100 + Numerical Aptitude & Elementary Mathematics MCQs

Q1. A sum becomes Rs 2286 in 3 years and Rs 2448 in 4 years at simple interest. What is the rate (in percentage) of interest per annum?
(a) 10
(b) 9
(c) 8
(d) 11

Q2. Selling price of a fan is Rs 4644. If profit percentage is 29%, then what is the cost price (in Rs) of fan?
(a) 5900
(b) 3500
(c) 3800
(d) 3600

Q3. The marked price of a helmet is 30% more than its cost price. If the helmet is sold for Rs 744 after a discount of Rs 36, then what will be the profit percentage?
(a) 24
(b) 18
(c) 21
(d) 27

Q4. S, T and U together can complete a work in 30 days. If the ratio of efficiency of S, T and U is 20 : 15 : 12 respectively, then in how many days U alone can complete the same work?
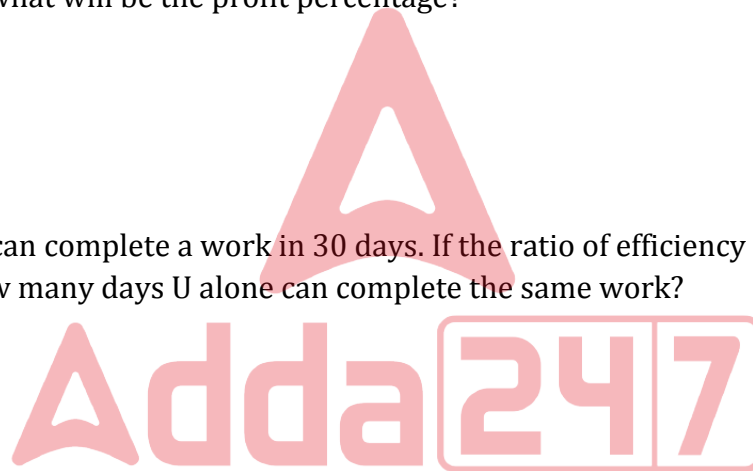(a) 195/2
(b) 235/2
(c) 225/2
(d) 215/2

Q5. A train is moving at the speed of 90 km/hr. How many seconds it will take to cover a distance of 2275 meter?
(a) 96
(b) 91
(c) 86
(d) 93

Q6. Length and breadth of a rectangle are increased by 40% and 70% respectively. What will be the percentage increase in the area of rectangle?
(a) 118
(b) 110
(c) 138
(d) 128

Q7. U and V started a business by investing amounts Rs 184000 and Rs 224000 respectively. If U's share in the profit received at the end of year is Rs 20700, then what will be the total profit (in Rs) earned by them together?
(a) 43200
(b) 45900
(c) 52300
(d) 56400

Q8. Calculate the value of $\frac{(61681 \times 61681 - 31681 \times 31681)}{30000}$
(a) 93352
(b) 94362
(c) 93362
(d) 95362

Q9. The marked price of a chair is 40% more than its cost price. If the chair is sold for Rs 520 after a discount of Rs 40, then what will be the profit percentage?
(a) 33
(b) 40
(c) 25
(d) 30

Q10. Which of the following statement(s) is/are TRUE?
I. $2\sqrt{3} > 3\sqrt{2}$
II. $4\sqrt{2} > 2\sqrt{8}$
(a) Only I
(b) Only II
(c) Neither I nor II
(d) Both I and II

Q11. A missile travels at 1260 km/h. How many metres does it travel in one second?
(a) 322 metres
(b) 369 metres
(c) 384 metres
(d) 350 metres

Q12. A shopkeeper, sold almonds at the rate Rs 1250 per kg and bears a loss of 7%. Now if he decides to sell it at Rs 1375 per kg, what will be the result?
(a) 4.6 percent gain
(b) 2.3 percent loss
(c) 2.3 percent gain
(d) 4.6 percent loss

Q13. Madhur works 2 times faster than Sagar. If Sagar can complete a job alone in 18 days, then in how many days can they together finish the job?
(a) 5 days
(b) 2 days
(c) 6 days
(d) 4 days

Q14. The bus fare between two cities is increased in the ratio 11:18. What would be the increase in the fare, if the original fare is Rs 550?
(a) Rs 350
(b) Rs 900
(c) Rs 180
(d) Rs 360

Q15. If $xy = 22$ and $x^2 + y^2 = 100$, then what will be the value of $(x + y)$?
(a) 12
(b) 144
(c) 72
(d) 6

Q16. Two students appeared for an examination. One of them secured 20 marks more than the other and his marks were 55% of the sum of their marks. The marks obtained by them are
(a) 92 and 72
(b) 83 and 63
(c) 110 and 90
(d) 64 and 44

Q17. 25% discount is offered on an item. By applying a promo code the customer wins 8% cash back. What is the effective discount?
(a) 35.75 percent
(b) 35 percent
(c) 31 percent
(d) 12.5 percent

Q18. Prabhat has done 1/2 of a job in 12 days. Santosh completes the rest of the job in 6 days. In how many days can they together do the job?
(a) 12 days
(b) 4 days
(c) 8 days
(d) 16 days

Q19. x and y are two numbers such that their mean proportion is 16 and third proportion is 128. What is the value of x and y?
(a) 8 and 16
(b) 16 and 32
(c) 8 and 32
(d) 16 and 16

Q20. In the first 32 overs of a cricket match, the run rate was 7.2 runs/over. What is the required run rate in the remaining 18 overs to reach the target of 297 runs?
(a) 4.3
(b) 4.9
(c) 3.1
(d) 3.7

Q21. The difference between simple and compound interests compounded annually on a certain sum of money for 2 years at 16% per annum is Rs 320. What is the value of given sum (in Rs)?
(a) 25000
(b) 50000
(c) 37500
(d) 12500

Q22. Of the 5 numbers whose average is 76, the first is 3/7 times the sum of other 4. The first number is
(a) 171
(b) 114
(c) 76
(d) 228

Q23. If (36 - 16x) - (4x - 8) = 4, then the value of x is
(a) 4
(b) 2
(c) 6
(d) 3

Q24. Marked price of an item is Rs 400. On purchase of 1 item discount is 6% and on purchase of 4 items discount is 24%. Rachita buys 5 items, what is the effective discount?
(a) 34 percent
(b) 20.4 percent
(c) 12.8 percent
(d) 23.25 percent

Q25. 199994 x 200006 = ?
(a) 39999799964
(b) 39999999864
(c) 39999999954
(d) 39999999964

Q26. Calculate the value of 0.77777 + 0.7777 + 0.777 + 0.77 + 0.7 + 0.07
(a) 3.86274
(b) 3.80247
(c) 3.85274
(d) 3.87247

Q27. A crate of egg holds one rotten egg out of every 25 egg in it. If 5 out of 8 rotten eggs are unusable and there are total 10 unusable eggs in the crate, then calculate the number of eggs in the crate.
(a) 380
(b) 400
(c) 420
(d) 440

Q28. Rs 18200 is divided among X, Y and Z in the ratio of 1/3 : 1/4 : 1/2. What is the share (in Rs) of X ?
(a) 7000
(b) 4400
(c) 4200
(d) 5600

Q29. In what ratio must a mixture of 20% milk strength be mixed with that of 60% milk strength so as to get a new mixture of 25% milk strength ?
(a) 7 : 1
(b) 4 : 1
(c) 5 : 2
(d) 9 : 2

Q30. What is the average of first 39 even numbers ?
(a) 39
(b) 40
(c) 20
(d) 68

Q31. If 31x + 31y = 403, then what is the average of x and y?
(a) 3.5
(b) 5
(c) 6.5
(d) 13

Q32. A sum of Rs 7500 is divided into two parts. The simple interest on first part at the rate of 12% per annum is equal to the simple interest on second part at the rate of 18%. What is the interest (in Rs) on each part for one year?
(a) 600
(b) 360
(c) 480
(d) 540

TEST SERIES
BILINGUAL

BSF
HEAD CONSTABLE
MINISTERIAL

30 TOTAL TESTS
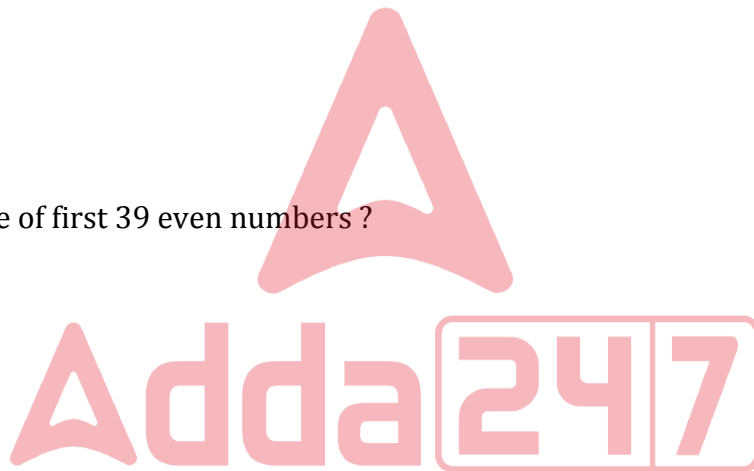
Q33. Selling price of a calculator is Rs 13924 and profit percentage is 18%. If selling price is Rs 10266, then what will be the loss percentage?
(a) 17.2
(b) 13
(c) 14.9
(d) 11

