Quantitative Aptitude Questions for IBPS RRB PO & Clerk Prelims 2023

Directions (1-10): What should come in place of question mark (?) in the following questions?

Q1. $\sqrt{12.25} \times 18 - (?)^2 = (6)^2 + \sqrt{4}$
(a) 7
(b) 6
(c) 5
(d) 4
(e) 3

Q2. $(1250 + 1725) \div (825 + 365) = ?$
(a) 1.5
(b) 2.5
(c) 1
(d) 2.25
(e) 2.75

Q3. $\sqrt{625} \div \sqrt{16} \times 6 = ?\%$ of 300
(a) 15
(b) 12.5
(c) 17.5
(d) 10
(e) 8.5

Q4. $26 \times 15 + 310 - (15)^2 = 25\%$ of ?
(a) 1600
(b) 1800
(c) 1900
(d) 1500
(e) 1700

Q5. $\sqrt{81} \times \sqrt{625} + 1225 = (?)^2 - 150$
(a) 50
(b) 45
(c) 35
(d) 30
(e) 40

Q6. $512 + \sqrt{676} + \frac{9}{17} \times 4250 + ? = (53)^2$
(a) 21
(b) -21
(c) 25
(d) -31
(e) -33

Q7. $150 \div 3 \times 15 - 225 \div 9 \times 12 = 900\%$ of ?
(a) 40
(b) 45
(c) 55
(d) 50
(e) 100

Q8. 40% of $1125 + \frac{2286}{6} = 33\frac{1}{3}\%$ of $1110 + ?$
(a) 461
(b) 523
(c) 451
(d) 444
(e) 425

Q9. $15 \div 2.5 + 133 - 157 + \sqrt{256} + (10)^2 = \frac{1176}{?}$
(a) 9
(b) 8.5
(c) 6.5
(d) 8
(e) 12

Q10. $(2500 + 170 - \sqrt{4900}) \div 25 + ? = (12)^2$
(a) 50
(b) 56
(c) 40
(d) 44
(e) 39

Directions (11-20): What will come in the place of question Mark (?) in the following number series:

Q11. 6, 18, 33, 57, 108, ?, 615
(a) 220
(b) 324
(c) 308
(d) 240
(e) 460

Q12. ?, 8, 32, 72, 128, 200
(a) 0
(b) 4
(c) 2
(d) 6
(e) -2

Q13. 6, 6, 12, 36, 144, 720, ?
(a) 3600
(b) 2880
(c) 4320
(d) 1440
(e) 4230

Q14. 8, 21, 47, 86, 138, 203, ?
(a) 287
(b) 281
(c) 372
(d) 278
(e) 268

Q15. 30, 60, 20, 80, ?, 96
(a) 90
(b) 40
(c) 48
(d) 26
(e) 16

Q16. 9, 11, 17, 29, 49, ?
(a) 73
(b) 75
(c) 77
(d) 79
(e) 81

Q17. 5, 13, 37, 85, ?, 285
(a) 165
(b) 200
(c) 180
(d) 185
(e) 210

Q18. 27, 9, 54, 6, 72, ?
(a) 12
(b) 15
(c) 4.8
(d) 7.2
(e) 2.4

Q19. 22, 42, 64, 92, 132, ?
(a) 194
(b) 192
(c) 212
(d) 202
(e) 204

Q20. 50, 62, 80, 90, 110, ?
(a) 108
(b) 118
(c) 124
(d) 116
(e) 120

Directions (21-30): What approximate value should come in place of question mark (?) in following questions.

Q21. 39.988% of 3999.97 + 80.07% of 79.999 = ?
(a) 80
(b) 2240
(c) 1664
(d) 1240
(e) 1446

Q22. (986 + 1229 + 982) ÷ (415 + 573 + 293) = ?
(a) 15
(b) 8
(c) 10
(d) 2.5
(e) 24

Q23. $(215.97)^{1/3} \times \sqrt{120}$ – ? = 34.02% of 149.93
(a) 8
(b) 15
(c) 25
(d) 2
(e) 32

Q24. 11.99 × 11.04 + 13.04 × 11.97 = ? + $\frac{4}{5}$th of 279
(a) 34
(b) 74
(c) 64
(d) 40
(e) 88

Q25. 1319 ÷ 10.995 – $(8.96)^2$ = ?
(a) 24
(b) 51
(c) 46
(d) 39
(e) 31

Q26. 24.97% of 1459.98 - ? % of 1120.4 = 29.04
(a) 15
(b) 55
(c) 45
(d) 65
(e) 30

Q27. $\sqrt{575} + \sqrt[3]{2745} - 2.01 = ?^2$
(a) 6
(b) 17
(c) 29
(d) 34
(e) 45

Q28. 10.98% of 11.04% of 10999 = ?
(a) 121
(b) 150
(c) 147
(d) 133
(e) 107

Q29. 20.94 ÷ 12.06 × 15.99 ÷ 7.02 = ?
(a) 4
(b) 28
(c) 19
(d) 36
(e) 52

Q30. $121 \div \frac{5}{8}$ of 24.08 × 3.95 = ?
(a) 6
(b) 18
(c) 32
(d) 42
(e) 55

Directions (31-40): In each of these questions a number series is given. In each series only one number is wrong. Find out the wrong number.

Q31. 512, 504, 488, 466, 432, 392, 344
(a) 512
(b) 466
(c) 344
(d) 392
(e) 432

Q32. 512, 255, 127, 63, 31, 15
(a) 15
(b) 31
(c) 127
(d) 512
(e) 63

Q33. 221, 263, 313, 370, 434, 505, 583
(a) 313
(b) 505
(c) 434
(d) 263
(e) 221

Q34. 35, 37, 49, 79, 137, 225, 357
(a) 137
(b) 35
(c) 225
(d) 357
(e) 79

Q35. 14, 30, 66, 130, 230, 374, 568
(a) 14
(b) 374
(c) 568
(d) 66
(e) 130

Q36. 2, 7, 42, 210, 840, 2520, 5040
(a) 2
(b) 210
(c) 2520
(d) 42
(e) 7

Q37. 1250, 1249, 1240, 1215, 1166, 1085, 965
(a) 1250
(b) 1166
(c) 1085
(d) 1240
(e) 965

Q38. 34, 66, 126, 244, 478, 944, 1874
(a) 126
(b) 244
(c) 478
(d) 34
(e) 66

Q39. 254, 302, 358, 422, 494, 574, 660
(a) 494
(b) 660
(c) 302
(d) 422
(e) 358

Q40. 111, 128, 148, 170, 199, 230, 267
(a) 230
(b) 170
(c) 128
(d) 148
(e) 111

Directions (41-45): 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 betw6een x and y.

Q41. I. $x^2 + x - 6 = 0$
II. $y^2 + 7y + 11 = -1$

Q42. I. $2x^2 - 17x + 35 = 0$
II. $4y^2 - 19y + 21 = 0$

Q43. I. $\sqrt[3]{x - 512} = 11$
II. $y + 353 = 13^3$

Q44. I. $x^2 + 39x = -380$
II. $y^2 + 37y = -342$

Q45. I. $x - \frac{2}{x} = \frac{2}{x}$
II. $y^2 - 2y + 1 = 0$

Directions (46-50): In each of the following questions two equations (I) and (II) are given, you have to solve both the equation 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 relationship can be obtained between x and y.

Q46. (I) x² – 14x + 48 = 0
(II) y² – 18y + 80 = 0

Q47. (I) $x^3 + 328 = 2525$
(II) $y^3 + 349 = 1680$

Q48. (I) $x^2 - 19x + 88 = 0$
(II) $y^2 - 21y + 108 = 0$

Q49. (I) $x^3 = 1728$
(II) $y^2 = 144$

Q50. (I) $2x^2 + 25x + 75 = 0$
(II) $3y^2 + 26y + 56 = 0$

Directions (51-55): What should come in place of question mark (?) in the following questions?

Q51. 7, 7, 23, 87, 231, ?
(a) 485
(b) 487
(c) 489
(d) 491
(e) 493

Q52. 27, 29, 26, 31, 24, ?
(a) 33
(b) 34
(c) 35
(d) 36
(e) 37

Q53. 170, 173, 178, 185, 196, ?
(a) 209
(b) 205
(c) 207
(d) 211
(e) 213

Q54. 2880, 480, 96, 24, 8, ?
(a) 12
(b) 4
(c) 2
(d) 6
(e) 8

Q55. 8, 9, 21, 68, 279, ?
(a) 1404
(b) 1395
(c) 1405
(d) 1415
(e) 1495

Direction (56–60): What approximate value should come in the place of question (?) marks in the given question?

Q56. $8399.99 \times 14.996 \div 374.982 + \sqrt{16.011} = ?$
(a) 564
(b) 340
(c) 320
(d) 324
(e) 384

Q57. $\sqrt{2499.99} + 14.97\%\ of\ 14 =?$
(a) 40
(b) 45
(c) 52
(d) 58
(e) 64

Q58. $24.987\% \times 639.97 + 45.21\%\ of\ 359 = ?$
(a) 358
(b) 378
(c) 322
(d) 302
(e) 288

Q59. $33.30003\%\ of\ 509.99 = ?$
(a) 140
(b) 185
(c) 155
(d) 170
(e) 100

Q60. $74.79\%\ of\ 1344.11 + 12.48\%\ of\ 128.20 = ?$
(a) 1048
(b) 1024
(c) 1072
(d) 1096
(e) 1120

Directions (61-65): What should come in place of question mark (?) in the following questions?

Q61. 15% of $28\frac{4}{7}\%$ of ? = 240
(a) 5800
(b) 6300
(c) 6100
(d) 5600
(e) 5300

Q62. $1674 \div 27 \times 9 + 18 = ?^2$
(a) 26
(b) 23
(c) 24
(d) 35
(e) 18

Q63. 320% of 700- 70% of 320 – 3.2% of 7000 = ?
(a) 1792
(b) 224
(c) 1972
(d) -224
(e) 1692

Q64. (7294 – 3241 + 716) – (3267 + 2425 – 961) = ?
(a) 35
(b) 48
(c) 43
(d) 38
(e) 47

Q65. $\frac{32}{35} \div \frac{1}{5} \times \frac{7}{8} \div \frac{2}{35} = ?$
(a) 60
(b) 80
(c) 75
(d) 90
(e) 70

Directions (66–70): In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and answer the following questions.
(a) x > y
(b) x < y
(c) x ≥ y
(d) x ≤ y
(e) x = y or no relation.

Q66. I. $2x^2 - 17x + 36 = 0$
II. $2y^2 - 19y + 45 = 0$

Q67. I. $x^2 - 25x + 154 = 0$
II. $y^2 - 28y + 195 = 0$

Q68. I. $\frac{10}{x} - \frac{24}{x^2} = 1$
II. $\frac{5}{y} - \frac{6}{y^2} = 1$

Q69. I. $3x^2 - 10x - 8 = 0$
II. $2y^2 - 23y + 60 = 0$

Q70. I. $12x - 16y = -16$
II. $17y - 13x = 12$

Q71. Mohit and Hemant can do a work in 30 days and 18 days respectively but with the help of another person B they can complete the work in 9 days only. Find in how many days person B and Mohit together can complete the work?
(a) 18 days
(b) $18\frac{1}{2}$ days
(c) $10\frac{1}{4}$ days
(d) $11\frac{1}{4}$ days
(e) 12 days

Q72. 21 men can do a piece of work in 15 days and 35 women can do a piece of work in 11 days. With the same efficiency 18 men and 20 women can do another piece of work in '(Y – 4)' days and 'Y' days respectively. Find the value of Y?
(a) 40
(b) 44
(c) 35
(d) 38
(e) 39

Q73. A take $\frac{1}{3}$rd time to do a piece of work as B takes to do same piece of work and C does it in the same time as A and B takes together to complete the same work. If all three working together would take 12 days. Find how long would each take if they work separately?
(a) 24 days, 72 days, 16 days
(b) 16 days, 48 days, 12 days
(c) 20 days, 60 days, 15 days
(d) 36 days, 108 days, 27 days
(e) 32 days, 96 days, 24 days

Q74. A and B worked for 20 days and 15 days on a work respectively. The ratio of total wages earned by them is 5 : 4. What is the ratio of their respective efficiency if they work with same efficiency throughout the work.
(a) 5 : 6
(b) 12 : 13
(c) 15 : 16
(d) 16 : 15
(e) 17 : 15

Q75. A group of 18 men and 12 women can do a work in 18 days. A woman takes twice as much times as a man to do the work. How many days will 8 men take to finish the same work?
(a) 45
(b) 48
(c) 54
(d) 36
(e) None of these

Q76. Veer, Anurag & Shivam can do a piece of work in 80 days, 120 days & 100 days respectively. If all three start working together and Veer left after 12 days, while Shivam left the work $22\frac{4}{5}$ days before it got completed and Anurag work till the work got completed. Find how many days Anurag work to complete the work?
(a) 56 days
(b) 48 days
(c) $64\frac{4}{5} days$
(d) $58\frac{4}{5} days$
(e) $60\frac{4}{5} days$

Q77. Manish and Suresh can do a task A in 48 days and 60 days respectively. If they together can complete another task B in x days and Manish alone can complete the task B in (x+ 16) days, then find in how many days Suresh alone can complete task B?
(a) 45days
(b) 36days
(c) 28days
(d) 40days
(e) 48days

Q78. A tank can be filled with water by two pipes A and B together in 36 minutes. If the pipe B was stopped after 30 minutes, rest of the tank filled in 10 minutes. The pipe B can alone fill the tank in
(a) 45 minutes
(b) 60 minutes
(c) 75 minutes
(d) 90 minutes
(e) None of these

Q79. Pipe A and Pipe B can fill a cistern together in 18 minutes. Pipe B is 50% more efficient than pipe A. Find the capacity of cistern, if it is given that pipe 'A' fills the cistern at speed of 6 litre/minute.
(a) 150 l
(b) 225 l
(c) 240 l
(d) 180 l
(e) 270 l

Q80. Pipe A and pipe B together can fill the tank in 12 minutes while pipe A, pipe B and pipe C together can fill the tank in 15 minutes and Pipe B and Pipe C together can fill the tank in 30 minutes. In how many time pipe A alone can fill the tank completely. (in minutes)
(a) 20
(b) 60
(c) 40
(d) 30
(e) 50

Directions (81-85): The given table shows the number of students in 5 schools and ratio of boys to girls in these school. Study the table carefully and answer the related questions.

School	Total student	Boys : Girls
A	640	5 : 3
B	460	13 : 10
C	370	16 : 21
D	1050	22 : 13
E	1230	2 : 1

Q81. Find the ratio of boys in school A and B together to girls in school A and C together.
(a) 22 : 15
(b) 15 : 22
(c) 19 : 23
(d) 23 : 19
(e) 23 : 15

Q82. Find the average number of students studying in school A, B, D and E.
(a) 841
(b) 795.5
(c) 845
(d) 822.5
(e) 906

Q83. Find the number of girls in school D is what percent more than the number of girls in school A.
(a) 82.5%
(b) 75%
(c) 37.5%
(d) 68%
(e) 62.5%

Q84. Find the difference between number of boys in school C and D together to girls in school B and E together.
(a) 210
(b) 190
(c) 175
(d) 225
(e) 240

Q85. If 60 boys left the school 'B' and 50 new girls took admission in school 'B' then find the percentage of girls in school now.
(a) $63\frac{2}{5}\%$
(b) $42\frac{1}{7}\%$
(c) $55\frac{5}{9}\%$
(d) 75%
(e) 84%

Directions (86-90): Study the data carefully & answer the questions.
Table given below shows the number of bikes in different shops & percentage of bike in bad condition.

Bike shop	No. of bike	Percentage of bike in bad condition
A	3600	18%
B	2400	12%
C	1300	26%
D	4200	14%
E	1800	15%

Note: No. of bike in each shop = No. of bike in good condition + No. of bike in bad condition.

Q86. Find the number of bikes in good condition in shop B & E together is how much more than the number of bike in bad condition in shop A & C together?
(a) 2656
(b) 2646
(c) 2648
(d) 2664
(e) 2668

Q87. Find the number of bikes in bad condition in shop A is what percentage more than the number of bikes in bad condition in shop B?
(a) 110%
(b) 105%
(c) 125%
(d) 115%
(e) 135%

Q88. What is the average of the number of bikes in good condition in shop C and E?
(a) 1236
(b) 1216
(c) 1226
(d) 1246
(e) 1256

Q89. Find the ratio of the number of bikes in bad condition in shop B & D together to $\frac{1}{4}$ th the number of bikes in good condition in Shop A?
(a) 146 : 123
(b) 146 : 127
(c) 146 : 129
(d) 149 : 126
(e) 146 : 121

Q90. If $\frac{2}{3}$ rd of bike sold from shop D. Then find bike which are unsold from shop D is what percent more than the number of bikes which are in bad condition in same shop? (only those bikes can be sold which are in good condition)?
(a) $102\frac{16}{21}\%$
(b) $104\frac{16}{21}\%$
(c) $106\frac{16}{21}\%$
(d) $108\frac{16}{21}\%$
(e) $110\frac{16}{21}\%$

Directions (91-100): What should come in place of question (?) mark in the following questions?

Q91. 30% of 450 + 75% of 680 = ?% of 1075
(a) 40
(b) 55
(c) 45
(d) 60
(e) 70

Q92. $? + \frac{5}{7} + \frac{2}{5} - \frac{3}{4} = 2\frac{2}{7} + 5\frac{1}{4} + 3\frac{2}{5}$
(a) $11\frac{4}{7}$
(b) $10\frac{2}{7}$
(c) $11\frac{2}{7}$
(d) $9\frac{4}{7}$
(e) $10\frac{4}{7}$

Q93. $\sqrt{524 + 125 \times 3 - 778} = (?)^2$
(a) 121
(b) 11
(c) $\sqrt{11}$
(d) 1.1
(e) 9

Q94. $(3)^{\frac{1}{2}+?} = \left(3\sqrt{3}\right) \times \left(9\sqrt{27}\right) \times \left(\sqrt{243}\right)$
(a) 6.5
(b) 7
(c) 6
(d) 5.5
(e) 5

Q95. 74 × 2.5 + 13 × 5 = ?
(a) 250
(b) 240
(c) 230
(d) 260
(e) 270

Q96. $\frac{(4)^3 + (18)^2}{7^2 + 121 - 73} = ?$
(a) 1
(b) 2
(c) 4
(d) 5
(e) 3

Q97. $2\frac{4}{11} \times 1\frac{5}{13} \times 2\frac{2}{9} = \frac{1}{22} \times ?$
(a) 240
(b) 320
(c) 40
(d) 80
(e) 160

Q98. (12% of 750) − (12.5% of 480) + ? = 140
(a) 105
(b) 120
(c) 110
(d) 100
(e) 90
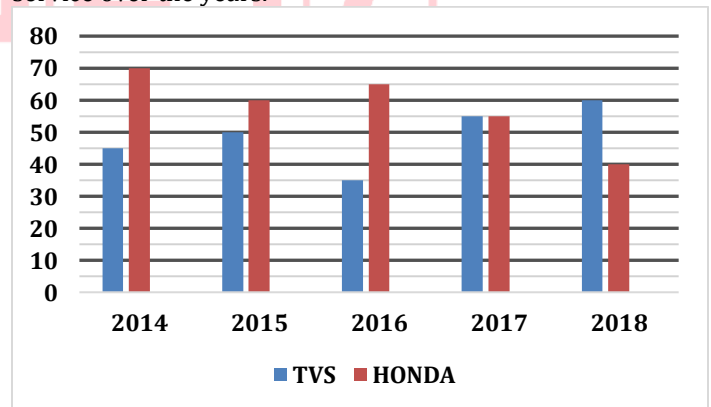
Q99. 40% of 260 + 80 = 50% of ?
(a) 366
(b) 372
(c) 368
(d) 364
(e) 362

Q100. $115 \times 8 + ? = 20\%$ *of* 6000
(a) 280
(b) 180
(c) 200
(d) 300
(e) 380

Direction (101-105): Study the given bar graph carefully and answer the questions given below. Bar-graph shows number of people (in hundred) using two different types of bike service over the years.

Q101. What is the average no. of people using the HONDA bike service in all over the years?
(a) 6400
(b) 4900
(c) 5800
(d) 6125
(e) 6800

Q102. Find the ratio of no. of people using the HONDA service in year 2015 and 2016 together to no. of people using the TVS service in year 2017 and 2014 together.
(a) 4 : 5
(b) 3 : 4
(c) 5 : 4
(d) 6 : 5
(e) 4 : 3

Q103. What is the difference between no. of people using TVS service all over the years (excluding 2016) and no. of people using HONDA service all over the years (excluding 2015)?
(a) 2000
(b) 2500
(c) 3500
(d) 1500
(e) None of these

Q104. Find the total bike service in year 2018 is what percentage more/less than the total bike service in year 2014 and 2015 together?
(a) $45\frac{4}{9}\%$
(b) $55\frac{5}{9}\%$
(c) $54\frac{4}{9}\%$
(d) $65\frac{5}{9}\%$
(e) $64\frac{4}{9}\%$

Q105. If per service cost of TVS is 20% more than HONDA, then total service cost of TVS in year 2015 is what percent of total service cost of HONDA in same year?
(a) 125%
(b) 150%
(c) 200%
(d) 100%
(e) 50%

Directions (106-110): The bar graph shows the percentage distribution of total visitors (male + female) who visited on six different days. Read the data carefully and answer the question accordingly.
Note: Total Visitors (male + female) in all six days together are '100x'.
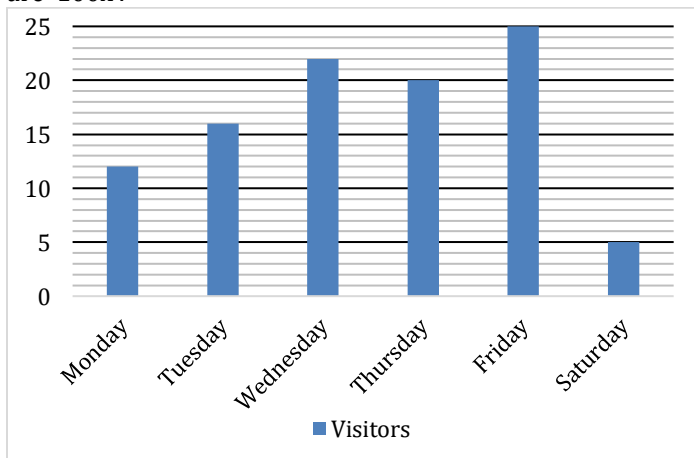
Q106. If ratio of male to female visitors on Wednesday is 7:5 and number of female visitors who visited on Wednesday are 1100, then find total number of visitors who visited on Monday and Tuesday together?
(a) 3360
(b) 3200
(c) 3000
(d) 3540
(e) 3450

Q107. If Ratio of male to female on Thursday and Friday are 3:2 and 8:7 respectively and sum of male visitors on these two days are 1900, then find total visitors who visited on Monday?
(a) 950
(b) 900
(c) 1000
(d) 1080
(e) 1200

Q108. The number of female visitors on Tuesday are what percent of female visitors on Friday if ratio of male to female visitors on Tuesday and Friday are 9:7 and 8:7 respectively?
(a) 40%
(b) 50%
(c) 60%
(d) 25%
(e) 75%

Q109. What is the ratio of total visitors who visited on Tuesday and Wednesday together to total visitors who visited on Friday and Saturday together?
(a) 17:15
(b) 13:15
(c) 26:15
(d) 19:15
(e) 23:15

Q110. If ratio of male to female visitors who visited on Thursday and Saturday are 3:2 and 5:3 respectively and difference between male visitors on these two days are 1420, then find total visitors who visited on Friday?
(a) 5000
(b) 4000
(c) 3000
(d) 3600
(e) 4500

Q111. If ratio between volume of a cylinder and volume of sphere is 3 : 1, then find the ratio between total surface area of cylinder and total surface area of sphere [Note: Radius of sphere = Radius of cylinder]
(a) 2 : 1
(b) 5 : 2
(c) 4 : 1
(d) 3 : 2
(e) 7 : 2

Q112. The side of a square is 25% more than the side of an equilateral triangle whose perimeter is 48 m. Find the ratio of area of square to area of triangle.
(a) 25 : 12
(b) $25\sqrt{2} : 12$
(c) $25\sqrt{3} : 12$
(d) $20\sqrt{3} : 12$
(e) $24\sqrt{3} : 12$

Q113. A rectangular field cost Rs. 110 for leveling at 50 paise per square meter. If the ratio of length to breadth is 11 : 5. Find the breadth of field?
(a) 12 m
(b) 10 m
(c) 5 m
(d) 16 m
(e) 15 m

Q114. A pyramid with a square base of side 3 cm and height 7 cm is carved out of a rectangular block of wood 7 cm × 3 cm × 3 cm. Find the percentage of wood wasted in the process?
(a) $33\frac{1}{3}\%$
(b) $62\frac{2}{3}\%$
(c) $57\frac{1}{7}\%$
(d) $54\frac{2}{7}\%$
(e) $66\frac{2}{3}\%$

Q115. The length of rectangular field is thrice its breadth. If Rs 480 is required to paint the floor at the rate Rs 2.5 per sq m, then what would be the difference between the length and breadth of the field?
(a) 16 m
(b) 8 m
(c) 12 m
(d) 24 m
(e) 20 m

Q116. If pipe – P & R together fills the tank in $11\frac{1}{9}$ hours and pipe – Q alone can empty the tank in 16 hours, then find time taken by pipe – P, Q & R together to fill the tank.
(a) $\frac{350}{17}$ hours
(b) $\frac{200}{27}$ hours
(c) $\frac{300}{11}$ hours
(d) $\frac{400}{11}$ hours
(e) $\frac{500}{17}$ hours

Q117. CP of article – A is 80% of that of article – B. Article – A is marked 60% above its CP and 20% discount is allowed on it. If discount allowed on article – A is Rs.20 more than profit earned on article – A, then find CP of article – B.
(a) Rs.600
(b) Rs.650
(c) Rs.675
(d) Rs.575
(e) Rs.625

Q118. The average marks scored by Aman in Math, English & Hindi are 70 and average marks scored by Aman in Hindi, English & Science are $83\frac{1}{3}$. If marks scored by Aman in English & Hindi are same, then find difference in Aman's marks in Math & Science.
(a) 10
(b) 40
(c) 30
(d) 20
(e) Cannot be determined.

Q119. A team of 5 persons consisting of 3 male and 2 female is to be formed out of 8 male and 5 female. Find in how many ways the team can be formed?
(a) 560 ways
(b) 840 ways
(c) 1280 ways
(d) 40 ways
(e) 1287 ways

Q120. Train – B can cross train – A in 90 seconds while running in same direction. Ratio of length of train – A to that of B is 4 : 5 and difference in speed of train – A & B is 36 km/hr. If train – A can cross 200m long platform in 24 seconds, then find speed of train – B.
(a) 162 km/hr.
(b) 90 km/hr.
(c) 144 km/hr.
(d) None of the above options.
(e) Cannot be determined.

Directions (121-125): What should come in place of question mark (?) in the following questions?

Q121. $?^2 = 512 \div 81 \div 72 \times 2916$
(a) 9
(b) 12
(c) 16
(d) 18
(e) 20

Q122. $\frac{9}{2} + \frac{11}{3} + \frac{17}{6} = ? + \frac{12}{5} + \frac{21}{10}$
(a) 6
(b) $6\frac{1}{2}$
(c) 7
(d) $6\frac{2}{3}$
(e) $7\frac{1}{2}$

Q123. $5^{?-2} = (5)^5 \div (25)^3 \times (125)^2 \div 625$
(a) –1
(b) 0
(c) 1
(d) 2
(e) 3

Q124. $? \times 65 \div 72 = 195 \times 352 \div 192$
(a) 369
(b) 396
(c) 594
(d) 297
(e) 376

Q125. $\sqrt[2]{256} \times (1728)^{\frac{1}{3}} = ? \times (4096)^{\frac{1}{4}}$
(a) 16
(b) 18
(c) 24
(d) 28
(e) 32

Directions (126-130): What approximate value will come at the place of question mark (?).
(Note: - You are not expected to calculate exact value)

Q126. $(13.012)^2 + (21.025)^2 - 29.89 \times 7.025 = ? - 520 + 150$
(a) 770
(b) 925
(c) 820
(d) 850
(e) 720

Q127. 18.05% of $1900.128 + ?\%$ of $1149.89 = 684.025 - 111.89$
(a) 35
(b) 25
(c) 20
(d) 40
(e) 30

Q128. $\frac{439.92}{?} = (8.01)^3 - (2.01)^3 - (241.92 \times 1.98)$
(a) 36
(b) 18
(c) 32
(d) 22
(e) 28

Q129. $(?)^2 - 431.98 = 1239.81 + 482.21 - 1313.01$
(a) 29
(b) 33
(c) 39
(d) 19
(e) 23

Q130. $30.025 \times \sqrt{?} + \sqrt{961.01} = 11.01\%$ of $1300 - 22.21$
(a) 25
(b) 9
(c) 16
(d) 36
(e) 64

Directions (131-135): What will come in place of (?) question mark in the following questions?

