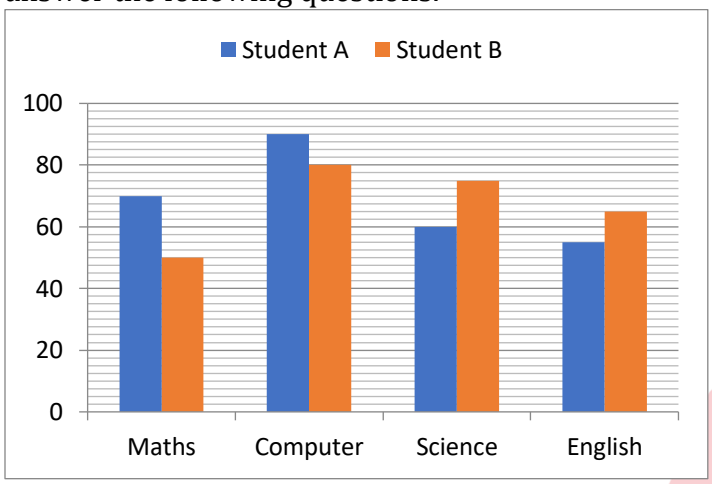
Important Questions of Quantitative Aptitude

Direction (1-5): Following bar Graph shows the marks scored by Student A and Student B in high school in different Subjects. (Maximum Marks is 100 for each subject). Study the data carefully and answer the following questions.



Q1. What is difference between average marks scored by Student A and Student B in all subjects?
(a) 1.75
(b) 1.45
(c) 1.50
(d) 1.25
(e) 1

Q2. What is Ratio of marks obtained by Student A in Maths and Computer together to the marks obtained by Student B in Science and English together?
(a) 7:5
(b) 7:8
(c) 8:7
(d) 8:5
(e) 5:7

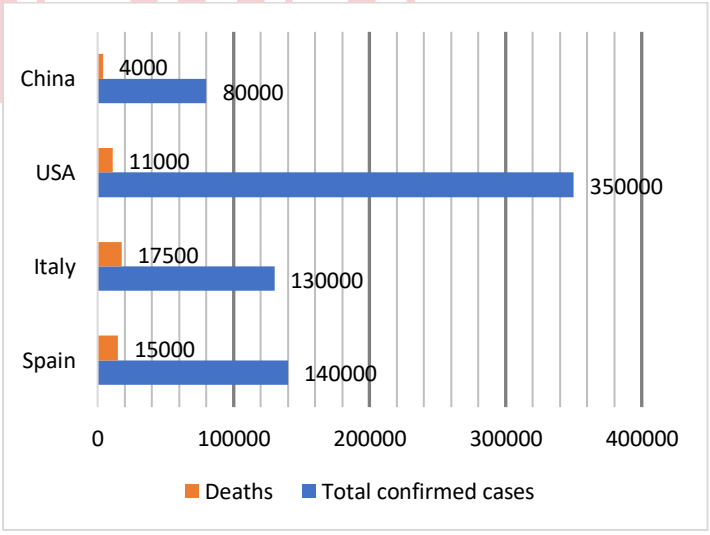
Q3. What is the overall percentage marks scored by Student B?
(a) 68.75 %
(b) 67.5 %
(c) 68%
(d) 67%
(e) 69.25%

Q4. Marks Scored by Student A in Math is what percent of marks scored by Student B in Science and English together?
(a) 40%
(b) 60%
(c) 50%
(d) 70%
(e) 80%

Q5. If passing marks for each subject is 40% of 120, then what is the difference between passing marks and marks scored by Student B in Computer?
(a) 30
(b) 32
(c) 36
(d) 40
(e) 45

Direction (6-10): Given bar graph shows total number of confirmed cases of COVIND-19 and number of deaths in four different countries. Study the bar graph carefully and answer the questions given below.

$$\textbf{Mortality rate} = \frac{\text{Number of death}}{\text{Number of total confirmed cases}} \times 100$$



Q6. For which country mortality rate is lowest among the given four countries.
(a) Italy
(b) USA

(c) Spain
(d) China
(e) USA and China

Q7. Total confirmed cases in USA is what percent more than total deaths in Italy.
(a) 1200%
(b) 1350%
(c) 2100%
(d) 1900%
(e) 1500%

Q8. Find out the ratio between mortality rate of Spain to that of China?
(a) 19: 11
(b) 43:14
(c) 15:7
(d) 14:9
(e) 13: 5

Q9. Total death in all four countries together is what percent of total confirmed cases in China?
(a) 59.375%
(b) 62%
(c) 55%
(d) 66.66%
(e) 75%

Q10. If number of confirmed cases in China is increased by 25% and mortality rate remains same, what will be the new number of total deaths in China.
(a) 4400
(b) 4500
(c) 4600
(d) 5200
(e) 5000

Directions (11-15): Read the following table carefully and answer the questions given below. Table shows total number of laptops manufactured and ratio of Apple laptops to Dell laptops manufactured by five different company in 2021.

Company	Total number of laptops manufactured	Apple laptop : Dell laptop
P	400	2:3
Q	210	9:5
R	280	9:5
S	520	3:5
T	750	2:1

Q11. What is the ratio of number of Apple laptops manufactured by R to number of Dell laptops manufactured by S?
(a) 36 : 61
(b) 36 : 65
(c) 39 : 62
(d) 37 : 69
(e) 39 : 59

Q12. Find the difference between total number of Dell laptops manufactured by P and Q together to total number of Apple laptops manufactured by S and T together?
(a) 380
(b) 240
(c) 540
(d) 290
(e) 820

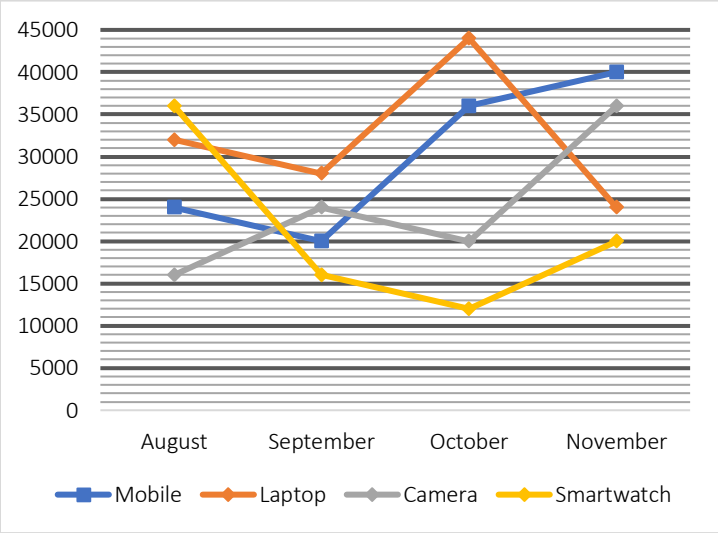
Q13. In 2022, total number of Dell laptops manufactured by S is 25% more than number of Dell laptops manufactured R in 2021. If ratio of total number of laptops manufactured by S in 2022 to that in 2021 is 11:13, then find the total number of Apple laptops manufactured by S in 2022.
(a) 420
(b) 280
(c) 355
(d) 315
(e) 550

Q14. Total number of laptops manufactured by S is how much % more/less than total number of laptops manufactured by company T?