Q34. Rohit wants to earn 21% profit on a belt after offering 45% discount. By how much percentage more should he mark the price of his article above the cost price?
(a) 75.45
(b) 120
(c) 66
(d) 102.5

Q35. What is the value of $\sqrt{513 - \sqrt{144} - \sqrt{81} - \sqrt{64}}$?
(a) 22
(b) 21
(c) 28
(d) 19

Q36. Two taps P and Q can fill a tank in 24 hours and 18 hours respectively. If the two taps are opened at 11 a.m., then at what time (in p.m.) should the tap P be closed to completely fill the tank at exactly 2 a.m.?
(a) 5
(b) 2
(c) 3
(d) 4

Q37. If Anuj walks at the speed of 4 km/hr, then he reaches his school 6 minutes late but if he walks at the speed of 5 km/hr, then he reaches 6 minutes before the scheduled time. What is the distance (in km) of his school from his house?
(a) 4
(b) 3
(c) 6
(d) 3.5

Q38. The average weight of two players P and Q of a football team is 38 kg. The average weight of P, Q and their coach T is 49 kg. What is the weight (in kg) of coach?
(a) 71
(b) 46
(c) 76
(d) 91

Q39. A sum of Rs 1200 amounts to Rs 1740 in 3 years at simple interest. If rate of interest is increased by 3%, then what will be the new amount (in Rs.)?
(a) 1848
(b) 1946
(c) 1812
(d) 1924

Q40. If cost price of an article is 75% of its selling price, then what will be the profit percentage?
(a) 23.47
(b) 25
(c) 33.33
(d) 20

Q41. The average age of a Royal family of 6 members 4 year ago was 25 years. Meanwhile a child was born in this family and still the average age of the whole family is same today. The present age of the child is:
(a) 2 years
(b) 11/2 years
(c) 1 year
(d) data insufficient

Q42. There were five sections in BOM Banking Exam paper. The average score of Pallavi in first 3 sections was 83 and the average in the last 3 sections was 97 and the average of all the sections (i.e., whole paper) was 92, then her score in the third section was:
(a) 85
(b) 92
(c) 80
(d) 90

Q43. Sahnaaz spends ¾ of his salary. Now his salary increased by 20% and his expenditure is increased by 10%. Find out the percentage increment in his savings?
(a) 75%
(b) 25%
(c) 50%
(d) Can't be determined

Q44. X's salary is 20% less of y's. Now find out how much percent y's salary is more than that of x's salary.
(a) 20%
(b) 40%
(c) $16\frac{1}{6}\%$
(d) 25%

Q45. A man earn x% on the first Rs. 2000 and y% on the rest of his income. If he earns Rs. 700 from Rs. 4000 and 900 from Rs. 5000 of income. How much he earn in the income of Rs. 11000.
(a) 2400 Rs.
(b) 2300 Rs.
(c) 2200 Rs.
(d) 2100 Rs.

Q46. The number that must be added to each of the numbers 8, 21, 13 and 31 to make the ratio of first two numbers equal to the ratio of last two numbers is:
(a) 5
(b) 9
(c) 7
(d) None of these

Q47. The incomes of A and B are in the ratio 3: 2 and their expenditures in the ratio 5: 3. If each saves Rs. 1000, A's income is:
(a) Rs. 5000
(b) Rs. 6000
(c) Rs. 8000
(d) None of these

Q48. The ratio of the number of students studying in schools A, B and C is 6: 8: 7 respectively. If the number of students studying in each of the schools is increased by 20%, 15% and 20% respectively, what will be the new ratio of the number of students in Schools A, B and C?
(a) 18 : 23 : 21
(b) 12 : 18: 1
(c) 18 : 21 : 17
(d) Cannot be determined

Q49. A sells a tube to B at a profit of 25% and B sells it to C at profit of 20%. If C pays Rs 450 for it, what did A pay for it?
(a) Rs 240
(b) Rs 247.5
(c) Rs 300
(d) Rs 500

Q50. A property dealer sells a house for Rs. 6,30,000 and in the bargain, makes a profit of 5%. Had he sold it for Rs. 5,00,000, then what percentage of loss or gain he would have made?
(a) $2\frac{1}{4}$ % loss
(b) 10% loss
(c) $12\frac{1}{2}\%$ loss
(d) $16\frac{2}{3}\%$ loss

Q51. If a merchant offers a discount of 20% on the list price, then she makes a loss of 16%. What % profit or % loss will she make if she sells goods at a discount of 10% of the list price?
(a) 14 percent profit
(b) 20 percent profit
(c) 50 percent profit
(d) 5.5 percent loss

Q52. The sum of all prime numbers between 30 and 42 is
(a) 103
(b) 109
(c) 105
(d) 104

Q53. The value of x for which the expressions 12 - 6x and 4x + 2 become equal is
(a) 0
(b) 2
(c) 1
(d) 4

Q54. To travel 816 km, an Express train takes 9 hours more than Rajdhani. If however, the speed of the Express train is doubled, it takes 4 hours less than Rajdhani. What is the speed of Rajdhani?
(a) 48 km/hr
(b) 62.8 km/hr
(c) 33.2 km/hr
(d) 77.5 km/hr

Q55. If $4pxy = (x + 2y)^2 - (x - 2y)^2$, then what will be the value of p?
(a) 0.5
(b) 0.25
(c) 4
(d) 2

Q56. In the first 26 overs of a cricket match, the run rate was 5.4 runs/over. What is the required run rate in the remaining 24 overs to reach the target of 294 runs?
(a) 7
(b) 6.4
(c) 7.6
(d) 5.8

Q57. Find two numbers whose sum is 29 and the product is 100.
(a) 20, 5
(b) 20, 9
(c) 25, 4
(d) 10, 10

Q58. A laborer can do a job in 50 hours. After 5 hours he takes a break. What fraction of the job is yet to be done?
(a) 0.8
(b) 0.5
(c) 0.75
(d) 0.9

Q59. In an army selection process, the ratio of selected to unselected candidates was 6:1. If 30 less had applied and 10 less selected, the ratio of selected to unselected would have been 7:1. How many candidates had applied for the process?
(a) 910
(b) 1820
(c) 455
(d) 2730

Q60. Ticket for an adult is Rs 1600 and a child is Rs 1200. 1 child goes free with two adults. If a group has 23 adults and 10 children what is the discount the group gets?
(a) 25.95 percent
(b) 24.59 percent
(c) 25.77 percent
(d) 31.60 percent

Q61. A shopkeeper by selling 17 Omega watches earns a profit equal to the selling price of 7 Omega watches. What is his profit percentage?
(a) 41.1 percent
(b) 82.2 percent
(c) 70 percent
(d) 12.2 percent

Q62. The mean of marks secured by 30 students in division-A of class X is 67, 55 students of division-B is 63 and that of 40 students of division-C is 61. What is the mean of marks of the students of three divisions of Class X?
(a) 63.32
(b) 62.62
(c) 61.92
(d) 64.72

Q63. At what rate of compound interest per annum will a sum of Rs 50000 become Rs 73205 in 2 years?
(a) 21 percent
(b) 19 percent
(c) 17 percent
(d) 15 percent

Q64. A bag has Rs 30.8 in the form of 1 rupee, 50 paise and 10 paise coins in the ratio of 6:3:2. What is the number of 50 paise coins?
(a) 8
(b) 24
(c) 12
(d) 4

Q65. Two students appeared for an examination. One of them secured 13 marks more than the other and his marks were 76% of the sum of their marks. The marks obtained by them are
(a) 19 and 6
(b) 34 and 21
(c) 102 and 89
(d) 92 and 79

Q66. What least number must be added to 1039, so that the sum obtained is completely divisible by 29?
(a) 4
(b) 5
(c) 8
(d) 6

Q67. If a merchant offers a discount of 4% on the list price, then she makes a loss of 10%. What % profit or % loss will she make if she sells at a discount of 20% of the list price?
(a) 25 percent loss
(b) 4 percent loss
(c) 50 percent profit
(d) 26 percent profit

Q68. Raj sells a machine for Rs 51 lakhs at a loss. Had he sold it for Rs 60 lakh, his gain would have been 8 times the earlier loss. What is the cost price of the machine?
(a) Rs 59 lakhs
(b) Rs 52 lakhs
(c) Rs 66.375 lakhs
(d) Rs 45 lakhs

Q69. The difference between simple and compound interests compounded annually on a certain sum of money for 2 years at 12% per annum is Rs 72. What is the value of given sum (in Rs)?
(a) 10000
(b) 20000
(c) 5000
(d) 15000

Q70. The average weight of Shivshankar, Gopesh and Reena is 97 kg. If the average weight of Shivshankar and Gopesh is 93 kg and that of Gopesh and Reena is 82 kg, then the weight of Gopesh is
(a) 72
(b) 56
(c) 59
(d) 63

Q71. The population of a town is 300000. It increases annually at the rate of 10%. What will be the population after 2 years?
(a) 360000
(b) 363000
(c) 331000
(d) 366000

Q72. The incomes of X and Y are in the ratio 2 : 3 and their expenditure are in the ratio 3 : 2. If X saves Rs 7000 and Y saves Rs 15000, then what will be the income (in Rs) of X?
(a) 12800
(b) 21400
(c) 12400
(d) 18600

TEST SERIES
BILINGUAL
CISF 2022
ASI (Stenographer) &
HC (Ministerial)
30 TOTAL TESTS