Q131. 85% of $?$ of $6755 = 3281$

(a) $\frac{4}{7}$
(b) $\frac{2}{7}$
(c) $1\frac{1}{7}$
(d) $\frac{6}{7}$
(e) $1\frac{3}{7}$

Q132. $\sqrt[3]{?} \times \sqrt[3]{2197} = \sqrt[4]{(8281)^2}$
(a) 512
(b) 216
(c) 125
(d) 343
(e) 729

Q133. $\sqrt{9409} - \sqrt{1156} = 3339 \div ?$
(a) 43
(b) 63
(c) 53
(d) 47
(e) 57

Q134. $(320\%$ of $825) \div ? = 48$
(a) 55
(b) 45
(c) 65
(d) 58
(e) 75

Q135. $\frac{2}{21}$ of $2268 \div 12 + ? = \sqrt{3025}$
(a) 47
(b) 37
(c) 27
(d) 57
(e) 45

Directions (136–140): Solve the given quadratic equations and mark the correct option based on your 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.

Q136. I. $x^2 + 10x + 16 = 0$
II. $y^2 + 9y + 20 = 0$

Q137. I. $x^2 - 14x + 45 = 0$
II. $3y^2 + 8y + 4 = 0$

Q138. I. $x^2 + 31x + 108 = 0$
II. $y^2 - 21y + 98 = 0$

Q139. I. $x^2 - 36x + 99 = 0$
II. $y^2 - 6y - 7 = 0$

Q140. I. $x^2 - 53x + 196 = 0$
II. $y^2 + 23y + 102 = 0$

Directions (141-150): In each of the following questions, two equations (I) and (II) are given. Solve the equations and mark the correct option:
(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.

Q141. I. $x^2 + 23x + 132 = 0$
II. $y^2 + 21y + 110 = 0$

Q142. I. $3x^2 + 20x + 32 = 0$
II. $5y^2 + 23y + 24 = 0$

Q143. I. $x^2 - 29x + 208 = 0$
II. $y^2 - 21y + 108 = 0$

Q144. I. x²+30x+224=0
II. y²+35y+306=0

Q145. I. $x = \sqrt[3]{4096}$
II. y² =256

Q146. I. $x^2 - 25x + 156 = 0$
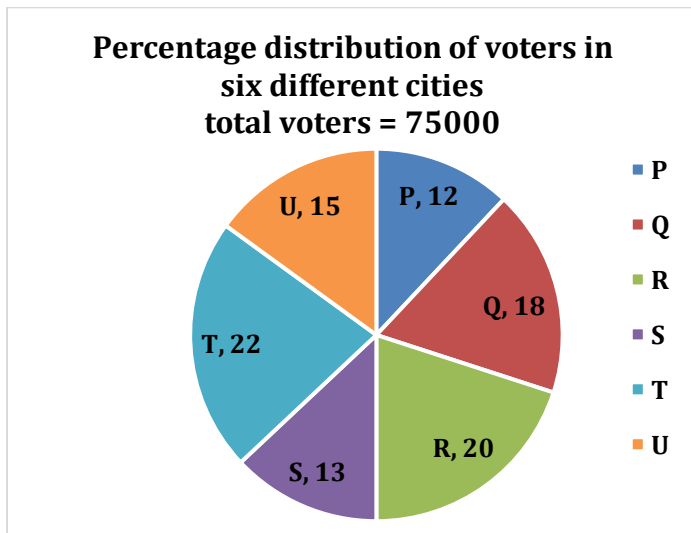**II.** $y^2 - 29y + 210 = 0$

Q147. I. $x^2 = 196$
II. $y = \sqrt{196}$

Q148. I. $x^2 + 12x + 35 = 0$
II. $y^2 + 14y + 48 = 0$

Q149. I. $3x^2 + 23x + 30 = 0$
II. $y^2 + 15y + 56 = 0$

Q150. I. $x^2 + 17x + 72 = 0$
II. $y^2 + 13y + 42 = 0$

Directions (151-155): pie chart given below gives information about distribution of voters in six different cities out of total voters.

Percentage distribution of voters in six different cities
total voters = 75000

- P
- Q
- R
- S
- T
- U

U, 15 | P, 12 | Q, 18 | R, 20 | S, 13 | T, 22

Q151. Find the average no. of voters in city P, Q, and U are equal to total no. of voters of which city?
(a) P
(b) Q
(c) S
(d) T
(e) U

Q152. If 90% and 88% of total voters of city R and T respectively voted on the day of voting, then find no. of voters who did not vote in these two cities?
(a) 3480
(b) 2280
(c) 2440
(d) 2240
(e) 3280

Q153. What is the difference between total voters of city P and S together to total voters of city Q and T together?
(a) 11250
(b) 9750
(c) 9000
(d) 16500
(e) 15000

Q154. If ratio of male voters to female voters in city S and city U is 13:12 and 29:16 respectively, then find difference between no. of male voters in these cities?
(a) 2050
(b) 2180
(c) 3400
(d) 3140
(e) None of these.

Q155. If in city T 40% of total voters are female and 20% of female voters did not cast vote and total 13840 vote were polled, then find how difference of male and female who did not cast vote?
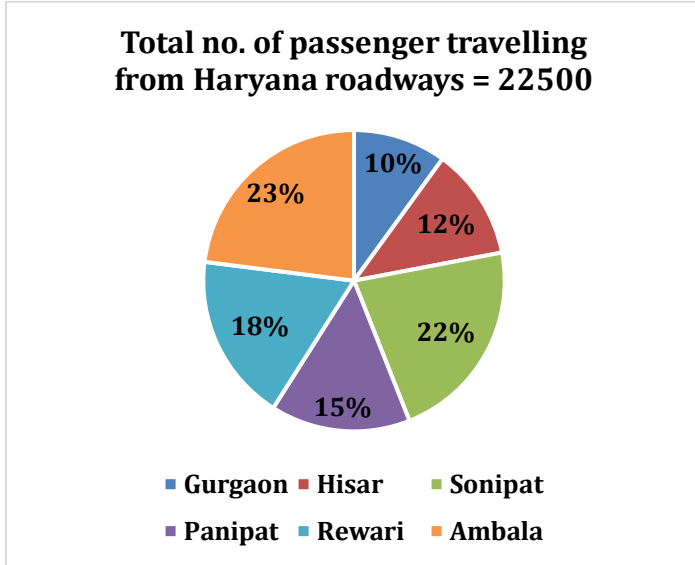(a) 20
(b) 40
(c) 25
(d) 15
(e) 38

Directions (156-160): Pie chart given below shows distribution of passenger travelling from Haryana roadways to different district. Read the data carefully and answer the questions.

Total no. of passenger travelling from Haryana roadways = 22500

- ■ **Gurgaon** ■ **Hisar** ■ **Sonipat**
- ■ **Panipat** ■ **Rewari** ■ **Ambala**

Q156. Find the number of passengers who are travelling to Gurgaon are approximately how much percent less than number of passengers travelling to Sonipat and Ambala together?
(a) 75%
(b) 78%
(c) 50%
(d) 65%
(e) 90%

Q157. What is the average number of passengers who are travelling to Hisar, Panipat and Rewari?
(a) 3025
(b) 2075
(c) 3375
(d) 3425
(e) 3075

Q158. Find the number of passengers travelling to Hisar district are how many less than passenger travelling to Ambala?
(a) 2525
(b) 2575
(c) 2425
(d) 2475
(e) None of these.

Q159. If ratio of men to women who are travelling to Ambala and Gurgaon are 18:5 and 7:8 respectively, find ratio between men travelling to Gurgaon and women travelling to Ambala?
(a) 5:7
(b) 7:18
(c) 7:5
(d) 14:15
(e) 15:8

Q160. If fair of a ticket for Rewari is Rs.75 and fair for Panipat is $33\frac{1}{3}$% more than that of Rewari, find difference between total revenue generated from both district (in Rs.)?
(a) 33750
(b) 22025
(c) 34250
(d) 35750
(e) 25075

Direction (161-170): Simplify the following questions and find what will come in place of question(?) mark.

Q161. $? \times \frac{1}{7}$ of $29841 \div 29 - \sqrt{2209} = \frac{1}{13}$ of 7033
(a) 6
(b) 4
(c) 8
(d) 5
(e) 3

Q162. $124\sqrt{?} + 876 = \frac{3}{4}$ of $840 + 742$
(a) 4
(b) 16
(c) 8
(d) 64
(e) 25

Q163. $\sqrt[3]{1331} \times 343 \div 49 - 28 = ?$
(a) 55
(b) 49
(c) 62
(d) 42
(e) 39

Q164. 475+64 % of 950 = 900+?
(a) 183
(b) 233
(c) 198
(d) 186
(e) 253

Q165. 56% of 700 + 64% of 900 – 40% of 290 = ?
(a) 848
(b) 852
(c) 860
(d) 874
(e) 846

Q166. $(9)^3 + ?^2 \times 25 = 1129$
(a) 2
(b) 4
(c) 3
(d) 5
(e) 7

Q167. $3\frac{1}{7} + 2\frac{1}{21} - ? = 2$
(a) $5\frac{1}{21}$
(b) $7\frac{3}{28}$
(c) $6\frac{4}{21}$
(d) $4\frac{5}{21}$
(e) $3\frac{4}{21}$

Q168. ?% of 125 + $(15)^2$ = $(16)^2$ – 2.5% of 640
(a) 6
(b) 8
(c) 10
(d) 12
(e) 4

Q169. $(12)^3$ + 24% of ? = 1830
(a) 400
(b) 415
(c) 425
(d) 405
(e) 400

Q170. 7.8 + 50% of 64.4 = $(7)^2$ – $?^2$
(a) 3
(b) 2
(c) 1
(d) 6
(e) 7

Direction (171–180): What will come in the place of question (?) mark in following number series.

Q171. 32, 144, 504, 1260, 1890, ?
(a) 945
(b) 2145
(c) 2560
(d) 815
(e) 915

Q172. 3, 4, 7, 11, 18, ?
(a) 32
(b) 25
(c) 36
(d) 27
(e) 29

Q173. ? , 16, 36, 64, 100, 144
(a) 8
(b) 12
(c) 2
(d) 4
(e) 6

Q174. 11, 14, 27, 67, 148, ?
(a) 230
(b) 233
(c) 237
(d) 240
(e) 242

Q175. 1525, ? , 1505, 1441, 1185, 161
(a) 1524
(b) 1507
(c) 1515
(d) 1521
(e) 1522

Q176. 1, 11, 99, 693, 3465, ?
(a) 10335
(b) 10285
(c) 10245
(d) 10395
(e) 10375

Q177. 2, 1, 1, 1.5, 3, ?
(a) 5
(b) 7.5
(c) 8
(d) 6.5
(e) 9.5

Q178. 28, 40, 60, 90, 132, ?
(a) 188
(b) 190
(c) 174
(d) 212
(e) 182

Q179. 821, 784, 743, ? , 653, 600
(a) 698
(b) 700
(c) 721
(d) 671
(e) 702

Q180. 2, 3, 27, 74, ? , 237
(a) 148
(b) 121
(c) 144
(d) 134
(e) 178

Q181. The average weight of a class of 45 girls is 53 kg. It was later found that weight of two girls was read as 49 kg and 57 kg instead of 45 kg and 52 kg. Find the actual average weight of the class.
(a) 54 kg
(b) 53.40 kg
(c) 50.6 kg
(d) 52.80 kg
(e) 51.5 kg

Q182. The average score of Sachin in his initial 40 matches is 'a'. In next two matches he scores 112 and 99 runs and his average increased by 2 runs. Find his new average?
(a) 63.5
(b) 67.5
(c) 67
(d) 65.5
(e) 61.5

Q183. The average of first three number out of seven number is 11 more than average of seven number and 5th , 6th and 7th no number re 8, 5 and 29 less than average of seven number respectively. If 4th number is 89, then find average of initial three number.
(a) 80
(b) 70
(c) 81
(d) 91
(e) 61

Q184. In an examination, a candidate obtains 20% marks and fails by 75marks while another candidate obtains 55% marks and passed by 20% of the maximum marks. What are the passing marks?
(a) 275
(b) 175
(c) 225
(d) 500
(e) 125

Q185. The average age of Amit, Dharam and Ankit at the time of the marriage of Dharam was 40 years. After one year a child was born to Dharam and after 5 years of marriage the average of all of them is 36 years. What was the age of the bride at the time of marriage?
(a) 30
(b) 40
(c) 36
(d) 42
(e) 32

Q186. The ratio between age of Veer and Sameer six years ago was 3 : 7 and six years hence the ratio of Veer's age to Sameer's age will be 5 : 9. Find the ratio between present age of Veer and Sameer?
(a) 2 : 3
(b) 1 : 4
(c) 1 : 3
(d) 1 : 2
(e) 1 : 5

Q187. The present population of two town A and B is in ratio 8 : 7 and present population of town B is 7000 and it increases by 20% and $14\frac{2}{7}$% in the next two year. Now the ratio of population of town B to A is 24 : 25. Find the increase in population of town A.
(a) 2500
(b) 2000
(c) 3500
(d) 3000
(e) 4500

Q188. Average age of a group of 30 people is 24 years. If two persons of age 20 year and 30 year left the group. When a new person joins the group and average age of group becomes 25 year. Find age of person.
(a) 32 yrs
(b) 45 yrs
(c) 55 yrs
(d) 50 yrs
(e) 70 yrs

Q189. When 30% of a no. y is subtracted from x it become 310 and when 50% of y is added to x it becomes 550. Find ratio of x to y.
(a) 5 : 3
(b) 4 : 3
(c) 2 : 1
(d) 7 : 6
(e) 6 : 5

Q190. Shivam's expense is 25% more than Dharam's expense and Dharam's expense is 15% less than Harish's expense. If the sum of the their expense is Rs 4660, then what would be the Shivam's expense?
(a) Rs 1360
(b) Rs 1700
(c) Rs 1600
(d) Rs 1156
(e) Rs 1165

Direction (191-195): In the following questions, two equations, I and II are given. You have to solve both the equations and give answer accordingly.
(a) if x>y
(b) if x≥y
(c) if x<y
(d) if x≤y
(e) if x=y or no relation.

Q191. I. $y^2 + 10y + 21 = 0$
II. $x^2 + 3x + 2 = 0$

Q192. I. $y^2 = 441$
II. $x^2 - 10x - 231 = 0$

Q193. I. $y^2 - 13y + 30 = 0$
II. $x^2 + 3x - 18 = 0$

Q194. I. $2x^2 - 52x + 50 = 0$
II. $y^2 - 30y + 125 = 0$

Q195. I. $4x + 2y = 122$
II. $3x + 2y = 102$

Q196. The compound interest of Rs 184.5 is obtained when Rs $(x + 700)$ is invested at 10% per annum for 1 year, interest being compounded half yearly. Find x?
(a) 1800
(b) 1100
(c) 700
(d) 1500
(e) None of these

Q197. If Jasprit Bumrah can bowl 8 different types of balls, then in how many ways he can bowl 6 different types of balls in an over of 6 balls?
(a) 28
(b) 720
(c) 20160
(d) none of these
(e) 2160

Q198. The breadth of a rectangle is $\frac{3}{4}th\ of$ its length. If area of rectangle is 972 cm^2 and diameter of a circle is 1 cm less than the length of rectangle, then what is the area of circle?
(a) 980 cm^2
(b) 1024 .25 cm^2
(c) 820.5 cm^2
(d) 850 cm^2
(e) 962.5 cm^2

Q199. A alone and B alone can finish a work in 36 days and 30 days respectively. B alone started the work and left after 9 days. If the remaining work was completed by A alone, then find the number of days taken by A alone to finish the remaining work?
(a) $25\frac{1}{5}\ days$
(b) $21\frac{1}{5}\ days$
(c) $12\frac{1}{5}\ days$
(d) $30\frac{1}{5}\ days$
(e) $29\frac{1}{5}\ days$

Q200. 47% people like pastries, 58% people like chocolates and 29% people like both pastries and chocolates. What percent of people like neither pastries nor chocolates?
(a) 22%
(b) 20%
(c) 28%
(d) 25%
(e) None of these

Q201. If 50% of (P – Q) = 30% of (P + Q) and Q = x% of P, then find the value of x.
(a) 30
(b) 25
(c) 20
(d) 50
(e) None of these

Q202. Pawan Kaul earns 15 percent on an investment but loses 10 per cent on another investment. If the ratio of two investments is 3 : 5, then find the combined loss percent.
(a) $\frac{5}{4}$%
(b) $\frac{4}{5}$ %
(c) $\frac{8}{5}$%
(d) $\frac{5}{8}$%
(e) None of these

Q203. The average mark obtained by a student in 6 subjects is 88. On subsequent verification it was found that the marks obtained by him in a subject was wrongly copied as 86 instead of 68. Find the correct average of the marks obtained by him.
(a) 87
(b) 86
(c) 85
(d) 84
(e) None of these

Q204. The two numbers are in the ratio 17 : 45. If one-third of the smaller is less than $\frac{1}{5}th$ of the bigger by 15, then find the smaller number.
(a) $25\frac{1}{2}$
(b) $67\frac{1}{2}$
(c) $76\frac{1}{2}$
(d) $86\frac{1}{2}$
(e) None of these

Q205. If the sum of four consecutive even numbers is 748, then find the smallest number among them.
(a) 188
(b) 186
(c) 184
(d) 174
(e) None of these

Directions (6-10): What will come at the place of question(?) mark in the following number series?

Q206. 2, 13, 35, 68, 112, ?
(a) 173
(b) 178
(c) 163
(d) 167
(e) None of these

Q207. 650, 601, 565, 540, 524, ?
(a) 512
(b) 514
(c) 412
(d) 515
(e) 540

Q208. 16, 24, 36, 54, 81, 121.5, ?
(a) 182.25
(b) 174.85
(c) 190.65
(d) 166.55
(e) 158.95

Q209. 8, 4, 6, 15, 52.5, ?
(a) 236.25
(b) 218.25
(c) 212.25
(d) 222.25
(e) 230.25

Q210. 108, 72, 36, 24, 12, ?
(a) 10
(b) 6
(c) 8
(d) 7
(e) 9

Directions (211-220): What approximate value will come in place of question mark (?) in the following questions. (You are not expected to find the exact value)

Q211. $42.022\% \ of \ 350.09 - 28.04\% \ of \ 399.999 =?$
(a) 40
(b) 35
(c) 45
(d) 50
(e) 30

Q212. $\sqrt{(123.09 + 465.05) \div 11.99}+? = 240.02 \div 1.989$
(a) 93
(b) 143
(c) 133
(d) 113
(e) 123

Q213. $(15.99)^2 - 14.04 \times 8.99+? = 154.999$
(a) 30
(b) 45
(c) 35
(d) 20
(e) 25

Q214. $62.02\% \ of \ 249.99 - 19.99\% \ of \ 105.05-? = 110$
(a) 24
(b) 16
(c) 28
(d) 34
(e) 20

Q215. $44.98\% \ of \ 220.09 + 30.03\% \ of \ 160.06 =?^2 + 2.99$
(a) 32
(b) 28
(c) 12
(d) 22
(e) 18

Q216. $1229.99 + 2120.09 - 3049.987 =?$
(a) 300
(b) 100
(c) 200
(d) 500
(e) 400

Q217. $\sqrt{\sqrt{(99.99 + 104.99 \times 5}} =? \div 8.989$
(a) 55
(b) 15
(c) 25
(d) 35
(e) 45

Q218. $35.99 \times 4.98 - 1199.99 \div 7.99 =?$
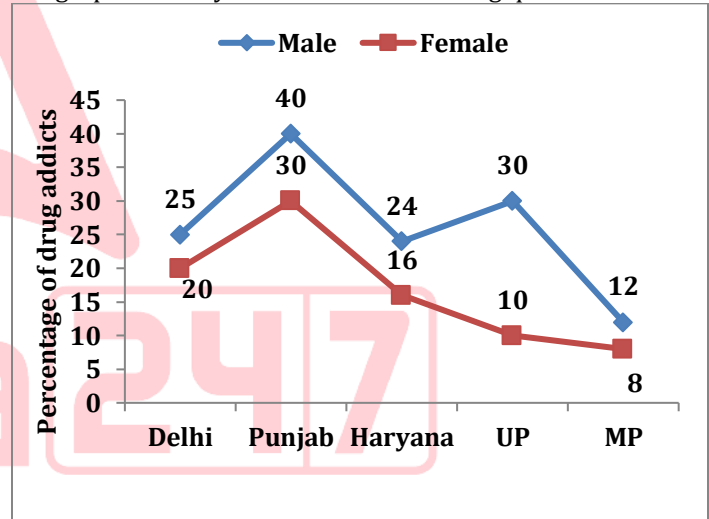(a) 20
(b) 50
(c) 40
(d) 30
(e) 10

Q219. $?^2 + 60\% \ of \ 239.99 = 55\% \ of \ 320.02 + 3.98$
(a) 8
(b) 6
(c) 4
(d) 16
(e) 14

Q220. $524.90 + 125.05 =? \times 9.99$
(a) 85
(b) 75
(c) 65
(d) 55
(e) 45

Directions (221-225): The following line graph shows the percentage of male and female population out of total population of five different states who are drug addicts. Study the graph carefully to answer the following questions.

Q221. If population of Delhi is 3.6 million then find the total number of male and female together who are drug addict in Delhi.
(a) 1.62 million
(b) 1.26 million
(c) 0.62 million
(d) 2.2 million
(e) 2.6 million

Q222. If total population of Haryana is 3.2 million then total number of male drug addict in Haryana is how many more (in no.) than that of female drug addict in the same state ?
(a) 3,44,000
(b) 2,56,000
(c) 1,56,000
(d) 4,20,000
(e) None of these

Q223. If total number of female drug addict in Punjab is 1.2 million then total population of Punjab is:
(a) 4.6 million
(b) 6 million
(c) 4 million
(d) 5.4 million
(e) 3.6 million

Q224. What is average of percentage of male drug addicts in all the states together?
(a) 24.2%
(b) 28%
(c) 2.62%
(d) 26.2%
(e) 28.85

Q225. If population ratio of Haryana and UP is 3 : 5 then in which state from these two states maximum number of females are drug addict ?
(a) UP
(b) Haryana
(c) Can't be determined
(d) Equal in both states
(e) None of these

Directions (226-230): line-chart given below shows production of two companies (in lakhs) Maruti and Honda in six different years. Study the date carefully & answer the following questions.
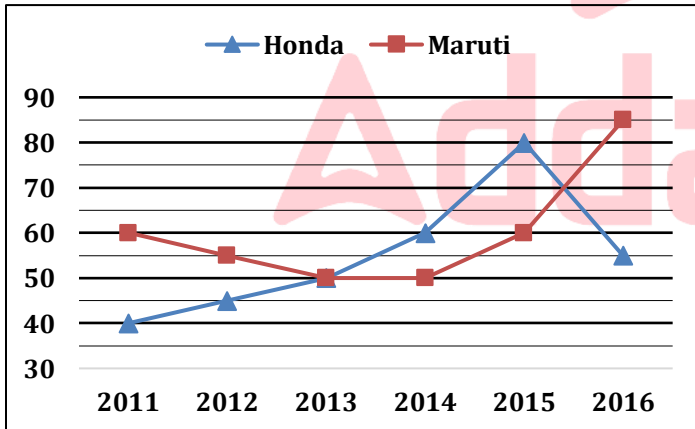
Q226. Total production of Maruti in year 2011, 2012 and 2013 together is what percent more/less than total production of Honda in same years?
(a) $22\frac{2}{9}$% less
(b) $22\frac{2}{9}$% more
(c) $11\frac{1}{9}$% less
(d) $11\frac{1}{9}$% more
(e) $16\frac{2}{3}$% less

Q227. Average production of Maruti in year 2014, 2015 and 2016 together is how much more/less than the average production of Honda in year 2014, 2015 and 2016 together. (in lakhs)
(a) 8
(b) 5
(c) 10
(d) 0
(e) 12

Q228. Total production of Honda is six years is what percent more or less than total production of Maruti in six years?
(a) $9\frac{1}{11}$% more
(b) $8\frac{1}{3}$% more
(c) $8\frac{1}{3}$% less
(d) $9\frac{1}{11}$% less
(e) 10 % less

Q229. In 2017, production of Maruti and Honda increase by 20% and 40% respectively with respect to year 2016. Find the total production in 2017. (in lakh)
(a) 179
(b) 185
(c) 190
(d) 175
(e) 197

Q230. Find the ratio of total production of Maruti is 2013, 2014 and 2015 together to the total production of Honda in 2014 and 2015 together?
(a) 9 : 8
(b) 9 : 7
(c) 7 : 8
(d) 8 : 7
(e) 8 : 9

Direction (231-235): In the following questions, two equations, I and II are given. You have to solve both the equations and give answer accordingly.
(a) if x>y
(b) if x ≥ y
(c) if x<y
(d) if x ≤ y
(e) if x=y or no relation.

Q231. I. $y^2 + 10y + 21 = 0$
II. $x^2 + 3x + 2 = 0$

Q232. I. $y^2 = 441$
II. $x^2 - 10x - 231 = 0$

Q233. I. $y^2 - 13y + 30 = 0$
II. $x^2 + 3x - 18 = 0$

Q234. I. $2x^2 - 52x + 50 = 0$
II. $y^2 - 30y + 125 = 0$

Q235. I. $4x + 2y = 122$
II. $3x + 2y = 102$

Directions (236-240): In each of these 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 or no relation can be established between x and y.

(d) if y>x

(e) if y≥ x

Q236. (i) $x^2 - 12x + 32 = 0$

(ii) $y^2 - 20y + 96 = 0$

Q237. (i) $2x^2 - 3x - 20 = 0$

(ii) $2y^2 + 11y + 15 = 0$

Q238. (i) $x^2 - x - 6 = 0$

(ii) $y^2 - 6y + 8 = 0$

Q239. (i) $x^2 + 14x - 32 = 0$

(ii) $y^2 - y - 12 = 0$

Q240. (i) $x^2 - 9x + 20 = 0$

(ii) $2y^2 - 12y + 18 = 0$

Q241. A car can cover a distance in 9 hours at the speed of 70 km/hr at what percent should the speed of car increase so distance can cover in 6 hr.

(a) 25%

(b) 40%

(c) 35%

(d) 50%

(e) 60%

Q242. What is the speed of car (in km/hr), which overtakes a running train in 20 second. Length of train is 180 meter and its speed is 33⅓% less than speed of car. (Car's length is negligible)

(a) 100 km/hr

(b) 81 km/hr

(c) 105 km/hr

(d) 90 km/hr

(e) 97.2 km/hr

Q243. A bird covers a distance of 112 km in 'y' hours travelling at the speed of 'x' km/hr. Find the speed of bird, given that x and y are co-primes integers, and both are greater than 1.

(a) 16 km/hr

(b) Can't be determined

(c) 14 km/hr

(d) 28 km/hr

(e) 7 km/hr

Q244. Anurag can cover a km in 10 minutes and Dharam can cover a km in 15 minutes. If they both participated in a race and Anurag defeated Dharam by 200m, then find the length of race.

(a) 500m

(b) 600m

(c) 800m

(d) 400m

(e) 300m

Q245. A car has wheels of diameter 84 cm. How many revolutions can the wheel complete in 40 minutes, if the car is travelling at the speed of 132 cm/s ?

(a) 1400

(b) 1000

(c) 600

(d) 1200

(e) 1600

Q246. Two cars stars at the same time from one point and move along two roads at right angles to each other. Their speeds are 36 km/hr. and 48 km/hr. respectively. After 15 second the distance between them will be

(a) 400 m

(b) 150 m

(c) 300 m

(d) 250 m

(e) None of these

Q247. A car driver observed that a bus was 40 m ahead of the car and after 20 seconds the car was 60 m ahead of the bus. If the speed of the bus is 38 kmph, then find the speed of the car (in kmph).

(a) 12

(b) 18

(c) 24

(d) 40

(e) None of these

Q248. Vikash and Mohit started from point A towards point Q. Distance between A and Q is 9 km. If Mohit starts after 4 min., then he will meet Vikash 1 km away from point Q at a time when Vikash is returning towards point A after reaching point Q and Vikash can cover 1 km in 6 min. find speed of Mohit in km/min.