(a) $32\frac{1}{2}\%$
(b) $33\frac{1}{3}\%$
(c) $37\frac{2}{3}\%$
(d) $27\frac{2}{3}\%$
(e) $30\frac{2}{3}\%$

Q15. Find the average number of Apple laptops manufactured by P, Q and T.
(a) 265
(b) 165
(c) 215
(d) 245
(e) 275

Directions (16-20): The line graph given below shows total number four different gadgets sold by a shop in four consecutive months. Study the chart carefully and answer the questions based on them.



Q16. Number of cameras sold in October is what percent of number of mobiles sold in August?
(a) $85\frac{1}{3}\%$
(b) $87\frac{2}{3}\%$
(c) $83\frac{1}{3}\%$
(d) $84\frac{1}{3}\%$
(e) $80\frac{1}{3}\%$

Q17. Which gadget has maximum number of sales in September month?
(a) Mobile
(b) Laptop
(c) Camera
(d) Smartwatch
(e) Laptop and Camera

Q18. Number of Camera and Laptops sold in November is what percent of total sales of all four gadgets in August?
(a) 45.45%
(b) 50.50%
(c) 60.75%
(d) 55.55%
(e) 65.50%

Q19. Find out the average of number of smartwatches sold in all the four months?
(a) 21000
(b) 22000
(c) 25000
(d) 20000
(e) 19000

Q20. Find out the ratio between number of mobiles sold in September to the number camera sold in August?
(a) 3:5
(b) 5:4
(c) 3:4
(d) 4:3
(e) 3:2

Q21. In a HR department there are 12 males and 10 females. Average weight of each male and each female is 50 kg and 45 kg respectively. If the sum of weight of all the employees and a manager whose weight is _____ kg is 1110 kg, then what will come in the place of blank?
(a) 70
(b) 55
(c) 50
(d) 60
(e) 80

Q22. X & Y working together and Z & X working together can complete a work in 12 days and 18 days respectively. If Z alone can complete the same work in 24 days, then Y and Z together to finish 50% of work in _____ days, then what will come in the place of blank?
(a) 2
(b) 5
(c) 2.5
(d) 6
(e) 4.5

Q23. Rs.3200 when invested at S.I. of 10% p.a. for T years gives an interest of Rs.2560. If Rs.2500 is invested at C.I. compounding annually of 20% p.a. for (T-6) years, then C.I. is Rs, _____. What will come in the place of blank?
(a) 1500
(b) 1250
(c) 1420
(d) 1100
(e) 1080

Q24. A jar contains 120 liters mixture of wine and water in the ratio of 7:3 respectively. If _____ liters of water are added in the mixture, then ratio of water to wine in the resultant mixture becomes 8:7 respectively. What will come in the place of blank?
(a) 60
(b) 68
(c) 70
(d) 54
(e) 50

Q25. A train crosses a bridge which length _____ meters in 14 seconds while it can cross a man standing on platform in 9 seconds. If the speed of the train is 144 km/hr, then what will come in the place of blank?
(a) 180
(b) 200
(c) 240
(d) 250
(e) 100

Q26. If Q invested Rs.2500 in scheme A which offers 15% simple interest for 2 years and Rs.2800 invested in scheme B which offers 10% C.I. for 2 years, then find the difference between interest earned from scheme A and scheme B.
(a) $Rs.168$
(b) $Rs.162$
(c) $Rs.154$
(d) $Rs.148$
(e) $Rs.172$

Q27. A shopkeeper buys an article for Rs.1995 and spent Rs.505 to transport that article. Shopkeeper marked 20% above the cost price. If he allows 15% discount on marked price, then find the profit earned by shopkeeper.
(a) $Rs.50$
(b) $Rs.60$
(c) $Rs.20$
(d) $Rs.55$
(e) $Rs.75$

Q28. 45 liters of mixture G and 70 liters of mixture Z contains milk and water in the ratio of 3:2 and 5:2 respectively. If mixture G and Z are mixed together, then what will be the ratio of quantity of water to quantity of milk in the resultant mixture.
(a) $\frac{38}{79}$
(b) $\frac{32}{77}$
(c) $\frac{39}{77}$
(d) $\frac{31}{77}$
(e) $\frac{38}{77}$

Q29. If a train crosses a tree in 18 seconds and crosses a man running in same direction of train at the speed of 11 m/s in 40 seconds, then find the length of the train?
(a) 340 m
(b) 360 m
(c) 380 m
(d) 315 m
(e) 395 m

Q30. In a class there are 60 girls and 30 boys, and the total average weight of class is $48\frac{2}{3}$ kg. If the average weight of boys is 56 kg, then find the difference between the average weight of one boy and one girl?
(a) 11 kg
(b) 9 kg
(c) 15 kg
(d) 10 kg
(e) None of these

Directions (31-35): - In each of the following questions, two equations (I) and (II) are given you have to solve both the equations and give answer.
(a) If x > y
(b) If x ≥ y
(c) If x < y
(d) If x ≤ y
(e) If x = y or no relation can be established between x and y.

Q31. I. $4x^2 - 8x + 3 = 0$
II. $4y^2 + 4y - 3 = 0$

Q32. I. $x^2 - 7x + 10 = 0$
II. $y^2 - 10y + 21 = 0$

Q33. I. $2x^2 - 7x + 3 = 0$
II. $3y^2 - y = 0$

Q34. I. $20x^2 + 31x + 12 = 0$
II. $3y^2 + 5y + 2 = 0$

Q35. I. $x + 1 = \sqrt[3]{3375}$
II. $y - 1 = \sqrt[2]{196}$

Directions (36-40) :- The table given below shows the no. of books published by 4 different publishers in 4 months. Study the data and answer the following questions.