Q73. X starts a business with Rs 40000. After 6 months Y joins X with Rs 50000. After 2 years, what will be the ratio of profit of X and Y?
(a) 16 : 15
(b) 4 : 5
(c) 8 : 9
(d) 14 : 15

Q74. What is the average of all the two digit natural numbers?
(a) 50
(b) 45.5
(c) 54.5
(d) 90

Q75. If the time increases by 6 years, then simple interest increases by Rs. 3600 on a sum of Rs. 6000. What is the rate (in percentage) of interest per annum?
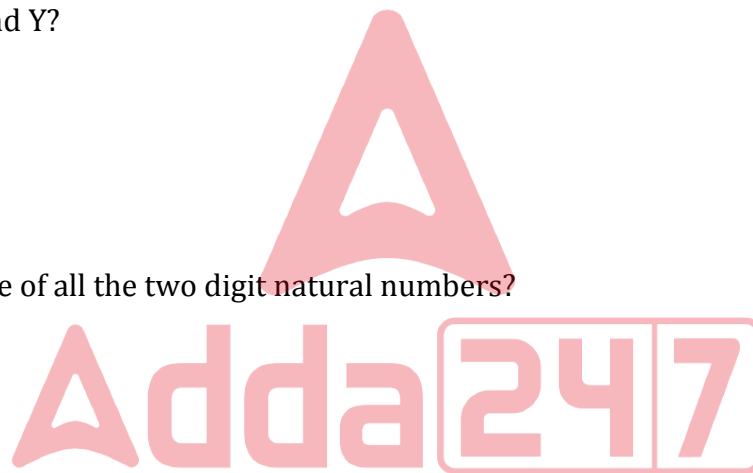(a) 15
(b) 16
(c) 10
(d) 12

Q76. Cost price of an article is Rs. 6000. If the loss percentage is 25%, then what is the selling price (in Rs.) of the article?
(a) 4500
(b) 4450
(c) 4420
(d) 5100

Q77. The marked price of an article is 40% more than its cost price. If the article is sold for Rs 400 after offering a discount of Rs 20, then what will be the profit percentage?

(a) $45\frac{2}{3}$

(b) $33\frac{1}{3}$

(c) $66\frac{1}{3}$

(d) $87\frac{2}{3}$

Q78. What is the value of $\frac{\sqrt{32}+\sqrt{72}}{\sqrt{8}}$?

(a) 8

(b) 4

(c) 5

(d) 10

Q79. A, B and C together can complete a work in 15 days. If the ratio of efficiency of A, B and C is 15 : 10 : 6 respectively, then in how many days C alone can complete the same work?

(a) 427/6

(b) 425/6

(c) 465/6

(d) 445/6

Q80. A boy crosses a 500 metres wide road in 50 seconds. What is his speed (in km/hr)?

(a) 18

(b) 54

(c) 36

(d) 27

Q81. Find the value of $\sqrt[3]{\frac{4096}{1728}}$

(a) 4/3

(b) 3/4

(c) 1/2

(d) 1/3

Q82. The sum of two numbers is 25 and sum of their square is 373. Calculate the numbers.

(a) 15, 10

(b) 18, 7

(c) 11, 14

(d) 12, 13

Q83. The value of $\frac{(0.94)^3+(0.1)^3}{(0.94)^2-0.094+(0.1)^2}$ is :
(a) 0.84
(b) 0.95
(c) 1.94
(d) 1.04

Q84. The correct expression of $7.\overline{47}$ in the fractional form is :
(a) $\frac{747}{99}$
(b) $\frac{74740}{1000}$
(c) $\frac{740}{100}$
(d) $\frac{740}{99}$

Q85. Calculate the value of 0.66666 + 0.6666 + 0.666 + 0.66 + 0.6 + 0.06
(a) 3.36274
(b) 3.30246
(c) 3.45274
(d) 3.31926

Q86. If 2x - 1 < 5x + 2 and 2x + 5 < 6 - 3x, then x can take which of the following values?
(a) 1
(b) 0
(c) 2
(d) 3

Q87. A carpenter can build a cupboard in 60 hours. After 15 hours he takes a break. What fraction of the cupboard is yet to be built?
(a) 0.5
(b) 0.9
(c) 0.75
(d) 0.25

Q88. There is 75% increase in an amount in 5 years at simple interest. What will be the compound interest of Rs 40000 after 2 years at the same rate?
(a) Rs 25800
(b) Rs 32250
(c) Rs 12900
(d) Rs 19350

Q89. Rahul sells a machine for Rs 50 lakhs at a loss. Had he sold it for Rs 60 lakh, his gain would have been 7 times the earlier loss. What is the cost price of the machine?
(a) Rs 51.25 lakhs
(b) Rs 58.75 lakhs
(c) Rs 67.14 lakhs
(d) Rs 43.75 lakhs

Q90. If Girilal's salary is 11/7 times of Hariram's and Shekhar's is 3/4 times of Hariram's, what is the ratio of Girilal's salary to Shekhar's salary.
(a) 44:21
(b) 28:33
(c) 33:28
(d) 21:44

Q91. Find the number that is as much greater than 49 as is less than 95.
(a) 23
(b) 55
(c) 72
(d) 76

Q92. Tanzeem spent 1/5 of his salary on his friends, 1/10 of his salary on accommodation and 1/4 of his salary on savings. If he has Rs. 1800 left in his wallet, then find his total expenditure on accommodation and savings.
(a) Rs. 1,200
(b) Rs. 1,400
(c) Rs. 1,600
(d) Rs. 1,800

Q93. If P = 350 and Q = 600, then P is how much percentage less than Q?
(a) 41.66
(b) 58.33
(c) 71.42
(d) 35.33

Q94. The ratio of two numbers is 5 : 4. If the sum of both the numbers is 180, then what is the smaller number among both the numbers?
(a) 100
(b) 80
(c) 60
(d) 75

Q95. P started a business by the investing Rs 35000 and Q joined him after one year with an amount of Rs 21000. After two years from the starting of the business, they earned profit of Rs 26000. What will be the P's share (in Rs) in the profit?
(a) 15000
(b) 18000
(c) 20000
(d) 16000

Q96. On dividing $24a^2b^2$ by $6b^2$, we will get
(a) $4b^2$
(b) $4a^2$
(c) $4a^2b^2$
(d) 4

Q97. To travel 612 km, an Express train takes 9 hours more than Rajdhani. If the speed of the Express train is doubled, it takes 3 hours less than Rajdhani. The speed (in km/hr) of Rajdhani is
(a) 40.8
(b) 51
(c) 30.6
(d) 61.2

Q98. Pradeep has done 1/4th of a job in 14 days, Saquib completes the rest of the job in 56 days. In how many days can they together complete the job?
(a) 64 days
(b) 32 days
(c) 16 days
(d) 8 days

Q99. What is the value of 2 consecutive natural numbers, sum of whose squares is 145?
(a) 8, 9
(b) 6, 7
(c) 13, 14
(d) 9, 10

Q100. If in a two digit number, the digit at unit place is z and the digit at tens place is 8, then the number is
(a) 80z + z
(b) 80 + z
(c) 8z + 8
(d) 80z + 8

Q101. Two vessels of equal capacity contains juice and water in the ratio of 5 : 1 and 5 : 7 respectively. The mixture of both the vessels are mixed and transferred into a bigger vessel. What is the ratio of juice and water in the new mixture?
(a) 3 : 2
(b) 5 : 3
(c) 5 : 4
(d) 1 : 2

Q102. In an alloy, aluminium and tin are in the ratio of 4 : 5. In the second alloy, the ratio of same elements is 4 : 7. If equal quantities of these two alloys be mixed to form a new alloy, then what will be the ratio of both of these elements in the new alloy?
(a) 2 : 3
(b) 16 : 35
(c) 4 : 5
(d) 40 : 59

Q103. Among four bags, average weight of last three bags is 18 kg and the average weight of first three bags is 19 kg. If the weight of last bag is 22 kg, then what is the weight (in kg) of first bag?
(a) 32
(b) 24
(c) 33
(d) 25

Q104. A sum becomes Rs 8800 in 4 years at simple interest at the yearly interest rate of 25% per annum. What is the sum (in Rs)?
(a) 4400
(b) 6600
(c) 7040
(d) 6400

Q105. Cost price of an article is Rs 360. If the profit percentage is 32%, then what is the value (in Rs) of profit?
(a) 126.2
(b) 108.2
(c) 115.2
(d) 105.2

Q106. Rohit buys a ball for Rs 450 and sells it. Rohit gives two successive discount of 20% and 5% to the customer. What will be the selling price (in Rs) of the ball?
(a) 342
(b) 354
(c) 334
(d) 362

Q107. What is the value of $\sqrt{2^6 + 15^2}$?
(a) 17
(b) 19
(c) 15
(d) 21

Q108. A work can be completed by 18 boys in 24 days. If 6 boys leave after working for 12 days, then how many days will be needed to complete the remaining work?
(a) 12
(b) 15
(c) 18
(d) 24

Q109. Two trains are moving in the same direction at the speed of 42 km/hr and 84 km/hr, their lengths are 320 metres and 380 metres respectively. What is the time taken (in seconds) by faster train to cross the slower train?
(a) 60
(b) 80
(c) 90
(d) 120

Q110. Which of the following statement(s) is/are TRUE?
I. $4\sqrt{3} > 3\sqrt{4}$
II. $8\sqrt{2} > 2\sqrt{8}$
(a) Only I
(b) Only II
(c) Neither I nor II
(d) Both I and II

