{array}{l} 8 \\ 48 \end{array} \right.$$

$$B \rightarrow 16 \quad \left\{ \begin{array}{l} 3 \\ 48 \end{array} \right.$$

$$A + B = 11$$

A.T.Q.

Time when all tap are open

$$80 \text{ minute} = \frac{4}{3} \text{ hr.}$$

A.T.Q.

$$\frac{4}{3} \left(\frac{1}{6} + \frac{1}{16} \right)$$

$$= \frac{11}{36}$$

$$\frac{5}{18} \text{ of tank empty in } \frac{4}{3} \text{ hr.}$$

$$\frac{10}{36} \text{ tank empty in } \frac{4}{3} \text{ hr.}$$

$$A + B \text{ empty } \frac{11}{36} \text{ (tank) in } \frac{4}{3} \text{ hr.}$$

$$\text{Tank fill by C in } \frac{4}{3} \text{ hr.}$$

$$\frac{11}{36} - \frac{10}{36} = \frac{1}{36}$$

$$\frac{1}{36} \text{ part fill in } \frac{4}{3} \text{ hr by C.}$$

$$\text{Complete fill} = \frac{4}{3} \times 36$$

$$= 48 \text{ hr.}$$

S233. Ans.(c)

Sol.

$$1785 \overline{)1995} \underline{1} \\ 210$$

$$210 \overline{)1785} \underline{8} \\ 105$$

$$105 \overline{)210} \underline{2}$$

$$\text{Required Sum} = 1785 + 1995$$

$$= 3780$$

S234. Ans.(d)

Sol.

$$\text{First selling price} = \text{Rs. } 1,134$$

$$\text{C.P} = 1,134 \times \frac{100}{90} \Rightarrow 1260$$

$$\text{New profit \%} = \frac{1354.50 - 1260}{1260} \times 100$$

$$= 7.5\%$$

S235. Ans.(c)

Sol.

$$\left(\frac{10}{3} - \frac{5}{2} \right) \div \frac{1}{4} \text{ of } \frac{5}{4} \text{ of } \frac{4}{15} \div \frac{1}{3} \div \frac{1}{27}$$

$$= \frac{\frac{10}{3} + \frac{1}{18}}{\frac{5}{6} + \frac{1}{16}} \text{ of } \frac{4}{15} \div \frac{9}{2}$$

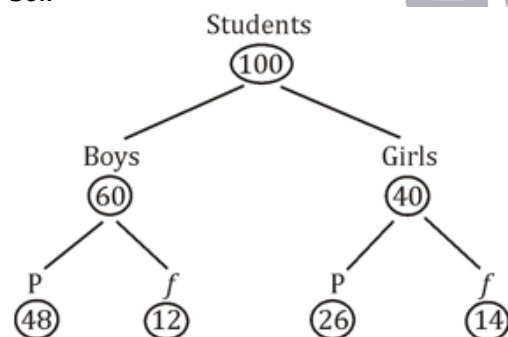
$$= \frac{\frac{8}{32}}{\frac{90}{90}} \text{ of } \frac{4}{15} \div \frac{81}{2}$$

$$= \frac{15}{2} \text{ of } \frac{4}{15} \div \frac{81}{2} \Rightarrow 2 \times \frac{2}{81}$$

$$= \frac{4}{81}$$

S236. Ans.(c)

Sol.



$$\text{Percentage of passed students} = \frac{74}{100} \times 100 = 74\%$$

S237. Ans.(a)

Sol.

$$\begin{array}{l} A = 30 \\ B = 45 \\ C = 90 \end{array} \begin{array}{l} \searrow \\ \searrow \\ \searrow \end{array} \begin{array}{l} 3 \\ 2 \\ 1 \end{array}$$

$$\text{Work done in first 3 days} = 3 + 3 + (3 + 2 + 1) = 12 \text{ units}$$

$$\text{Work done in 21 days} = 84 \text{ unit}$$

$$\text{Work done in 23 days} = 90 \text{ unit}$$

S238. Ans.(d)

Sol.

$$\text{Total score of students} = 69 \times 42$$

$$\begin{array}{ccc} B & G & \\ 10 & : & 11 \end{array} \quad 20\% = \frac{1}{5}$$

$$1.2x \quad x$$

$$\text{Net avg.} = \frac{12x + 11x}{21}$$

$$\frac{23x}{21} = 69$$

$$x = 63$$

$$\text{Avg. of boys} = 1.2 \times 63$$

$$= 75.6$$

S239. Ans.(d)

Sol.

$$7650 = \frac{10500 \times x \times 3}{100} + \frac{13500 \times x \times 3}{100} + \frac{13500 \times 2 \times 3}{100}$$

$$6840 = 240x \times 3$$

$$\Rightarrow x = 9.5\%$$

S240. Ans.(c)