(a) $\frac{1}{7}$

(b) $\frac{1}{8}$

(c) $\frac{1}{9}$

(d) $\frac{1}{6}$

(e) $\frac{1}{12}$
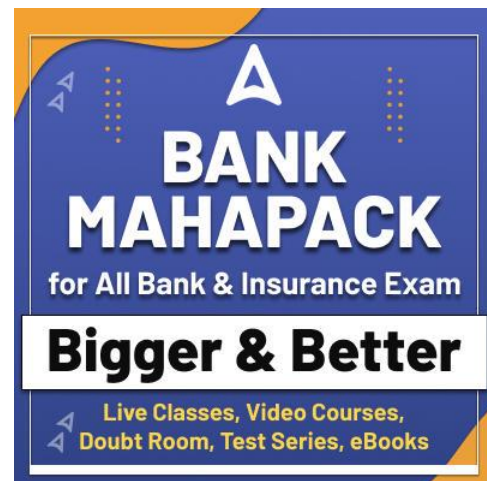
Q249. Two trains A and B of length 400 m and (400 + x) m respectively are moving with same speed. If train A and B crosses a pole in 16 sec and 24 secs respectively then in what time train 'B' will cross 400 m long platform.
(a) 32 sec
(b) 40 sec
(c) 45 sec
(d) 54 sec
(e) 24 sec

Q250. The ratio of speed of train P and train Q is 4 : 5. Train P crosses a pole in 6 sec while train Q crosses the same pole in 4 sec. If train P crosses a platform of length 480 m in 18 sec then in how much time train Q will cross the same platform?
(a) 16.3 sec
(b) 14.2 sec
(c) 13.6 sec
(d) 18 sec
(e) 16 sec

Directions (251–260): Find the wrong number in following number series:

Q251. 12, 28, 60, 124, 252, 506, 1020
(a) 506
(b) 12
(c) 28
(d) 60
(e) 124

Q252. 5, 18, 34, 54, 79, 110, 158
(a) 34
(b) 5
(c) 18
(d) 54
(e) 158

Q253. 8, 48, 240, 960, 2400, 5760, 5760
(a) 8
(b) 48
(c) 960
(d) 2400
(e) 5760

Q254. 64, 58, 66, 62, 68, 64, 70
(a) 64
(b) 58
(c) 62
(d) 70
(e) 66

Q255. 64, 56, 65, 49, 74, 38, 87
(a) 87
(b) 64
(c) 38
(d) 56
(e) 49

Q256. 12, 39, 63, 90, 104, 141, 165
(a) 104
(b) 39
(c) 90
(d) 141
(e) 165

Q257. 13, 40, 56, 181, 217, 562, 624
(a) 13
(b) 40
(c) 181
(d) 562
(e) 217

Q258. 112, 128, 108, 132, 104, 134, 100
(a) 112
(b) 128
(c) 134
(d) 108
(e) 100

Q259. 120, 145, 168, 197, 224, 255, 288
(a) 288
(b) 197
(c) 145
(d) 255
(e) 120

Q260. 5, 6, 14, 45, 184, 920, 5556
(a) 5
(b) 6
(c) 14
(d) 920
(e) 45

Directions (261-265): In the following questions there are two equations 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 relation between x and y cannot be established

Q261. I. $x^2 + 9x - 22 = 0$
II. $2y^2 - 7y + 6 = 0$

Q262. I. $2y^2 - 13y - 34 = 0$
II. $3x^2 - 11x - 20 = 0$

Q263. I. $x^4 = 256$
II. $y^2 - 16y + 64 = 0$

Q264. I. $x^2 + 4x - 12 = 0$
II. $2y^2 + 7y + 6 = 0$

Q265. I. $2x + 3y = 4$
II. $4x + 5y = 6$

Q266. A can do a work in x days. B is 60% more efficient than 'A'. They together can do a work in 6 days. Find the value of x.

(a) $15\frac{3}{5}$ days

(b) $14\frac{2}{5}$ days

(c) $18\frac{1}{3}$ days

(d) $12\frac{2}{3}$ days

(e) $11\frac{1}{3}$ days

Q267. Cost price of two articles A and B is in the ratio 2 : 3. If article A is sold 20% profit and article B is sold at 25% profit then find the overall profit percentage in selling the both articles.

(a) 25%

(b) 24%

(c) 23%

(d) 22%

(e) 21%

Q268. Average age of three persons A, B and C is 30 years. After three years average age of A, B, C and including another person D will 37.5 years. What will be the age of D after six years?

(a) 51 years

(b) 54 years

(c) 57 years

(d) 60 years

(e) 48 years

Q269. A and B invested Rs. x and Rs. 20,000 for 4 months and 3 months respectively in a business. If ratio of profit share of A and B is 1 : 2 then find the value of 'x'

(a) 8500 Rs.

(b) 7000 Rs.

(c) 9000 Rs.

(d) 8000 Rs.

(e) 7500 Rs.

Q270. A mixture of milk and water in a jar contains 36ℓ milk and 12ℓ water, Xℓ of milk and (X + 8) ℓ of water added in mixture. If $12\frac{1}{2}$% of new mixture is 10ℓ, then find how much water added in mixture?

(a) $16\ \ell$

(b) $14\ \ell$

(c) $22\ \ell$

(d) $20\ \ell$

(e) $12\ \ell$

Directions (271-275): What approximate value will come in place of (x) in the following questions.

Q271. $\frac{2.99}{3.99} \times \sqrt[3]{511.99} + 123.9\%$ of $650.11 = x$

(a) 850

(b) 792

(c) 812

(d) 841

(e) 750

Q272. $275.12 + 187.99x = (49.98)^2 + 30.99$

(a) 6

(b) 7

(c) 8

(d) 10

(e) 12

Q273. $\frac{1690}{85\% \ of \ 125} - 249.9 \div \left(\frac{5}{8} \times 100\right) \times \sqrt{x} = 0$

(a) 4

(b) 9

(c) 25

(d) 8

(e) 16

Q274. $\sqrt{1023.99} + \sqrt{63.89} + \sqrt{960.89} + x = 24.99\%$ of 699.99

(a) 104

(b) 111

(c) 96

(d) 90

(e) 120

Q275. $349 \div 49 + (9.99)^2 \times 19.99 = x^3 - 18.99\%$ of 999.99

(a) 10

(b) 8

(c) 17

(d) 13

(e) 19

Q276. Speed of boat to cover a distance in upstream is 40% of the boat to cover same distance in downstream. Find the speed of current if time taken to cover 280 km in upstream is 7 hours. (in km/hr)

(a) 25

(b) 30

(c) 20

(d) 35

(e) 40

Q277. In how many different ways the letter of words 'MUBARAK' be arranged so that both A's never comes together?

(a) 1600

(b) 1760

(c) 1800

(d) 1540

(e) 1840

Q278. Ayush and Akshay invested in the ratio $\frac{1}{3} : \frac{2}{5}$ in a scheme for a time period which is in the ratio $\frac{1}{5} : \frac{2}{3}$. If the profit of Ayush is Rs. 550 then find difference in profit of Akshay & Ayush?

(a) Rs. 1350

(b) Rs.1600

(c) Rs. 1450

(d) Rs. 1650

(e) Rs. 1550

Q279. Simple interest for a period of two years is Rs. 2400. If difference of CI and SI for same period is Rs. 300. Then find the rate of interest. [Amount given in each case is same & rate is also same].
(a) 12.5%
(b) 305
(c) 35%
(d) 20%
(e) 25%

Q280. The curved surface area of cylinder is 616 cm² and radius of cylinder is half the height of cylinder. Find the area of rectangle if length & breadth of rectangle is equal to height & radius of cylinder?
(a) 98 cm²
(b) None of these
(c) 256 cm²
(d) 196 cm²
(e) 144 cm²

Direction (281-290): In each question below only one number is missing. Please understand the data carefully and find the value of question mark(?).

Q281. 50, 54, ?, 74, 90, 110
(a) 58
(b) 62
(c) 68
(d) 70
(e) 72

Q282. 210, ?, 197, 172, 123, 2
(a) 200
(b) 202
(c) 204
(d) 206
(e) 208

Q283. 1, 4, ?, 16, 125, 36
(a) 35
(b) 36
(c) 18
(d) 9
(e) 27

Q284. 2, 6, 14, 30, ?, 126
(a) 62
(b) 70
(c) 58
(d) 94
(e) 88

Q285. 5, 7, 11, 19, 35, ?
(a) 46
(b) 54
(c) 67
(d) 78
(e) 89

Q286. 23, 33, 53, ?, 123, 173
(a) 83
(b) 93
(c) 63
(d) 113
(e) 103

Q287. 8, 27, 125, 343, ?, 2197
(a) 512
(b) 1296
(c) 121
(d) 1000
(e) 1331

Q288. 2, 2, 3, 6, 15, ?
(a) 15
(b) 37.5
(c) 30
(d) 45
(e) 60
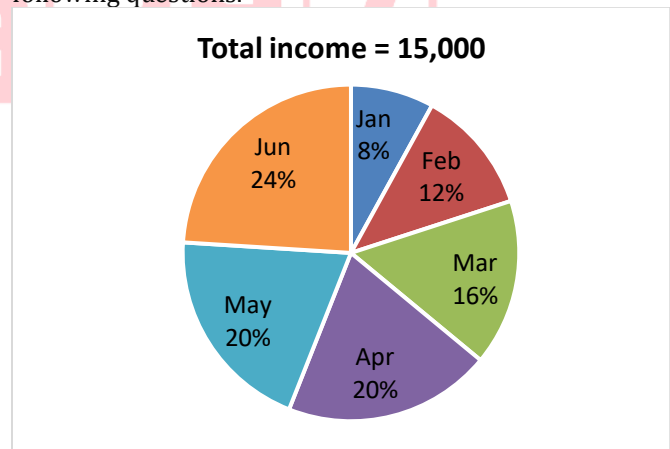
Q289. 17, 34, 53, ?, 105, 136
(a) 66
(b) 76
(c) 94
(d) 88
(e) 80

Q290. 310, 260, 219, 187, 164, ?
(a) 144
(b) 138
(c) 150
(d) 121
(e) 108

Directions (291-295): Pie-chart given below shows percentage distribution of total income of Sandeep in six different months. Study the data carefully and answer the following questions.

Total income = 15,000

Jan 8%
Feb 12%
Mar 16%
Apr 20%
May 20%
Jun 24%

Q291. Income of Sandeep in the month of Jan and April together is what percent less than income of Sandeep in the month of Mar and Jun together?
(a) 20%
(b) 30%
(c) 40%
(d) 50%
(e) 70%

Q292. Income of Sandeep in May and Jun together is how much more than the income of Sandeep in Feb and March together? (in Rs.)
(a) 1500
(b) 1800
(c) 1200
(d) 2400
(e) 2700

Q293. Which month shows the highest percent increment in income as compare to previous month?
(a) Feb
(b) March
(c) April
(d) May
(e) Both (b) and (c)

Q294. Income in the month of March and April together makes how much central angle of the total?
(a) 115.2°
(b) 158.4°
(c) 144°
(d) 100.8°
(e) 129.6°

Q295. Sandeep's average income in starting four months from the given six months is how much less than Sandeep's average income from last four months in the given six months? (in Rs.)
(a) 300
(b) 600
(c) 900
(d) 1200
(e) 1500

Directions (296-300): Given line graph shows the number of mangoes sold by three different sellers A,B and C on five different days. Read the line graph carefully and answer the questions accordingly.
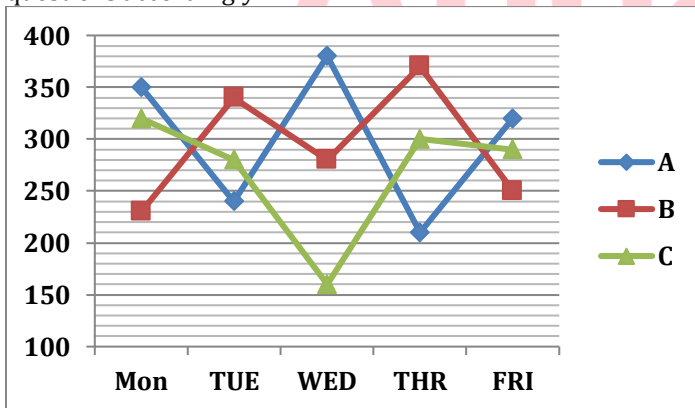
Q296. Find the difference between average number of mangoes sold by A on all the five days together and average no. of mangoes sold by seller C on all the five days together?
(a) 20
(b) 50
(c) 40
(d) 30
(e) 45

Q297. Find the respective ratio of mangoes sold by A and B on Monday and Tuesday together to the mangoes sold by B and C sold on Wednesday and Friday together?
(a) 55:47
(b) 58:49
(c) 47:55
(d) 49:58
(e) 47:57

Q298. Total number of mangoes sold by seller B and C together on Friday is what percentage of mangoes sold by seller A,B and C together on Monday?
(a) 70%
(b) 65%
(c) 60%
(d) 55%
(e) 75%

Q299. Find the average number of mangoes sold by seller B on all the days together?
(a) 294
(b) 300
(c) 325
(d) 280
(e) 275

Q300. Total Mangoes sold by seller B and C together on Monday is how much more/less than total mangoes sold by seller B and C together on Thursday?
(a) 140
(b) 100
(c) 120
(d) 110
(e) 150

Q301. Harsh borrow Rs. 400 at 10% rate of interest. He paid Rs.200 and Rs.64 at the end of 1st and 2nd year respectively. Then find how much money he will pay at the end of 3rd year to clear his debt?
(a) Rs. 200
(b) Rs. 240
(c) Rs. 264
(d) Rs. 220
(e) Rs. can't be determined.

Q302. A container has mixture of water and acid in which water is 40% out of total mixture of 50 lit. if 30 lit of the mixture is taken out and 50 lit of another mixture of water and acid is added and in second mixture acid is 40%, then find ratio of water to acid in final mixture.
(a) 16:19
(b) 8:7
(c) 19:16
(d) 7:8
(e) 17:19

Q303. Manoj is 25% less efficient than Hemant. Vikash and Hemant working together can complete a task in 16 days and Vikash is half efficient as Hemant, then find in how many days Manoj alone can complete the task with 150% of his original efficiency?

(a) $21\frac{1}{3}\,days$

(b) $21\,days$

(c) $22\frac{2}{3}\,days$

(d) 24 days

(e) 32 days

Q304. Each of two trains – A & B of different length can cross a pole in 5 seconds and when they are moving in same direction, train – A crosses train – B in $28\frac{1}{3}\,sec$. If sum of their length is 0.85 km, then find the ratio of their length?

(a) 7:11

(b) 10:7

(c) 11:13

(d) 10:13

(e) 5:4

Q305. When two cards are drawn from a pack of cards then find what is the probability that both cards are club cards or both cards are ace cards?

(a) $\frac{14}{221}$

(b) $\frac{15}{221}$

(c) $\frac{19}{221}$

(d) $\frac{9}{221}$

(e) $\frac{12}{221}$

Q306. Diagonal of a square whose side is $22\sqrt{2}$ cm is bent into a circle, find area of the circle?

(a) $176\ cm^2$

(b) $132\ cm^2$

(c) $154\ cm^2$

(d) $220\ cm^2$

(e) $198\ cm^2$

Q307. A man purchases three type of item in ratio 2:3:4 and their cost price are Rs. 300, Rs. 500 and Rs. 700 respectively. If he sold first, second and third type of article at 10%, 5% and 4% profit respectively, then find his overall approximate profit percentage?

(a) 7%

(b) 2%

(c) 4%

(d) 9%

(e) 5%

Q308. A, B and C invest in a partnership in ratio 5:3:7 and investment of A is Rs. 200 less than investment of C. Partner B invests for $\frac{1}{5}th$ and A and C invest for $\frac{1}{12}th\ and\ \frac{1}{15}th$ respectively of total time of investment. If profit of B is Rs. 800 more than that of C than find profit of A.

(a) Rs. 1000

(b) Rs. 2500

(c) Rs. 2800

(d) Rs. 1400

(e) Rs. 3600

Q309. The sides of a rectangle are in the ratio of 5 : 4 (length : breadth). If the length is increased by 3 cm and breadth is reduced by 37½%, the new area obtained is 150 cm² less than the original area. Find the perimeter of the rectangle?

(a) 72 cm

(b) 108 cm

(c) 126 cm

(d) 90 cm

(e) 100 cm

Q310. Average of first three no. out of seven no. is 11 more than average of seven no. and 5th , 6th and 7th no. are 8, 5 and 29 less than average of seven number respectively. If 4th no. is 89, then find average of initial three no.

(a) 80

(b) 70

(c) 81

(d) 91

(e) 61

Directions (311-315): Given bar graph shows the details of number of students in a particular class of 3 different schools in 5 different years.
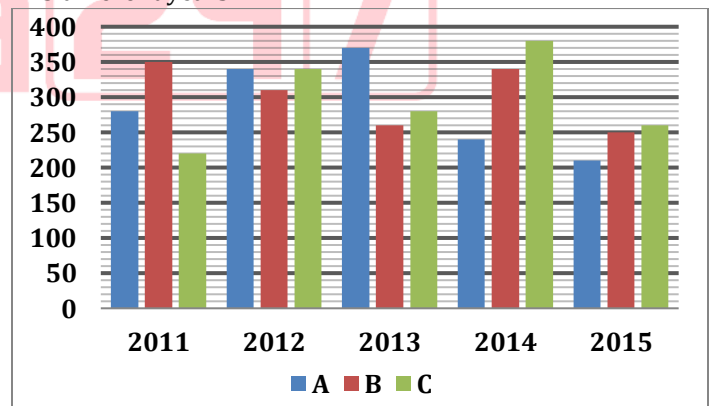
Q311. What is the difference between average number of students of school A across all the years and the average number of students of school B across all the years?

(a) 18

(b) 10

(c) 12

(d) 14

(e) 16

Q312. Find the respective ratio of the total number of students of school A in 2011 and 2012 together to the total number of students of school C in 2013 and 2014 together?
(a) 31:33
(b) 47:55
(c) 55:47
(d) 33:31
(e) 31:37

Q313. If in 2016, the total number of students in School A, School B and School C increases by 10%, 20% and 15% respectively as compared to 2015, then find the total number of students in 2016 in all the schools together?
(a) 850
(b) 870
(c) 780
(d) 830
(e) 800

Q314. Total students of all the school together in 2013 is approximately what percentage more/less than the total students of school B in 2011 and 2015 together?
(a) 52%
(b) 59%
(c) 56%
(d) 63%
(e) 48%

Q315. Find the difference between the number of total students from all the schools in 2011 and 2013 together and the total number of students from all the schools in 2014 and 2015 together?
(a) 140
(b) 60
(c) 120
(d) 80
(e) 100

Directions (316-320): What will come in the place of question (?) mark in following number series:

Q316. $19, 32, 58, ?, 149, 214$
(a) 106
(b) 29
(c) 90
(d) 97
(e) 84

Q317. $?, 10, 15, 26, 35, 50$
(a) 5
(b) 7
(c) 11
(d) 15
(e) 3

Q318. $208, ?, 156, 390, 1365, 6142.5$
(a) 108
(b) 52
(c) 72
(d) 104
(e) 90

Q319. $34, 33, 41, 32, 96, ?$
(a) 71
(b) 48
(c) 84
(d) -29
(e) 102

Q320. $1920, 384, 96, 32, ?, 16$
(a) 64
(b) 16
(c) 8
(d) 4
(e) 32

Directions (321–330): What approximate value should come in place of Question mark (?) in the following equation?

Q321. $6561.01 ÷ (27.03) ÷ 2.98 = ?$
(a) 27
(b) 54
(c) 72
(d) 81
(e) 68

Q322. $4575.99 + 2789.01 + (5.01)^2 + \sqrt{?} = 1285.11 + 6147.90$
(a) 1894
(b) 1681
(c) 1764
(d) 2025
(e) 1849

Q323. $127.001 × 16.09 ÷ 1.99 + 8.05 × 3.001 = ?$
(a) 1440
(b) 1400
(c) 1000
(d) 1040
(e) 1140

Q324. $(107.9\% \text{ of } 1999.8 ÷ 9.99)^{1/3} + (84.01\% \text{ of } 299.97) = ?$
(a) 232
(b) 258
(c) 298
(d) 278
(e) 328

Q325. $13.05 × 44.95 – 13.99 × 20.12 = (108.01 ÷ 3 + ?) × 4.98$
(a) 20
(b) 30
(c) 40
(d) 35
(e) 25

Q326. $67.01 × 4.99 × 245.001 ÷ 34.99 = ?$
(a) 2345
(b) 2450
(c) 2220
(d) 2510
(e) 2135

Q327. 39.98% of ? – 24.97% of 720.01 = 19.98% of 519.97
(a) 605
(b) 590
(c) 710
(d) 845
(e) 455

Q328. $\frac{8.99}{11.99}$ of $\frac{20.99}{14.99}$ of $(10.01)^2 = ? - \frac{3}{16}$ of 1727.98
(a) 429
(b) 529
(c) 329
(d) 469
(e) 489

Q329. $176.97 + 469.04 - 359.93 = ? + 181.03$
(a) 185
(b) 155
(c) 75
(d) 105
(e) 125

Q330. $\sqrt{11.98\% \ of \ 1124.98 + 7.96\% \ of \ 424.95} = ?$
(a) 13
(b) 7
(c) 31
(d) 23
(e) 27

Direction (331-335): What will come in place of question mark(?) in the following number series.

Q331. 2, 7, 16, 71, 346, ?
(a) 2092
(b) 2087
(c) 2197
(d) 1998
(e) 2204

Q332. 729, 1331, 2197, ?, 4913, 6859
(a) 3375
(b) 4096
(c) 3325
(d) 4144
(e) 3350

Q333. 0, 7, 26, ?, 124, 215
(a) 66
(b) 62
(c) 64
(d) 63
(e) 65

Q334. 15, 17, 21, 29, ?, 77
(a) 50
(b) 47
(c) 43
(d) 41
(e) 45

Q335. 2, 11, 45, 136, ?, 274
(a) 273
(b) 272
(c) 271
(d) 274
(e) 275

Directions (336-340): Study the charts given below carefully and answer the following questions.

Pie chart shows the percentage distribution of total employee in 5 different companies as shown below and table shown below shows the ratio of males to females in these 5 companies.

Total employee = 5400
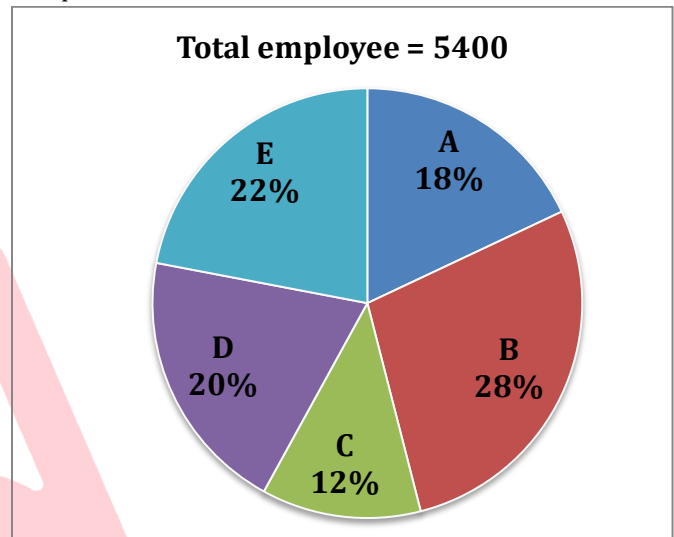
	Ratio of total males to females(M: F)
A	2:1
B	3:1
C	1:2
D	2:3
E	2:1

Q336. What is the ratio of number of males in company E to the number of females in company D?
(a) 7: 11
(b) 9:11
(c) 11:9
(d) 11: 7
(e) 7:13

Q337. Total number of males in company A are approximately what percent of total females in company E?
(a) 164%
(b) 152%
(c) 170%
(d) 144%
(e) 138%

Q338. Total males in B, C & D together are what percent of total employees in all 5 companies together?
(a) 38%
(b) 33%
(c) 45%
(d) 48%
(e) 52%

Q339. How many females employee are there in all the 5 companies together?
(a) 2084
(b) 2304
(c) 2256
(d) 2178
(e) 2280

Q340. Find the central angle of total employees from companies B and D together?
(a) 151.2°
(b) 162°
(c) 165.6°
(d) 187.2°
(e) 172.8°

Direction (341-345): The line graph shows the production of four different types of items by three companies namely Havells, Orient and Anchor. Read the data carefully and answer the following questions.
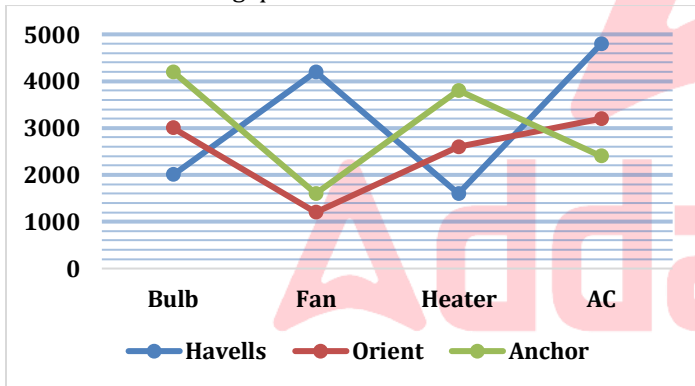
Q341. Bulbs produced by Havells and Orient together are how many more/less than AC produced by Havells and Anchor together?
(a) 1400
(b) 1700
(c) 2500
(d) 2000
(e) 2200

Q342. What is the ratio of total number of items produced by Havells to total number of items produced by Anchor?
(a) 27:25
(b) 14:11
(c) 19:17
(d) 3:2
(e) 21:20

Q343. AC and Heater together produced by Havells are what percent of Bulb and Heater together produced by Anchor?
(a) 50%
(b) 100%
(c) 80%
(d) 120%
(e) 65 %

Q344. What is the average of all four types of item produced by Orient?
(a) 2500
(b) 3000
(c) 2750
(d) 2300
(e) 2000

Q345. What is the difference between Bulb, Fan and AC together produced by Havells and Heater produced by orient and Anchor together?
(a) 4600
(b) 4800
(c) 5000
(d) 4400
(e) 4200

Q346. A shopkeeper gives one shirt free on the purchase of 3 shirts and also gives an additional 20% discount. What is overall discount percent given by the shopkeeper?
(a) 50%
(b) 40%
(c) 30%
(d) 42%
(e) 52%

Q347. Mohit covers a certain distance in 17 min and Maanik covers the same distance in 12 min. Difference between speed of Maanik and Mohit is 10m/min. Find the distance travelled by Maanik in 2 hours?
(a) 680 m
(b) 650 m
(c) 3050 m
(d) 4080 m
(e) 3080 m

Q348. Ratio of total rivers to total lakes in India is 3:7. Ratio of total rivers to total ponds in India is 7:5. Number of lakes in India are what percent of number of ponds in India?
(a) 100%
(b) $\frac{980}{3}$%
(c) $\frac{880}{3}$%
(d) $\frac{680}{3}$%
(e) can't be determined

Q349. Average of present age of A and B is 31 years more than the difference between their present age. Ratio of age of A 9 years ago to the age of B 2 years ago is 8:7. find present age of A?
(a) 37 years
(b) 45 years
(c) 49 years
(d) 31 years
(e) 39 years

Q350. Train A(faster) of length 340m crosses train B(slower) travelling at speed of 18 m/sec in opposite direction in 10 seconds. These two trains cross each other in 25 seconds when running in same direction. Find the length of train B?
(a) 340m
(b) 320m
(c) 380m
(d) 260m
(e) 400m

Direction (351-355): Find the approximate value of question (?) mark in given questions

Q351. $(23.02 × 22.98) + 11.89 × 7.98 = ?^2$
(a) 20
(b) 25
(c) 31
(d) 22
(e) 30

Q352. 87.08 + 913.99 – 260.13% of 129.88 = 74.98% of ?
(a) 663
(b) 552
(c) 672
(d) 221
(e) 884

Q353. ?% of 1049.87 + 74.99% of 420.12 = 750.11% of 70
(a) 15
(b) 20
(c) 10
(d) 35
(e) 25

Q354. $\sqrt{324.11 × \sqrt{19.98 × 49.99 × 8.01 × 20.01}}$ + 25.17% of 31.9 =?
(a) 368
(b) 455
(c) 312
(d) 244
(e) 632

Q355. $359.99 × 288.02 ÷ 14.98 ÷ 17.94 = \frac{(?)^2}{6}$
(a) 51
(b) 38
(c) 41
(d) 45
(e) 48

Directions (356-360): What will come in place of (?) in the following number series?