Q111. Find the number which is NOT a prime number.
(a) 89
(b) 87
(c) 79
(d) 97

Q112. Which of the following is the largest number among $\sqrt{2}, \sqrt[3]{3}, \sqrt{4}, \sqrt[3]{5}$.
(a) $\sqrt{2}$
(b) $\sqrt[3]{3}$
(c) $\sqrt{4}$
(d) $\sqrt[3]{5}$

Q113. What is the value of $13 \times 49^{\frac{3}{2}}$?
(a) 4369
(b) 4459
(c) 4549
(d) 4639

Q114. What is the value of $\frac{a^2+b^2}{a^3-b^3}$, when a + b = 8 and a – b = 2?
(a) 0.313
(b) 0.347
(c) 0.368
(d) 0.381

Q115. A number is divided into two parts in such a way that 30% of first part is 25 more than the 20% of second part. 50% of second part is 33.5 more than the 60% of first part. What is the number?
(a) 1475
(b) 1655
(c) 1425
(d) 1905

Q116. The price of an article is cut by 3%. To restore to its original value, the new price must be increased by
(a) 3 percent
(b) 7.11 percent
(c) 3.09 percent
(d) 2.69 percent

Q117. Simple interest on a certain sum of money for 3 years at 8% per annum is half the compound interest on Rs. 16000 for 2 years at 10% per annum. The sum placed on simple interest is:
(a) Rs 14000
(b) Rs 3500
(c) Rs 7000
(d) Rs 5600

Q118. On dividing $144a^3b^3c^3$ by $24b^2c$, we get
(a) $6a^3bc^2$
(b) $24a^3bc^2$
(c) $24b^2c$
(d) $6a^3b^2c$

Q119. Ticket for an adult is Rs 1600 and a child is Rs 1200. 1 child goes free with two adults. If a group has 23 adults and 10 children what is the discount the group gets?
(a) 25.95 percent
(b) 24.59 percent
(c) 25.77 percent
(d) 31.60 percent

Q120. A tent is to be built in the form of a cylinder of radius 10 m surmounted by a cone of the same radius. If the height of the cylindrical part is 5 m and slant height of the conical part is 15 m, how much canvas will be required to build the tent? Allow 20% extra canvas for folding and stitching. (Take $\pi = 22/7$)
(a) 4714.43 sq m
(b) 3772.14 sq m
(c) 6783.86 sq m
(d) 942.8 sq m

Q121. 7 hrs after a goods train passed a station, another train travelling at a speed of 54 km/hr following that goods train passed through that station. If after passing the station the train overtakes the goods train in 11 hours. What is the speed of the goods train?
(a) 39.6 km/hr
(b) 49.5 km/hr
(c) 33 km/hr
(d) 26.4 km/hr

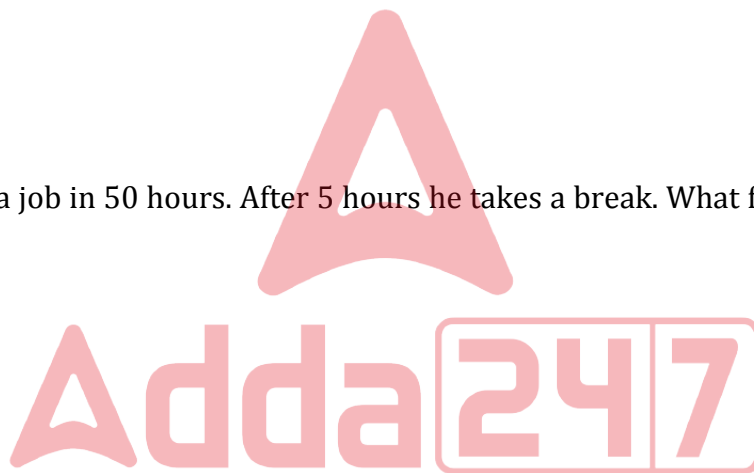**Q122.** Find two numbers whose sum is 29 and the product is 100.
(a) 20, 5
(b) 20, 9
(c) 25, 4
(d) 10, 10

Q123. 6.651-(148.6- x)-57.22 = 6.098. Find x.
(a) 205.267
(b) 90.827
(c) 91.933
(d) 218.569

Q124. A laborer can do a job in 50 hours. After 5 hours he takes a break. What fraction of the job is yet to be done?
(a) 0.8
(b) 0.5
(c) 0.75
(d) 0.9

Q125. In an army selection process, the ratio of selected to unselected candidates was 6:1. If 30 less had applied and 10 less selected, the ratio of selected to unselected would have been 7:1. How many candidates had applied for the process?
(a) 910
(b) 1820
(c) 455
(d) 2730

Q126. A wholesaler sells a watch to a retailer at a gain of 32% and the retailer sells it to a customer at a loss of 20%. If the customer pays Rs 1,953.6, what had it cost the wholesaler?
(a) Rs 2063
(b) Rs 2394
(c) Rs 1850
(d) Rs 1637

Q127. In the first 39 overs of a cricket match, the run rate was 4.6 runs/over. Calculate the required run rate in the remaining 11 overs to reach the target of 252 runs?
(a) 7.2
(b) 6.6
(c) 7.8
(d) 6

Q128. Simple interest on a certain sum of money for 3 years at 8% per annum is half the compound interest on Rs 1200 for 2 years at 10% per annum. The sum placed on simple interest is
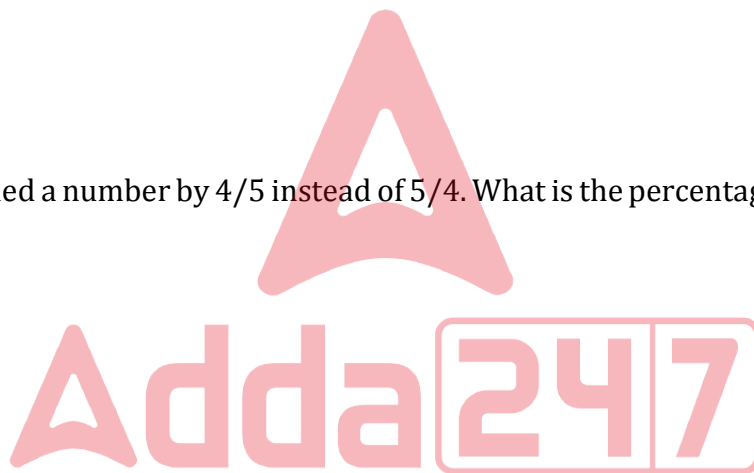(a) Rs 525
(b) Rs 1050
(c) Rs 260
(d) Rs 420

Q129. A vendor buys chikoos at 15 for Rs 8 and then sells at 10 for Rs 6. What will be the result?
(a) 12.5 percent loss
(b) 11.11 percent gain
(c) 12.5 percent gain
(d) 11.1 percent loss

Q130. A student multiplied a number by 4/5 instead of 5/4. What is the percentage error in the calculation?
(a) 56.25 percent
(b) 18 percent
(c) 28.13 percent
(d) 36 percent

Solutions

S1. Ans.(b)
Sol. Interest of one year = 2448 – 2286 = 162
Interest of three year = 162 × 3 = 486
Principal = 2286 – 486 = 1800
Rate % = $\frac{162}{1800} \times 100 = 9\%$

S2. Ans.(d)
Sol. Selling price of fan = 4644
Profit % = 29%
We have, 129 units = 4644
∴ 100 units = CP of Fan = $\frac{4644}{129} \times 100$ = Rs. 3600

S3. Ans.(a)
Sol. $30\% = \frac{3}{10}$
Mark price = selling price + Discount
= 744 + 36 = Rs. 780
We have, 13 unit = Rs.780
$\therefore$ 10 unit = cost price = $\frac{780}{13} \times 10$ = Rs.600
Profit% = $\frac{744-600}{600} \times 100$
= $\frac{144}{600} \times 100$
= 24%

S4. Ans.(b)
Sol. Total work = days × efficiency
= 30 × 47
U alone can complete the work = $\frac{30 \times 47}{12} = \frac{235}{2}$ days.

S5. Ans.(b)
Sol. Time = $\frac{\text{Distance}}{\text{speed}} = \frac{2275}{90 \times \frac{5}{18}}$ = 91 sec.

S6. Ans.(c)
Sol. Let length = 10 cm & breadth = 10 cm
Area = 100 cm^2
New length = $\frac{10 \times 140}{100}$ = 14 cm
New breadth = $\frac{10 \times 170}{100}$ = 17 cm
New area = 238 cm^2
Required percentage increase = $\frac{238-100}{100} \times 100$ = 138%

S7. Ans.(b)
Sol. Profit share Ratio is equal to investment ratio if time of investment is equal or not given profit share ratio

u		v
184000	:	224000
23	:	28

Required total profit = $\frac{20700 \times (23+28)}{23}$ = 45900

S8. Ans.(c)
Sol. ATQ,
$\frac{61681^2 - 31681^2}{30000} = \frac{(61681+31681)(61681-31681)}{30000}$
= 93362

S9. Ans.(d)
Sol. Total market price = 520 + 40 = 560

Let, cost price = x

Market price $= \frac{x \times 140}{100} = 1.4x$

1.4x = 560

x = 400

Selling price = 520

Profit = 520 – 400 = 120

Required profit percentage $= \frac{120}{400} \times 100 = 30\%$

S10. Ans.(c)
Sol. In 1st statement

$2\sqrt{3} > 3\sqrt{2}$

If we make square we get 12 > 18

So, 1st statement is wrong.