Month / Publisher	**February**	**March**	**April**	**May**
A	2000	2400	1800	2500
B	1500	1850	2000	2100
C	1750	2000	2250	2400
D	1200	1350	800	1250

Q36. What is the average no. of books published by A in all the given months?
(a) 1740
(b) 2275
(c) 2050
(d) 2175
(e) 2250

Q37. Books published by B in February and March together is what percent more/less than that by C in March and April? (approximate)
(a) 21%
(b) 24%
(c) 16%
(d) 12%
(e) 27%

Q38. Find the ratio between books published by C to D in all given months.
(a) 23 : 45
(b) 24 : 43
(c) 42 : 23
(d) 41 : 25
(e) 23 : 42

Q39. Find the revenue obtained by B in March is how much more/less than that by D in same month, if selling price of book is Rs 120 and all books are sold. (Note – cost price and selling price of each book is same for all publishers)

(a) Rs 50,000
(b) Rs 40,000
(c) Rs 55,000
(d) Rs 70,000
(e) Rs 60,000

Q40. Books published by A in April is what percent of book published by C in March?
(a) $\frac{1000}{9}\%$
(b) 90%
(c) 10%
(d) $\frac{100}{9}\%$
(e) 75%

Q41. Tap 'A' can fill a cistern alone in 12 hours while another tap 'B' alone can empty the tank in 18 hours. If both pipes are opened together and after 3 hours tap 'B' is closed then in how much time the tank will be filled?
(a) 14 hours
(b) 16 hours
(c) 10 hours
(d) 12 hours
(e) 20 hours

Q42. Three friends run around a circular track can complete a single loop in 24 min, 32 min and 56 min respectively. If they started running from the same initial point then after how much time they will meet together for first time?
(a) 8.4 hours
(b) 9.6 hours
(c) 11.2 hours
(d) 6.4 hours
(e) 10 hours

Q43. A man covers half of total distance with 12 km/h and another half distance with 24km/h. Find his average speed.
(a) 12 km/h
(b) 16 km/h
(c) 10 km/h
(d) 18 km/h
(e) 6 km/h

Q44. I bought 16 pencils at the rate of Rs 9 per dozen and sold all of them at the rate of Rs 12 per dozen. What is the overall profit percentage in this transaction?
(a) $66\frac{2}{3}\%$
(b) $22\frac{1}{7}\%$
(c) 22%
(d) $33\frac{1}{3}\%$
(e) 44%

Q45. In a zoo, there are 480 deers and ostriches together. If the total number of legs are 1040 then find the number of deers and ostriches respectively.
(a) 80, 400
(b) 60, 420
(c) 40, 440
(d) 120, 360
(e) 100, 380

Q46. A boy was asked to find the value of $\frac{3}{5}th$ of the sum of money. He divides the sum by $\frac{3}{5}th$ instead of multiplying, due to which he exceeds the value by 512. Find the initial sum of money.
(a) Rs 450
(b) Rs 520
(c) Rs 540
(d) Rs 480
(e) Rs 560

Q47. The HCF of two numbers is 15 and LCM of two number is 180. If one number is 45, then find the other number.
(a) 54
(b) 60
(c) 72
(d) 63
(e) 90

Q48. There are 15 persons lives in PG. If average monthly income of 8 persons is Rs 37000 and average monthly income of remaining persons is Rs 40000. Find the average monthly income of the group?
(a) Rs 37600
(b) Rs 38800
(c) Rs 38400
(d) Rs 36400
(e) Rs 37400

Q49. The ratio of spirit and water in two mixtures of 24 liters and 42 liters is 7 : 5 and 5 : 9 respectively. Both the mixtures are mixed together. Now the ratio of the spirit and water in the new mixture is
(a) 21 : 29
(b) 29 : 35
(c) 37 : 29
(d) 29 : 37
(e) 31 : 29

Q50. Volume of right circular cylinder is twice of the volume of sphere. Radius of the base of the cylinder is same as the radius of the sphere. If height of the cylinder is 8 cm, then find the total surface area of the cylinder.
(a) $64\pi\ cm^2$
(b) $66\pi\ cm^2$
(c) $78\pi\ cm^2$
(d) $72\pi\ cm^2$
(e) $63\pi\ cm^2$

Q51. Harish covers a distance of 720 km in 8 hours. If speed of Shivam is $\frac{4}{3}rd$ of the speed of Harish, then find time taken by Shivam to cover $\frac{3}{4}th$ of the distance that is covered by Harish.
(a) 5 hours
(b) 3.6 hours
(c) 4 hours
(d) 4.5 hours
(e) 5.2 hours

Q52. A and B invests a total amount of Rs 10000 in two schemes respectively for two years. A invests at rate of 10% per annum at CI while B invests at rate of 12.5% at SI. If interest earned by B is Rs 660 more than A, then find amount invested by B.
(a) Rs 4000
(b) Rs 5500
(c) Rs 6000
(d) Rs 6500
(e) Rs 5000

Q53. A boatman starts streaming from a point in downstream. After covering a distance of 180 km, the boatman returns to initial point. If the speed of the boat in still water is 36 kmph and speed of stream is 9 kmph. Find the total time taken by boatman during his whole trip.
(a) 9 hour 30 min
(b) 10 hour 40 min
(c) 8 hour 20 min
(d) 9 hour 50 min
(e) 10 hour 30 min

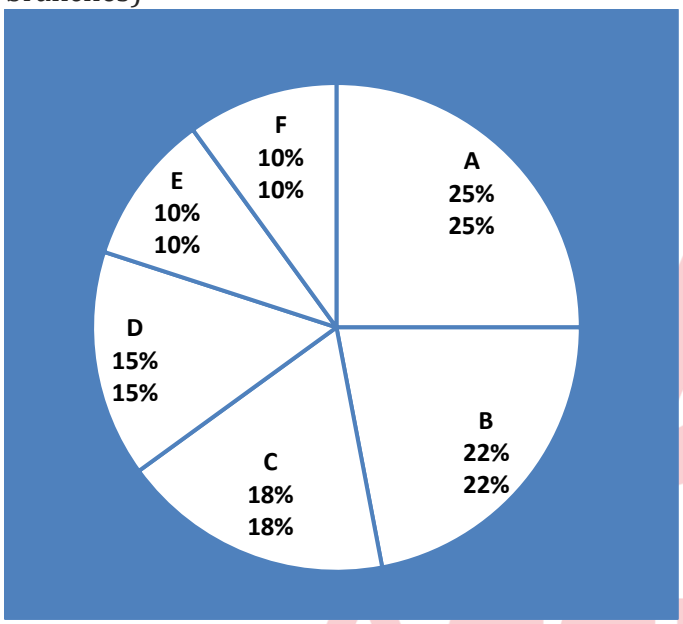
Q54. The ratio between the curved surface area and total surface area of right circular cylinder is 3 : 5. If the volume of the cylinder is $96\pi\ cm^3$, then find the curved surface area of the cylinder.
(a) $48\pi\ cm^2$
(b) $52\pi\ cm^2$
(c) $46\pi\ cm^2$
(d) $54\pi\ cm^2$
(e) $60\ \pi\ cm^2$

Q55. There are 4 consecutives even numbers. If sum of first three numbers is 108, then calculate the product of smallest and largest no.
(a) 1260
(b) 1292
(c) 1280
(d) 1360
(e) 1428

Directions (56-60): A company have five branch office (P, Q, R, S & T) and each office have six different departments (A, B, C, D, E & F). Table shows total employees in each five branch and pie chart shows distribution of employees in each department.