Q356. 76, 80, ?, 132, 196, 296
(a) 100
(b) 92
(c) 104
(d) 96
(e) 108

Q357. 55, 70, 115, 190, 295, ?
(a) 430
(b) 460
(c) 410
(d) 440
(e) 480

Q358. ?, 24, 44, 78, 133, 216
(a) 18
(b) 11
(c) 15
(d) 12
(e) 16

Q359. 5, ?, 28, 62, 132, 274
(a) 12
(b) 10
(c) 15
(d) 18
(e) 16

Q360. 32, 16, 24, 60, 210, ?
(a) 975
(b) 965
(c) 945
(d) 985
(e) 955

Directions (361-365): What will come in place of (?) question mark in the following questions.

Q361. $11\% \ of \ 250 + \sqrt{961} =? × 2$
(a) 29.25
(b) 34.75
(c) 24.50
(d) 56.25
(e) 16.75

Q362. $16\% \ of \ 225 + 135 ÷ 3 =?^2$
(a) 31
(b) 21
(c) 9
(d) 11
(e) 19

Q363. $23 \times 5 - 25\% \ of \ 220 = ? \div 4$
(a) 220
(b) 180
(c) 200
(d) 240
(e) 280

Q364. $\sqrt{40\% \ of \ 500 \ + 6.25\% \ of \ 400 \div 9} + ? = \frac{8}{3}$
(a) 5
(b) 4
(c) 3
(d) 2
(e) 1

Q365. $56 - 24\% \ of \ 125 + 13 \times 7 = ?$
(a) 107
(b) 137
(c) 97
(d) 117
(e) 87

Direction (366–370): In each of these questions a number series is given. In each series only one number is wrong. Find out the wrong number.

Q366. 8, 4, 4, 10, 12, 30, 90
(a) 90
(b) 8
(c) 10
(d) 12
(e) 30

Q367. 11, 16, 25, 41, 66, 102, 151
(a) 41
(b) 66
(c) 11
(d) 151
(e) 25

Q368. 21, 25, 20, 28, 19, 27, 18
(a) 18
(b) 27
(c) 19
(d) 25
(e) 20

Q369. 20, 28, 40, 56, 76, 104, 128
(a) 104
(b) 128
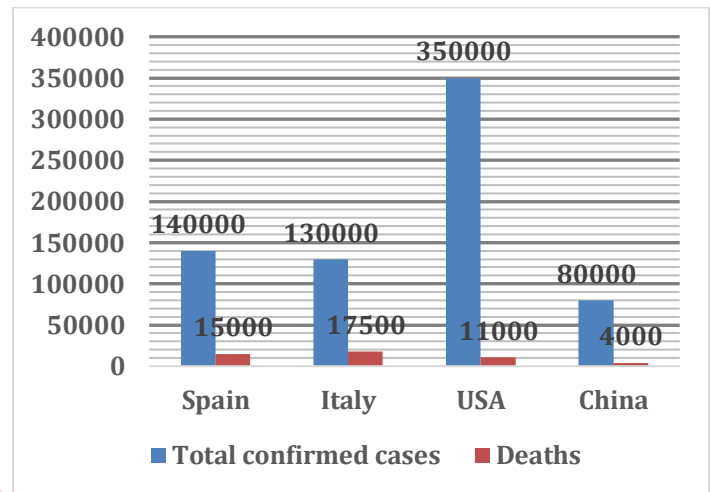(c) 56
(d) 28
(e) 40

Q370. 1, 2, 6, 20, 88, 445, 2676
(a) 2
(b) 6
(c) 88
(d) 2676
(e) 20

Direction (371-375): 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.

Mortality rate $= \dfrac{Number \ of \ death}{Number \ of \ total \ confirmed \ cases} \times 100$

Q371. For which country mortality rate is lowest among the given four countries.
(a) Italy
(b) USA
(c) Spain
(d) China
(e) USA and China

Q372. Total confirmed cases in USA is what percent more than total deaths in Italy.
(a) 1200%
(b) 1350%
(c) 2100%
(d) 1900%
(e) 1500%

Q373. 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

Q374. 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%

Q375. 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

Direction (376–380): Given below the bar graph shows the quantity of six different items (in kg) purchased by a person during the lockdown period. Read the data carefully and answer the questions.
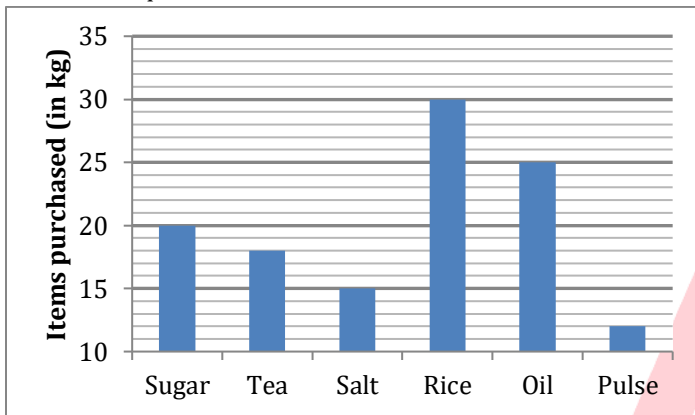
Q376. If the sum of the price of one kg sugar and one kg salt is Rs.84 and the ratio of price of one kg of sugar and one kg of salt is 11: 10. Then, find the difference between the total price of Sugar and salt purchased by man?
(a) Rs. 220
(b) Rs. 240
(c) Rs. 260
(d) Rs. 300
(e) Rs. 280

Q377. If the total price of tea is Rs. 900 and that of rice is Rs. 1500, then find the price of one kg tea is what percent more than that of rice?
(a) 0%
(b) 20%
(c) 5%
(d) 10%
(e) 15%

Q378. If the price of one kg of pulse and one kg of oil is Rs. 63 and Rs. 42 respectively, then find the ratio of the total price of the pulse to the total price of oil?
(a) 13:25
(b) 1:2
(c) 3:5
(d) 18:25
(e) 12:13

Q379. The total quantity of sugar and salt purchased together by man is what percent of the total quantity of rice and pulse together purchased by man?
(a) $87\frac{1}{3}\%$
(b) $83\frac{1}{3}\%$
(c) 74%
(d) 92%
(e) $64\frac{1}{3}\%$

Q380. If the price of one kg salt, one kg rice, and one kg oil is Rs. 56, Rs. 32 and Rs. 40 respectively, then find out the total price of oil, salt, and rice purchased by man?
(a) Rs. 2000
(b) Rs. 2800
(c) Rs. 2200
(d) Rs. 1800
(e) Rs. 2600

Directions (381-385): Solve the given quadratic equations and mark the correct option based on your answer.
(a) $x > y$
(b) $x \geq y$
(c) $x < y$
(d) $x \leq y$
(e) x = y or no relation.

Q381. I. $x^2 + 6x + 5 = 0$
II. $y^2 + 6y + 8 = 0$

Q382. I. $x^2 - 9x + 14 = 0$
II. $y^2 - 16y + 63 = 0$

Q383. I. $2x^2 - 17x + 35 = 0$
II. $(y + 7)^3 = 2197$

Q384. I. $(x + 16)^2 = 529$
II. $y^3 = 343$

Q385. I. $x^2 - 10x + 21 = 0$
II. $6y^2 - 23y + 20 = 0$

Direction (386-390): What will come in place of question mark(?) in the following number series.

Q386. 8, 12, 20, 36, 68, ?
(a) 132
(b) 120
(c) 124
(d) 136
(e) 128

Q387. 0.25, 0.5, ?, 12, 96, 960
(a) 1
(b) 1.5
(c) 3
(d) 2
(e) 2.75

Q388. ?, 164, 284, 484, 764, 1124
(a) 120
(b) 124
(c) 116
(d) 108
(e) 136

Q389. 1600, 1088, 1039, 823, 798, ?
(a) 687
(b) 699
(c) 734
(d) 712
(e) 727

Q390. 147, ?, 103, 84, 67, 52
(a) 124
(b) 119
(c) 125
(d) 116
(e) 122

Q391. What will be the time taken by Rahul to cover the same distance which is covered by Abhishek in 5 hours if ratio of speed of Abhishek and Rahul is 6 : 5?
(a) 4 hrs
(b) 5 hrs
(c) 6 hrs
(d) 7 hrs
(e) 3 hrs

Q392. What is the interest earned by a leader on 10000 Rupees for the period of 2 years at the rate of 12.5% S.I.
(a) 2000 Rs.
(b) 2500 Rs.
(c) 3000 Rs.
(d) 3500 Rs.
(e) 1500 Rs.

Q393. In how many days A alone can complete the work if A and B together can complete the work in 5 days and B alone can complete the work in 10 days.
(a) 7 days
(b) 8 days
(c) 10 days
(d) 15 days
(e) 9 days

Q394. In a mixture of Milk and water, 25 litres of water is added due to which the ratio of milk and water becomes from 4:5 to 2:5. Find the initial quantity of Mixture.
(a) 40
(b) 45
(c) 50
(d) 55
(e) 35

Q395. In a committee of 20 members, the average age is 25 years. The average age of first 18 members is 24 years. What will be the average age of last 2 members?
(a) 32
(b) 36
(c) 38
(d) 34
(e) 30

Q396. A invested 25000 and B invested 75000 in a business and Ratio of time in which they invest is 7: 4. If the difference between their profit is 500 Rs, then what is the total profit?
(a) 1800
(b) 2000
(c) 1900
(d) 1700
(e) 2100

Q397. If the circumference of circle is 88 cm and ratio of radius of circle to side of square is 1 : 2 then what will be the ratio of area of circle to area of square.
(a) 14 : 11
(b) 11 : 14
(c) 13 : 14
(d) 11 : 16
(e) 16 : 13

Q398. A bag contains 3 red, 4 blue and 3 green balls. If 2 balls are drawn at random then what is the probability that none is green.
(a) 6/11
(b) 8/15
(c) 11/15
(d) 7/15
(e) 9/11

Q399. There are 2 inlet pipes and 1 outlet pipe assigned to fill a tank. If inlet pipe 1 and inlet pipe 2 can fill the tank in 5 hrs and 10 hours respectively and outlet pipe can empty the tank in 15 hrs, then what will be time taken by all three pipes together to fill the tank?
(a) 20/7 hours
(b) 30/7 hours
(c) 15/4 hours
(d) 7 hours
(e) 9 hours

Q400. In how many ways can 8 person be arranged in a row such that 4 person always sit together in a fix pattern.
(a) 8400
(b) 40320
(c) 576
(d) 2880
(e) None of these

Directions (401-405): Study the table given below & answer the question.

Table given below shows the number of items sold by four different sellers in the five different months.

Month \ Seller	A	B	C	D
Feb	–	42	52	64
March	48	–	24	74
April	32	28	48	56
May	36	64	–	32
June	54	81	36	–

Note- Some data are missing in the given table, find the missing data if necessary.

Q401. If seller A sold 150 items in January and February together and number of items sold by seller A in February and March together is 80% of the no. of items sold by same seller in May and June together then find no. of items sold in January by seller A?
(a) 108
(b) 132
(c) 126
(d) 92
(e) 96

Q402. If the ratio of total items sold by seller B in Feb & March together to total items sold by seller C in April & may together is 1 : 2 and items sold by C in May is 64. Then find total items sold by seller B in march?
(a) 14
(b) 20
(c) 24
(d) 12
(e) 32

Q403. If average of items sold in April by all sellers is equal to average items sold in March by all sellers then total items sold by seller B in March is what percent of items sold by seller A in May?
(a) 40%
(b) 50%
(c) 70%
(d) 75%
(e) 60%

Q404. If no. of items sold by seller D in June is 50% more than no. of items sold by seller B in May then find the difference of total items sold by seller D in May & June together and total items sold by seller A in march & April together?
(a) 58
(b) 32
(c) 36
(d) 42
(e) 48

Q405. Find the ratio of items sold by seller B in Feb & June together to items sold by seller C in May & June together if items sold by seller C in May is $33\frac{1}{3}$% of items sold by seller B in June?
(a) 47 : 23
(b) 41 : 23
(c) 43 : 21
(d) 41 : 21
(e) 31 : 21

Direction (406-410): Find out the value of question mark (?) in the given questions.

Q406. 12.50% of 1440 - 17 × 51 + 721 =?
(a) 30
(b) 31
(c) 32
(d) 33
(e) 34

Q407. $\sqrt{4096} + \frac{4}{5} \, of \, 780 - ? = 296$
(a) 356
(b) 360
(c) 376
(d) 392
(e) 420

Q408. $17^2 + 896 + 12^2 - 25\%$ of 1100 =?
(a) 1000
(b) 1050
(c) 1054
(d) 1058
(e) 1060

Q409. $\frac{3}{7}$ of $686 + 133\frac{1}{3}\%$ of $33 - 69$ =?
(a) 269
(b) 239
(c) 249
(d) 259
(e) 289

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Q410. (33 + 6.25% of 4096) = ? + 2 × 119
(a) 41
(b) 51
(c) 61
(d) 31
(e) 81

Directions (411-415): Study the bar chart and table given below and answer the following questions.

Bar chart shows the number of chocolates (white + brown) sold by 4 different companies (A, B, C & D) in 2016 & 2017 and table shows the percentage of brown chocolates out of total chocolates sold by these 4 companies in 2016 & 2017.
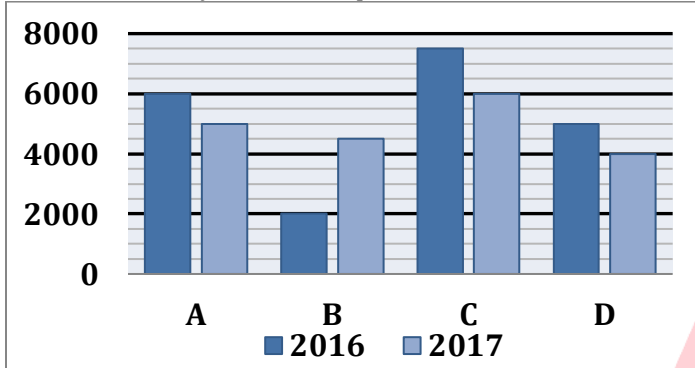
Company	% of brown chocolates sold	
	2016	**2017**
A	70%	80%
B	75%	60%
C	40%	50%
D	30%	25%

Q411. White chocolates sold by company – A & C together in 2016 are what percent more or less than brown chocolates sold by company – B & D together in 2016?
(a) 145%
(b) 110%
(c) 125%
(d) 100%
(e) 160%

Q412. Find ratio of total chocolates sold by company – A & C together in 2016 to total chocolates sold by company – A & D together in 2017.
(a) 5 : 1
(b) 7 : 10
(c) 3 : 2
(d) 4 : 3
(e) None of the above.

Q413. Find the average number of white chocolates sold by company – B, C & D in 2017?
(a) 2800
(b) 2200
(c) 2000
(d) 2400
(e) 2600

Q414. Find total number of brown chocolates sold by company – A, C & D together in 2017.
(a) 9000
(b) 10000
(c) 8000
(d) 6000
(e) 7000

Q415. Total chocolates sold by company – A & B together in 2016 are what percent of total chocolates sold by company – C & D together in 2017?
(a) 40%
(b) 100%
(c) 60%
(d) 80%
(e) 120%

Direction (416-420): What will come in the place of question (?) mark?

Q416. 12, 48, 24, 96, ?, 192
(a) 48
(b) 24
(c) 64
(d) 60
(e) 12

Q417. 756, 774, 738, 792, ?, 810
(a) 700
(b) 712
(c) 724
(d) 720
(e) 748

Q418. ?, 3, 6.4, 11.5, 18.3, 26.8
(a) 2.7
(b) 2.3
(c) 2.1
(d) 1.6
(e) 1.3

Q419. 4, 262, 460, 606, 708, ?
(a) 772
(b) 778
(c) 774
(d) 784
(e) None of these

Q420. 120, 208, 286, ?, 412, 460
(a) 360
(b) 364
(c) 354
(d) 340
(e) 348

Directions (421-425): In each of the following questions, two equations **(I)** and **(II)** are given. Solve the equations and mark the correct option:
(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.

Q421. I. $6x^2 + 5x + 1 = 0$
II. $2y^2 + 5y + 3 = 0$

Q422. I. $x^2 = 4$
II. $y^5 = 32$

Q423. I. $x^2 - 11x + 30 = 0$
II. $y^2 - 15y + 56 = 0$

Q424. I. $3x^2 - 14x + 15 = 0$
II. $5y^2 - 14y + 8 = 0$

Q425. I. $x^2 + 13x + 42 = 0$
II. $y^2 + 16y + 63 = 0$

Direction (426-430): In each of the following questions, two equations **(I)** and **(II)** are given. Solve the equations and mark the correct option: (a) x>y
(b) y> x
(c) x ≥y
(d) x ≤y
(e) x =y or No relation can't be established.

Q426. I. $4x^2 - 20x + 25 = 0$
II. $5y^2 - 6y - 8 = 0$

Q427. I. $x^2 - 2x - 15 = 0$
II. $y^2 - 15y + 56 = 0$

Q428. I. $10x^2 + 19x + 7 = 0$
II. $5y^2 + 16y + 12 = 0$

Q429. I. $x^2 - 20x + 75 = 0$
II. $y^2 + 19y + 84 = 0$

Q430. I. $x^2 - 9x - 22 = 0$
II. $y^2 - 17y + 66 = 0$

Directions (431-435): What will come in place of question mark (?) in the following questions

Q431. $\sqrt{841} + \sqrt{1296} - \sqrt{1024} = \sqrt{?}$
(a) 1156
(b) 1089
(c) 1024
(d) 961
(e) 1225

Q432. 14400÷ 36+15600 ÷ 12 + 450 = 1800 + ?
(a) 410
(b) 330
(c) 390
(d) 350
(e) 370

Q433. 7450 +5880 − 6890 = 9000 - ?
(a) 2560
(b) 2760
(c) 2460
(d) 2850
(e) 2480

Q434. 32× 25 + 44 × 18 + 348 ÷ 6 = ?
(a) 1550
(b) 1620
(c) 1650
(d) 1600
(e) 1690

Q435. $\sqrt{1225} \times 28 + 203 \times 7 = (?)^2$
(a) 47
(b) 45
(c) 49
(d) 51
(e) 53

Q436. The average expenditure of Nandu & Bandu on rent is Rs. 2000 while that on travel is Rs. 1500. Nandu spends Rs. 800 on food while Bandu spends Rs. 900. What is average of total expenditure of both? (no one spends on any other thing than given)
(a) 4400
(b) 4350
(c) 4300
(d) 4750
(e) 4800

Q437. Anu bought a purse at a discount of 20% which was marked at 30% higher than cost price. A customer gets 10% extra discount on purchase of more than two purse. If Anu purchased 3 such purses, find profit or loss percent of shopkeeper.
(a) 4% loss
(b) 4% profit
(c) 6.4% profit
(d) 6.4% loss
(e) None of these

Q438. What is the probability of drawing 2 red cards from a pack of 52 cards having 2 black cards missing?
(a) $\frac{13}{49}$
(b) $\frac{25}{153}$
(c) $\frac{25}{102}$
(d) $\frac{69}{221}$
(e) $\frac{13}{25}$

Q439. In a bag there are 2 red balls, X green balls and 3 yellow balls. If two balls are taken out, then its probability to be green is $\frac{2}{9}$. Find number of green balls in the bag.
(a) 8
(b) 4
(c) 5
(d) 6
(e) 7

Q440. Kappu & Chandu have their speed in ratio 5:6. If both start from 2 points 110 kms away towards each other. How much distance Chandu had travelled more than Kappu when they meet for first time? (both start at same time)
(a) 11 kms
(b) 20 kms
(c) 10 kms
(d) Cannot be determined
(e) None of these

Q441. Simple interest become what time of principle of Rs 2500 after 8 yrs at the rate of 22.5% per annum at SI?
(a) 1.2 times
(b) 1.8 times
(c) 1.5 times
(d) 2.2 times
(e) None of these

Q442. Ten years ago, father age was 12 times of his son's age and present age of father is 7 times of his son's age. Find present age of son ?
(a) 20 yrs
(b) 22 yrs
(c) 32 yrs
(d) 40 yrs
(e) 18 yrs

Q443. A and B invested into a partnership for $\frac{2}{3}rd$ and $\frac{2}{5}th$ of investment time respectively. If A and B invested Rs.2000 and Rs. 5000 respectively. Find profit share of A is how much percent more/less than profit share of B?
(a) 16.33%
(b) 14.28%
(c) 7.14%
(d) 33.33%
(e) 33.67%

Q444. Population of a city increases by 15% and $4\frac{8}{23}$% in two successive years respectively. If population of city after two years is 24024, then find initial population of city?
(a) 20020
(b) 20002
(c) 20120
(d) 20802
(e) None of these.

Q445. Find total no. of result that can be obtained when 2 coins are tossed and two dice are rolled simultaneously?
(a) 124
(b) 24
(c) 180
(d) 144
(e) 120

Q446. A and B invested in a partnership Rs. 5000 and Rs. X for half and two-third of time respectively and profit share of A is 20% more than profit share of B. Find X?
(a) Rs. 3000
(b) Rs. 2000
(c) Rs. 2525
(d) Rs. 2715
(e) Rs. 3125

Q447. What is the probability of getting 2 head and 1 when two coins and a dice are tossed simultaneously?
(a) $\frac{1}{12}$
(b) $\frac{1}{6}$
(c) $\frac{1}{24}$
(d) $\frac{3}{7}$
(e) None of these.

Q448. What is the area of a triangle whose sides are in ratio 5:13:12 and perimeter is 600m?
(a) $12000\ m^2$
(b) $10000\ m^2$
(c) None of these.
(d) $11500\ m^2$
(e) $6000\ m^2$

Q449. Simple interest on a sum of Rs. 1200 after $2\frac{1}{5}$ year is Rs. 264. Find amount incurred on same rate of interest compounded annually on same sum after 3 years?
(a) Rs. 1445.5
(b) Rs. 1597.2
(c) Rs.1582.2
(d) Rs. 1682.8
(e) None of these.

Q450. If a shopkeeper marks an article 20% above cost price and sold it at 5% discount and get Rs. 28 profit. Find difference between C.P. and market price of article?
(a) Rs. 50
(b) Rs. 45
(c) Rs. 32
(d) Rs. 40
(e) Rs. 44

Directions (451-455): Bar chart given below shows the total number of admissions taken place in two different schools A and B from year 2012 to year 2016. Read the bar graph carefully and answer the following questions.
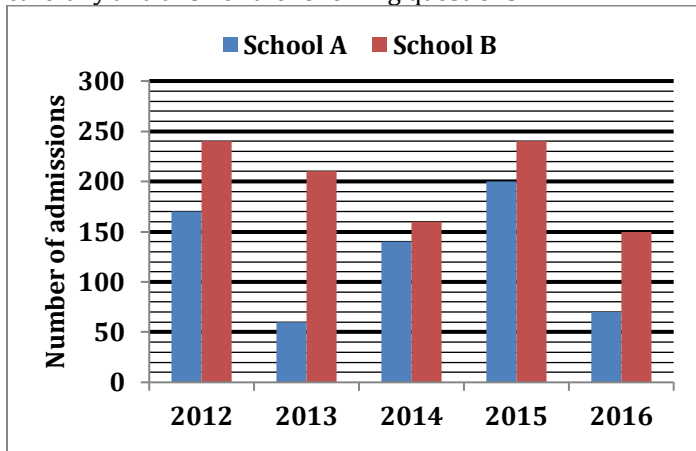
Q451. In school C, total student who take admission in year 2013 is $33\frac{1}{3}$ % more than the difference between admissions taken place in school A and B in the same year. Find the average of admission taken in school C in year 2013 and school B in year 2015.
(a) 225
(b) 220
(c) 210
(d) 205
(e) 200

Q452. Ratio of boys to girls who take admission in school A in 2012 is 9 : 8 and number of boys taking admission in school A in 2015 is $11\frac{1}{9}$ % more than boys taking admission in school A in 2012. Find the sum of girls who take admission in school A in 2012 and in school A in 2015 together.
(a) 180
(b) 220
(c) 195
(d) 150
(e) 240

Q453. In 2017, there is 60% increase in the total number of admissions taken in both the schools from previous year. Find the total number of admissions taken place in 2017.
(a) 312
(b) 322
(c) 332
(d) 342
(e) 352

Q454. Total admission taken place in 2014 in both the schools together is what percent more or less than total admission taken place in both the schools in year 2016.
(a) $35\frac{2}{11}$ %
(b) $36\frac{4}{11}$ %
(c) $44\frac{2}{9}$ %
(d) $38\frac{1}{11}$ %
(e) $39\frac{5}{11}$ %

Q455. Find the ratio of total admissions taken place in both the schools in year 2013 to total admissions taken place in both the school in year 2016.
(a) 29 : 22
(b) 13 : 11
(c) 14 : 11
(d) 27 : 22
(e) 25 : 22

Directions (456–460): What approximate value should come in the place of question (?) marks in the given question?

Q456. $8399.99 \times 14.996 \div 374.982 + \sqrt{16.011} = ?$
(a) 564
(b) 340
(c) 320
(d) 324
(e) 384

Q457. $\sqrt{2499.99} + 14.97\% \ of \ 14 = ?$
(a) 40
(b) 45
(c) 52
(d) 58
(e) 64

Q458. $24.987\% \times 639.97 + 45.21\%$ of $359 = ?$
(a) 358
(b) 378
(c) 322
(d) 302
(e) 288

Q459. 33.33% of $509.99 = ?$
(a) 140
(b) 185
(c) 155
(d) 170
(e) 100

Q460. 74.79% of $1344.11 + 12.48\%$ of $128.20 = ?$
(a) 1048
(b) 1024
(c) 1072
(d) 1096
(e) 1100

Directions (461-470): What value should come in place of (?) in the following questions?

Q461. $4900 \div 28 \times 444 \div 12 - 6450 = (?)^2$
(a) 6
(b) 7
(c) 5
(d) 4
(e) 8

Q462. 38% of 250 – 85% of 560 + 13 × ?= 61
(a) 34
(b) 26
(c) 12
(d) 28
(e) 32

Q463. $2\frac{1}{9} \times 1\frac{2}{19} \div 2\frac{1}{3} - \frac{1}{2} =? - 1\frac{1}{2}$
(a) $\frac{5}{2}$
(b) 4
(c) $\frac{3}{2}$
(d) $\frac{1}{2}$
(e) 2

Q464. $\sqrt{?} \times 12 - 26\%$ of $1650 + 19 = 13 \times 34$
(a) 4900
(b) 5041
(c) 5329
(d) 5476
(e) 5625

Q465. $575 \times 24 \div 8 - (5)^3 = (?)^2$
(a) 40
(b) 45
(c) 50
(d) 55
(e) 35

Q466. $\frac{600 \div 24 \times 1.8}{176 \div 8 + 0.5} \times 4 = ?$
(a) 8
(b) 12
(c) 16
(d) 4
(e) 1

Q467. 125% of 80 + 350% of 18 + 6 =?^{2}
(a) 17
(b) 12
(c) 13
(d) 15
(e) 11

Q468. $\sqrt{24\% \ of \ 225 + 10}$ = ? $+\sqrt{121}$
(a) 3
(b) 2
(c) -1
(d) 1
(e) -3

Q469. $\frac{10^2 + 64^2 \div (2)^5}{11^2 + 9^2 - 29 \times 5}$ =?
(a) 7
(b) 4
(c) 2
(d) 8
(e) 10

Q470. $8\frac{4}{7} \times 16\frac{2}{6} - 2 \times? = 324 \div 9 \div 2$
(a) 122
(b) 63
(c) 73
(d) 61
(e) 71

Directions (471-475): In each of the following questions, two equations (I) and (II) are given. Solve the equations and mark the correct option:
(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.