In 2nd statement

$4\sqrt{2} > 2 \times 2\sqrt{2} = 4\sqrt{2} = 4\sqrt{2}$

So, 2nd statement is also wrong..

Both statements are wrong.

S11. Ans.(d)
Sol. $1260 \frac{km}{hr} = 1260 \times \frac{5}{18} m/s$

$= 350 \, m/s$

S12. Ans.(c)
Sol. CP of 1 kg of almond

$= 1250 \times \frac{100}{93} = Rs. \, 1344$

Now, on selling it for Rs. 1375

$P = \frac{1375 - 1344}{1344} \times 100$

$= 2.3\%$

S13. Ans.(c)
Sol.

Sagar → 18 days ↖ 1

18

Madhur → 9 days ↙ 2
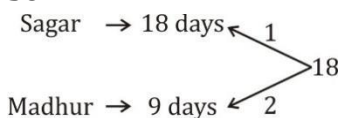
No. of days to complete the work together

$= \frac{18}{1+2} = 6$ days

S14. Ans.(a)
Sol. Increase in fare $= \frac{550}{11} \times 7$

$= Rs. 350$

S15. Ans.(a)
Sol. $(x + y)^2 = x^2 + y^2 + 2xy$

$(x + y)^2 = 100 + 2 \times 22$

$(x + y)^2 = 144$

$x + y = \sqrt{144} = 12$

S16. Ans.(c)
Sol. Let the marks score by two students be x, (x + 20)

ATQ,

$(x + 20) = \frac{55}{100}(x + x + 20)$

$\Rightarrow x = 90$

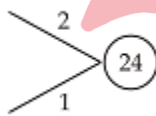So, marks obtained by two students are 90, 110.

S17. Ans.(c)
Sol. Effective discount $= D_1 + D_2 - \frac{D_1 \times D_2}{100}$

$= 25 + 8 - \frac{25 \times 8}{100}$

$= 31\%$

S18. Ans.(c)
Sol.

Prabhat --- 24 days

Santosh --- 12 days

2

1

24

No. of days required to complete the work together

$= \frac{24}{1+2} = 8$ days

S19. Ans.(c)
Sol. ATQ,

$\frac{x}{y} = \frac{y}{128} \Rightarrow y^2 = 128x$ ... (i)

And,

$\sqrt{xy} = 16 \Rightarrow xy = 256$ .. (ii)

From (i) & (ii)

x = 8 & y = 32

S20. Ans.(d)
Sol. Total runs mode till 32 overs = 32 × 7.2
= 230.4 runs
Remaining runs to be made = 297 – 230.4
= 66.6 runs
∴ Required run rate $= \frac{66.6}{18} = 3.7$

S21. Ans.(d)
Sol. Let the sum be 100x.
CI for 2 years at 16% = 34.56x
SI for 2 years at 16% = 32x
CI – SI = 320
2.56x = 320
x = 125
Sum = Rs. 12500

S22. Ans.(b)
Sol. Let the no. be a, b, c, d, e.
ATQ,
a + b + c + d + c = 76 × 5 = 380
& $a = \frac{3}{7}(b + c + d + e)$
$\Rightarrow a + \frac{7}{3}a = 380$
a = 114

S23. Ans.(b)
Sol. ATQ,
36 – 16x – 4x + 8 = 4
x = 2

S24. Ans.(b)
Sol. 1 items selling price = 400-24= 376
4 items selling price = 1600 – (16*24) = 1216
5 items selling price = 1216 + 376 =1592
Effective discount $= \frac{(2000-1592)}{2000} * 100 = 20.4 \%$

S25. Ans.(d)
Sol. (200000 – 6) × (200000 + 6)
= $(200000)^2 – (6)^2$
= 39999999964

S26. Ans.(d)
Sol. 0.77777 + 0.7777 + 0.777 + 0.77 + 0.7 + 0.07
= 3.87247

S27. Ans.(b)
Sol. Total unusual eggs = 10
∴ Total rotten eggs = 16
& total number of eggs = 25 × 16 = 400

S28. Ans.(d)
Sol. X: Y: Z = $\frac{1}{3} : \frac{1}{4} : \frac{1}{2}$ = 4: 3: 6
⇒ X: Y: Z = 4: 3: 6
We have
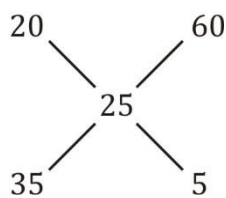13 units = 18200
∴ 4 units = $\frac{18200}{13} \times 4$ = 5600

S29. Ans.(a)
Sol.

```
20        60
   \    /
    25
   /    \
35        5
```

Req. ratio = 7: 1

S30. Ans.(b)
Sol. Sum of first 39 even numbers
2 + 4 + 6 + ...
It is an A.P. where,
$a = 2, d = 2, n = 39$
$S_n = \frac{n}{2}[2a + (n-1).d]$
⇒ $S_{39} = \frac{39}{2}[2 \times 2 + 38 \times 2]$ = 39 × 40
Avg. of first 39 even numbers = $\frac{39 \times 40}{39}$ = 40

S31. Ans.(c)
Sol. We have, 31x + 31y = 403
⇒ x + y = 13
Avg. of x & y = $\frac{x+y}{2} = \frac{13}{2}$ = 6.5

S32. Ans.(d)

Sol. We have,

$$\frac{x \times 12 \times 1}{100} = \frac{(7500 - x) \times 18 \times 1}{100}$$

$2x = 22500 - 3x$

$\Rightarrow x = 4500$

$\therefore$ Required interest = $\frac{4500 \times 12 \times 1}{100}$ = Rs. 540

S33. Ans.(b)

Sol. Profit percentage = 18% = $\frac{9}{50}$

CP = $\frac{13924}{59} \times 50 = 11,800$

Req. loss % = $\frac{11800 - 10266}{11,800} \times 100 = 13\%$

S34. Ans.(b)

Sol. We know that

CP	MRP
100–D	100+P
55 :	121

Req.% = $\frac{66}{55} \times 100 = 120\%$

S35. Ans.(a)

Sol. $= \sqrt{513 - \sqrt{144} - \sqrt{81} - \sqrt{64}} = \sqrt{513 - 12 - 9 - 8}$

$= \sqrt{484} = 22$

S36. Ans.(c)

Sol.

P ⟶ 24 ⟍ 3
⟍ 72
Q ⟶ 18 ⟋ 4
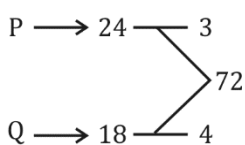
Tap Q works for 15 hrs.

In 15 hours it will fill 15 × 4 = 60 liters

Remaining = 72 – 60 = 12

It at 11 am + 4 hrs = 3pm tap P should be closed

S37. Ans.(a)

Sol. We have,

S → 4 : 5

T → 5 : 4

1 unit = 6 + 6 = 12 min.

5 unit = 5 × 12 = 60 min.

Distance = Speed × Time = 4 × 1 = 4km

S38. Ans.(a)
Sol. Weight of P and Q = 2 × 38 = 76 kg
Weight of P, Q and Coach (T) = 3 × 49 = 147 kg
Now,
Weight of coach (T) = 147- 76
= 71 kg

S39. Ans.(a)
Sol. R = $\frac{540 \times 100}{1200 \times 3}$ = 15%
New rate = (15 + 3) = 18%
So,
SI = $\frac{1200 \times 18 \times 3}{100}$ = Rs 648
Amount = 1200 + 648 = Rs.1848

S40. Ans.(c)
Sol. SP = 100 (let)
CP = 75
Profit = 100 – 75 = 25
P% = $\frac{25}{75} \times 100$
= 33.33%

S41. Ans.(c).
Sol.
Total age of family of 6 members = 25 × 6 + 4 × 6= 174
Total age of family of 7 members = 25 × 7 = 175
So, present age of child = 175 – 174 = 1 year

S42. Ans.(c)
Sol.
I + II + III = 83 × 3 = 249
III + IV + V = 97 × 3 = 291
I to V = 92 × 5 = 460

S43. Ans.(c)
Sol.
Let his salary is 100
He spends $\frac{3}{4} \times 100 = 75$
His savings is 25
Now increased salary = 120
New expenditure = $75 + 75 \times \frac{10}{100} = 82.5$
Now savings = 120 – 82.5 = 37.5
Percentage increment in saving = $\frac{37.5 - 25}{25} \times 100$
= $\frac{12.5}{25} \times 100 = 50\%$.

S44. Ans.(d)
Sol.
Let y's salary = 100
So x's salary = $100 \times \frac{80}{100} = 80$
y's salary is greater than x by 20
In percentage = $\frac{\text{difference in salary}}{X' \text{salary}} \times 100$
$= \frac{20}{80} \times 100 = 25\%$

S45. Ans.(d)
Sol.
According to question given,

$\frac{x}{100} \times 2000 + \frac{y}{100} \times 2000 = 700$ ... (1)
$\frac{x}{100} \times 2000 + \frac{y}{100} \times 3000 = 900$ ... (2)
From (1) and (2)
$x = 15\%$
$y = 20\%$
$\Rightarrow \frac{15}{100} \times 2000 + \frac{20}{100} \times 9000 = 2100$ Rs.