Company Branches	Total no. of employees
P	7200
Q	6400
R	5600
S	8400
T	7500

(Note: company has decided to keep same % of employees in each six department in each five branches)



Q56. What is ratio between total employees in A and D department from branch P to total employees in B & C department from branch S ?
(a) 7 : 6
(b) 6 : 5
(c) 6 : 11
(d) 6 : 7
(e) None of these

Q57. If ratio of male to female employees from branch S is 4 : 3 and ratio of female to male employees in department A from same branch is 2 : 1. Then find total female employees in department A from branch S are what percent of total number of females employees from branch S.
(a) $36\frac{8}{9}\%$
(b) $38\frac{8}{9}\%$
(c) $39\frac{8}{9}\%$
(d) $40\frac{8}{9}\%$
(e) $37\frac{8}{9}\%$

Q58. Find the average of total employees in department A from the all five branches of the company?
(a) 1725
(b) 1735
(c) 1745
(d) 1755
(e) 1765

Q59. Employees in department D, E and F from branch Q together are what percent less than total employees from branch R ?
(a) 60%
(b) 55%
(c) 65%
(d) 58%
(e) 50%

Q60. What is difference between average of employees in all departments except A from branch T and total employees in branch Q ?
(a) 5435
(b) 5245
(c) 5265
(d) 5215
(e) 5275

Directions (61-65): Read the information carefully and answer the following questions.
Persons X, Y and Z wish to go from place A to place B, which are separated by a distance of 70 km. All the three persons start off together from A, with X and Y going by bike at a speed of 20 kmph. X drops Y somewhere along the way and return to pick up Z, who has already started walking towards B at a speed of 5 kmph. Y, after being dropped by X starts walking towards B at a speed of 5 kmph. In this manner, all three of them reach B at the same time.

Q61. How much distance is covered by Z on foot?
(a) 15 km

(b) 10 km
(c) 12.5 km
(d) 17.5 km
(e) None of these

Q62. After how much time is Y dropped on the way by X?
(a) 2 *hr*
(b) 2.5 *hr*
(c) 3 *hr*
(d) 3.5 *hr*
(e) $3\frac{1}{3}$ *hr*

Q63. Find the distance from B where X meets Z while X was going to pick Z?
(a) 36 km
(b) 40 km
(c) 45 km
(d) 30 km
(e) None of these

Q64. Find the distance covered by Y in the time when X meets Z in order to pick him?
(a) 7.2 *km*
(b) 6 *km*
(c) 8 *km*
(d) 7.5 *km*
(e) 9 *km*

Q65. Find the total time taken by Z to reach point B?
(a) 6 *hr*
(b) 7.5 *hr*
(c) 6.5 *hr*
(d) 8 *hr*
(e) 5.5 *hr*

Directions (66-70): What will come in place of question mark (?) in the following series questions?

Q66.
1 2 6 15 ?
(a) 31
(b) 30
(c) 25
(d) 40
(e) 28

Q67. 12 14 17 22 29 ?
(a) 41
(b) 40
(c) 38
(d) 45
(e) 46

Q68. 12 10 37 101 ?
(a) 225
(b) 227
(c) 226
(d) 220
(e) 221

Q69. 101 123 147 173 ?
(a) 200
(b) 201
(c) 202
(d) 203
(e) 204

Q70. 24 30 23 31 22 ?
(a) 32
(b) 33
(c) 31
(d) 34
(e) 35

Directions (71-75):- What will come in place of question mark (?) in the following questions
Q71. $\sqrt{256} \times \sqrt{169} + 3600 \div 12 = 800 - ?$
(a) 312
(b) 280
(c) 292
(d) 324
(e) 296

Q72. $37.5\times14+800-(26)^2+136=?$
(a) 785
(b) 800
(c) 810
(d) 825
(e) 765

Q73. $5430+3780-6430=2260+?$
(a) 530
(b) 490
(c) 500
(d) 520
(e) 510

Q74. $2160\div12+5740\div14-3150\div15+?=400$
(a) 16
(b) 32
(c) 28
(d) 24
(e) 20

Q75. $\sqrt{3481}\times7+\sqrt{5625}\times4=500+?$
(a) 213
(b) 223
(c) 203
(d) 233
(e) 243

Directions (76-85): Find out the wrong number, if any, in the following number series questions?

Q76. 121, 246, 309, 335, 342, 342
(a) 309
(b) Series is correct
(c) 335
(d) 246
(e) 121

Q77. 100, 228, 292, 324, 340, 348, 354
(a) 100
(b) 348
(c) 354
(d) 324
(e) 292

Q78. 11, 1343, 614, 957, 832, 859, 858
(a) 858
(b) 11
(c) 1343
(d) 832
(e) 614

Q79. 4, 10, 23, 50, 105, 216, 440
(a) 440
(b) 4
(c) 216
(d) 10
(e) 105

Q80. 16, 25, 41, 257, 321, 1321, 1465
(a) 321
(b) 16
(c) 25
(d) 1321
(e) 257

Q81. 109, 111, 117, 129, 149, 179, 222
(a) 111
(b) 117
(c) 179
(d) 222
(e) 109

Q82. 210, 212, 225, 259, 332, 468, 697
(a) 212
(b) 225
(c) 468
(d) 210
(e) 259

Q83. 100, 50 , 50, 75, 150, 375, 1150
(a) 75
(b) 1150
(c) 375
(d) 150
(e) 100

Q84. 213, 218, 233, 278, 413, ?
(a) 810
(b) 218
(c) 570
(d) 720
(e) 818

Q85. 279, 286, 297, 310, 327, 346, 368
(a) 310
(b) 286
(c) 368
(d) 346
(e) 327

Directions (86-100): What will come in place of question mark(?) in the following questions?

Q86. 45% of 80 + $\sqrt{841}$ + $?^2$ = 2121 ÷ 21
(a) 2
(b) 6
(c) 5
(d) 8
(e) 9

Q87. $\frac{36+3\times ?}{23} + 2^8 \div 16^2 = 13 \times 4$
(a) 290
(b) 270
(c) 379
(d) 350
(e) 152

Q88. $7^3 \times 2^5 \div 4^3 + 175\%\ of\ 350 = ?^2$
(a) 23
(b) 21
(c) 28
(d) 26
(e) 25

Q89. 23 × 24 + 23 × 47 – 23 × 54 = ?
(a) 237
(b) 289
(c) 321
(d) 391
(e) 491

Q90. 120% of 650 + 320 + 255 ÷ 5 = ?
(a) 1163
(b) 1363
(c) 1151
(d) 1263
(e) 1051

Q91. 50% of 128 + $\frac{\sqrt{16}}{2} \times 4 = ? + 10$
(a) 64
(b) 62
(c) 60
(d) 56
(e) 82

Q92. $\frac{\sqrt[3]{1331}}{11} + \sqrt{81} + ? = 27$
(a) 19
(b) 18
(c) 17
(d) 16
(e) 15