Q471. I. $x^2 - 25x + 100 = 0$
II. $y^2 - 27y + 110 = 0$

Q472. I. $x^2 = 289$
II. $y = \sqrt{289}$

Q473. I. $x^2 + 12x + 32 = 0$
II $y^2 + 7y + 12 = 0$

Q474. I. $3x^2 + 16x + 20 = 0$
II. $y^2 + 14y + 48 = 0$

Q475. I. $x^2 + x - 72 = 0$
II. $y^2 + 13y + 42 = 0$

Q476. Distance between two cities P and Q is 900 km. Car A and Car B can cover the distance between P and Q in 'X' hours and (X + 4) hours respectively. If Car B and Car A start from city P at 6.00 am and 8.00 am respectively and both Cars meet at 10.30 am, then find the distance between P and the point where both the cars meet?
(a) 425 km
(b) 475 km
(c) 450 km
(d) 500 km
(e) 400 km

Q477. Downstream speed of a boat is $33\frac{1}{3}\%$ more than its upstream speed and the speed of the boat in still water is 15 km/h more than the speed of the stream. Find the total time taken by boat to travel 120 km in upstream?
(a) 7 hr
(b) 8 hr
(c) 9 hr
(d) 5 hr
(e) 10 hr

Q478. Amit goes to office from his home by bike at the speed of 30 kmph and he comes back to his home from office by bike at the speed of X kmph. If average speed for whole journey is 33 kmph, then find the value of 'X' (nearest to two decimal places)?
(a) 35.56 km/hr
(b) 36.00 km/hr
(c) 36.67 km/hr
(d) 32.50 km/hr
(e) 34.50 km/hr

Q479. A train 'X' starts from station P at 8 am and reaches station Q at 4 pm. Another train 'Y' started from Q at the same time at which 'X' started and reaches 'P' at 3 pm. then find the time at which both the trains crossed each other.
(a) 11 : 44 am
(b) 11 : 48 am
(c) 11 : 36 am
(d) 12 : 44 pm
(e) 11 : 50 am

Q480. A car covered a certain distance at a certain speed in a fixed time. If car had moved 9 kmph slower, it would have taken 2 hours more and if it had moved 5 kmph faster, it would have taken 48 min less. Find the distance covered by car?
(a) 300 km
(b) 360 km
(c) 320 km
(d) 400 km
(e) 450 km

Direction (481-485): The percentage distribution of students studying various subjects in a college is given below in the pie-graph. Answer the following question based on given data.
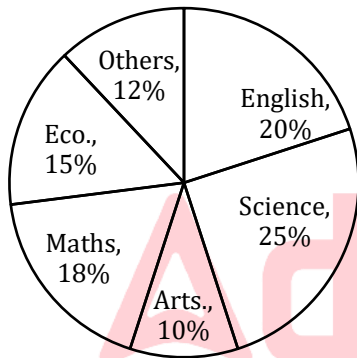
Q481. Find the ratio between number of students studying 'Science' and 'English' together to number of students studying 'Eco' and 'Others' together?
(a) 2:5
(b) 5:2
(c) 3:5
(d) 7:5
(e) 5:3

Q482. If the difference between students studying 'Maths' and 'Arts' is 512, then find the number of students studying science?
(a) 1600
(b) 1500
(c) 1800
(d) 1400
(e) 1700

Q483. Total number of students studying 'English' is what percent more than total number of students studying 'Eco'?
(a) $133\frac{1}{3}\%$
(b) $33\frac{1}{3}\%$
(c) $66\frac{2}{3}\%$
(d) $120\frac{1}{3}\%$
(e) $20\frac{1}{3}\%$

Q484. If the number of students studying 'Science' is 20 more than number of students studying 'English', then find the average number of student studying 'Eco', 'Others' and Maths.
(a) 62
(b) 65
(c) 70
(d) 60
(e) 57

Q485. If total number of students studying in college is 1800, then find the number of students studying 'Eco' and 'Others' together.
(a) 412
(b) 560
(c) 486
(d) 350
(e) 520

Directions (486–490): What will come in the place of question (?) mark in following number series:

Q486. 109, 111, 117, 129, 149, ?
(a) 173
(b) 175
(c) 177
(d) 179
(e) 181

Q487. ?, 27, 47, 77, 119, 175
(a) 15
(b) 20
(c) 18
(d) 5
(e) 21

Q488. ?, 31, 47, 83, 147, 247
(a) 24
(b) 21
(c) 27
(d) 18
(e) 15

Q489. 5, 6, 14, 45, 184, ?
(a) 880
(b) 925
(c) 945
(d) 905
(e) 975

Q490. 150, 162, 180, 190, 210, ?
(a) 238
(b) 218
(c) 124
(d) 116
(e) 128

Directions (491-500): Given below in each question two quadratic equations are given. Please solve each quantity and compare both of them and answer accordingly from the following options.
(a) x>y
(b) y> x
(c) x ≥y
(d) x ≤y
(e) x =y or No relation can't be established.

Q491. I. $2x^2 + x - 10 = 0$
II. $y^2 + 6y + 9 = 0$

Q492. I. $2x^2 - 8x + 8 = 0$
II. $y^2 - 10y + 24 = 0$

Q493. I. $2x^2 + 7x - 4 = 0$
II. $3y^2 + 11y + 10 = 0$

Q494. I. $x^2 - 2x - 48 = 0$
II. $y^2 - 16y + 64 = 0$

Q495. I. $4x^2 + 15x + 9 = 0$
II. $y^2 + 10y + 21 = 0$

Q496. I. $4x^2 - 52x + 25 = 0$
II. $5y^2 - 2y - 3 = 0$

Q497. I. $3x^2 - 12x - 15 = 0$
II. $y^2 - 13y + 40 = 0$

Q498. I. $10x^2 + 17x + 6 = 0$
II. $5y^2 + 22y + 24 = 0$

Q499. I. $3x^2 - 34x + 75 = 0$
II. $2y^2 + 41y + 90 = 0$

Q500. I. $2x^2 - 7x - 22 = 0$
II. $y^2 - 15y + 54 = 0$

Directions (501-510): What approximate value will come in place of question mark (?) in the following questions. (You are not expected to find the exact value)

Q501. $135.20 \times 5.15 + 7799.89 \div 26.03 + 124.8 = ?$
(a) 1150
(b) 1100
(c) 1200
(d) 1250
(e) 1050

Q502. $115.05 \times 6.98 + 8749 \div 13.98 - 21.97 \times 8 = ?$
(a) 1300
(b) 1350
(c) 1205
(d) 1254
(e) 1150

Q503. $(25.98)^2 + (33.97)^2 + \sqrt{1440} - \sqrt{3136} = ?$
(a) 1814
(b) 1864
(c) 1764
(d) 1710
(e) 1920

Q504. $12449.5 + 7649.7 - 9874.8 + 8274.9 = ?$
(a) 19200
(b) 17000
(c) 17500
(d) 18000
(e) 18500

Q505. $(15.98)^3 + 9320 \div 7.99 - 7304.8 \div 4.99 = ?$
(a) 3750
(b) 3800
(c) 3600
(d) 3690
(e) 3850

Q506. $1999.92 \div 49.87 \times 3.01 + 5.13 = (?)^3$
(a) 5
(b) 8
(c) 9
(d) 2
(e) 3

Q507. $59.9\% \text{ of } 319.94 + 9.99\% \text{ of } 1600.01 = -177 + (?)^2$
(a) 26
(b) 33
(c) 23
(d) 20
(e) 40

Q508. $1.101 + 11.01 + 101.01 \div 1.01 = ?$
(a) 109
(b) 116
(c) 101
(d) 113
(e) 117

Q509. $\sqrt{2024} \times \sqrt{9.21} - 35.01 = ? \times 10.1$
(a) 10
(b) 12
(c) 14
(d) 20
(e) 15

Q510. $1390.98 \div 26.04 \times 1.99 = ? - 16^2$
(a) 324
(b) 413
(c) 400
(d) 343
(e) 363

Directions (511-515): Study the following table carefully & answer the following questions.

Table given below shows the distribution of number of bikes sold by 5 different shopkeepers in year 2016 and the ratio of two types of bikes out of the total sold bikes by each shopkeeper.

Shopkeeper	Total bike sold	Bajaj Bike : hero Bike
A	18%	3 : 2
B	22%	7 : 3
C	20%	5 : 9
D	15%	3 : 7
E	1250	2 : 3

Q511. What is the difference of total Bajaj number of bike sold by A & E together and the total number of Hero bike sold by A & B together?
(a) 350
(b) 250
(c) 375
(d) 400
(e) 450

Q512. Find the number of Hero bike sold by D is what percent more/less than number of Bajaj bike sold by B?
(a) $43\frac{2}{3}\%$
(b) $31\frac{1}{9}\%$
(c) $31\frac{9}{11}\%$
(d) $41\frac{9}{11}\%$
(e) $33\frac{1}{11}\%$

Q513. If the total number of bikes sold by C in 2017 is increased by 20% compared to that of in the previous year and number of total bikes sold by D is also increased by 40% in 2017 as compared to that of in the previous year. Then find the total number of bikes sold by D in 2017 is what percent of total number of bikes sold by C in 2017?
(a) 72%
(b) 92.2%
(c) 87.5%
(d) 78.5%
(e) 83.5%

Q514. Find the ratio of number of Bajaj bike sold by A to the number of Hero bike sold by C?
(a) 23 : 31
(b) 21 : 25
(c) 23 : 27
(d) 21 : 31
(e) 23 : 25

Q515. Find total number of Bajaj bike sold by B, Hero bike sold by E and D together?
(a) 2045
(b) 1850
(c) 2470
(d) 2255
(e) 2350

Directions (516–520): Given below table shows the total number of visitors who have visited Taj Mahal on five different days of a week and percentage of total visitors who are Indians.

Days	Total number of visitors	percentage of visitors who are Indians
Monday	15,000	75%
Tuesday	17,800	82%
Friday	16,800	82%
Saturday	15,400	77%
Sunday	18,000	85%

Total number of visitors = Indians + Foreigners.

Q516. If the ratio of male to female foreigners visiting Taj Mahal on Sunday is 4 : 5, then find the difference between male and female foreigner visiting Taj Mahal on sunday?
(a) 250
(b) 275
(c) 300
(d) 320
(e) 350

Q517. Find the average of the number of Indian visitors on Monday and Tuesday?
(a) 12923
(b) 12833
(c) 12963
(d) 12933
(e) 12833

Q518. The difference of the number of Indian and foreign visitors on Saturday is what percent of the total number of visitors on Friday.
(a) 50%
(b) 55%
(c) 45%
(d) $49\frac{1}{2}\%$
(e) $46\frac{1}{2}\%$

Q519. Out of the total number of visitors on Monday 32% are Indian females. Find the ratio of number of Indian male visitors to the total number of foreign visitors on same day?
(a) 43 : 44
(b) 43 : 25
(c) 12 : 25
(d) 25 : 33
(e) 17 : 21

Q520. Find the difference between the total number of visitors on Sunday and total number of foreign visitors on Tuesday and Saturday together?
(a) 11,154
(b) 11,754
(c) 11,644
(d) 12,254
(e) 11,254

Q521. The parallel sides of a trapezium are 4 cm & 10 cm respectively while non-parallel sides are equal to side of square whose area 25 sq.cm. Find the area of trapezium. (in sq.cm.)
(a) 50
(b) 42
(c) 56
(d) 28
(e) 14

Q522. An amount doubles in 5 years at simple interest. In what time will it become 12 times of itself at same rate? (in years)
(a) 30
(b) 50
(c) 55
(d) 36
(e) None of these

Q523. A & B can do a work in 12 days when working together while A alone does it in 25 days. In what time the work will be finished if each A & B completes half of the work? (in days)
(a) $24\frac{7}{26}$
(b) $24\frac{1}{26}$
(c) $22\frac{1}{26}$
(d) $18\frac{9}{26}$
(e) $22\frac{11}{26}$

Q524. Jai scores 20% higher than Raj in an exam who scores 30% more than Ronit who scores 10% less than Ravi. What percent of marks are scored by Jai as compared to Ravi?
(a) 117%
(b) 140.4%
(c) 90%
(d) 127.8%
(e) None of these

Q525. In a mixture of juice and water, juice is 20% more than water. This is mixed with another mixture having juice & water in ratio 5:6. If these two are mixed in ratio 3:4. Find ratio of juice & water in final mixture.
(a) 35 : 39
(b) 35 : 38
(c) 1 : 1
(d) 38 : 41
(e) 38 : 39

Q526. The ratio of milk and water in a mixture of 64 litres is 7:1. How much water must be added to it so that the ratio of milk and water becomes 14:5?
(a) 12 litres
(b) 15 litres
(c) 8 litres
(d) 16 litres
(e) None of these

Q527. A person is 16 yrs older than his son. After 2 yrs, the person's age will be double the age of his son. Then find the age of his son 8 yrs hence?
(a) 24 yrs
(b) 20 yrs
(c) 22 yrs
(d) 18 yrs
(e) 28 yrs

Q528. The interest earned on an amount after 2 yrs at 10 % per annum compounded yearly is Rs 672. Find the interest earned on same amount after 4 yr at 14 % per annum at simple interest ?
(a) Rs 1792
(b) Rs 1864
(c) Rs 1912
(d) Rs 1754
(e) Rs 1720

Q529. Four books are to be distributed among seven students. If no students get more than one book, then the number of ways possible to do it is?
(a) 1200
(b) 960
(c) 600
(d) 840
(e) 720

Q530. When a 2-digit number(x) is reversed, the number so formed is 63 more than the original number. If the sum of digits of original number is 11, then find the value of x+15?
(a) 48
(b) 44
(c) 36
(d) 56
(e) None of these

Directions (531-535): Given line graph shows the details of number of cars sold by three different Showrooms P, Q and R in five different months and answer the questions accordingly.
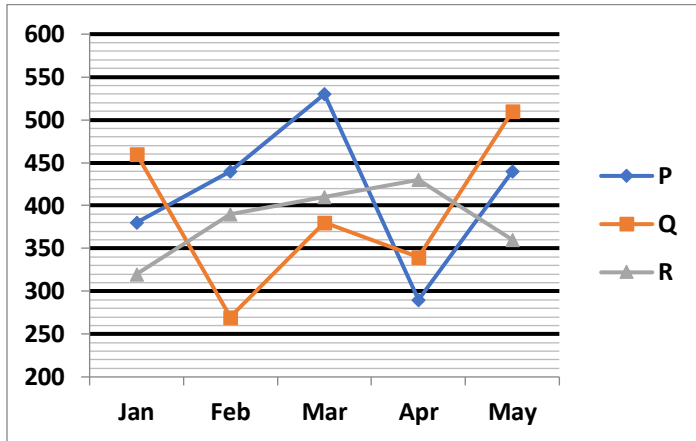
Q531. Total cars sold by showroom Q in February and March together is what percent of cars sold by showroom R in February and March together?
(a) 72.5%
(b) 76.25%
(c) 81.25%
(d) 84.75%
(e) 77.5%

Q532. Find the difference between average numbers of cars sold by the showroom P in all months together to the average number of cars sold by the showroom Q in all the months together ?
(a) 38
(b) 32
(c) 34
(d) 28
(e) 24

Q533. Find the average number of cars sold by all the 3 showrooms in march month?
(a) 460
(b) 440
(c) 480
(d) 420
(e) 490

Q534. Find the respective ratio of total numbers of cars sold by showroom P in March, April and May together to the total number of cars sold by showroom R in January, February and march together?
(a) 7 : 8
(b) 8 : 9
(c) 8 : 7
(d) 9 : 8
(e) 9 : 7

Q535. If in June, numbers of cars sold by showrooms P, Q and R is 20% , 25% and 30% respectively more than that of cars sold in march by all the respective showrooms, then find total cars sold by all the 3 showrooms together in june ?
(a) 1644
(b) 1686
(c) 1584
(d) 1728
(e) 1782

Directions (536-540): In each of these questions a number series is given. In each series only one number is wrong. Find out the wrong number.

Q536. 30, 30, 60, 20, 80, 16, 90
(a) 80
(b) 20
(c) 60
(d) 90
(e) 16

Q537. 14, 19, 12, 21, 10, 23, 9
(a) 9
(b) 14
(c) 23
(d) 10
(e) 21

Q538. 100, 110, 128, 155, 191, 236, 290
(a) 191
(b) 155
(c) 110
(d) 100
(e) 290

Q539. 4, 2, 3, 6, 15, 45, 157.5
(a) 6
(b) 2
(c) 4
(d) 3
(e) 15

Q540. 117, 134, 159, 193, 237, 292, 360
(a) 134
(b) 159
(c) 237
(d) 292
(e) 360

Directions (541-545): 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.

Q541. I. $x^2 + x - 6 = 0$
II. $y^2 + 7y + 11 = -1$

Q542. I. $2x^2 - 17x + 35 = 0$
II. $4y^2 - 19y + 21 = 0$

Q543. I. $\sqrt[3]{x - 512} = 11$
II. $y + 353 = 13^3$

Q544. I. $x^2 + 39x = -380$
II. $y^2 + 37y = -342$

Q545. I. $x - \frac{2}{x} = \frac{2}{x}$
II. $y^2 - 2y + 1 = 0$

Directions (546-550): Simplify the following equations and find the value of (?) question mark?

Q546. $132\% \, of \, 55 + \frac{685}{12}\% \, of \, 48 = ?^2$
(a) 11
(b) 5
(c) 8
(d) 10
(e) 12

Q547. $52703 + 41297 - 58000 = 100 \times ?$
(a) 720
(b) 504
(c) 360
(d) 704
(e) 840

Q548. $13.2 \div \frac{1}{6} \div 4.4 - 27.5 \div 13.75 = ?$
(a) 16
(b) 18
(c) 12
(d) 10
(e) 8

Q549. $2744 \div 28 \div 14 + 42 = 7^?$
(a) 1
(b) 2
(c) 0.5
(d) 1.5
(e) 3

Q550. $264 \div 24 + 190 \div 5 = ? \div 5$
(a) 235
(b) 305
(c) 255
(d) 245
(e) 205

Q551. 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

Q552. 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

Q553. A boatman starts covering distance 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

Q554. 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) $60 \, \pi \, cm^2$

Q555. There are 4 consecutive even numbers. If sum of first three numbers is 108, then calculate the product of smallest and largest number.
(a) 1260
(b) 1292
(c) 1280
(d) 1360
(e) 1428

Directions (556–560): In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and answer the following questions.
(a) x > y
(b) x < y
(c) x ≥ y
(d) x ≤ y
(e) x = y or no relation.

Q556. I. $2x^2 - 17x + 36 = 0$
II. $2y^2 - 19y + 45 = 0$

Q557. I. $x^2 - 25x + 154 = 0$
II. $y^2 - 28y + 195 = 0$

Q558. I. $\frac{10}{x} - \frac{24}{x^2} = 1$
II. $\frac{5}{y} - \frac{6}{y^2} = 1$

Q559. I. $3x^2 - 10x - 8 = 0$
II. $2y^2 - 23y + 60 = 0$

Q560. I. $12x - 16y = -16$
II. $17y - 13x = 12$

Directions (561-570): In each of these questions a number series is given. Find what comes at the place of question (?) mark.

Q561. 11, 13, 17, 25, 41, ?
(a) 73
(b) 79
(c) 82
(d) 90
(e) 68

Q562. 21, ?, 46, 66, 91, 121
(a) 39
(b) 31
(c) 29
(d) 27
(e) 33

Q563. 3, 6, 14, 38, ?, 206
(a) 154
(b) 126
(c) 86
(d) 112
(e) 72

Q564. 2, 12, ?, 240, 720, 1440
(a) 72
(b) 84
(c) 36
(d) 60
(e) 48

Q565. 3, 6, ?, 42, 123, 366
(a) 12
(b) 24
(c) 15
(d) 18
(e) 21

Q566. 11, 16.5, 22, 27.5, ?, 38.5
(a) 34.5
(b) 32
(c) 30.5
(d) 31.5
(e) 33

Q567. 390, 300, 244, 214, ?, 200
(a) 210
(b) 208
(c) 206
(d) 204
(e) 202

Q568. ?, 45, 36, 43, 34, 41
(a) 38
(b) 28
(c) 36
(d) 54
(e) 27

Q569. 7, 25, ?, 69, 99, 137
(a) 39
(b) 58
(c) 62
(d) 45
(e) 57

Q570. 761, 592, 448, 327, ?, 146
(a) 302
(b) 264
(c) 292
(d) 276
(e) 227

Directions (571-580): What will come in place of question (?) mark in the following questions.

Q571. $725 \div \sqrt{625} + \frac{2}{5} \times 600 = ?$
(a) 269
(b) 254
(c) 256
(d) 289
(e) 220

Q572. $[12 \times (1.9 + 2.1)] - 12 = ?^2$
(a) 7
(b) 3
(c) 6
(d) 5
(e) 4

Q573. $(2343 \div 11) + (126 \div 3) = ?$
(a) 250
(b) 225
(c) 248
(d) 255
(e) 260

Q574. $14\frac{2}{7}\% \ of \ 350 - \frac{2}{3} \times ? = 30$
(a) 15
(b) 30
(c) 60
(d) 75
(e) 24

Q575. $\frac{42 \times 12}{36 \times 7} + \sqrt{121} = ?$
(a) 13
(b) 12
(c) 15
(d) 14
(e) 16

Q576. $16\frac{2}{3}\%$ of $684 \div 11\frac{1}{9}\%$ of $171 = ?$
(a) 5
(b) 8
(c) 6
(d) 9
(e) 7

Q577. $360 \div 15$ of $(4 \times 2) + \sqrt{?} = 26$
(a) 484
(b) 529
(c) 169
(d) 625
(e) 441

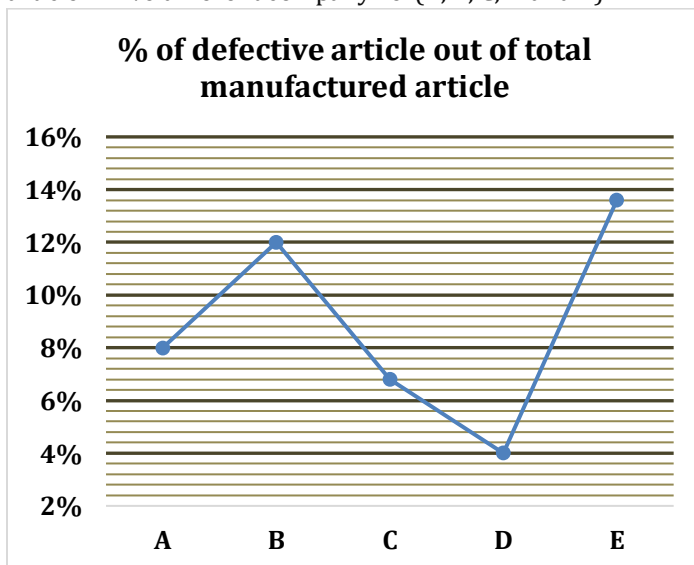**Q578.** $25^2 - ?^2\%$ of $125 = 20$
(a) 22
(b) 18
(c) 24
(d) 26
(e) 20

Q579. $\frac{0.16 \times 1.25}{0.08} + \frac{0.015 \times 150}{0.9} = ?$
(a) 3.5
(b) 3
(c) 2
(d) 5
(e) 4.5

Q580. $\frac{15}{18}$ of $378 \div \frac{15}{2} = ? - 8$
(a) 42
(b) 52
(c) 36
(d) 34
(e) 50

Direction (581-585): Line graph given below shows percentage of defective article out of total manufactured article in five different company i.e. (A, B, C, D and E).

% of defective article out of total manufactured article

Q581. If ratio between total number of article manufactured in company C to company E is 1:2. Find ratio of defective article manufactured in E to that of C?
(a) 2:1
(b) 4:1
(c) 8:3
(d) 4:3
(e) 3:2

Q582. If number of article manufactured in each company are equal, find no. of non-defective article manufactured in company D are how much percent more/less than number of non-defective article manufactured in company B?
(a) $11\frac{1}{9}\%$
(b) $9\frac{1}{11}\%$
(c) $14\frac{2}{7}\%$
(d) $7\frac{1}{7}\%$
(e) $37\frac{1}{5}\%$

Q583. Find the number of defective articles manufactured by company A is 96. Find total number of article manufactured by company A?
(a) 9600
(b) 1200
(c) 1600
(d) 8000
(e) 3200

Q584. If ratio of defective article of company C to that of D is 2:3. Find ratio between total number of articles manufactured by company C to that of company D?
(a) 20:7
(b) 3:7
(c) 20:51
(d) 25:21
(e) Can't be determine.

Q585. If difference between no. of article manufactured by company A and D is 200 and ratio of number of articles manufactured by A to D is 7:6. Find number of non-defective article manufactured by A?
(a) 1288
(b) 1308
(c) 1402
(d) 1512
(e) 1198

Directions (586-590): Pie chart given below shows number of non-defective article manufactured by five different firms i.e. P, Q, R, S and T. Read the data carefully and answer the following questions. (total article manufactured by any firm = defective + non-defective article)

No. of non-defective article

■ P ■ Q ■ R ■ S ■ T
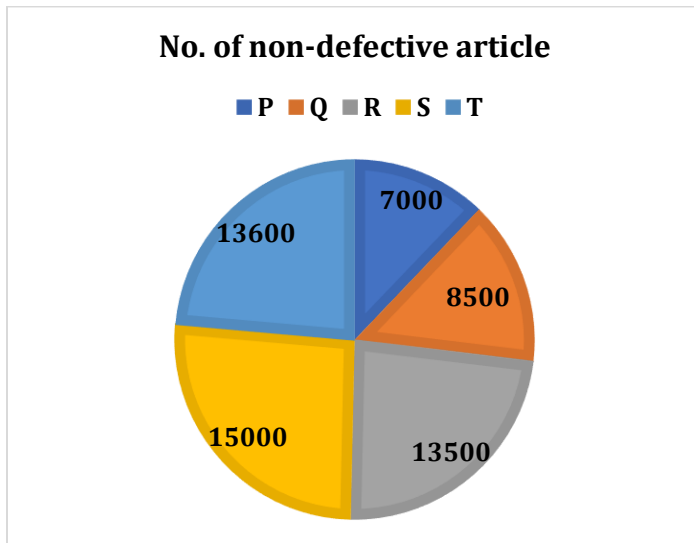
Q586. Find the number of non-defective article manufactured by firm Q is what percent of non-defective article manufactured by firm T?
(a) 60%
(b) 62.5%
(c) 37.5%
(d) 50%
(e) 72.5%

Q587. If ratio of non-defective to defective article manufactured by firm S is 75:2, then find ratio of non-defective article manufactured by firm T to defective article manufactured by firm S?
(a) 37:1
(b) 34:1
(c) 33:1
(d) 24:1
(e) 38:1

Q588. Find the average number of non-defective article manufactured by firm Q and R is what percent of total number of non-defective article manufactured by firm S?
(a) $72\frac{2}{3}\%$
(b) $66\frac{2}{3}\%$
(c) $33\frac{1}{3}\%$
(d) $73\frac{1}{3}\%$
(e) None of these.

Q589. If number of defective article manufactured by firm P and R are 30% and $30\frac{10}{13}\%$ respectively of total number of article manufactured by each of these firm, then find defective article manufactured by firm P is what percent more/ less than that of firm R?
(a) 20%
(b) 15%
(c) 50%
(d) 25%
(e) 75%

Q590. What is the ratio of non-defective article manufactured by firm Q and R together to that of P and S together?
(a) 2:1
(b) 1:1
(c) 1:2
(d) 1:3
(e) 3:1

Q591. Manoj bought a laptop at 25% less than it's original cost. If he sold it at 20% profit on it's original cost, then find his actual profit percent in this process.
(a) 45%
(b) 50%
(c) 30%
(d) 60%
(e) 40%

Q592. In a container there is 100 lit pure sulphuric acid. First 30 lit of sulphuric acid is completely replaced with water. Now again 40 lit of mixture is completely replaced with water. Find ratio of water to sulphuric acid in final mixture.
(a) 21:25
(b) 21:29
(c) 29:25
(d) 29:21
(e) 25:21

Q593. Mohit started a business with investment of Rs. 12000. After 4 months Vikash entered into business with some amount and after next four months Vikash increased his investment and make it equal to Mohit's investment. At the end of year profit ratio of Mohit to Vikash was 9:5. Find how much money Vikash increased in his initial investment.
(a) Rs. 8000
(b) Rs. 4000
(c) Rs. 12000
(d) Rs. 9000
(e) Rs. 10000

Q594. Pipe P alone can fill a tank in 24 hours and the ratio of efficiency of P to Q is 1:2 respectively. If pipe P & pipe Q can open together, then find the time taken by both pipe together can fill the tank completely. (in hours)
(a) 12
(b) 10
(c) 2
(d) 4
(e) 8

Q595. A tap can fill a tank in 12 hrs but due to an outlet it takes 3 hr more to fill the tank. Find in how many hours outlet can empty the tank.
(a) 30 hr
(b) 40 hr
(c) 60 hr
(d) 45 hr
(e) None of these.

Q596. A train at a speed of 90 kmph crosses a pole in 25 seconds less than the time it required to cross a bridge 5 times of its length at same speed. Find the length of train.
(a) 100 meter
(b) 105 meter
(c) 120 meter
(d) 125 meter
(e) None of these.