Sol.

$$A : B : C$$

$$\text{First 3 month :- } 4 : 2 : 9$$

$$\text{Next 3 month :- } 2 : 4 : 9$$

$$\text{Next 3 month :- } 1 : 8 : 9$$

$$\text{Next 3 month :- } 0.5 : 16 : 9$$

$$\text{After 1 year} \Rightarrow 7.5 : 30 : 36$$

$$\text{Ratio} \Rightarrow 5 : 20 : 24 \Rightarrow \text{Total} = 49$$

$$A's \text{ profit} = \frac{24000}{5} = 4800, \text{ So, Total profit} \Rightarrow 4800 \times 49$$

$$= \text{Rs. } 2,35,200$$

S241. Ans.(d)

Sol.

$$\text{Let the no.} \Rightarrow (7306 - 6454), (8797 - 7306), (8797 - 6454)$$

$$\Rightarrow 852, 1491, 2343$$

$$(d) \text{ HCF of } 852, 1491 \text{ and } 12343 = 213$$

$$\text{So, } r = 64$$

$$d - r = 213 - 64 = 149$$

S242. Ans.(b)

Sol.

$$\text{Price after 20\% discount} = \frac{250 \times 4}{5} = 200 \text{ Rs.}$$

$$2^{\text{nd}} \text{ discount} = 14.4 \text{ Rs.}$$

$$\text{discount \%} = \frac{14.4 \times 100}{200} = 7.2\%$$

S243. Ans.(d)

Sol.

	Train A	Train B
Speed	$x - 16$	x
Time	T	$T - 4$

$$\frac{384}{x - 16} - \frac{384}{x} = 4$$

$$\left(\frac{1}{x - 16} - \frac{1}{x} \right) = \frac{1}{96}$$

$$\frac{x + 16 - x}{(x - 16)x} = \frac{1}{96}$$

$$16 \times 96 = (x - 16) \times x$$

$$x = 48$$

$$48 \times 32 = 48 (32)$$

S244. Ans.(a)

Sol.

Let the income $\rightarrow 100$

Saving $\rightarrow 25$

Exp. $\rightarrow 75$.

New income = 120, New exp. = 95

Required % = $\frac{20}{75} \times 100 = 26\frac{2}{3}\%$

S245. Ans.(d)

Sol.

$$\frac{(0.13)^2 + (0.21)^2}{(0.39)^2 + 81(0.07)^2} \div \frac{(2.4)^4 + 3 \times (11.52) + 9}{(2.4)^6 + 6(2.4)^4 + 3 \times (17.28)}$$

$$= \frac{0.0169 + 0.0441}{0.1521 + 0.3969} \div \frac{33.1776 + 34.56 + 9}{191.102976 + 199.0656 + 51.84}$$

$$= \frac{0.061}{0.549} \times \frac{44.008576}{78.7376} \Rightarrow 0.637$$

Option (d) 0.6 and 0.7

S246. Ans.(d)

Sol.

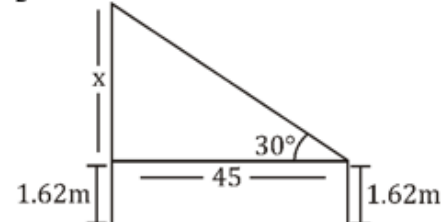
LCM of 8, 9, 12, 14, 36 $\rightarrow 504$

The number = $\frac{504k+4}{11} \Rightarrow K = 2 \Rightarrow 1012 = 4$.

S247. Ans.(c)

Sol.

$$\frac{h}{B} = \tan 30^\circ$$



$$\frac{x}{45} = \frac{1}{\sqrt{3}}$$

$$x = \frac{45}{\sqrt{3}}$$

$$x = 25.98$$

$$\text{total height of pole} = 25.98 + 1.62$$

$$= 27.6 \text{ m}$$

S248. Ans.(a)

Sol.

$$\begin{array}{ccc} 5 & : & 3 \\ \times 2 & & \times 2 \\ \hline 10 & : & 11 \end{array}$$

5unit 10 liter

$$1\text{unit} = 2 \text{ liter}$$

$$\text{Required quantity} = 21 \times 2 = 42 \text{ liter}$$

S249. Ans.(b)

Sol.