Q93. $(3)^2 \times (3)^6 \times (9)^2 \div (27)^2 = (3)^?$
(a) 4
(b) 6
(c) 7
(d) 5
(e) 8

Q94. 123 + 447 – 170 + 500 =? – 200
(a) 1300
(b) 1100
(c) 1000
(d) 1030
(e) 1173

Q95. $(14)^2$ + 179 + $(5)^2$ = $(?)^2$
(a) 10
(b) 20
(c) 30
(d) 40
(e) 22

Q96. $11\frac{2}{9} + 12\frac{2}{9} - 13\frac{2}{9} - 4\frac{1}{4} = ?$
(a) $5\frac{35}{36}$
(b) $7\frac{35}{36}$
(c) $9\frac{35}{36}$
(d) $8\frac{31}{36}$
(e) $3\frac{35}{36}$

Q97. 5220 + 1375 – 5364 + ? = 10288
(a) 9263
(b) 9057
(c) 8024
(d) 7056
(e) 8824

Q98. ? × (1350 ÷ 112.5) = $\sqrt{5929}$ + $\sqrt{8281}$
(a) 11
(b) 12
(c) 13
(d) 14
(e) 15

Q99. 18750 ÷ $\sqrt{?}$ = 36 × 11 + 59 × 6
(a) 25
(b) 625
(c) 5
(d) 3125
(e) 5625

Q100. $3^{?}$ = 729 ÷ 243 × 216 × 72 ÷ 576
(a) –2
(b) 8
(c) 6
(d) 5
(e) 4

Solutions

S1. Ans(d)
Sol.
required difference = average marks scored by Student A - Average marks scored by Student B
$\therefore \frac{70+90+60+55}{4} - \frac{50+80+75+65}{4} = \frac{5}{4} = 1.25$

S2. Ans(c)
Sol.
marks obtained by student A in Math and Computer together =70 + 90 = 160
marks obtained by student B in Science and English together=75+65 =140
required ratio = 160:140= 8:7

S3. Ans(b)
Sol.
Overall percentage marks of Student B = $\frac{50+80+75+65}{400} \times 100 = 67.5$

S4. Ans(c)
Sol.
Marks Scored by Student A in Math =70
Marks Scored by Student B in Science and English =75+65=140
Required % = $\frac{70}{140} \times 100$
=50%

S5. Ans(b)
Sol.
A.T.Q, passing marks = $\frac{40}{100} \times 120 = 48$
$\therefore$ required difference = 80 – 48 = 32

Solution (6-10)
ATQ,
Mortality rate for China = $\frac{4000}{80000} \times 100 = 5\%$
Mortality rate for USA = $\frac{11000}{350000} \times 100 = 3.14\%$
Mortality rate for Italy = $\frac{17500}{130000} \times 100 = 13.46\%$
Mortality rate for Spain = $\frac{15000}{140000} \times 100 = 10.71\%$

S6. Ans(b)
Sol.
USA has lowest mortality rate, which is 3.14%

S7. Ans(d)
Sol.
Required % = $\frac{350000-17500}{17500} \times 100 = 1900\%$

S8. Ans(c)
Sol.
Required ratio = $\frac{\frac{15000}{140000}\times 100}{\frac{4000}{80000}\times 100} = 15 : 7$

S9. Ans(a)
Sol.
Required % = $\frac{4000+11000+17500+15000}{80000} \times 100 = 59.375\%$

S10. Ans(e)
Sol.
New total confirmed cases in China = $80000 \times \frac{5}{4} = 100000$
Mortality rate in China is 5%.
New number of total deaths = $100000 \times \frac{5}{100} = 5000$

S11. Ans(b)
Sol.
Req. ratio = $280 \times \frac{9}{14} : 520 \times \frac{5}{8} = 180 : 325 = 36 : 65$

S12. Ans(a)
Sol.
Req. difference = $\left(520 \times \frac{3}{8} + 750 \times \frac{2}{3}\right) - \left(400 \times \frac{3}{5} + 210 \times \frac{5}{14}\right)$
$= (195 + 500) - (240 + 75)$
$= 695 - 315 = 380$

S13. Ans(d)
Sol.
Total number of Dell laptops manufactured by S in 2022 = $280 \times \frac{5}{14} \times \frac{125}{100} = 125$
Total number of laptops manufactured by S in 2022 = $520 \times \frac{11}{13} = 440$
Total number of Apple laptop manufactured by S in 2022 = 440 – 125 = 315

S14. Ans(e)
Sol.
Req. % = $\frac{750-520}{750} \times 100 = 30\frac{2}{3}\%$

S15. Ans(a)
Sol.
Req. average = $\frac{400\times\frac{2}{5}+210\times\frac{9}{14}+750\times\frac{2}{3}}{3} = \frac{160+135+500}{3} = 265$

S16. Ans(c)
Sol. Required percentage = $\frac{20000}{24000} \times 100 = 83\frac{1}{3}\%$

S17. Ans(b)
Sol. Laptop has maximum number of sales in September month, which is 28000.

S18. Ans(d)
Sol. Required percentage = $\frac{24000+36000}{108000} \times 100 = 55.55\ \%$

S19. Ans(a)
Sol. Average number of smartwatches = $\frac{20000+12000+16000+36000}{4} = 21000$

S20. Ans(b)
Sol. Required ratio = $\frac{20000}{16000} = 5:4$

S21. Ans (d)
Sol.
Let weight of a manager be x kg
Total weight of 12 males = $12 \times 50 = 600\ kg$
Total weight of 10 females = $10 \times 45 = 450\ kg$
ATQ.
$600 + 450 + x = 1110$
$x = 60\ kg$

S22. Ans (e)
Sol.
let total work (L.C.M. of 12, 18 & 24) = 72 units
Efficiency of X&Y, Z&X and Z is 6 units/day, 4 units/day & 3 units/day respectively.
Efficiency of X = 4 – 3 = 1 unit/day
Efficiency of Y = 6 – 1 = 5 unit/day
Req. time = $\frac{72\times\frac{50}{100}}{5+3} = \frac{36}{8} = 4.5\ days$

S23. Ans (d)
Sol.
ATQ.
$2560 = \frac{3200 \times T \times 10}{100}$
$T = 8$
Composite compound interest for two years = $\left(20 + 20 + \frac{20\times20}{100}\right)\% = 44\%$

Req. interest = $2500 \times \frac{44}{100} = Rs.1100$

S24. Ans (a)
Sol.
let quantity of water added be x liters
ATQ.

$$\frac{120 \times \frac{7}{10}}{120 \times \frac{3}{10} + x} = \frac{7}{8}$$

$$\frac{84}{36 + x} = \frac{7}{8}$$

$96 - 36 = x$
$60 = x$

S25. Ans (b)
Sol.
Let length of bridge be x meters
length of train = $9 \times 144 \times \frac{5}{18} = 360\ m$
ATQ.