Q597. A boat cover 11.2 km distance in downstream in 48 minutes. If ratio between speed of boat in still water to speed of stream is 3 : 1, then find in what time boat will cover 42 km of distance in downstream and in upstream?
(a) 7 hours
(b) 5 hours
(c) 9 hours
(d) 10hours
(e) 3 hours

Q598. Two pipes A and B can fill a cistern in 12 hours and 8 hours respectively. The pipes are opened simultaneously, and it is found that due to leakage in bottom, 12 min extra are taken to the cistern to be filled. If the cistern is full, in how much time the leak empties the cistern alone?
(a) 120 hours
(b) 112 hours
(c) 108 hours
(d) 132 hours
(e) 96 hours

Q599. Sanjay can cover a distance of 30 km in upstream and 45 km in downstream in 13 hours. At the same speed, he can travel 24 km upstream and 30 km downstream in 10 hours. What is the speed of the water current?
(a) 9 km/hr
(b) 8 km /hr
(c) 6 km/hr
(d) 4 km/hr
(e) 12 km/hr

Q600. Raghav can do a piece of work in 15 days while Dev can do the same piece of work in 20 days. If they work together for 4 days, how much fraction of work left?
(a) 7/15
(b) 1/2
(c) 8/13
(d) 8/15
(e) None of these

Directions (601-605): What approximate value will come in place of question mark (?) in the following questions? (You are not expected to calculate the exact value)

Q601. $\sqrt{?} - 11.01^3 + 38.09^2 = 11.89^2$
(a) 529
(b) 1369
(c) 1089
(d) 961
(e) 625

Q602. $119.77\% \ of \ 175.05 - ? = 1123.86 - 33.13^2$
(a) 445
(b) 175
(c) 225
(d) 355
(e) 710

Q603. $\sqrt[3]{1330.84} + ? + \sqrt[5]{242.96} = \sqrt[2]{361.23}$
(a) 17
(b) 25
(c) 13
(d) 5
(e) 1

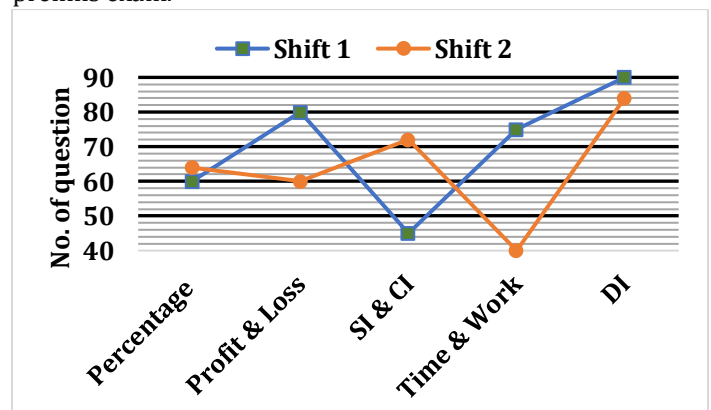**Q604.** $\frac{168.98}{12.97} \ of \ 49.86 = ? - 32.09\% \ of \ 799.95$
(a) 245
(b) 906
(c) 840
(d) 950
(e) 1550

Q605. 39.88% of 819.97 + 25.02% of 240.021 - ? = 59.98% of 500.12
(a) 88
(b) 72
(c) 56
(d) 108
(e) 144

Directions (606-610): Study the following line graph carefully and answer the following questions.
The line graph shows the no. of questions asked from different topics of quantitative aptitude in two shifts of SBI clerk prelims exam.

Q606. Find the number of questions asked in shift 1 from SI & CI is what percent of no. of questions asked from time and work in the same shift?
(a) 60%
(b) 50%
(c) 55%
(d) 64%
(e) 75%

Q607. Find the average number of questions asked from all the given sections in shift 2.
(a) 46
(b) 64
(c) 48
(d) 68
(e) 74

Q608. What is the ratio of number of questions asked from profit & loss and percentage together in shift 1 to the questions asked from profit & loss and time & work together in shift-2?
(a) 6 : 5
(b) 5 : 7
(c) 7 : 5
(d) 5 : 6
(e) 8 : 7

Q609. What is the difference between total no. of questions asked in both shifts from all the given sections together?
(a) 45
(b) 40
(c) 35
(d) 30
(e) 60

Q610. Find the total number of questions asked from DI in shift 2 are what percent less than that of DI in shift 1?
(a) $5\frac{2}{3}\%$
(b) $6\frac{2}{3}\%$
(c) $4\frac{2}{3}\%$
(d) 8%
(e) $3\frac{2}{3}\%$

Directions (611-615): The line graph shows the no. of consumers of alcohol and cigarettes in a state in 5 different years. Study the graph carefully and answer the following questions.
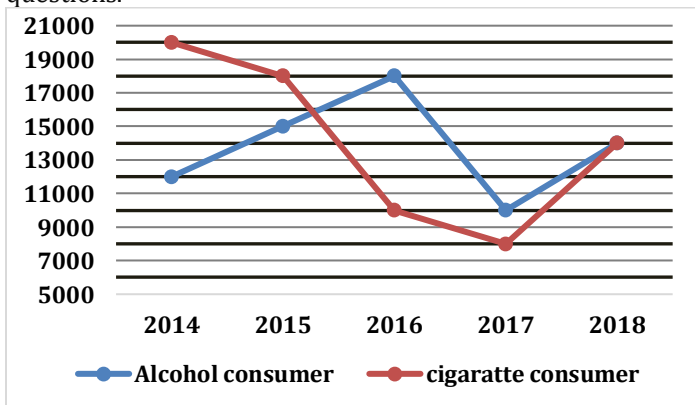
Q611. Find the ratio between alcohol consumers in 2014 and 2016 together to the cigarette consumers in 2016 and 2017 together.
(a) 5 : 6
(b) 5 : 3
(c) 10 : 9
(d) 5 : 4
(e) 7 : 6

Q612. Find the no. of alcohol consumers increased or decreased in 2018 over 2014.
(a) 4000
(b) 3000
(c) 2000
(d) 5000
(e) 6000

Q613. What is the average no. of cigarette consumers over all the years?
(a) 12000
(b) 15000
(c) 13000
(d) 14000
(e) 16000

Q614. Cigarette consumers is what percent of alcohol consumers in 2015?
(a) 120%
(b) 83.33%
(c) 125%
(d) 150%
(e) 78%

Q615. Alcohol consumers in 2015 and 2017 together is what percent more/less than cigarette consumers in 2014 and 2016 together?
(a) 16.67%
(b) 23.25%
(c) 17.25%
(d) 20%
(e) 12.5%

Directions (616-620): What approximate value should come in place of question mark (?) in the following questions?

Q616. $5012.97 + 987.23 = ?\%\,of\,3999$
(a) 250
(b) 150
(c) 50
(d) 175
(e) 125

Q617. $\sqrt{1025} + 19.87\%\,of\,19.87 = ?^2$
(a) 5
(b) 4
(c) 3
(d) 6
(e) 2

Q618. $? = \left(\frac{321.4}{594.8} \times \frac{119.2}{106.98}\right)\%\,of\,499.5$
(a) 3
(b) 7
(c) 15
(d) 5
(e) 12

Q619. $20\%\,of\,150 + 11\%\,of\,300 = ?^2$
(a) 5
(b) 8
(c) 4
(d) 2
(e) 9

Q620. $322.01 - 135.99 + 22.98 = ?$
(a) 205
(b) 195
(c) 209
(d) 215
(e) 200

Directions (621–625): In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and answer the following questions.
(a) x > y
(b) x < y
(c) x ≥ y
(d) x ≤ y
(e) x = y or no relation

Q621. I. $2x^2 - 11x + 15 = 0$
II. $2y^2 - 13y + 20 = 0$

Q622. I. $\frac{30}{x^2} = \frac{11}{x} - 1$
II. $y^2 - 7y + 12 = 0$

Q623. I. $x^2 - 84 = 112$
II. $y^3 + 1845 = 5220$

Q624. I. $x^2 + 18x + 80 = 0$
II. $y^2 + 14y + 48 = 0$

Q625. I. $18x - 12y = 9$
II. $16y - 20x = 2$

Directions (626-630): 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

Q626. What is the average number of books published by A in all the given months?
(a) 1740
(b) 2275
(c) 2050
(d) 2175
(e) 2250

Q627. Find the number of 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%

Q628. Find the ratio of number of 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

Q629. 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

Q630. Find the number of books published by A in April is what percent of number of books published by C in March?
(a) $\frac{1000}{9}\%$
(b) 90%
(c) 10%
(d) $\frac{100}{9}\%$
(e) 75%

Directions (631-635): Given pie graph shows percentage distribution of watches manufactured by a company in 2018. Study the graph carefully & answer the questions.

Total watches manufactured = 1000
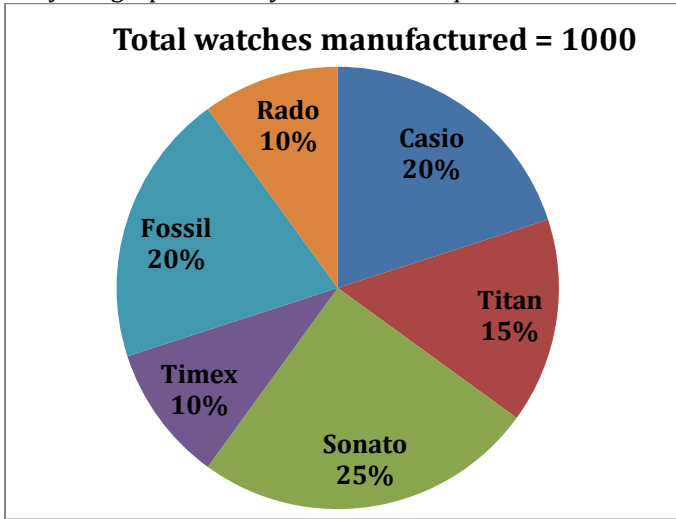
Q631. What is average of watches manufactured by Casio, Titan & Sonata together?
(a) 500
(b) 600
(c) 400
(d) 200
(e) 300

Q632. What is ratio of watches manufactured by Timex & Sonata together to that by Fossil & Casio together?
(a) 5:4
(b) 8:7
(c) 7:8
(d) 7:4
(e) 5:8

Q633. Watches manufactured of Sonata are what percent more/less than watches manufactured of Rado?
(a) 130%
(b) 150%
(c) 200%
(d) 170%
(e) 100%

Q634. If next year, Titan watch production increases by 10% while that of Timex decreases by 10%. What is difference in manufacturing of both in next year?
(a) 80
(b) 90
(c) 100
(d) 65
(e) 75

Q635. No. of watches manufactured of how many brands is more than average no. of watches manufactured?
(a) 4
(b) 3
(c) 1
(d) 2
(e) 5

Directions (636-640): Given pie diagram shows the percentage distribution of number of registered voters in 5 villages. Study the diagram carefully and answer the following questions.

No. of registered voters = 10000
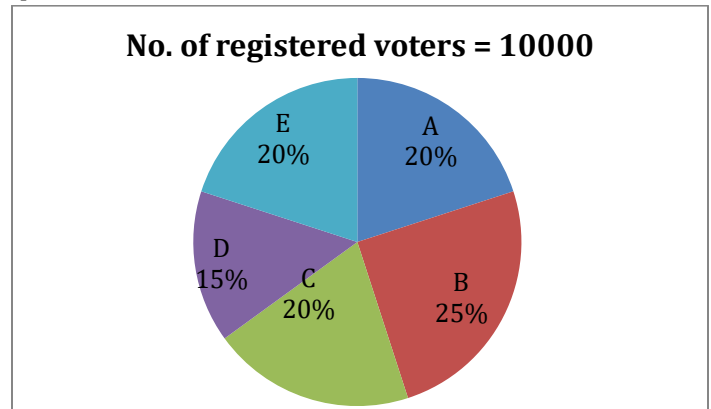
Q636. If 20% of registered voters in village B did not cast their vote and 10 % of votes cast were found invalid. Find no. of valid votes cast in village B.
(a) 1800
(b) 1900
(c) 1950
(d) 1850
(e) 2000

Q637. In village C, 10% of registered voters did not cast their vote and no vote was invalid from the votes which were cast. The winning candidate defeated the other candidate by 12% of votes cast. Find no. of votes obtained by losing candidate. (There are only 2 candidates contesting in elections in village C)
(a) 996
(b) 880
(c) 1008
(d) 792
(e) *None of these*

Q638. Find average number of registered voters in village B, C & D.
(a) 1700
(b) 2100
(c) 1900
(d) 1800
(e) 2000

Q639. In village A, B, D & E votes cast by only 70%, 65%, 80% and 75% of registered voters respectively. From which village among A, B, D & E did maximum voters cast their votes?
(a) *E*
(b) *A*
(c) B
(d) *D*
(e) *B & E*

Q640. Average no. of registered voters from village A & C is what percent of average no. of registered voters from village B, D and E?

(a) 120%

(b) 100%

(c) 90%

(d) 80%

(e) 110%

Direction (641-650): Find the wrong number in the following number series given below:

Q641. 3, 11, 38, 100, 227, 443, 786

(a) 227

(b) 3

(c) 100

(d) 38

(e) 786

Q642. 6, 11, 21, 43, 85, 171, 341

(a) 11

(b) 6

(c) 43

(d) 85

(e) 171

Q643. 7.5, 7.5, 15, 5, 20, 4, 28

(a) 28

(b) 15

(c) 5

(d) 20

(e) 4

Q644. 5, 3, 4, 7.5, 15, 45, 138

(a) 4

(b) 7.5

(c) 45

(d) 3

(e) 15

Q645. 604, 572, 537, 499, 458, 414, 368

(a) 604

(b) 368

(c) 414

(d) 458

(e) 499

Q646. 23, 46, 75, 106, 143, 184, 224

(a) 106

(b) 143

(c) 184

(d) 23

(e) 224

Q647. 0.50, 2, 4.5, 18, 28.5, 86, 172.5

(a) 18

(b) 2

(c) 28.5

(d) 172.5

(e) 86

Q648. 730, 705, 655, 580, 475, 355, 205

(a) 205

(b) 730

(c) 355

(d) 475

(e) 705

Q649. 57, 64, 78, 106, 170, 274, 498

(a) 498

(b) 78

(c) 106

(d) 170

(e) 57

Q650. 198, 186, 172, 154, 130, 104, 56

(a) 186

(b) 198

(c) 104

(d) 130

(e) 56

S1. Ans.(c)
Sol. $3.5 \times 18 - (?)^2 = 36 + 2$
$63 - 38 = (?)^2$
$25 = (?)^2$
$? = 5$

S2. Ans.(b)
Sol. $? = \frac{2975}{1190}$
$? = 2.5$

S3. Ans.(b)
Sol. $\frac{25 \div 4 \times 6}{3} = ?$
$? = 12.5$

S4. Ans.(c)
Sol. $(390 + 310 - 225) \times 4 = ?$
$(700 - 225) \times 4 = ?$
$475 \times 4 = ?$
$? = 1900$

S5. Ans.(e)
Sol. $9 \times 25 + 1225 + 150 = (?)^2$
$225 + 1225 + 150 = (?)^2$
$? = \sqrt{1600}$
$? = 40$

S6. Ans.(a)
Sol. $512 + 26 + 9 \times 250 + ? = 2809$
$? = 2809 - 512 - 26 - 2250$
$? = 2809 - 2788$
$? = 21$

S7. Ans.(d)
Sol. $\frac{150}{3} \times 15 - \frac{225}{9} \times 12 = \frac{900}{100} \times ?$
$750 - 300 = 9 \times ?$
$? = \frac{450}{9}$
$? = 50$

S8. Ans.(a)
Sol. $\frac{40}{100} \times 1125 + 381 = \frac{1}{3} \times 1110 + ?$
$450 + 381 = 370 + ?$
$? = 461$

S9. Ans.(e)
Sol. $6 - 24 + 16 + 100 = \frac{1176}{?}$
$98 = \frac{1176}{?}$
$? = \frac{1176}{98}$
$? = 12$

S10. Ans.(c)
Sol. $\frac{2500 + 170 - 70}{25} + ? = 144$
$? = 144 - \frac{2600}{25}$
$? = 144 - 104$
$? = 40$

S11. Ans.(d)
Sol.
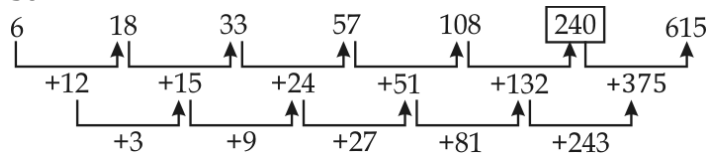
S12. Ans.(a)
Sol. The pattern is
$\boxed{0} + 8 \times 1 = 8$
$8 + 8 \times 3 = 32$
$32 + 8 \times 5 = 72$
$72 + 8 \times 7 = 128$
$128 + 8 \times 9 = 200$

S13. Ans.(c)
Sol. The pattern is ×1, ×2, ×3, ×4, ×5......
So, ? = 720 ×6 = 4320

S14. Ans.(b)
Sol.
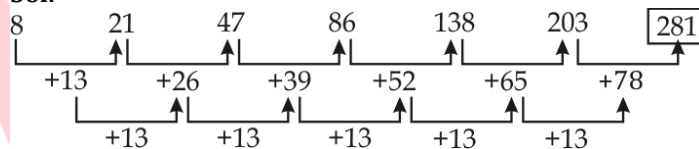
S15. Ans.(e)
Sol. The pattern is ×2, ÷3, ×4, ÷5, ×6
So, the no. is $80 \div 5 = \boxed{16}$

S16. Ans.(d)
Sol.
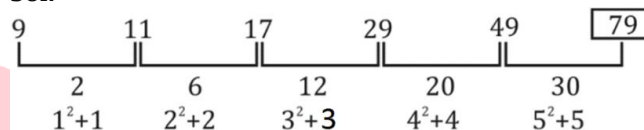
S17. Ans.(a)
Sol. $5 + 2 \times 4 = 13$
$13 + 4 \times 6 = 37$
$37 + 6 \times 8 = 85$
$? = 85 + 8 \times 10 = 165$
$165 + 10 \times 12 = 285$

S18. Ans.(c)
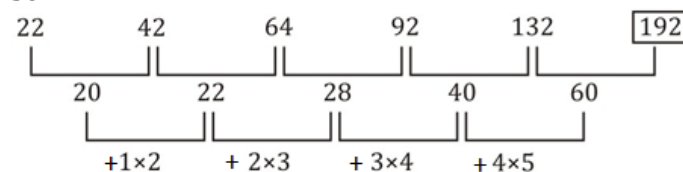**Sol.** $27 \div 3 = 9$
$9 \times 6 = 54$
$54 \div 9 = 6$
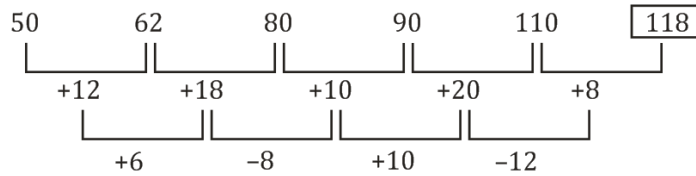$6 \times 12 = 72$
$? = 72 \div 15 = 4.8$

S19. Ans.(b)
Sol.

S20. Ans.(b)
Sol.

50   62   80   90   110 $\boxed{118}$

+12   +18   +10   +20   +8

+6   −8   +10   −12

S21. Ans.(c)
Sol. 40% of 4000 + 80% of 80 ≈ ?
$1600 + 64 ≈ ?$
$? ≈ 1664$

S22. Ans.(d)
Sol. $? ≈ \frac{3197}{1281}$
$? ≈ 2.5$

S23. Ans.(b)
Sol. $(216)^{1/3} × \sqrt{121} - ? ≈ \frac{34}{100} × 150$
$? ≈ 6 × 11 – 51$
$? ≈ 15$

S24. Ans.(c)
Sol. $12 × 11 + 13 × 12 ≈ ? + \frac{4}{5} × 280$
$? ≈ 288 – 224$
$⇒ ? ≈ 64$

S25. Ans.(d)
Sol. $\frac{1320}{11} - (9)^2 ≈ ?$
$? ≈ 120 – 81$
$? ≈ 39$

S26. Ans.(e)
Sol. 25% of 1460 - ?% of 1120 ≈ 29
$\frac{25}{100} × 1460 − \frac{?}{100} × 1120 ≈ 29$
$\frac{112}{10} ×? ≈ 365 − 29$
$? ≈ \frac{3360}{112}$
$? ≈ 30$

S27. Ans.(a)
Sol. $24 + 14 − 2 ≈ ?^2$
$?^2 ≈ 36$
$? ≈ 6$

S28. Ans.(d)
Sol. 11% of 11% of 11000 ≈?
$\frac{11}{100} × \frac{11}{100} × 11000 ≈?$
$? ≈ \frac{1331}{10}$
$? ≈ 133$

S29. Ans.(a)
Sol. $21 × \frac{1}{12} × 16 × \frac{1}{7} ≈?$
$? ≈ 4$

S30. Ans.(c)
Sol. $120 ÷ 15 × 4 ≈?$
$? ≈ 8 × 4$
$? ≈ 32$

S31. Ans.(b)
Sol. Pattern of series-
$512 − 8 = 504$
$504 − 16 = 488$
$488 − 24 = \mathbf{464}$
$\mathbf{464} − 32 = 432$
$432 − 40 = 392$
$392 − 48 = 344$
So, Wrong number is 466.

S32. Ans.(d)
Sol. Pattern of series-
$2^9 − 1 = \mathbf{511}$
$2^8 − 1 = 255$
$2^7 − 1 = 127$
$2^6 − 1 = 63$
$2^5 − 1 = 31$
$2^4 − 1 = 15$
So, Wrong number is 512.

S33. Ans.(e)
Sol. Pattern of series-
220   263   313   370   434   505   583
   +43   +50   +57   +64   +71   +78
    +7   +7   +7   +7   +7
So, Wrong number is 221.

S34. Ans.(a)
Sol. Pattern of series-
$35 + 1 × 2 = 37$
$37 + 3 × 4 = 49$
$49 + 5 × 6 = 79$
$79 + 7 × 8 = \mathbf{135}$
$\mathbf{135} + 9 × 10 = 225$
$225 + 11 × 12 = 357$
So, Wrong number is 137.

S35. Ans.(c)
Sol. Pattern of series-
$14 + 4^2 = 30$
$30 + 6^2 = 66$
$66 + 8^2 = 130$
$130 + 10^2 = 230$
$230 + 12^2 = 374$
$374 + 14^2 = \mathbf{570}$
So, Wrong number is 568

S36. Ans.(a)
Pattern of series-
$\mathbf{1} × 7 = 7$
$7 × 6 = 42$
$42 × 5 = 210$
$210 × 4 = 840$
$840 × 3 = 2520$
$2520 × 2 = 5040$
So, Wrong number is 2.

S37. Ans.(e)
Sol. Pattern of series-
$1250 - 1^2 = 1249$
$1249 - 3^2 = 1240$
$1240 - 5^2 = 1215$
$1215 - 7^2 = 1166$
$1166 - 9^2 = 1085$
$1085 - 11^2 = \mathbf{964}$
So, Wrong number is 965.

S38. Ans.(d)
Sol. Pattern of series-
$\mathbf{35} \times 2 - 4 = 66$
$66 \times 2 - 6 = 126$
$126 \times 2 - 8 = 244$
$244 \times 2 - 10 = 478$
$478 \times 2 - 12 = 944$
$944 \times 2 - 14 = 1874$
So, Wrong number is 34.

S39. Ans.(b)
Sol. Pattern of series-
254   302   358   422   494   574   **662**
  +48   +56   +64   +72   +80   +88
      +8   +8   +8   +8   +8
So, Wrong number is 580.

S40. Ans.(d)
Sol. 111   128   **147**   170   199   230   267
      +17   +19   +23   +29   +31   +37
So, Wrong number is 148.

S41. Ans.(b)
Sol. I. $x^2 + x - 6 = 0$
$x^2 + 3x - 2x - 6 = 0$
$x(x + 3) - 2(x + 3) = 0$
$(x + 3)(x - 2) = 0$
$x = -3, 2$
II. $y^2 + 7y + 12 = 0$
$y^2 + 4y + 3y + 12 = 0$
$y(y + 4) + 3(y + 4) = 0$
$y = -3, -4$
So, $x \geq y$

S42. Ans.(a)
Sol. $2x^2 - 17x + 35 = 0$
$2x^2 - 10x - 7x + 35 = 0$
$2x(x - 5) - 7(x - 5) = 0$
$(2x - 7)(x - 5) = 0$
$x = \frac{7}{2}, 5$
II. $4y^2 - 19y + 21 = 0$
$4y^2 - 12y - 7y + 21 = 0$
$4y(y - 3) - 7(y - 3) = 0$
$(4y - 7)(y - 3) = 0$
$y = \frac{7}{4}, 3$
So, x > y

S43. Ans.(c)
Sol. I. $x - 512 = 1331$
$x = 1843$
II. $y = 2197 - 353$
$y = 1844$
So, y > x

S44. Ans.(d)
Sol. I. $x^2 + 39x + 380 = 0$
$x^2 + 19x + 20x + 380 = 0$
$x(x + 19) + 20(x + 19) = 0$
$(x + 19)(x + 20) = 0$
$x = -19, -20$
II. $y^2 + 37y + 342 = 0$
$y^2 + 18y + 19y + 342 = 0$
$y(y + 18) + 19(y + 18) = 0$
$(y + 18)(y + 19) = 0$
$y = -18, -19$
So, $y \geq x$

S45. Ans.(e)
Sol. I. $x = \frac{2}{x} + \frac{2}{x}$
$x^2 = 4$
$x = \pm 2$
II. $y^2 - y - y + 1 = 0$
$y(y - 1) - 1(y - 1) = 0$
$(y - 1)^2 = 0$
$y = 1$
So, no relation can be established.

S46. Ans.(b)
Sol. (I) $x^2 - 14x + 48 = 0$
$\therefore x^2 - 8x - 6x + 48 = 0$
$x(x - 8) - 6(x - 8) = 0$
$(x - 8)(x - 6) = 0$
$\therefore x = 8, 6$
(II) $y^2 - 18y + 80 = 0$
$\therefore y^2 - 8y - 10y + 80 = 0$
$\therefore y(y - 8) - 10(y - 8) = 0$
$\therefore (y - 8)(y - 10) = 0$
$\therefore y = 8, 10$
$\therefore x \leq y$

S47. Ans.(c)
Sol. (I) $x^3 + 328 = 2525$
$\therefore x^3 = 2525 - 328$
$\therefore x^3 = 2197$
$\therefore x = 13$
(II) $y^3 + 349 = 1680$
$\therefore y^3 = 1680 - 349$
$\therefore y^3 = 1331$
$\therefore y = 11$
$\therefore x > y$

S48. Ans.(e)
Sol. (I) $x^2 - 19x + 88 = 0$
$\therefore x^2 - 8x - 11x + 88 = 0$
$\therefore x(x-8) - 11(x-8) = 0$
$\therefore (x-8)(x-11) = 0$
$\therefore x = 8, 11$
(II) $y^2 - 21y + 108 = 0$
$\therefore y^2 - 9y - 12y + 108 = 0$
$\therefore y(y-9) - 12(y-9) = 0$
$\therefore (y-12)(y-9) = 0$
$\therefore y = 9, 12$
So, no relation

S49. Ans.(d)
Sol. (I) $x^3 = 1728$
$\therefore x = \sqrt[3]{1728}$
$\therefore x = 12$
(II) $y^2 = 144$
$\therefore y = \sqrt{144}$
$y = \pm 12$
$\therefore x \geq y$

S50. Ans.(a)
Sol. (I) $2x^2 + 25x + 75 = 0$
$2x^2 + 10x + 15x + 75 = 0$
$2x(x+5) + 15(x+5) = 0$
$\therefore (2x+15)(x+5) = 0$
$x = -5, \frac{-15}{2}$
(II) $3y^2 + 26y + 56 = 0$
$\therefore 3y^2 + 12y + 14y + 56 = 0$
$\therefore 3y(y+4) + 14(y+4) = 0$
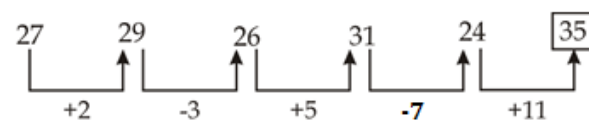$\therefore (y+4)(3y+14) = 0$
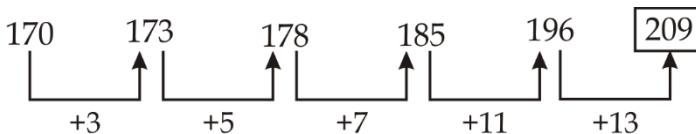$\therefore y = -4, \frac{-14}{3}$
So, $y > x$

S51. Ans.(b)
Sol.