S46. Ans.(a)
Sol.
Here, a = 8, b = 21, c = 13 and d = 31.
∴ The required number = $\frac{bc-ad}{(a+d)-(b+c)}$
$= \frac{21 \times 13 - 8 \times 31}{(8+31)-(21+13)} = 5$.

S47. Ans.(b)
Sol.
We have, a: b = 3 :2, c: d = 5: 3 and S = 1000
∴ A's income = $\frac{aS(d-c)}{ad-bc}$
$= \frac{3 \times 1000 \times (3-5)}{(3 \times 3 - 2 \times 5)}$
= Rs. 6000.

S48. Ans.(a)
Sol.

	A	B	C
Present students =	6x	8x	7x
New strength =	6 × 1.2x	8 × 1.15x	7 × 1.2x
	7.2x	9.2x	8.4x
New ratio =	72 :	92 :	84
	18 :	23 :	21

S49. Ans.(c)
Sol.
Let A paid = Rs x
120% of 125 % of x = 450 $\Rightarrow \frac{120}{100} \times \frac{125}{100} \times x = 450$
$\Rightarrow$ x = Rs 300

S50. Ans.(d)
Sol.
C.P. = Rs. $\left(\frac{100}{105} \times 630000\right)$ = Rs. 600000.

$\therefore$ Required loss% = $\left(\frac{100000}{600000} \times 100\right)$ % = $16\frac{2}{3}$%

S51. Ans.(d)
Sol. CP: MP
= (100 – D): (100 – L)
= (100 – 20): (100 – 16)
= 80: 84
Or, CP: MP = 20: 21
Let the CP = 20x & MP =21x
Now, 10% discount
SP = 18.9x
Loss% = $\frac{20x - 18.9x}{20x}$ = 5.5%

S52. Ans.(b)
Sol. All the prime number between 30 and 42 are 31, 37, 41
Sum = 31+37+41 = 109

S53. Ans.(c)
Sol. ATQ
12 – 6x = 4x + 2
x = 1

S54. Ans.(a)
Sol. Let speed of express train = x km/hr
& speed of Rajdhani = y km/hr
ATQ,
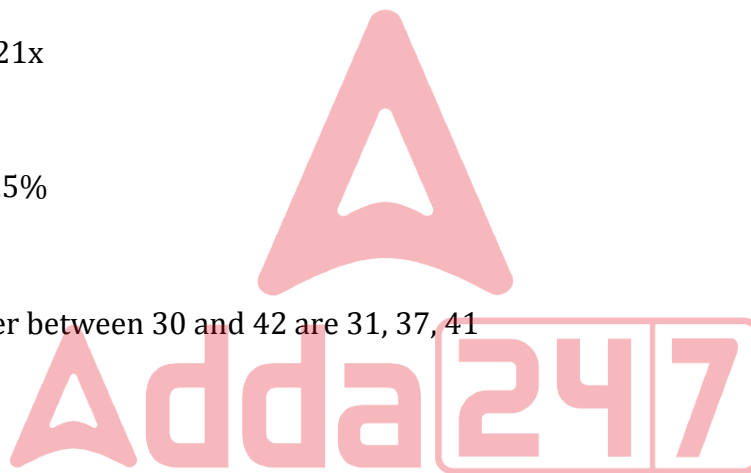$\frac{816}{x} - \frac{816}{y} = 9$ ...(i)
And,
$\frac{816}{y} - \frac{816}{2x} = 4$ ..(ii)
Add (i) & (ii)
$\frac{816}{x} - \frac{816}{2x} = 13$
x = 31.38 km/hr
By putting value of x in (i) or (ii)
y = 48 km/hr

S55. Ans.(d)
Sol. $4pxy = (x + 2y)^2 - (x - 2y)^2$
$4pxy = [x^2 + 4y^2 + 4xy] - [x^2 + 4y^2 - 4xy]$
$4pxy = 8xy$
$p = 2$

S56. Ans.(b)
Sol. Runs scored till 26 overs = 26 × 5.4
= 140.4 runs
Runs to be made in last 24 overs = (294 – 140.4) runs
∴ Required Run rate $= \frac{153.6}{24} = 6.4$ runs/over

S57. Ans.(c)
Sol. a + b = 29
$ab = 100 \Rightarrow a = \frac{100}{b}$
$\frac{100}{b}$ +b = 29
$b^2 - 29b + 100 = 0$
b = 25, 4
Hence, the two numbers are 4, 25.

S58. Ans.(d)
Sol. Let the total work be 100 unit
Work/hour $= \frac{100}{50}$ unit = 2 unit
Work done in 5 hour = 10 unit
Remaining work = 90 unit
Fraction of remaining work $= \frac{90}{100}$
= 0.90

S59. Ans.(a)
Sol. Let the no. of selected & non-selected candidates be 6x, x respectively.
ATQ,
$\frac{6x - 10}{x - 20} = \frac{7}{1}$
x = 130
No. of candidate applied = 7x = 910

S60. Ans.(b)
Sol. Total amount to be paid without discount = 1600 × 23 + 1200 × 10 = 48,800
ATQ,
10 children can get free ticket with 20 Adult, so all the children will get free tickets
∴ Total discount = 1200 × 10 = Rs. 12000
% Discount $= \frac{12000}{48800} \times 100$
= 24.59%

S61. Ans.(c)
Sol. Let the SP of 1 watch be Rs 1
SP of 17 Omega watches = Rs 17
Profit = Rs 7 (i.e. SP of 7 watches)
∴ CP = Rs (17 – 7) = Rs 10
Profit % = $\frac{7}{10} \times 100 = 70\%$

S62. Ans.(a)
Sol. Required avg. marks = $\frac{(30 \times 67 + 55 \times 63 + 40 \times 61)}{(30 + 55 + 40)}$
$= \frac{2010 + 3465 + 2440}{125}$
= 63.32

S63. Ans.(a)
Sol. ATQ,
$\frac{73205}{50000} = \left(1 + \frac{R}{100}\right)^2$
$\sqrt{\frac{14641}{10000}} = \left(1 + \frac{R}{100}\right)$
$\frac{121}{100} - 1 = \frac{R}{100} \Rightarrow R = 21\%$

S64. Ans.(c)
Sol. Let the no. of 1 rupee, 50 paise and 10 paise coins be 6x, 3x & 2x
ATQ,
$6x + \frac{3x}{2} + \frac{2x}{10} = 308$
$\Rightarrow x = 4$
No. of 50 paise coins = 3 × 4 = 12

S65. Ans.(a)
Sol. Let the marks scored by them are x & (x + 13)
ATQ,
$(x + 13) = \frac{76}{100} (x + x + 13)$
x = 6
So, the marks obtained by two students are 6 and 19.

S66. Ans.(b)
Sol. 1044 is the nearest multiple of 29 to 1039. Hence 5 is the least no. to be added to 1039 to make the sum completely divisible by 29.

S67. Ans.(a)
Sol. Let the MP be 100x
SP at 4% discount = 96x
CP at 10% loss = $\frac{320}{3}x$
New SP at 20% discount = 80x
Loss = $\frac{\frac{320}{3}x - 80x}{\frac{320}{3}x} \times 100 = 25\%$

S68. Ans.(b)
Sol. ATQ,
8 (CP – 51) = (60 – CP)
9CP = 468
CP = 52 lakhs

S69. Ans.(c)
Sol. Let the sum be 100x
S.I. at 12% for 2 years = 24x
C.I. at 12% for 2 years = 25.44x
C.I. – S.I. = 1.44x = 72
$\Rightarrow$ x = 50
Sum = Rs. 5000

S70. Ans.(c)
Sol. According to the question,
S + G + R = 97 × 3 = 291 kg
S + G = 93 × 2 = 186 kg
$\Rightarrow$ R = 291 – 186 = 105 kg.
& G + R = 82 × 2 = 164 kg
$\Rightarrow$ Gopesh weight (G) = 164 – 105 = 59 kg

S71. Ans.(b)
Sol. We have, 10% = $\frac{1}{10}$

10	11
10	11
100	121

$\Rightarrow$ 100 unit = 300000
$\therefore$ 121 unit = $\frac{300000}{100}$ × 121 = 363000

S72. Ans.(c)
Sol. We have
$\frac{2x-7000}{3x-15000} = \frac{3}{2}$
$\Rightarrow$ 4x – 14000 = 9x – 45000
$\Rightarrow$ 5x = 31000
or x = 6200
$\therefore$ Income of X (in Rs.) = 2x = 2 × 6200 = Rs. 12400

S73. Ans.(a)
Sol. Profit ratio = Investment ×time
X : Y = 40,000 × 2 : 50,000 × $\frac{3}{2}$
= 16 : 15

S74. Ans.(c)
Sol. Sum of all two digit numbers
10 +11 + 12 + 13 +.................. +99.
sum of n terms in AP $= \frac{n\{2a+(n-1)d\}}{2}$;
n= number of terms
a = first terms
d=difference of two consecutive terms
$= \frac{90\{2\times10+(90-1)1\}}{2} = \frac{90\times109}{2}$
Avg $= \frac{90\times54.5}{90} = 54.5$

S75. Ans.(c)
Sol. Simple interest of 6 years = 3600
∴ Simple interest of 1 years = 600
Rate of interest $= \frac{600}{6000} \times 100 = 10\%$

S76. Ans.(a)
Sol. 100% = 6000
∴ 75 % $= \frac{6000}{100} \times 75 = 4500$

S77. Ans.(b)
Sol. Let CP = 100
∴ MP = 140
We have, 140 = Rs. 420
∴ CP = Rs. 300
Profit % $= \frac{400-300}{300} \times 100 = \frac{100}{3} = 33\frac{1}{3}\%$

S78. Ans.(c)
Sol. $\frac{\sqrt{32}+\sqrt{72}}{\sqrt{8}} = \frac{4\sqrt{2}+6\sqrt{2}}{2\sqrt{2}} = 5$

S79. Ans.(c)
Sol.