$$\frac{x + 360}{144 \times \frac{5}{18}} = 14$$

$x + 360 = 560$
$x = 200$

S26. Ans.(b)
Sol.
Equivalent compound interest for 2 years = $\left(10 + 10 + \frac{10 \times 10}{100}\right)\% = 21\%$
Req. difference = $\frac{2500 \times 15 \times 2}{100} - 21 \times \frac{2800}{100}$
$= 750 - 588 = Rs.162$

S27. Ans.(a)
Sol.
Total cost price = $Rs.(1995 + 505) = Rs.2500$
Marked price = $2500 \times \frac{120}{100} = Rs.3000$
Selling price = $3000 \times \frac{85}{100} = Rs.2550$
Profit = $Rs.(2550 - 2500) = Rs.50$

S28. Ans.(e)
Sol.
Req. ratio = $\frac{45 \times \frac{2}{5} + 70 \times \frac{2}{7}}{45 \times \frac{3}{5} + 70 \times \frac{5}{7}} = \frac{18 + 20}{27 + 50} = \frac{38}{77}$

S29. Ans.(b)
Sol.
Let the speed of the train be 's' m/s
Length of train = 18s
ATQ.
$18s = 40 \times (s - 11)$
$18s = 40s - 440$
$22s = 440$
$s = 20$
Length of train $= 20 \times 18 = 360\ m$

S30. Ans(a)
Sol.
Total weight of class = $(60 + 30) \times \frac{146}{3} = 4380\ kg$
Total weight of boys = $30 \times 56 = 1680$ kg
So, weight of one girl = $\frac{(4380 - 1680)}{60} = 45$ kg
Required difference = 56 – 45 = 11 kg

S31. Ans.(b)
Sol.
I. $4x^2 - 8x + 3 = 0$
$4x^2 - 6x - 2x + 3 = 0$
$2x(2x - 3) - 1(2x - 3) = 0$
$(2x - 3)(2x - 1) = 0$
$x = \frac{3}{2}, \frac{1}{2}$
II. $4y^2 + 4y - 3 = 0$
$4y^2 + 6y - 2y - 3 = 0$
$2y(2y + 3) - 1(2y + 3) = 0$
$(2y - 1)(2y + 3) = 0$
$y = \frac{1}{2}, \frac{-3}{2}$
So, x ≥ y

S32. Ans.(e)
Sol.
I. $x^2 - 7x + 10 = 0$
$x^2 - 5x - 2x + 10 = 0$
$x(x - 5) - 2(x - 5) = 0$
$(x - 5)(x - 2) = 0$
$x = 2, 5$
II. $y^2 - 10y + 21 = 0$
$y^2 - 7y - 3y + 21 = 0$
$y(y - 7) - 3(y - 7) = 0$

(y – 7) (y – 3) = 0
y = 3, 7
So, no relation can be established.

S33. Ans.(a)
Sol.
I. $2x^2 - 7x + 3 = 0$
$2x^2 - 6x - x + 3 = 0$
2x (x – 3) – 1 (x – 3) = 0
(x – 3) (2x – 1) = 0
$x = \frac{1}{2}, 3$
II. $3y^2 - y = 0$
y (3y – 1) = 0
$y = 0, \frac{1}{3}$
So, x > y

S34. Ans.(e)
Sol.
I. $20x^2 + 31x + 12 = 0$
$20x^2 + 16x + 15x + 12 = 0$
4x (5x + 4) + 3 (5x + 4) = 0
(5x + 4) (4x + 3) = 0
$x = \frac{-4}{5}, \frac{-3}{4}$
II. $3y^2 + 5y + 2 = 0$
$3y^2 + 3y + 2y + 2 = 0$
3y (y + 1) + 2 (y + 1) = 0
(y + 1) (3y + 2) = 0
$y = -1, \frac{-2}{3}$
So, no relation can be established.

S35. Ans.(c)
Sol.
I. $x + 1 = \sqrt[3]{3375}$
x = 15 – 1
x = 14
II. $y - 1 = \sqrt[2]{196}$
y = 14 + 1
y = 15
So, y > x

S36. Ans (d)
Sol. Required average $= \frac{2000+2400+1800+2500}{4} = \frac{8700}{4}$
$= 2175$

S37. Ans (a)
Sol. Required percentage
$= \frac{(2000+2250)-(1500+1850)}{(2000+2250)} \times 100$
$= \frac{4250-3350}{4250} \times 100 = \frac{900}{4250} \times 100$
$= \frac{360}{17} = 21.176 \simeq 21\%$

S38. Ans (c)
Sol. Required ratio $= \frac{1750+2000+2250+2400}{1200+1350+800+1250} = \frac{8400}{4600}$
$= 42:23$

S39. Ans (e)
Sol. Difference in revenue $= (1850 - 1350) \times 120 = 500 \times 120$
$= Rs\ 60{,}000$

S40. Ans (b)
Sol. Required percentage $= \frac{1800}{2000} \times 100$
$= 90\%$

S41. Ans.(a)
Sol.
Let total work = 36 units
One hour's work of A $= \frac{36}{12} = 3$ units
One hour's work of B $= \frac{-36}{18} = -2$ units
(∵ B is emptying pipe)
∴ Remaining work after 3 hours
= 36 – (3 × 3 – 2 × 3)
= 33 units
∴Total time required to fill the tank
$= 3 + \frac{33}{3} = 14$ hours

S42. Ans.(c)
Sol.
Required time = LCM of (24, 32, 56)
= 672 min
= 11.2 hours

S43. Ans.(b)
Sol.
Let total distance = d
$\therefore$ Average speed $= \frac{d}{\frac{d}{24}+\frac{d}{48}}$
= 16 km/h

S44. Ans.(d)
Sol.
CP of 16 pencils $= \frac{9}{12} \times 16 = Rs.12$
SP of 16 pencils $= \frac{12}{12} \times 16 = Rs\ 16$
$\therefore$ Required profit percentage $= \frac{16-12}{12} \times 100 = 33\frac{1}{3}\%$

S45. Ans.(c)
Sol.
Let total number of deer and ostriches are x and y respectively.
$\therefore$ x + y = 480 ...(i)
And,
4x + 2y = 1040
$\Rightarrow$ 2x + y = 520 ...(ii)
Solving equation (i) and (ii) respectively.
x = 40 and y = 440

S46. Ans (d)
Sol.
ATQ
Let initial sum be Rs x.
$x \times \frac{5}{3} - x \times \frac{3}{5} = 512$
$25x - 9x = 512 \times 15$
$16x = 512 \times 15$
$x = Rs\ 480$

S47. Ans (b)
Sol. product of two no. = LCM of two no. × HCF of two no.
So, second no. $= \frac{15 \times 180}{45} = 60$

S48. Ans (c)
Sol. Required average $= \frac{37000 \times 8 + 40000 \times 7}{15}$
$= \frac{576000}{15} = Rs\ 38400$