7	7	23	87	231	487
	$+0^2$	$+4^2$	$+8^2$	$+12^2$	$+16^2$

S52. Ans.(c)
Sol.

27	29	26	31	24	35
	+2	-3	+5	-7	+11

S53. Ans.(a)
Sol.

170	173	178	185	196	209
	+3	+5	+7	+11	+13

S54. Ans.(b)
Sol.

2880	480	96	24	8	4
$\times \frac{1}{6}$	$\times \frac{1}{5}$	$\times \frac{1}{4}$	$\times \frac{1}{3}$	$\times \frac{1}{2}$	

S55. Ans.(a)
Sol.

8	9	21	68	279	1404
$\times 1+1$	$\times 2+3$	$\times 3+5$	$\times 4+7$	$\times 5+9$	
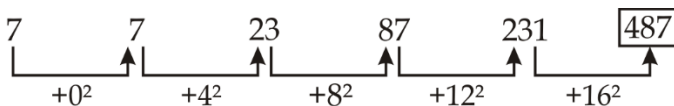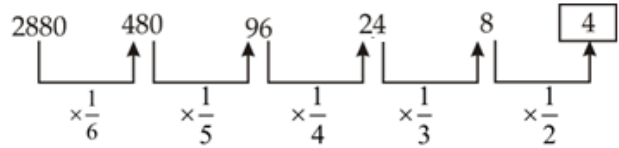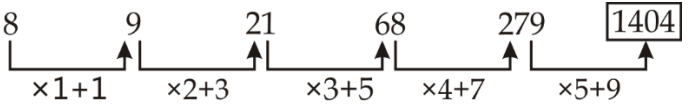
S56. Ans.(b)
Sol. $\frac{8400 \times 15}{375} + \sqrt{16} \approx ?$
$\frac{84 \times 100}{25} + 4 \approx ?$
$336 + 4 \approx ?$
$340 \approx ?$

S57. Ans.(c)
Sol. $\sqrt{2500} + \frac{15}{100} \times 14 \approx ?$
$50 + 2.1 \approx ?$
$52 \approx ?$

S58. Ans.(c)
Sol. $? \approx 25\% \times 640 + 45\%$ of 360
$? \approx 160 + 162 \approx 322$

S59. Ans.(d)
Sol. 33.33% of $510 \approx ?$
$\frac{510}{3} \approx ?$
$? \approx 170$

S60. Ans.(b)
Sol. 75% of $1344 + 12.5\%$ of $128 \approx ?$
$\frac{3}{4} \times 1344 + \frac{1}{8} \times 128 \approx ?$
$1008 + 16 \approx ?$
$1024 \approx ?$

S61. Ans.(d)
Sol. $\frac{15}{100} \times \frac{200}{700} \times ? = 240$
$? = 240 \times \frac{7}{2} \times \frac{20}{3}$
$? = 5600$

S62. Ans.(c)
Sol. $1674 \times \frac{1}{27} \times 9 + 18 = ?^2$
$62 \times 9 + 18 = ?^2$
$?^2 = 576$
$? = 24$

S63. Ans.(a)
Sol. $\frac{320}{100} \times 700 - \frac{70}{100} \times 320 - \frac{3.2}{100} \times 7000 = ?$
$2240 - 224 - 224 = ?$
$? = 1792$

S64. Ans.(d)
Sol. 4769–4731=?
? = 38

S65. Ans.(e)
Sol. $\frac{32}{35} \times 5 \times \frac{7}{8} \times \frac{35}{2} = ?$
?= 70

S66. Ans.(d)
Sol. I. $2x^2 - 17x + 36 = 0$
$2x^2 - 8x - 9x + 36 = 0$
$2x (x - 4) - 9 (x - 4) = 0$
$(2x - 9) (x - 4) = 0$
$x = \frac{9}{2}, 4$
II. $2y^2 - 19y + 45 = 0$
$2y^2 - 10y - 9y + 45 = 0$
$2y (y - 5) - 9 (y - 5) = 0$
$(2y - 9) (y - 5) = 0$
$y = \frac{9}{2}, 5$
∴ y ≥ x

S67. Ans.(e)
Sol. I. $x^2 - 25x + 154 = 0$
$x^2 - 14x - 11x + 154 = 0$
$x (x - 14) - 11 (x - 14) = 0$
$(x - 11) (x - 14) = 0$
x = 11, 14
II. $y^2 - 28y + 195 = 0$
$y^2 - 13y - 15y + 195 = 0$
$y (y - 13) - 15 (y - 13) = 0$
$(y - 13) (y - 15) = 0$
y = 13, 15
∴ no relation

S68. Ans.(a)
Sol. I. $\frac{10}{x} - \frac{24}{x^2} = 1$
Multiplying by x^2 on both side
$10x - 24 = x^2$
$x^2 - 10x + 24 = 0$
$x^2 - 6x - 4x + 24 = 0$
$x(x - 6) - 4 (x - 6) = 0$
$(x - 4) (x - 6) = 0$
x= 4, 6
II. $\frac{5}{y} - \frac{6}{y^2} = 1$
Multiplying by y^2 on both side
$5y - 6 = y^2$
$y^2 - 5y + 6 = 0$
$y^2 - 3y - 2y + 6 = 0$
$y (y - 3) - 2 (y - 3) = 0$
$(y - 2) (y - 3) = 0$
y = 2, 3
∴ x > y

S69. Ans.(d)
Sol. I. $3x^2 - 10x - 8 = 0$
$3x^2 - 12x + 2x - 8 = 0$
$3x (x - 4) + 2 (x - 4) = 0$
$(3x + 2) (x - 4) = 0$
$x = -\frac{2}{3}, 4$
II. $2y^2 - 23y + 60 = 0$
$2y^2 - 8y - 15y + 60 = 0$
$2y (y - 4) - 15(y - 4) = 0$
$(y - 4) (2y - 15) = 0$
$y = 4, \frac{15}{2}$
∴ y ≥ x

S70. Ans.(a)
Sol. I. 12x – 16y +16 = 0
3x – 4y + 4 = 0   ...(i)
II. 17y - 13x = 12   ...(ii)
By multiplying equation (i) by 13 & equation (ii) by 3
39x – 52y = -52
-39x + 51y = 36
y = 16 & x = 20
∴ x > y

S71. Ans.(a)
Sol. Total work = 90 units (LCM of days taken by Mohit , Hemant & B)
Efficieny of Mohit = $\frac{90}{30} = 3\ units/day$
Efficiency of Hemant = $\frac{90}{18} = 5\ units/day$
Efficiency of (Mohit + Hemant + B) = $\frac{90}{9} = 10 units/day$
Efficiency of person B = 10 – 3 – 5
= 2 units/day.
Required time = $\frac{90}{(2 + 3)}$ = 18 days.

S72. Ans.(b)
Sol. 21M × 15 = 35W × 11
9M=11W
ATQ,
18M × (Y – 4) = 20W × Y
$18 \times \frac{11}{9} W \times (Y - 4) = 20W \times Y$
22Y – 88 = 20Y
2Y = 88
Y = 44.

S73. Ans.(e)
Sol. Let A takes = x days
B takes = 3x days
$(A + B)$ together $= \frac{x \times 3x}{x+3x}$ days
C takes $= \frac{3x}{4}$ days
(A + B + C) takes together = 12 days
$$\frac{x \times 3x \times \frac{3x}{4}}{x \times 3x + 3x \times \frac{3x}{4} + x \times \frac{3x}{4}} = 12$$
$$\frac{\frac{9x^3}{4}}{\frac{12x^2+9x^2+3x^2}{4}} = 12$$
$$x = \frac{24 \times 12}{9}$$
   = 32 days
A takes = 32 days
B takes = 32 × 3 = 96 days
C takes $= \frac{3 \times 32}{4} = 24$ days

S74. Ans.(c)
Sol. Let efficiency of A and B is a and b respectively
Then
$\frac{a \times 20}{b \times 15} = \frac{5}{4}$
$\frac{a}{b} = \frac{5}{4} \times \frac{15}{20} = \frac{15}{16}$

S75. Ans.(c)
Sol. Let efficiency of a man = 2a unit/day
So a women = a unit/day
Now,
18 (18 × 2a + 12a) = Total work
Time taken by 8 man
$= \frac{18(36a+12a)}{8 \times 2a} = 54$ days

S76. Ans.(d)
Sol. Let total 'x' days required to complete the work
Given, Veer work for 12 days, Shivam work for $(x - \frac{114}{5})$ days
, while Anurag work for x days
ATQ −
$\frac{12}{80} + \frac{(5x-114)}{500} + \frac{x}{120} = 1$
$\frac{900+60x-1368+50x}{6000} = 1$
110x = 6468
$x = 58\frac{4}{5} days$
So, Anurag work for $58\frac{4}{5} days$ to complete the work.

S77. Ans.(a)
Sol. Task A

	Days	Work	Efficiency
Manish	48		5 unit/day
		240	
Suresh	60		4 unit/days

ATQ
Task B
One day work of Manish and Suresh = 5+4=9 units

Total work = 9x
Manish alone can do task B in (x + 16) days
So total work = 9x = 5(x+16)
x = 20 days
Total work = 9 × 20
= 180 unit
Suresh alone can do the work $= \frac{180}{4} = 45$ days

S78. Ans.(d)
Sol. Let Pipe A and B alone can fill the tank in 'a' and 'b' minutes respectively.
ATQ,
$\frac{1}{a} + \frac{1}{b} = \frac{1}{36} \ldots \ldots \ldots (i)$
And,
$\frac{40}{a} + \frac{30}{b} = 1 \ldots \ldots \ldots (ii)$
On solving (i) and (ii), We get
$a = 60 ; b = 90$

S79. Ans.(e)
Sol. Let Pipe A can fill the tank in x minutes
⇒ Pipe B can fill the tank in $x \times \frac{100}{150} = \frac{2x}{3}$
ATQ,
$\frac{1}{x} + \frac{3}{2x} = \frac{1}{18}$
$\Rightarrow \frac{5}{2X} = \frac{1}{18}$
⇒ x = 45
Capacity of tank = 45 × 6 = 270 l

S80. Ans.(d)
Sol. $A + B = \frac{1}{12}$
$A + B + C = \frac{1}{15}$
$\Rightarrow C = \frac{1}{15} - \frac{1}{12} = \frac{4-5}{60} = \frac{-1}{60}$
Pipe 'C' is an outlet pipe which can empty the tank in 60 minutes.
$B + C = \frac{1}{30}$
$B = \frac{1}{30} + \frac{1}{60} = \frac{2+1}{60} = \frac{1}{20}$
$A + B = \frac{1}{12}$
$A = \frac{1}{12} - \frac{1}{20} = \frac{5-3}{60} = \frac{2}{60} = \frac{1}{30}$
Pipe 'A' alone can fill the tank completely in 30 minutes.

S81. Ans.(a)
Sol. Boys in school A and B together
$= 640 \times \frac{5}{8} + 460 \times \frac{13}{23}$
= 400 + 260
= 660
Girls in school A and C together
$= \frac{3}{8} \times 640 + \frac{21}{37} \times 370$
= 240 + 210 = 450
Required ratio $= \frac{660}{450} = 22 : 15$

S82. Ans.(c)

Sol. Required average $= \frac{640+460+1050+1230}{4} = 845$

S83. Ans.(e)

Sol. Girls in school D

$= \frac{13}{35} \times 1050 = 390$

Girls in school A

$= \frac{3}{8} \times 640 = 240$

Required percentage $= \frac{390-240}{240} \times 100 = 62.5\%$

S84. Ans.(a)

Sol. Number of boys in school C & D together

$= 370 \times \frac{16}{37} + 1050 \times \frac{22}{35}$

$= 160 + 660$

$= 820$

Number of girls in school B & E together

$= \frac{10}{23} \times 460 + \frac{1}{3} \times 1230$

$= 200 + 410$

$= 610$

Required difference = 820 – 610 = 210

S85. Ans.(c)

Sol. No. of boys in school B now $= \frac{13}{23} \times 460 - 60 = 200$

No. of girls in school B now $= \frac{10}{23} \times 460 + 50 = 250$

Required percentage $= \frac{250}{200+250} \times 100 = 55\frac{5}{9}\%$

S86. Ans.(a)

Sol. No. of bike in good condition in shop B & E together

$= 2400 \times \frac{88}{100} + 1800 \times \frac{85}{100}$

$= 2112 + 1530 = 3642$

No. of bike in bad condition in shop A & C together

$= 3600 \times \frac{18}{100} + 1300 \times \frac{26}{100}$

$= 648 + 338 = 986$

Required difference = 3642 – 986 = 2656

S87. Ans.(c)

Sol. No. of bike in bad condition in Shop A

$= 3600 \times \frac{18}{100} = 648$

No. of bike I n bad condition in shop B

$= 2400 \times \frac{12}{100} = 288$

Required percentage $= \frac{648-288}{288} \times 100$

$= 125\%$

S88. Ans.(d)

Sol. Required percentage $= \frac{1}{2}\left[1300 \times \frac{74}{100} + 1800 \times \frac{85}{100}\right]$

$= \frac{962+1530}{2} = 1246$

S89. Ans.(a)

Sol. No. of bike in bad condition in shop B & D together

$= 2400 \times \frac{12}{100} + 4200 \times \frac{14}{100}$

$= 288 + 588 = 876$

$\frac{1}{4}$ th of bike in good condition in shop A

$= 3600 \times \frac{82}{100} \times \frac{1}{4} = 738$

Required ratio $= \frac{876}{738} = 146 : 123$

S90. Ans.(b)

Sol. No. of bike unsold from shop D

$= \frac{2}{3} \times 4200 \times \frac{86}{100} = 1204$

No. of bike in bad condition in shop D

$= 4200 \times \frac{14}{100} = 588$

Required percentage $= \frac{1204-588}{588} \times 100$

$= \frac{616}{588} \times 100$

$= 104\frac{16}{21}\%$

S91. Ans.(d)

Sol. $\frac{30}{100} \times 450 + \frac{75}{100} \times 680 = \frac{?}{100} \times 1075$

$135 + 510 = ? \times \frac{43}{4}$

$\frac{645 \times 4}{43} = ?$

? = 60

S92. Ans.(e)

Sol. $? = 2 + \frac{2}{7} + 5 + \frac{1}{4} + 3 + \frac{2}{5} - \frac{5}{7} - \frac{2}{5} + \frac{3}{4}$

$= 10 + \frac{2}{7} - \frac{5}{7} + \frac{1}{4} + \frac{3}{4}$

$= 10 + \frac{4}{4} + \frac{2-5}{7}$

$= 11 - \frac{3}{7}$

$= 10\frac{4}{7}$

S93. Ans.(c)

Sol. $\sqrt{524 + 375 - 778} = (?)^2$

$\sqrt{121} = (?)^2$

$11 = (?)^2$

$? = \pm\sqrt{11}$

S94. Ans.(b)

Sol. $(3)^{\frac{1}{2}+?} = (3\sqrt{3}) \times (9\sqrt{27}) \times (\sqrt{243})$

$(3)^{\frac{1}{2}+?} = 3\sqrt{3} \times 3^2 \times 3\sqrt{3} \times 3^2\sqrt{3} = 3^6 \times 3\sqrt{3} = 3^7 \times \sqrt{3}$

$= 3^{7+\frac{1}{2}}$

$\Rightarrow ? = 7$

S95. Ans.(a)
Sol. 74 × 2.5 + 13 × 5 = ?
2.5 [74 + 13 × 2] = ?
2.5 [74 + 26] = ?
? = 250

S96. Ans.(c)
Sol. $\frac{64+324}{97}$ =?
? = 4

S97. Ans.(e)
Sol. $\frac{26}{11} \times \frac{18}{13} \times \frac{20}{9} = \frac{1}{22} \times$?
? = 160

S98. Ans.(c)
Sol. $90 - 60 + ? = 140$
? = 110

S99. Ans.(c)
Sol. $(104 + 80) \times 2 =$?
? = 368

S100. Ans.(a)
Sol. ? = 1200 − 920
? = 280

S101. Ans.(c)
Sol. Required average = $\frac{(70+60+65+55+40)\times100}{5}$ = 5800

S102. Ans.(c)
Sol. Required ratio = $\frac{6000+6500}{5500+4500} = \frac{5}{4}$

S103. Ans.(a)
Sol. Required difference = (7000 + 6500 + 5500 + 4000) − (4500 + 5000 + 5500 + 6000)
$$= 2000$$

S104. Ans.(b)
Sol. Required percentage = $\frac{22500-10000}{22500} \times 100$
$$= \frac{500}{9}\% = 55\frac{5}{9}\%$$

S105. Ans.(d)
Sol. Let per service cost of HONDA be 'x'
ATQ
Required percentage = $\frac{1.2x(5000)}{6000x} \times 100$
$$= 100\%$$

S106. Ans.(a)
Sol. total visitors who visited all six days together = 100x
ATQ $100x \times \frac{22}{100} \times \frac{5}{12} = 1100$
x= 120
Total visitors who visited on Monday and Tuesday together =
$100 \times 120 \times \left(\frac{12+16}{100}\right) = 3360$

S107. Ans.(b)
Sol. Male visitors visited on Thursday and Friday together
$= 100x \times \left(\frac{20}{100} \times \frac{3}{5} + \frac{25}{100} \times \frac{8}{15}\right) = \frac{76x}{3}$
ATQ $\frac{76x}{3} = 1900 \Rightarrow x = 75$
Total visitor who visited on Monday = $100 \times 75 \times \frac{12}{100} = 900$

S108. Ans.(c)
Sol. Female visitors visited on Tuesday = $100x \times \frac{16}{100} \times \frac{7}{16}$
$= 7x$
Female visitors visited on Friday = $100x \times \frac{25}{100} \times \frac{7}{15} = \frac{35x}{3}$
Required % = $\frac{7x}{\frac{35x}{3}} \times 100 = 60\%$

S109. Ans.(d)
Sol. Total visitors visited on Tuesday and Wednesday together = $100x \times \frac{38}{100} = 38x$
Total visitors visited on Friday and Saturday together = $100x \times \frac{30}{100} = 30x$
Required Ratio = $\frac{38x}{30x}$ = 19: 15

S110. Ans.(b)
Sol. Male visitors visited on Thursday = $100x \times \frac{20}{100} \times \frac{3}{5} = 12x$
Male visitors visited on Saturday = $100x \times \frac{5}{100} \times \frac{5}{8} = \frac{25x}{8}$
ATQ
$$12x - \frac{25x}{8} = 1420$$
$$\Rightarrow x = 160$$
Total visitors visited on Friday = $100 \times 160 \times \frac{25}{100}$
$= 4000$

S111. Ans.(b)
Sol. Volume of cylinder = πr²h (r-radius , h – height)
Volume of sphere = $\frac{4}{3}$πr³
ATQ
$\frac{\pi r^2 h}{\frac{4}{3}\pi r^3} = \frac{3}{1}$
$\Rightarrow \frac{h}{r} = \frac{4}{1} \Rightarrow$ h = 4r
T.S.A of cylinder = 2πr (r+h)
T.S.A of sphere = 4πr²
Required Ratio = $\frac{2\pi r (r+h)}{4\pi r^2} = \frac{4r+r}{2r} = \frac{5}{2}$

S112. Ans.(c)
Sol. Side of triangle = $\frac{48}{3} = 16$ m
∴ side of square = $\frac{125}{100} \times 16 = 20m$
∴ Required ratio
$$= \frac{20 \times 20}{\frac{\sqrt{3}}{4} \times 16 \times 16} = \frac{25}{4\sqrt{3}} = 25\sqrt{3} : 12$$

S113. Ans.(b)
Sol. Given, ratio of length to breadth = 11 : 5
Let length be 11X and breadth be 5X
ATQ,
∴ Area of the rectangular field
$= \frac{110}{0.50}$ sq meter
= 220 sq. meter
∴ 11X × 5X = 220
$\Rightarrow 55X^2 = 220$
    X = 2
So, the breadth of the rectangle is
= 5 × 2 = 10 m

S114. Ans.(e)
Sol. Vol. of wooden block $= 7 \times 3 \times 3 = 63$ cm^2
Vol. of pyramid $= \frac{1}{3} \times 3^2 \times 7 = 21$ cm^3
Wood wasted = 63 – 21 = 42 cm^3
∴ % of wood wasted $= \frac{42}{63} \times 100 = 66\frac{2}{3}$%

S115. Ans.(a)
Sol. Let the breadth of field be x m and that of length will be 3x m.
Area $= 3x^2$ m²
∴ $3x^2 \times 2.5 = 480$
$x^2 = 64$
$x = 8$
∴ Required difference = 2 × 8 = 16 m

S116. Ans.(d)
Sol. Let total capacity of tank be 400 units (LCM of $\frac{100}{9}$ and 16).
So, efficiency of pipe – Q $= \frac{400}{16}$
= 25 units/hour
And, efficiency of P & R together $= 400 \times \frac{9}{100}$
= 36 units/hour
Required time $= \frac{400}{36-25}$
$= \frac{400}{11}$ hours

S117. Ans.(e)
Sol. Let cost price of article – A be Rs.100x
So, marked price of article – A $= 100x \times \frac{160}{100}$
= Rs.160x
And, selling price of article – A $= 160x \times \frac{80}{100}$
= Rs.128x
ATQ,
$(160x - 128x) - (128x - 100x) = 20$
$x = 5$
Now, CP of article – B $= 100 \times 5 \times \frac{100}{80}$
= Rs.625

S118. Ans.(b)
Sol. Let marks scored by Aman in each of English & Hindi be x.
ATQ,
Aman's marks in Math = $(70 \times 3) - 2x$
$= 210 - 2x$
And, Aman's marks in Science $= \left(\frac{250}{3} \times 3\right) - 2x$
$= 250 - 2x$
Required difference $= (250 - 2x) - (210 - 2x)$
= 40

S119. Ans.(a)
Sol. Required ways = $8_{c_3} \times 5_{c_2}$
= 560 ways

S120. Ans.(d)
Sol. Let length of train – A & B be 4x meters and 5x meters respectively.
ATQ,
$\frac{4x+5x}{90} = 36 \times \frac{5}{18}$
$x = 100$
Speed of train – A $= \frac{(4 \times 100)+200}{24}$
= 25 m/sec
So, speed of train – B $= 25 \times \frac{18}{5} + 36$
= 126 km/hr.

S121. Ans.(c)
Sol. $?^2 = \frac{512 \times 2916}{81 \times 72}$
$?^2 = 256$
$? = 16$

S122. Ans.(b)
Sol. $\frac{9}{2} + \frac{11}{3} + \frac{17}{6} = ? + \frac{12}{5} + \frac{21}{10}$
$4 + \frac{1}{2} + 3 + \frac{2}{3} + 2 + \frac{5}{6} = ? + 2 + \frac{2}{5} + 2 + \frac{1}{10}$
$9 + \frac{3+4+5}{6} = ? + 4 + \frac{4+1}{10}$
$9 + 2 = ? + 4 + \frac{1}{2}$
$11 - 4 - \frac{1}{2} = ?$
$\Rightarrow ? = 6\frac{1}{2}$

S123. Ans.(e)
Sol. $5^{?-2} = \frac{5^5}{25^3} \times \frac{125^2}{625}$
$5^{?-2} = \frac{5^5}{(5^2)^3} \times \frac{(5^3)^2}{5^4} = \frac{5^5 \times 5^6}{5^6 \times 5^4}$
$5^{?-2} = 5^1$
? – 2 = 1
? = 3

S124. Ans.(b)

Sol. $? \times \frac{65}{72} = \frac{195 \times 352}{192}$

$? = \frac{195 \times 352 \times 72}{192 \times 65}$

$? = 396$

S125. Ans.(c)

Sol. $\sqrt[2]{256} \times (1728)^{\frac{1}{3}} = ? \times (4096)^{\frac{1}{4}}$

$16 \times (12^3)^{\frac{1}{3}} = ? \times (8^4)^{\frac{1}{4}}$

$? = \frac{16 \times 12}{8} = 24$

S126. Ans.(a)

Sol. $(13)^2 + (21)^2 - 30 \times 7 \simeq ? - 520 + 150$

$169 + 441 - 210 = ? - 370$

$? = 770$

S127. Ans.(c)

Sol. $\frac{18}{100} \times 1900 + \frac{?}{100} \times 1150 = 684 - 112$

$\frac{?}{10} \times 115 = 572 - 342$

$? = 20$

S128. Ans.(d)

Sol. $\frac{440}{?} = 512 - 8 - 484$

$? = \frac{440}{20}$

$? = 22$

S129. Ans.(a)

Sol. $(?)^2 - 432 = 1240 + 482 - 1313$

$(?)^2 = 409 + 432$

$(?)^2 = 841$

$? = 29$

S130. Ans.(b)

Sol. $30 \times \sqrt{?} + \sqrt{961} = \frac{11}{100} \times 1300 - 22$

$30 \times \sqrt{?} + 31 = 143 - 22$

$30 \times \sqrt{?} = 90$

$? = 9$

S131. Ans.(a)

Sol. $\frac{85}{100} \times ? \times 6755 = 3281$

$? = \frac{3281 \times 100}{85 \times 6755} = \frac{4}{7}$

S132. Ans.(d)

Sol. $\sqrt[3]{?} \times 13 = 91$

$? = (7)^3 = 343$

S133. Ans.(c)

Sol. $\sqrt{9409} - \sqrt{1156} = 3339 \div ?$

$3339 \div ? = 97 - 34 = 63$

$? = \frac{3339}{63} = 53$

S134. Ans.(a)

Sol. $\left(\frac{320}{100} \times 825\right) \div ? = 48$

$\frac{2640}{48} = ?$

$? = 55$

S135. Ans.(b)

Sol. $216 \div 12 + ? = 55$

$? = 37$

S136. Ans.(e)

Sol. I. $x^2 + 10x + 16 = 0$

$x^2 + 8x + 2x + 16 = 0$

$x(x+8) + 2(x+8) = 0$

$x = -2, -8$

II. $y^2 + 9y + 20 = 0$

$y^2 + 4y + 5y + 20 = 0$

$y(y+4) + 5(y+4) = 0$

$y = -4, -5$

So, No relation.

S137. Ans.(a)

Sol. I. $x^2 - 14x + 45 = 0$

$x^2 - 9x - 5x + 45 = 0$

$x(x-9) - 5(x-9) = 0$

$x = 5, 9$

II. $3y^2 + 8y + 4 = 0$

$3y^2 + 6y + 2y + 4 = 0$

$3y(y+2) + 2(y+2) = 0$

$y = -2, -\frac{2}{3}$

x>y

S138. Ans.(c)

Sol. I. $x^2 + 31x + 108 = 0$

$x^2 + 27x + 4x + 108 = 0$

$x(x+27) + 4(x+27) = 0$

$x = -4, -27$

II. $y^2 - 21y + 98 = 0$

$y^2 - 14y - 7y + 98 = 0$

$y(y-14) - 7(y-14) = 0$

$y = 7, 14$

y>x

S139. Ans.(e)

Sol. I. $x^2 - 36x + 99 = 0$

$x^2 - 33x - 3x + 99 = 0$

$x(x-33) - 3(x-33) = 0$

$x = 3, 33$

II. $y^2 - 6y - 7 = 0$

$y^2 - 7y + y - 7 = 0$

$y(y-7) + 1(y-7) = 0$

$y = -1, 7$

So, No relation

S140. Ans.(a)
Sol. I. $x^2 - 53x + 196 = 0$
$x^2 - 49x - 4x + 196 = 0$
$x(x-49) - 4(x-49) = 0$
$x = 4, 49$
II. $y^2 + 23y + 102 = 0$
$y^2 + 17y + 6y + 102 = 0$
$y(y+17) + 6(y+17) = 0$
$y = -6, -17$
So, x>y

S141. Ans.(d)
Sol. I. $x^2 + 23x + 132 = 0$
$x^2 + 12x + 11x + 132 = 0$
$x(x+12) + 11(x+12) = 0$
$(x+11)(x+12) = 0$
$x = -11, -12$
II. $y^2 + 21y + 110 = 0$
$y^2 + 11y + 10y + 110 = 0$
$y(y+11) + 10(y+11) = 0$
$(y+10)(y+11) = 0$
$y = -10, -11$
So, x ≤ y

S142. Ans.(e)
Sol. I. $3x^2 + 20x + 32 = 0$
$3x^2 + 12x + 8x + 32 = 0$
$3x(x+4) + 8(x+4) = 0$
$(3x+8)(x+4) = 0$
$x = -4, -\frac{8}{3}$
II. $5y^2 + 23y + 24 = 0$
$5y^2 + 15y + 8y + 24 = 0$
$5y(y+3) + 8(y+3) = 0$
$(y+3)(5y+8) = 0$
$y = -3, -\frac{8}{5}$
So, No relation.