Total number of female employees = 105

70% = 105 (given)

$$\text{Total number of employees} = \frac{105}{70} \times 100 \Rightarrow 150$$

$$80\% \text{ got promotion} = 150 \times \frac{80}{100} \Rightarrow 120$$

$$\text{No. of female employees got promotion} \Rightarrow 120 - 85 \Rightarrow 35$$

$$\text{Required percentage} = \frac{35}{105} \times 100 \Rightarrow 33\frac{1}{3}\%$$

S250. Ans.(c)

Sol.

$$\text{ATQ, } \frac{6}{18} + \frac{2 \times 6}{45} = \frac{x}{12} \Rightarrow \frac{1}{3} + \frac{4}{15} = \frac{x}{12}$$

$$\frac{9}{5} = \frac{x}{4} \quad x = \frac{36}{5} = 7\frac{1}{5}$$

S251. Ans.(c)

Sol.

$\frac{10}{9} \rightarrow$ Marked price
 $\frac{9}{10} \rightarrow$ Selling price (discount of 10% allowed)

$$\text{Profit} \Rightarrow \frac{125}{100} \Rightarrow \frac{5}{4}$$

C.P	S.P	M.P
	9x5	10x5
4x9	5x9	
36	45	50

After offering 25% discount on marked price

$$\text{S.P} = 50 \times \frac{75}{100} \Rightarrow 37.5$$

$$\text{Profit} \Rightarrow 37.5 - 36 = 1.5$$

$$\text{Profit\%} \Rightarrow \frac{1.5}{36} \times 100 \Rightarrow 4\frac{1}{6}\%$$

S252. Ans.(c)

Sol.

$$\text{Given } \frac{4-3+2 \times (4-2)-3+4 \times 3+2+4}{4+3+4 \times (2-4) \times 4+3+4 \text{ of } 3}$$

$$\Rightarrow \frac{4-\frac{8}{2} \times 2-3+4 \times \frac{8}{2}+4}{4+\frac{8}{4} \times (-2) \times 4+\frac{8}{12}} \Rightarrow \frac{4-6+6+4}{4-6+\frac{1}{4}} = \frac{8 \times 4}{-7} = \frac{-32}{7}$$

S253. Ans.(b)

Sol.

Let the number = x

$$\frac{2}{3} \times \frac{3}{4} \times \frac{x}{8} = 179$$

$$x = 179 \times 16$$

A.T.Q.

$$\frac{1}{3} \times \frac{3}{4} \times 179 \times 16$$

$$= 716$$

S254. Ans.(b)

Sol.

$$A : B : C$$

$$2 : 1 : 3$$

$$\text{Total work} = 5 \times 6 = 30 \text{ Unit}$$

$$\text{A and C completed} = 5 \times 5 = 25 \text{ Unit}$$

$$\text{Required days} = \frac{5}{1} = 5 \text{ days}$$

S255. Ans.(d)

Sol.

$$538xy$$

Check by options $(x^2 + y^2)$

(a) $\rightarrow 3, 1$ when we put it is not divisible by 3

(b) $\rightarrow 4, 1$ divisible by 11 not possible

(c) $\rightarrow 3, 4 \rightarrow$ divisibility by 3 is not satisfied

(d) $\rightarrow 2, 3 \rightarrow$ it is satisfied all conditions.

$$\text{Put } x = 2, y = 3$$

$$x^2 + y^2 = 4 + 9$$

$$= 13$$

S256. Ans.(a)

Sol.

$$\begin{aligned} & \sqrt{6 - \sqrt{17 - 2\sqrt{72}}} \\ &= \sqrt{6 - \sqrt{(3 - 2\sqrt{2})^2}} \\ &= \sqrt{6 - 3 + 2\sqrt{2}} \\ &= \sqrt{3 + 2\sqrt{2}} \\ &= \sqrt{(\sqrt{2} + 1)^2} \\ &= \sqrt{2} + 1 \\ &= 1.414 + 1 \\ &= 2.4 \end{aligned}$$

S257. Ans.(b)

Sol.

Let the number = x

$$\frac{2}{3} \times \frac{3}{4} \times \frac{x}{8} = 179$$

$$x = 179 \times 16$$

A.T.Q.

$$\begin{aligned} & \frac{1}{3} \times \frac{3}{4} \times 179 \times 16 \\ &= 716 \end{aligned}$$

S258. Ans.(b)

Sol.

$$5000 \quad 7200$$

$$25 \times 4 : 36 \times 4$$

$$100 : 144$$

$$\xrightarrow{20\%} \xrightarrow{20\%}$$

4 year → 4 year

Make two slot of 4 years

Rate = 20%

A.T.Q.

$$\begin{array}{c} 5 : 6 \\ \swarrow \quad \searrow \\ 1 \rightarrow 1310 \\ \swarrow \\ 6550 \end{array}$$

Compound interest on sum is 1310

S259. Ans.(c)

Sol.