S49. Ans (d)
Sol. Ratio of the spirit and water in the resultant mixture
$= \frac{24 \times \frac{7}{12} + 42 \times \frac{5}{14}}{24 \times \frac{5}{12} + 42 \times \frac{9}{14}} = \frac{14+15}{10+27} = \frac{29}{37}$

S50. Ans (b)
Sol. let h cm be the height of the cylinder, r cm be radius of the cylinder and R cm be the radius of the sphere.
Given that, r = R
ATQ
$\frac{\pi r^2 h}{\frac{4}{3}\pi r^3} = \frac{2}{1}$
$\frac{3h}{4r} = \frac{2}{1}$
As h = 8 cm
$R = r = 3\ cm$
So, total surface area of the cylinder $= 2\pi r(r+h)$
$= 2 \times \pi \times 3 \times 11 = 66\pi\ cm^2$

S51. Ans (d)
Sol.
Required time $= \frac{720 \times \frac{3}{4}}{\frac{720}{8} \times \frac{4}{3}} = \frac{540}{120} = 4.5\ hours$

S52. Ans (c)
Sol. Let B invested Rs x.
So, amount invested by A = Rs.(10000 – x)
Equivalent rate of interest for A at 10% C.I. $= 10 + 10 + \frac{10 \times 10}{100} = 21\%$
ATQ
$\frac{x \times 12.5 \times 2}{100} - \frac{(10000-x) \times 21}{100} = 660$
$\frac{25x}{100} - \frac{210000-21x}{100} = 660$
$25x - 210000 + 21x = 66000$
$46x = 276000$
$x = 6000$

S53. Ans (b)
Sol. Total time taken $= \frac{180}{36+9} + \frac{180}{36-9}$

$= \frac{180}{45} + \frac{180}{27} = 4 + \frac{20}{3} = 10\ hour\ 40\ min$

S54. Ans (a)

Sol. let r cm and h cm respectively be the radius and height of the cylinder

ATQ

$\frac{2\pi rh}{2\pi r(r+h)} = \frac{3}{5}$

$\frac{h}{r+h} = \frac{3}{5}$

$\frac{r}{h} = \frac{2}{3}$

Now, let h = 3x and r = 2x

$\pi r^2 h = 96\pi$

$\pi \times 4x^2 \times 3x = 96\pi$

$x^3 = 8$

$x = 2\ cm$

So, r = 4 cm and h = 6 cm

$\therefore curved\ surface\ area\ of\ cylinder = 2\pi \times 4 \times 6 = 48\pi\ cm^2$

S55. Ans (d)

Sol. Let 4 consecutive even no. are a, a+2, a+4 and a+6 respectively.

ATQ

$a + a + 2 + a + 4 = 108$

$a = 34$

$\therefore$ required no. $= a \times (a + 6) = 34 \times 40$

$= 1360$

S56. Ans.(d)

Sol.

$Required\ ratio = \frac{7200 \times \frac{(25+15)}{100}}{8400 \times \frac{(22+18)}{100}}$

$= \frac{7200}{8400} = 6 : 7$

S57. Ans.(b)

Sol.

Total female employees from branch S

$= 8400 \times \frac{3}{7} = 3600$

Total female employees in department A from branch S

$= 8400 \times \frac{25}{100} \times \frac{2}{3}$

$= 1400$

$Required\ \% = \frac{1400}{3600} \times 100 = 38\frac{8}{9}\%$

S58. Ans.(d)

Sol.

Required average

$= \frac{7200 \times \frac{25}{100} + 6400 \times \frac{25}{100} + 5600 \times \frac{25}{100} + 8400 \times \frac{25}{100} + 7500 \times \frac{25}{100}}{5}$

$= \frac{1800 + 1600 + 1400 + 2100 + 1875}{5}$

$= \frac{8775}{5} = 1755$

S59. Ans.(a)

Sol.

Total employees in department D, E and F from branch Q

$= 6400 \times \frac{(15 + 10 + 10)}{100}$

$= 2240$

$Required\% = \frac{5600 - 2240}{5600} \times 100$

$= \frac{3360}{5600} \times 100$

$= 60\ \%$

S60. Ans.(e)

Sol.

Average of total employees in all department from branch T expect A

$= \frac{7500 \times \frac{(22 + 18 + 15 + 10 + 10)}{100}}{5}$

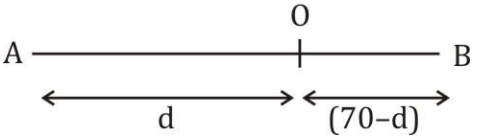
$= 7500 \times \frac{75}{100 \times 5}$

$= 1125$

Required difference = 6400 – 1125

$= 5275$

Solution (61-65):



Let X drops Y at a distance of d km from point A.

Time taken by X to cover a distance of d km = $\frac{d}{20} hr.$

Distance Coverd by Z in $\frac{d}{20} hr. = \frac{d}{20} \times 5 = \frac{d}{4} km.$

Distance From A were X meets Z

$= \frac{d}{4} + \frac{\left(d - \frac{d}{4}\right)}{25} \times 5 = \frac{8d}{20} = \frac{2d}{5} km$

Remaing distance that X has to cover

$= \left(70 - \frac{2d}{5}\right)$ km.

Distance covered by Y in the time when X meets Z

$= 5 \times \frac{(d - \frac{d}{4})}{25} = \frac{3d}{20} km.$

ATQ,

$\frac{70 - \frac{2d}{5}}{20} = \frac{70 - d - \frac{3d}{20}}{5}$

$\Rightarrow$ d = 50 km.

S61. Ans(e)

Sol.

Required distance covered by Z on foot=20 km

S62. Ans(b)

Sol.

Required time=$\frac{d}{20} hr = 2.5\ hr$

S63. Ans(e)

Sol.

Required distance=70-$\frac{2d}{5} = 50\ km$

S64. Ans(d)

Sol.

Required distance=$\frac{3d}{20} = 7.5\ km$

S65. Ans(c)

Sol.

Required time=$\frac{d}{20} + \frac{70-d}{5} = 6.5\ hr$

S66. Ans.(a)

Sol.

$1 + 1^2 = 2$

$2 + 2^2 = 6$

$6 + 3^2 = 15$

$\therefore 15 + 4^2 = 31$

S67. Ans.(b)

Sol.

12 + 2 = 14

14 + 3 = 17

17 + 5 = 22

22 + 7 = 29

∴ 29 + 11 = 40 (addition of prime numbers)

S68. Ans.(c)

Sol.

$1 + 1^3 = 2$

$2 + 2^3 = 10$

$10 + 3^3 = 37$

$37 + 4^3 = 101$

$\therefore 101 + 5^3 = 226$

S69. Ans.(b)

Sol.

$10^2 + 1 = 101$

$11^2 + 2 = 123$

$12^2 + 3 = 147$

$13^2 + 4 = 173$

$\therefore 14^2 + 5 = 201$

S70. Ans.(a)

Sol.