      A : B : C
E→ 15 : 10 : 6
We have, Total work = Efficiency × time
= 31 × 15
C can complete the same work in
$= \frac{31\times15}{6} = \frac{465}{6}$

S80. Ans.(c)
Sol. $S = \frac{D}{T}$
$S = \frac{500}{50} = 10$ m/s = 10 $\times\frac{18}{5} = 36$ km/hr

S81. Ans.(a)

Sol. $\sqrt[3]{\dfrac{4096}{1728}} = \sqrt[3]{\dfrac{16 \times 16 \times 16}{12 \times 12 \times 12}} = \dfrac{16}{12} = \dfrac{4}{3}$

S82. Ans.(b)

Sol. Let the numbers, a & 25 – a

ATQ,

$\Rightarrow a^2 + (25-a)^2 = 373$

$\Rightarrow a^2 + 625 + a^2 - 50a = 373$

$\Rightarrow 2a^2 - 50a + 252 = 0$

$\Rightarrow a^2 - 25a + 126 = 0$

$\Rightarrow a^2 - 18a - 7a + 126 = 0$

$\Rightarrow a(a-18) - 7(a-18) = 0$

$\Rightarrow (a-18)(a-7) = 0$

a = 18, 7

Required number are, a =18 & 25–a = 7

S83. Ans.(d)

Sol. Given expression $= \dfrac{(0.94)^3 + (0.1)^3}{(0.94)^2 - 0.094 + (0.1)^2}$

$= \left(\dfrac{a^3 + b^3}{a^2 - ab + b^2}\right) = \left(\dfrac{(a+b)(a^2 - ab + b^2)}{a^2 - ab + b^2}\right)$

$= (a + b)$

$= (0.94 + 0.1) = 1.04$

S84. Ans.(d)

Sol. $7.\overline{47} = 7 + 0.\overline{47}$

$= 7 + \dfrac{47}{99} = \dfrac{693 + 47}{99} = \dfrac{740}{99}$

S85. Ans.(d)

Sol. 0.66666 + 0.6666 + 0.666 + 0.66 + 0.6 + 0.06

= 3.31926

S86. Ans.(b)

Sol. From,

2x – 1 < 5x + 2

$\Rightarrow$ -1< x   ...(i)

From, 2x + 5 <6 – 3x

$\Rightarrow x < \dfrac{1}{5}$ ...(ii)

From (i) & (ii) only option (b) satisfy the equations.
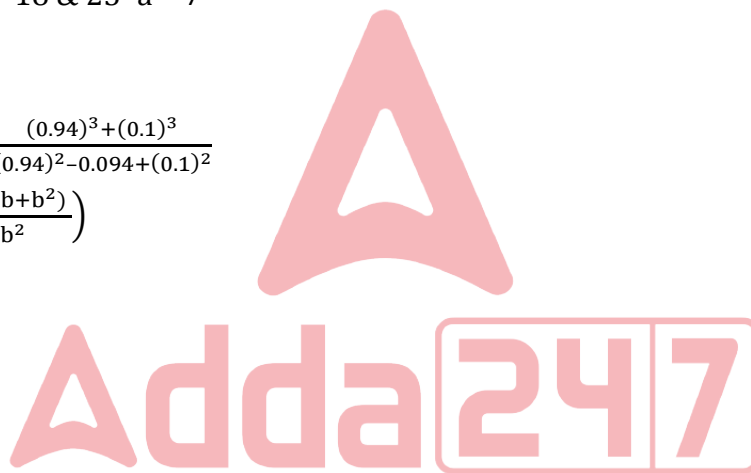
S87. Ans.(c)

Sol. Let the total work be 100 units, which he does in 60 hours

⇒ 60 hours → 100-unit work

1 hour → 5/3-unit work

15 hours → 25-unit work

Remaining work = (100- 25) unit work

= 75-unit work

Fraction of remaining work $= \frac{75}{100}$= 0.75

S88. Ans.(c)

Sol. Let the principle be 100 (at SI)

∴ Amount after 5 years = 175

$SI = \frac{P \times R \times T}{100}$

$(175 - 100) = \frac{100 \times R \times 5}{100}$

R= 15%

Now,

CI = Amount – Principal

$= P \left(1 + \frac{R}{100}\right)^t - P$

$= 40000 \left(1 + \frac{15}{100}\right)^2 - 40,000$

= Rs 12,900

S89. Ans.(a)

Sol. According to question

7(CP – 50 Lakh) = (60 lakh – CP)

⇒ CP = 51.25 lakhs

S90. Ans.(a)

Sol. $\frac{\text{Girish's salary}}{\text{Hariram' salary}} = \frac{11}{7} = \frac{44}{28}$

$\frac{\text{Shekher's Salary}}{\text{Hariram's salary}} = \frac{3}{4} = \frac{21}{28}$

By making Hariram's salary constant, we get the ratio as Girish's and Shikhar's salary ratio i.e. 44: 21

S91. Ans.(c)

Sol. Let the required number = x

ATQ,

x – 49 = 95 – x

2x = 144

x = 72

S92. Ans.(b)
Sol. We have, F = A + S = $\frac{1}{5} + \frac{1}{10} + \frac{1}{4} = \frac{11}{20}$

Remaining Rs. in his wallet = $\frac{9}{20}$ = 1800

1 = 4000

A + S = $\frac{1}{10} + \frac{1}{4} = 4000 \times \frac{7}{20}$ = Rs. 1400

S93. Ans.(a)
Sol. We have, P = 350 & Q = 600

Req. percentage = $\frac{600-350}{600} = \frac{250}{600} \times 100$

= 41.66%

S94. Ans.(b)
Sol. Let the numbers are 5x & 4x.

ATQ,

5x + 4x = 180

9x = 180

x = 20

Smaller number = 4x = 4 × 20 = 80

S95. Ans.(c)
Sol. Profit Ratio = Investment × time

Profit Ratio = 35000 × 2 : 21000 × 1

= 10: 3

We have 13 unit = 26000

P's share = 10 unit = $\frac{26000}{13} \times 10$ = 20,000 Rs.

S96. Ans.(b)
Sol. $\frac{24a^2b^2}{6b^2} = 4a^2$

S97. Ans.(a)
Sol. Let the speed of express train and Rajdhani be x km/h & y km/hr respectively.

ATQ,

$\frac{612}{x} - \frac{612}{y} = 9$ ...(i)

And,

$\frac{612}{y} - \frac{612}{2x} = 3$ ...(ii)

Adding (i) and (ii)

$\frac{612}{x} - \frac{612}{2x} = 12$

⇒ x = 25.5 km/h

From (i),

⇒ y= 40.8 km/hr

S98. Ans.(b)
Sol. Let the efficiency of Pradeep & Saquib be P & S respectively.

ATQ,

$\frac{P \times 14}{1/4} = \frac{S \times 56}{3/4}$

$\Rightarrow \frac{P}{S} = \frac{4}{3}$

Total work = $\frac{4 \times 14}{\frac{1}{4}}$ or $\frac{3 \times 56}{\frac{3}{4}}$

= 224 units

Time taken by both to complete the whole work together

$= \frac{224}{4+3} = 32$ days

S99. Ans.(a)
Sol. Let the two consecutive natural numbers be x, (x + 1)

ATQ,

$x^2 + (x + 1)^2 = 145$

$x^2 + x - 72 = 0$

$x = 8$

∴ Two numbers are 8 and 9

S100. Ans.(b)
Sol. $8Z = 8 \times 10 + Z$

$= 80 + Z$

S101. Ans.(b)
Sol.

$\quad$ J $\quad$ W

A → 5 : 1 = 6 $\quad$ ... (i)

B → 5 : 7 = 12 ... (ii)

Eqn. (i) × 2 + Eqn. (ii)

$\quad$ J $\qquad$ W

15 : 9

5 : 3

S102. Ans.(d)
Sol.