$$\begin{array}{c} (A + B) \rightarrow 16 \\ \quad \quad \quad \searrow \quad \swarrow \\ \quad \quad \quad 48 \\ \quad \quad \quad \swarrow \quad \searrow \\ C \rightarrow 24 \end{array}$$

$$A + B + C = +1 \text{ unit}$$

$$(A + B) 10 = 3 \times 10$$

$$= 30 \text{ unit}$$

$$C \text{ alone empty} = \frac{30}{2} = 15 \text{ hours.}$$

S260. Ans.(b)

Sol.

$$2\sin\theta + 15(1 - \sin^2\theta) = 7$$

$$2\sin\theta - 15\sin^2\theta = -8$$

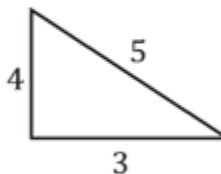
$$15\sin^2\theta - 2\sin\theta - 8 = 0$$

$$15\sin^2\theta + 10\sin\theta - 12\sin\theta - 8 = 0$$

$$5\sin\theta(3\sin\theta + 2) - 4(3\sin\theta + 2) = 0$$

$$5\sin\theta = 4, \quad 3\sin\theta = -2$$

$$\sin\theta = \frac{4}{5}$$



$$\sin\theta = \frac{4}{5}$$

$$\tan\theta = \frac{4}{3}$$

A.T.Q.

$$\begin{aligned} \frac{3 - \frac{4}{3}}{2 + \frac{4}{3}} &= \frac{\frac{5}{3}}{\frac{10}{3}} \\ &= \frac{1}{2} \end{aligned}$$

S261. Ans.(d)

Sol.

$$\begin{array}{lcl} \text{A} & 3 \times 5 & = 15 \\ \text{B} & \frac{10 \times 5}{2} & = 25 \\ \text{C} & \frac{15}{3} \times 4 & = 20 \end{array}$$

Diagram showing a tree structure for the value 300:

```

    15 --- 20 --- 300
    |      |
    20     12
    |      |
    15     15
  
```

Work done in 6 days. $47 \times 6 = 282$

$$\text{Required number of days} = \frac{300 - 282}{12} = 1\frac{1}{2} \text{ days}$$

S262. Ans.(c)

Sol.

A	B	C	D
7	5		
	2	5	
		8	5
112	80	200	125

$$\frac{D-B}{D} \times 100 = \frac{45}{125} \times 100 = 36\%$$

S263. Ans.(a)

Sol.

LCM of 4, 5, 6, 7, 8 and 12 = 840

Required Number = $840K + 2$

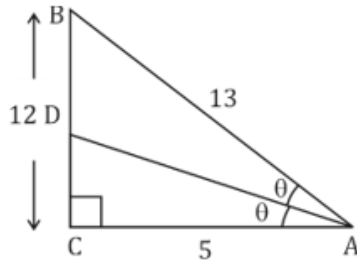
Put $K = 1 = \frac{842}{13}$ not divisible

Put $k = 3 = \frac{840 \times 3 + 2}{13} = \text{divisible}$

The required number = 2522 \Rightarrow sum of digits = 11.

S264. Ans.(c)

Sol.



$$CD = 12 \times \frac{5}{18} = \frac{10}{3}$$

$$(AD)^2 = 25 + \frac{100}{9} = \frac{325}{9} = \frac{5\sqrt{13}}{3}$$

S265. Ans.(d)

Sol.

$$\text{Price After 1st discount} = \frac{800 \times 3}{4} = 600$$

$$\text{second discount} = \frac{60}{600} \times 100 = 10\%$$

S266. Ans.(d)

Sol.

A	:	B	:	C
112000×12	:	$80000 \times 10 - 8000 \times 2$:	$72000 \times 8 - 8000 \times 2$
112000×12	:	784000.	:	560000
112×3	:	196	:	140
12	:	7	:	5

$$\text{Total profit} = \frac{9800}{7} \times 24 = 33600$$

S267. Ans.(a)

Sol.

Let profit = x

$$\text{ATQ, } 4x = 400, x = 100$$

$$\text{Cost price} = 800 \quad \text{Required S.P.} = \frac{9}{8} \times 800 = 900$$

S268. Ans.(a)

Sol.

$$\text{ATQ. } \frac{4x+14}{5x+14} = \frac{5}{6} \Rightarrow x = 14$$

Age after 5 years = 78 and 82

Required Ratio = 34 : 41

S269. Ans.(b)

Sol.

$$\text{Upstream speed} = \frac{15 \times 2}{4 \times 3} = 2.5 \text{ km/hr.}$$

Downstream speed = 6.5 km/hr.

$$\text{Speed in still water} = \frac{6.5 + 2.5}{2} = 4.5 \text{ km/hr}$$

$$\text{Required Time} = \frac{90}{4.5} = 20 \text{ hour}$$

S270. Ans.(a)

Sol.

$$\text{Required sum} = \frac{9200}{25} \times 100 = 36800$$

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