24 + 6 = 30

30 – 7 = 23

23 + 8 = 31

31 – 9 = 22

∴ 22 + 10 = 32

S71. Ans(c)

Sol.

$\sqrt{256} \times \sqrt{169} + 3600 \div 12 = 800 - ?$

16× 13+300=800- ?

208+300=800 -?

?=800 -508

=292

S72. Ans(a)
Sol.
? = 37.5×14+800 –$(26)^2$+136
?= 525+800-676+136
?=1325-540
=785

S73. Ans(d)
Sol.
5430+3780 − 6430 = 2260 + ?
9210 - 6430=2260 + ?
2780 = 2260 +?
?=2780 -2260
=520

S74. Ans(e)
Sol.
2160÷ 12 + 5740 ÷ 14 − 3150 ÷ 15+ ? = 400
180+410-210+ ? =400
590-210+? =400
?=400- 380 =20

S75. Ans(a)
Sol.
$\sqrt{3481} \times 7 + \sqrt{5625} \times 4 = 500 + ?$
59× 7 + 75 × 4 =500+ ?
413+300 =500+ ?
?=713-500
=213

S76. Ans.(e)
Sol.
$\mathbf{122} + 5^3 - 1 = 246$
$246 + 4^3 - 1 = 309$
$309 + 3^3 - 1 = 335$
$335 + 2^3 - 1 = 342$
$342 + 1^3 - 1 = 342$

S77. Ans.(c)
Sol.
$100 + 128 = 228$
$228 + 64 = 292$
$292 + 32 = 324$
$324 + 16 = 340$
$340 + 8 = 348$
$348 + 4 = \mathbf{352}$

S78. Ans.(b)
Sol.
$12 + 11^3 = 1343$
$1343 - 9^3 = 614$
$614 + 7^3 = 957$
$957 - 5^3 = 832$
$832 + 3^3 = 859$
$859 - 1^3 = 858$

S79. Ans.(a)
Sol.
$4 \times 2 + 2 = 10$
$10 \times 2 + 3 = 23$
$23 \times 2 + 4 = 50$
$50 \times 2 + 5 = 105$
$105 \times 2 + 6 = 216$
$216 \times 2 + 7 = 439$

S80. Ans.(b)
Sol.
$\mathbf{17} + 2^3 = 25$
$25 + 4^2 = 41$
$41 + 6^3 = 257$
$257 + 8^2 = 321$
$321 + 10^3 = 1321$
$1321 + 12^2 = 1465$

S81. Ans.(d)
Sol.

$109 + 1^2 + 1 = 111$
$109 + 2^2 + 2 = 117$
$109 + 3^2 + 3 = 129$
$109 + 4^2 + 4 = 149$
$109 + 5^2 + 5 = 179$
$109 + 6^2 + 6 = \mathbf{221}$

S82. Ans.(d)
Sol.
$\mathbf{208} + 1^3 + 3 = 212$
$212 + 2^3 + 5 = 225$
$225 + 3^3 + 7 = 259$
$259 + 4^3 + 9 = 332$
$332 + 5^3 + 11 = 468$
$468 + 6^3 + 13 = 697$

S83. Ans.(b)
Sol.
$100 \times 0.5 = 50$
$50 \times 1 = 50$
$50 \times 1.5 = 75$
$75 \times 2 = 150$
$150 \times 2.5 = 375$
$375 \times 3 = \mathbf{1125}$

S84. Ans.(e)
Sol.
13 21 37 69 133 261 517
+8 +16 +32 +64 +128 +256

S85. Ans.(c)
Sol.
$279 + 7 = 286$
$286 + 11 = 297$
$297 + 13 = 310$
$310 + 17 = 327$
$327 + 19 = 346$
$346 + 23 = \mathbf{369}$

S86. Ans.(b)
Sol.
$\frac{45}{100} \times 80 + \sqrt{841} + ?^2 = 2121 \div 21$
$36 + 29 + ?^2 = 101$
$?^2 = 36$
$? = 6$

S87. Ans.(c)
Sol.
$\frac{36+3\times?}{23} + 1 = 52$
$36 + 3 \times ? + 23 = 52 \times 23$
$3 \times ? + 59 = 1196$
$3 \times ? = 1196 - 59$
$3 \times ? = 1137$
$? = 379$

S88. Ans.(c)
Sol.
$\frac{343}{64} \times 32 + \frac{175}{100} \times 350 = ?^2$
$?^2 = 171.5 + 612.5$
$?^2 = 784$
$? = 28$

S89. Ans.(d)
Sol.
$23 \times (24 + 47 - 54) = ?$
$? = 23 \times 17$
$? = 391$

S90. Ans.(c)
Sol.
$\frac{6}{5} \times 650 + 320 + 51 = ?$
$780 + 320 + 51 = ?$
$? = 1151$

S91. Ans.(b)
Sol.
$\frac{128}{2} + \frac{4}{2} \times 4 = ? + 10$
$64 + 8 = ? + 10$
$? = 62$

S92. Ans.(c)
Sol.
$\frac{11}{11} + 9 + ? = 27$
$1 + 9 + ? = 27$
$? = 17$

S93. Ans.(b)
Sol.
$(3)^2 \times (3)^6 \times ((3)^2)^2 \div (3^3)^2$
$\Rightarrow \frac{3^{2+6+4}}{3^6} \Rightarrow \frac{3^{12}}{3^6} = 3^6$

S94. Ans.(b)
Sol.
$123 + 447 - 170 + 500 = ? - 200$
$570 - 170 + 500 + 200 = ?$
$? = 1100$

S95. Ans.(b)
Sol.
$196 + 179 + 25 = (?)^2$
$(?)^2 = 400$
$? = 20$

S96. Ans.(a)

Sol.

$? = 11 + 12 - 13 - 4\left(\frac{2}{9} + \frac{2}{9} - \frac{2}{9} - \frac{1}{4}\right)$

$? = 6 + \left(\frac{8+8-8-9}{36}\right)$

$? = 6 + \left(-\frac{1}{36}\right)$

$? = 5\frac{35}{36}$

S97. Ans.(b)

Sol.

$? = 10288 - 5220 - 1375 + 5364$

$? = 9057$

S98. Ans.(d)

Sol.

$?\times \frac{1350}{112.5} = \sqrt{5929} + \sqrt{8281}$

$? \times 12 = 77 + 91 = 168$

$\Rightarrow ? = 14$

S99. Ans.(b)

Sol.

$\frac{18750}{\sqrt{?}} = 36 \times 11 + 59 \times 6$

$\Rightarrow \frac{18750}{\sqrt{?}} = 396 + 354$

$\Rightarrow \sqrt{?} = \frac{18750}{750} = 25$

$? = 625$

S100. Ans.(e)

Sol.

$3^{?} = \frac{729}{243} \times \frac{216\times72}{576} = 81$

$3^{?} = 3^{4} \Rightarrow ? = 4$