$\quad$ A $\quad$ T

I $\;$ 4 : 5 = 9 $\quad$ ... (i)

II $\;$ 4 : 7 = 11 ... (ii)

Eqn. (i) × 11 + Eqn. (ii) × 9

A $\qquad$ T

80 : 118

40 : 59

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S103. Ans.(d)
Sol. Avg. weight of first three bags = 19 kg
Sum of weight of four bags = 19 × 3 + 22 = 79 kg.
Avg. weight of last three bags = 18 kg
Sum of weight of three bags = 54 kg
∴ Weight of first bag = 79 – 54 = 25 kg

S104. Ans.(a)
Sol. Let P be the principal
$8800 - P = \frac{P \times 25 \times 4}{100}$
$\Rightarrow P = Rs.\ 4400$

S105. Ans.(c)
Sol. CP = 360
Profit % = 32% = $\frac{8}{25}$
$\frac{CP}{SP} = \frac{25}{33}$
SP = $\frac{360}{25} \times 33 = 475.2$
Profit = SP – CP
= 475.2 – 360
= Rs. 115.2

S106. Ans.(a)
Sol. We have, 20% = $\frac{1}{5}$ & 5% = $\frac{1}{20}$

$\quad$ 5 $\quad$ 4
$\quad$ 20 $\quad$ 19
$\underline{\quad\quad\quad\quad\quad}$
$\quad$ 100 $\quad$ 76

100 unit = 450
76 unit = $\frac{450}{100} \times 76 = 342$

S107. Ans.(a)
Sol. $\sqrt{2^6 + 15^2} = \sqrt{64 + 225} = \sqrt{289} = 17$

S108. Ans.(c)
Sol. We have
$M_1 D_1 = D_2 D_2$
ATQ,
$18 \times 24 = 12 \times 18 + x \times 12$
$18(24 - 12) = 12x$
$x = 18$

S109. Ans.(a)

Sol. Both trains are moving in same direction

∴ Relative speed = 84 – 42 = 42 km/hr

Required time = $\frac{(320+380)\times18}{42\times5}$ = 60 seconds

S110. Ans.(d)

Sol. We have,

$4\sqrt{3} > 3\sqrt{4}$

$4 \times 1.73 > 3 \times 2$

$6.92 > 6$

∴ Statement I is true

And $8\sqrt{2} > 2\sqrt{8}$

$8\sqrt{2} > 2.2\sqrt{2}$

$8\sqrt{2} > 4\sqrt{2}$

∴ Statement II is true.

S111. Ans.(b)

Sol. A prime number can be divided, without a remainder, only by itself and by 1. Out of the given options 87 does not full fill these conditions. It can be divided by 3 as well 29. Hence 87 is not a prime number.
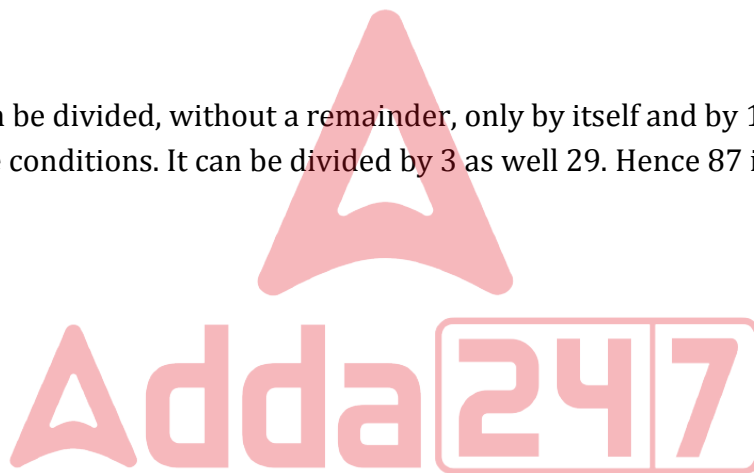
S112. Ans.(c)

Sol. $\sqrt{2}, \sqrt[3]{3}, \sqrt{4}, \sqrt[3]{5}$

$= 2^{\frac{1}{2}}, \ 3^{\frac{1}{3}}, \ 2, 5^{\frac{1}{3}}$

$= 2^3, 3^2, 2^6, 5^2$

$= 8, \ 9, 64, 25$

$\Rightarrow \sqrt{4}$ is largest number.

S113. Ans.(b)

Sol. $13 \times 49^{\frac{3}{2}} = 13 \times 7^{2\times\frac{3}{2}} = 13 \times (7)^3$

$= 13 \times 343$

$= 4459$

S114. Ans.(b)

Sol. We have,

$a + b = 8$

$a - b = 2$

Solving, we get, $a = 5, b = 3$.

Now, $\frac{a^2+b^2}{a^3-b^3} = \frac{25+9}{125-27} = \frac{34}{98} = \frac{17}{49} = 0.347$

S115. Ans.(a)
Sol. Let the first & second part of the number is A & B respectively
ATQ
Case (i)
$\frac{30A}{100} - \frac{20B}{100} = 25$
3A – 2B = 250 ... (i)
Case (ii)
$\frac{50B}{100} - \frac{60A}{100} = 33.5$
5B – 6A = 335 ... (ii)
From eqn. (i) & (ii) A = 640 & B = 835.
Hence, required number = A + B
= 640 + 835
= 1475

S116. Ans.(c)
Sol. Let the price of the article be 100
∴ Reduced price = 97
% increase to restore to its original price $= \frac{100\ -97}{97} \times 100 = 3.09\%$

S117. Ans.(c)
Sol. $CI = P\left[\left(1 + \frac{R}{100}\right)^t - 1\right]$
$= 16000\left[\left(1 + \frac{10}{100}\right)^2 - 1\right]$
= Rs. 3360
ATQ,
$SI = \frac{1}{2} \times Rs.\ 3360 = 1680$
$1680 = \frac{P \times 8 \times 3}{100}$
P = Rs. 7000

S118. Ans.(a)
Sol. $\frac{144\ a^3 b^3 c^3}{24\ b^2 c}$
$= 6a^3bc^2$

S119. Ans.(b)
Sol. Total amount to be paid without discount = 1600 × 23 + 1200 × 10 = 48,800
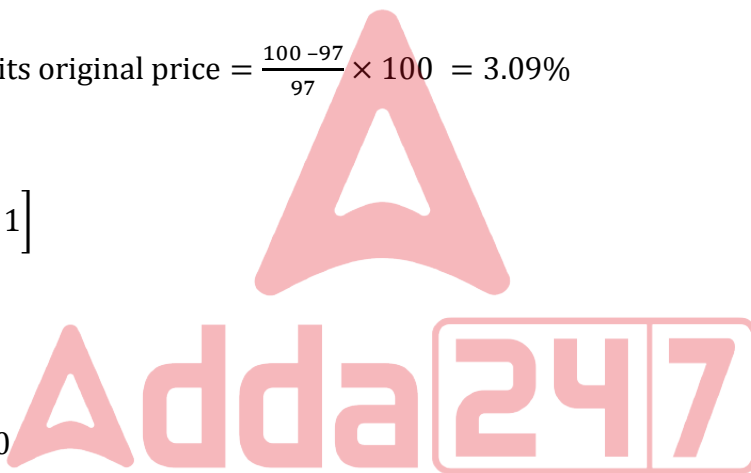ATQ,
10 children can get free ticket with 20 Adult, so all the children will get free tickets
∴ Total discount = 1200 × 10 = Rs. 12000
% Discount $= \frac{12000}{48800} \times 100$
= 24.59%

S120. Ans.(d)
Sol. Total curved S. Area = $2\pi rh + \pi r\ell$
$= 2 \times \frac{22}{7} \times 10 \times 5 + \frac{22}{7} \times 10 \times 15 = \frac{5500}{7}$
As 20% extra is required
$\therefore$ Total canvas Required
$= \frac{5500}{7} \times \frac{120}{100}$
$= 942.8 \text{ m}^2$

S121. Ans.(c)
Sol. ATQ,
Distance travel by Goods train in 11 hours is equal to the distance travel by other train in 18 hours.
$\therefore 11 \times 54 = 18 \times x$
$\Rightarrow x = 33$ km/hr

S122. Ans.(c)
Sol. a + b = 29
$ab = 100 \Rightarrow a = \frac{100}{b}$
$\frac{100}{b} + b = 29$
$b^2 - 29b + 100 = 0$
b = 25, 4
Hence, the two numbers are 4, 25.

S123. Ans.(a)
Sol. 6.651 – (148.6 – x) – 57.22 = 6.098
x = [6.098 + 57.22 + 148.6 – 6.651]
x = 205.267

S124. Ans.(d)
Sol. Let the total work be 100 unit
Work/hour = $\frac{100}{50}$ unit = 2 unit
Work done in 5 hour = 10 unit
Remaining work = 90 unit
Fraction of remaining work
$= \frac{90}{100} = 0.90$

S125. Ans.(a)
Sol. Let the no. of selected & non selected candidates be 6x, x respectively.
ATQ,
$\frac{6x-10}{x-20} = \frac{7}{1}$
x = 130
No. of candidate applied = 7x = 910

S126. Ans.(c)
Sol. Let the CP of watch for wholeseller be x.
ATQ,
$x \times \frac{132}{100} \times \frac{80}{100} = 1953.6$
x = Rs. 1850

S127. Ans.(b)
Sol. Runs made till 39 overs = 39 × 4.6
= 179.4 runs
Runs to be made in last 11 overs
= 252 – 179.4
= 72. 6
Required run rate $= \frac{72.6}{11}$
= 6.6

S128. Ans.(a)
Sol. $CI = P \left[\left(1 + \frac{R}{100} \right)^t - 1 \right]$
$= 1200 \left[\left(1 + \frac{10}{100} \right)^2 - 1 \right]$
= Rs 252
ATQ,
$SI = \frac{1}{2} \times 252 =$ Rs 126
$\frac{P \times 3 \times 8}{100} = 126$
⇒ P = Rs 525

S129. Ans.(c)
Sol. CP of 1 chikoo = Rs 8/15 = 0.54
SP of 1 chikoo = Rs 6/10 = Rs 0.60
$P = \frac{0.60 - 0.54}{0.54} \times 100 = 12.5\%$

S130. Ans.(d)
Sol. Let the no. be 20x [LCM of 4 & 5]
Wrong multiplication $= 20x \times \frac{4}{5} = 16x$
Right multiplication $= 20x \times \frac{5}{4} = 25x$
% error $= \frac{25x - 16x}{25x} \times 100$
= 36%

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