S143. Ans.(a)
Sol. I. $x^2 - 29x + 208 = 0$
$x^2 - 13x - 16x + 208 = 0$
$x(x-13) - 16(x-13) = 0$
$(x-16)(x-13) = 0$
$x = 16, 13$
II. $y^2 - 21y + 108 = 0$
$y^2 - 9y - 12y + 108 = 0$
$y(y-9) - 12(y-9) = 0$
$(y-12)(y-9) = 0$
$y = 9, 12$
So, x > y

S144. Ans.(a)
Sol. I. $x^2 + 30x + 224 = 0$
$x^2 + 14x + 16x + 224 = 0$
$x(x+14) + 16(x+14) = 0$
$(x+16)(x+14) = 0$
$x = -16, -14$
II. $y^2 + 35y + 306 = 0$
$y^2 + 18y + 17y + 306 = 0$
$y(y+18) + 17(y+18) = 0$
$(y+18)(y+17) = 0$
$y = -18, -17$
So, x > y

S145. Ans.(b)
Sol. $x = \sqrt[3]{4096}$
$x = 16$
$y^2 = 256$
$y = \sqrt{256}$
$= \pm 16$
So, x ≥ y

S146. Ans.(c)
Sol. I. $x^2 - 25x + 156 = 0$
$x^2 - 12x - 13x + 156 = 0$
$x(x-12) - 13(x-12) = 0$
$(x-12)(x-13) = 0$
$x = 12, 13$
II. $y^2 - 29y + 210 = 0$
$y^2 - 14y - 15y + 210 = 0$
$y(y-14) - 15(y-14) = 0$
$(y-14)(y-15) = 0$
$y = 14, 15$
So, x<y

S147. Ans.(d)
Sol. I. $x^2 = 196$
$x = \sqrt{196}$
$x = \pm 14$
II. $y = \sqrt{196}$
$y = 14$
So, x ≤ y

S148. Ans.(e)
Sol. I. $x^2 + 12x + 35 = 0$
$x^2 + 5x + 7x + 35 = 0$
$x(x+5) + 7(x+5) = 0$
$(x+5)(x+7) = 0$
$x = -5, -7$
II. $y^2 + 14y + 48 = 0$
$y^2 + 6y + 8y + 48 = 0$
$y(y+6) + 8(y+6) = 0$
$(y+8)(y+6) = 0$
$y = -8, -6$
So, no relation.

S149. Ans.(a)
Sol. I. $3x^2 + 23x + 30 = 0$
$3x^2 + 18x + 5x + 30 = 0$
$3x(x+6) + 5(x+6) = 0$
$(3x+5)(x+6) = 0$
x = -6, $-\frac{5}{3}$
II. $y^2 + 15y + 56 = 0$
$y^2 + 8y + 7y + 56 = 0$
$y(y+8) + 7(y+8) = 0$
$(y+7)(y+8) = 0$
y = -7, -8
So, x > y

S150. Ans.(c)
Sol. I. $x^2 + 17x + 72 = 0$
$x^2 + 8x + 9x + 72 = 0$
$x(x+8) + 9(x+8) = 0$
$(x+9)(x+8) = 0$
x = -8, -9
II. $y^2 + 13y + 42 = 0$
$y^2 + 6y + 7y + 42 = 0$
$y(y+6) + 7(y+6) = 0$
$(y+6)(y+7) = 0$
y = -6, -7
So, x < y

S151. Ans.(e)
Sol. Average no. of voter in city P, Q and U
$= \left(\frac{12+18+15}{3}\right)\% = 15\%$
So, average no. of voters in city P, Q and U equal to total no. of voters in city U (15%)

S152. Ans.(a)
Sol. Required no. of voters
$= 75000 \times \frac{20}{100} \times \frac{10}{100} + 75000 \times \frac{22}{100} \times \frac{12}{100}$
$= 3480$

S153. Ans.(a)
Sol. Required difference $= 75000 \times \frac{(18+22-12-13)}{100}$
$= 11250$

S154. Ans.(b)
Sol. Required difference
$= 75000 \times \frac{15}{100} \times \frac{29}{45} - 75000 \times \frac{13}{100} \times \frac{13}{25}$
$= 2180$

S155. Ans.(a)
Sol. In city T
Total no. of female who did not cast vote
$= 75000 \times \frac{22}{100} \times \frac{40}{100} \times \frac{20}{100} = 1320$
Total voters who did not cast vote
$= 75000 \times \frac{22}{100} - 13840 = 2660$
Total male who did not cast vote
$= 2660 - 1320 = 1340$
Required difference $= 1340 - 1320 = 20$

S156. Ans.(b)
Sol. Required percentage
$= \frac{(22+23)-10}{22+23} \times 100 \approx 78\%$

S157. Ans.(c)
Sol. Required average $= \frac{1}{3} \times (12 + 15 + 18)\% \times 22500$
$= \frac{15}{100} \times 22500$
$= 3375$

S158. Ans.(d)
Sol. Required number of passengers
$= 22500 \times \frac{23-12}{100} = 2475$

S159. Ans.(d)
Sol. Required ratio
$= 22500 \times \frac{10}{100} \times \frac{7}{15} : 22500 \times \frac{23}{100} \times \frac{5}{23}$
$= 14 : 15$

S160. Ans.(a)
Sol. Passenger travelling to Rewari
$= 22500 \times \frac{18}{100} = 4050$
Passenger travelling to Panipat
$= 22500 \times \frac{15}{100} = 3375$
Required difference
$= 3375 \times 75 \times \frac{4}{3} - 4050 \times 75$
$= 75 \times (4500 - 4050)$
$= 75 \times 450$
$= 33750$ Rs.

S161. (b)
Sol. $? \times 4263 \div 29 - 47 = \frac{1}{13} \times 7033$
$\Longrightarrow 147 \times ? = 588$
$\Longrightarrow ? = 4$

S162. Ans.(b)
Sol. $124\sqrt{?} + 876 = \frac{3}{4}$ of $840 + 742$
or $124\sqrt{?} + 876 = 630 + 742$
or $124\sqrt{?} = 1372 - 876$
or, $\sqrt{?} = \frac{496}{124} = 4$
$\therefore ? = 4^2 = 16$

S163. Ans.(b)
Sol. ? = 11 × 343 ÷ 49 – 28
? = 49

S164. Ans.(a)
Sol. 475 + 64% of 950 – 900
= 475 + 608 – 900
= 183

S165. Ans.(b)
Sol. ? = 56 × 7 + 64 × 9 – 4 × 29
= 852

S166. Ans.(b)
Sol. $729 + ?^2 \times 25 = 1129$
$?^2 \times 25 = 1129 - 729$
$?^2 \times 25 = 400$
$?^2 = \frac{400}{25}$
$?^2 = 16$
$? = 4$

S167. Ans.(e)
Sol. $\frac{22}{7} + \frac{43}{21} - ? = 2$
$? = \frac{109}{21} - 2$
$? = \frac{109-42}{21}$
$? = \frac{67}{21}$
$? = 3\frac{4}{21}$

S168. Ans.(d)
Sol. ?% of $125 + 225 = 256 - \frac{2.5}{100} \times 640$
$\frac{?}{100} \times 125 = 256 - 16 - 225$
$\frac{?}{100} \times 125 = 15$
$? = \frac{15 \times 100}{125}$
$? = 12$

S169. Ans.(c)
Sol. $1728 + \frac{24}{100} \times ? = 1830$
$\frac{24}{100} \times ? = 1830 - 1728$
$? = \frac{102 \times 100}{24}$
$? = 425$

S170. Ans.(a)
Sol. $7.8 + \frac{50}{100} \times 64.4 = 49 - ?^2$
$7.8 + 32.2 = 49 - ?^2$
$?^2 = 49 - 40$
$?^2 = 9$
$? = 3$

S171. Ans.(a)
Sol. Pattern of series –

32   144   504   1260   1890   [945]

$\times\frac{9}{2}$ $\times\frac{7}{2}$ $\times\frac{5}{2}$ $\times\frac{3}{2}$ $\times\frac{1}{2}$
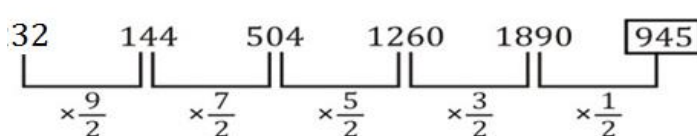
S172. Ans.(e)
Sol. Pattern of series –
3   4   7   11   18   [29]

$3 + 4 = 7$
$4 + 7 = 11$
$7 + 11 = 18$
$11 + 18 = 29$

S173. Ans.(d)
Sol. Pattern of series –
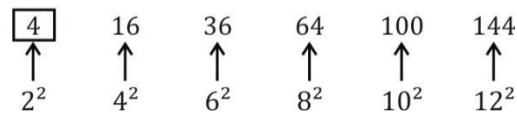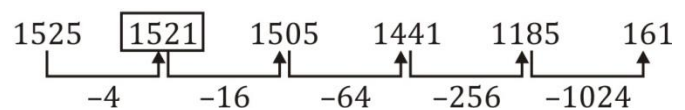
[4]   16   36   64   100   144

2^2 4^2 6^2 8^2 10^2 12^2

S174. Ans.(a)
Sol. Pattern of series –

11   14   27   67   148   [230]

$+3$ $+13$ $+40$ $+81$ $+82$

$\times 4+1$ $\times 3+1$ $\times 2+1$ $\times 1+1$

S175. Ans.(d)
Sol. Pattern of series –

1525   [1521]   1505   1441   1185   161

-4 -16 -64 -256 -1024

S176. Ans.(d)
Sol. Pattern of series –

1   11   99   693   3465   10395

$\times 11$ $\times 9$ $\times 7$ $\times 5$ $\times 3$
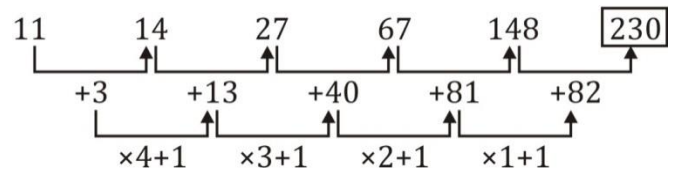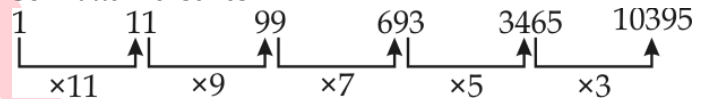
So, missing number is 10395.

S177. Ans.(b)
Sol. Pattern of series –

2   1   1   1.5   3   7.5

$\times 0.5$ $\times 1$ $\times 1.5$ $\times 2$ $\times 2.5$
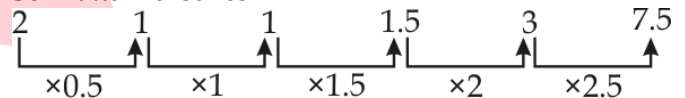
So, missing number is 7.5

S178. Ans.(a)
Sol. Pattern of series –

28   40   60   90   132   188

$+12$ $+20$ $+30$ $+42$ $+56$

$+8$ $+10$ $+12$ $+14$
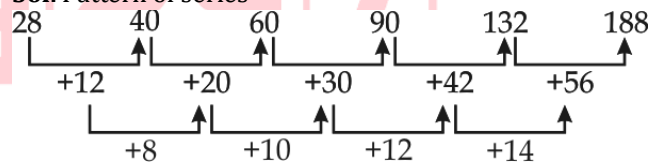
So, missing number is 188.

S179. Ans.(b)
Sol. Pattern of series –

821   784   743   [700]   653   600
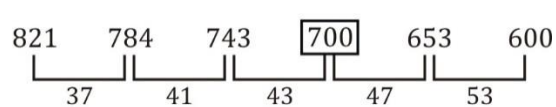
37   41   43   47   53

37, 41, 43, 47, 53 are prime numbers.

S180. Ans.(c)
Sol. Pattern of series –

2   3   27   74   [144]   237

1   24   47   70   93

23   23   23   23
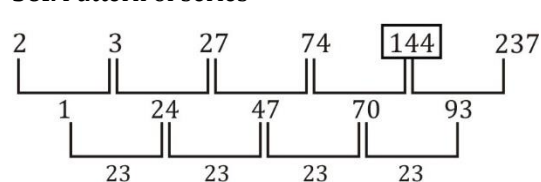
S181. Ans.(d)
Sol. Required average = $53 - \frac{[(49+57)-(45+52)]}{45}$
$= 53 - \frac{9}{45}$
= 52.80 kg

S182. Ans.(d)
Sol. average in initial matches = a
ATQ,
$40 \times a + 112 + 99 = 42(a + 2)$
$40a + 211 = 42a + 84$
$2a = 127$
$a = 63.5$
new average = a + 2
= 63.5 + 2
= 65.5

S183. Ans.(d)
Sol. let average of seven no. = a
Then, average of first three no. = a + 11
ATQ
$3(a + 11) + 89 + a - 8 + a - 5 + a - 29 = 7 \times a$
$6a + 80 = 7a$
$a = 80$
So, $a + 11 = 91$

S184. Ans.(b)
Sol. let total marks = 100x
ATQ
$20x + 75 = 55x - 20x$
$15x = 75$
$x = 5$
Passing marks = $20x + 75 = 175$

S185. Ans.(c)
Sol. sum of age of Amit, Dharam and Ankit at the time of marriage = $120\ years$
Sum of age of Amit, Dharam, Ankit, Child and bride after 5 years of marriage = $180\ years$
So, sum of age of Amit, Dharam and Ankit and bride at the time of marriage
$= 180 - (5 + 5 + 5 + 4 + 5) = 156\ years$
So, age of bride at the time of marriage = $156 - 120$
= $36\ years$
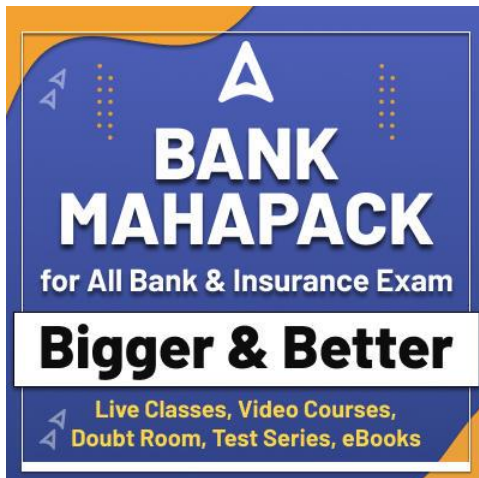
S186. Ans.(d)
Sol. Let age of Veer & Sameer six years ago be 3x years and 7x years respectively.
ATQ—
$\frac{3x+12}{7x+12} = \frac{5}{9}$
$27x + 108 = 35x + 60$
$8x = 48$
$x = 6$ years
Required ratio $= \frac{3x+6}{7x+6}$
$= \frac{3\times6+6}{7\times6+6}$
$= \frac{24}{48}$
= 1 : 2

S187. Ans.(b)
Sol. Population of town A $= \frac{7000}{7} \times 8$
= 8000
After two - year population of town B = $7000 \times \frac{6}{5} \times \frac{8}{7}$
= 9600
After two years population of town A $= \frac{9600}{24} \times 25$
= 10000
Increment in population = 10000 – 8000
= 2000

S188. Ans.(c)
Sol. Let age of person = x
x + 30 × 24 – 20 – 30 = 29 × 25
x = 29 × 25 – (30 × 24 – 20 – 30)
x= 55

S189. Ans.(b)
Sol. ATQ,
x − 0.3y = 310   ...(i)
x + 0.5y = 550   ..(ii)
Dividing (i) by (ii)
$x - 0.3y = 310$
$\overline{x + 0.5y = 550}$

$\Rightarrow$ 55 (x – 0.3y) = 31 (x+ 0.5y)
= 55x – 16.5y = 31x + 15.5y
$\Rightarrow$ 24x = 32y
$\frac{x}{y} = \frac{32}{24}$
x : y = 4 : 3

S190. Ans.(b)
Sol. Let expenses of Shivam, Dharam and Harish be Rs S, Rs D and Rs H respectively.
ATQ
S + D + H = 4660
$\frac{125}{100} \times D + D + \frac{100}{85} \times D = 4660$
$D\left(\frac{5}{4} + 1 + \frac{20}{17}\right) = 4660$
$D = Rs\ 1360$
So, expense of Shivam $= \frac{125}{100} \times 1360$ = Rs 1700

S191. Ans.(a)
Sol. I. $y^2 + 7y + 3y + 21 = 0$
$y(y + 7) + 3(y + 7) = 0$
$(y + 7)(y + 3) = 0$
$y = -7, -3$
II. $x^2 + 2x + x + 2 = 0$
$x(x + 2) + 1(x + 2) = 0$
$(x + 2)(x + 1) = 0$
$x = -2, -1$
Hence x>y

S192. Ans.(e)
Sol. I. $y = \pm 21$
II. $x^2 - 21x + 11x - 231 = 0$
$x(x - 21) + 11(x - 21) = 0$
$(x - 21)(x + 11) = 0$
$x = 21, -11$
Hence no relation.

S193. Ans.(d)
Sol. I. $y^2 - 10y - 3y + 30 = 0$
$y(y - 10) - 3(y - 10) = 0$
$(y - 10)(y - 3) = 0$
$y = 10, 3$
II. $x^2 + 6x - 3x - 18 = 0$
$x(x + 6) - 3(x + 6) = 0$
$(x - 3)(x + 6) = 0$
$x = 3, -6$
Hence, x≤y

S194. Ans.(e)
Sol. I. $2x^2 - 50x - 2x + 50 = 0$
$2x(x - 25) - 2(x - 25) = 0$
$(2x - 2)(x - 25) = 0$
$x = 1, 25$
II. $y^2 - 25y - 5y + 125 = 0$
$y(y - 25) - 5(y - 25) = 0$
$(y - 25)(y - 5) = 0$
$y = 25, 5$
Hence no relation.

S195. Ans.(c)
Sol. $4x + 2y = 122 \ldots \ldots (i)$
$3x + 2y = 102 \ldots \ldots (ii)$
On solving (i) and (ii)
$x = 20, y = 21$
$x < y$

S196. Ans.(b)
Sol. Effective rate of interest for 1 year = $5 + 5 + \frac{5 \times 5}{100}$
= 10.25%
ATQ
$(x + 700) \times \frac{10.25}{100} = 184.5$
$x + 700 = 1800$
$x = 1100$

S197. Ans.(c)
Sol. Required number of ways he can bowl = 8_{p_6} = 20160

S198. Ans.(e)
Sol. Let the length of rectangle be x cm
Breadth of rectangle = $\frac{3}{4}x \, cm$
ATQ,
$x \times \frac{3}{4}x = 972$
$x = 36$
Diameter of circle = 35 cm
Required area = $\frac{22}{7} \times \frac{35}{2} \times \frac{35}{2} = 962.5 \, cm^2$

S199. Ans.(a)
Sol. Let total work be 180 units
Efficiency of A and B are 5 units/day and 6 units/day respectively.
Work completed by B in 9 days = 54 units
Time taken by A alone to finish remaining work
= $\frac{180 - 54}{5} = \frac{126}{5} \, days$
= $25\frac{1}{5} \, days$

S200. Ans.(e)
Sol. Required % = $100 - (47 + 58 - 29) = 24\%$

S201. Ans.(b)
Sol. $\frac{50}{100}(P - Q) = \frac{30}{100}(P + Q)$
$5P - 5Q = 3P + 3Q$
$2P = 8Q$
P = 4Q
Put value of P in given equation
$Q = P \times \frac{x}{100}$
$Q = 4Q \times \frac{x}{100}$
x = 25
Hence required value of x = 25

S202. Ans.(d)
Sol. According to question,

```
      A    :    B
Investment 3        5
   Ratio      or
          300  +  500 = 800
        15%  /        \ 10%   \ 5 unit
        earn \        / loses  / loss
          345  +  450 = 795
```
loss% = $\frac{5}{800} \times 100 = \frac{5}{8}\%$

S203. Ans.(c)
Sol. Correct average of the marks obtained by him.
$\Rightarrow 88 - \frac{(86 - 68)}{6}$
$\Rightarrow 88 - \frac{18}{6} = 88 - 3 = 85$

S204. Ans.(c)
Sol. A : B
17   : 45
17x : 45x
ATQ,
$\Rightarrow 17x \times \frac{1}{3} + 15 = 45x \times \frac{1}{5}$
$\Rightarrow \frac{17x+45}{3} \Rightarrow 9x$
$17x + 45 = 27x$
$10x = 45$
$x = \frac{45}{10}$
∴Smaller number is
$\frac{45}{10} \times 17 = \frac{765}{10} = 76\frac{1}{2}$

S205. Ans.(c)
Sol. Let 'a' be the smallest even no.
According to question
(a) + (a + 2) + (a + 4) + (a + 6) = 748
4a+ 12 = 748
4a = 736
a = 184

S206. Ans.(d)
Sol. Pattern is
2 + 1 × 11 = 2 + 11 = 13
13 + 2 × 11 = 13 + 22 = 35
35 + 3 × 11= 35 + 33 = 68
68 + 4 × 11 = 68 + 44 = 112
112 + 5 × 11 = 112 + 55 = **167**

S207. Ans.(d)
Sol. Pattern is
$650 - 7^2 = 601$
$601 - 6^2 = 565$
$565 - 5^2 = 540$
$540 - 4^2 = 524$
$524 - 3^2 = \mathbf{515}$

S208. Ans.(a)
Sol. Pattern is
$\times \frac{3}{2}, \times \frac{3}{2}, \times \frac{3}{2} \dots \dots \dots$
$\therefore 121.5 \times \frac{3}{2} = 182.25$

S209. Ans.(a)
Sol. Pattern is
×0.5, ×1.5, ×2.5, ×3.5, ×4.5…..
∴ 52.5 × 4.5 = 236.25

S210. Ans.(c)
Sol. Pattern is
108 ÷ 1.5 = 72
72 ÷ 2 = 36
36 ÷ 1.5 = 24
24 ÷ 2 = 12
12 ÷ 1.5 = **8**

S211. Ans.(b)
Sol. $\frac{42}{100} \times 350 - \frac{28}{100} \times 400 = ?$
$147 - 112 = ?$
$? = 35$

S212. Ans.(d)
Sol. $\sqrt{(123.09 + 465.05) \div 11.99} + ? = 240.02 \div 1.989$
$\sqrt{\frac{123+465}{12}} + ? = \frac{240}{2}$
$\sqrt{49} + ? = 120$
$? = 113$

S213. Ans.(e)
Sol. $(15.99)^2 - 14.04 \times 8.99 + ? = 154.999$
$16^2 - 14 \times 9 + ? = 155$
$? = 155 + 126 - 256$
$? = 25$

S214. Ans.(a)
Sol. $\frac{62}{100} \times 250 - \frac{20}{100} \times 105 - ? = 110$
$155 - 21 - 110 = ?$
$? = 24$

S215. Ans.(c)
Sol. $45\% \ of \ 220.09 + 30\% \ of \ 160.06 = ?^2 + 2.99$
$\frac{45}{100} \times 220 + \frac{30}{100} \times 160 = ?^2 + 3$
$99 + 48 - 3 = ?^2$
$? = 12$

S216. Ans.(a)
Sol. $1229.99 + 2120.09 - 3049.987 = ?$
$1230 + 2120 - 3050 = ?$
$? = 300$

S217. Ans.(e)
Sol. $\sqrt{\sqrt{(99.99 + 104.99 \times 5)}} = ? \div 8.989$
$\sqrt{\sqrt{100 + 105 \times 5}} = \frac{?}{9}$
$\sqrt{\sqrt{625}} = \frac{?}{9}$
$? = 45$

S218. Ans.(d)
Sol. $35.99 \times 4.98 - 1199.99 \div 7.99 = ?$
$36 \times 5 - \frac{1200}{8} = ?$
$? = 180 - 150$
$? = 30$

S219. Ans.(b)
Sol. $?^2 + 60\% \ of \ 239.99 = 55\% \ of \ 320.02 + 3.98$
$?^2 + \frac{60}{100} \times 240 = \frac{55}{100} \times 320 + 4$
$?^2 + 144 = 176 + 4$
$?^2 = 180 - 144$
$? = 6$

S220. Ans.(c)
Sol. $524.90 + 125.05 = ? \times 9.99$
$525 + 125 = ? \times 10$
$? = \frac{650}{10}$
$? = 65$

S221. Ans.(a)
Sol. Total number of drug addict in Delhi
$= \frac{45}{100} \times 3.6$ million
$= 1.62$ million

S222. Ans.(b)
Sol. Required difference $= \frac{24-16}{100} \times 3.2$ million $= 2,56,000$

S223. Ans.(c)
Sol. Total population of Punjab $= \frac{1.2}{30} \times 100 = 4$ million

S224. Ans.(d)
Sol. Required average $= \frac{1}{5} \times (25 + 40 + 24 + 30 + 12) = 26.2\%$

S225. Ans.(a)
Sol. Let population in Haryana be 3x
Population in UP = 5x
$\therefore$ number of female drug addict in Haryana $= \frac{16}{100} \times 3x = 0.48x$
number of female drug addict in UP $= \frac{10}{100} \times 5x = 0.5x$
$\therefore$ Maximum number of female drug addicts are in UP.

S226. Ans.(b)
Sol. Total production of Maruti in year 2011, 2012 and 2013
together = 60 + 55 + 50
= 165 lakhs
Total production of Honda in year 2011, 2012 and 2013
together = 40 + 45 + 50 = 135 lakh
Required % $= \frac{165-135}{135} \times 100 = 22\frac{2}{9}\%$ more

S227. Ans.(d)
Sol. Required difference $= \frac{60+80+55}{3} - \frac{50+60+85}{3}$
$= \frac{195}{3} - \frac{195}{3} = 0$

S228. Ans.(c)
Sol. Total production of Honda = 40 + 45 + 50 + 60 + 80 + 55
= 330 lakh
Total production of Maruti = 60 + 55 + 50 + 50 + 60 + 85
= 360 lakh
Required % $= \frac{360-330}{360} \times 100$
$= \frac{30}{360} \times 100 = 8\frac{1}{3}\%$ less

S229. Ans.(a)
Sol. Required value $= 55 \times \frac{14}{10} + 85 \times \frac{12}{10}$
= 77 + 102
= 179 lakh

S230. Ans.(d)
Sol. Required ratio $= \frac{50+50+60}{60+80} = \frac{160}{140}$
$= \frac{8}{7}$

S231. Ans.(a)
Sol. I. $y^2 + 7y + 3y + 21 = 0$
$y(y + 7) + 3(y + 7) = 0$
$(y + 7)(y + 3) = 0$
$y = -7, -3$
II. $x^2 + 2x + x + 2 = 0$
$x(x + 2) + 1(x + 2) = 0$
$(x + 2)(x + 1) = 0$
$x = -2, -1$
Hence x>y

S232. Ans.(e)
Sol. I. y $= \pm 21$
II. $x^2 - 21x + 11x - 231 = 0$
$x(x - 21) + 11(x - 21) = 0$
$(x - 21)(x + 11) = 0$
$x = 21, -11$
Hence no relation.

S233. Ans.(d)
Sol. I. $y^2 - 10y - 3y + 30 = 0$
$y(y - 10) - 3(y - 10) = 0$
$(y - 10)(y - 3) = 0$
$y = 10, 3$
II. $x^2 + 6x - 3x - 18 = 0$
$x(x + 6) - 3(x + 6) = 0$
$(x - 3)(x + 6) = 0$
$x = 3, -6$
Hence x≤y

S234. Ans.(e)
Sol. I. $2x^2 - 50x - 2x + 50 = 0$
$2x(x - 25) - 2(x - 25) = 0$
$(2x - 2)(x - 25) = 0$
$x = 1, 25$
II. $y^2 - 25y - 5y + 125 = 0$
$y(y - 25) - 5(y - 25) = 0$
$(y - 25)(y - 5) = 0$
$y = 25, 5$
Hence no relation.

S235. Ans.(c)
Sol. $4x + 2y = 122 \dots\dots. (i)$
$3x + 2y = 102 \dots\dots(ii)$
On solving (i) and (ii)
$x = 20, y = 21$
$x < y$

S236. Ans.(e)
Sol. (i) $x^2 - 12x + 32 = 0$
$x^2 - 8x - 4x + 32 = 0$
$x(x - 8) - 4(x - 8) = 0$
$(x - 8)(x - 4) = 0$
$x = 8, 4$
(ii) $y^2 - 20y + 96 = 0$
$y^2 - 12y - 8y + 96 = 0$
$y(y - 12) - 8(y - 12) = 0$
$(y - 8)(y - 12) = 0$
$y = 8, 12$
$y \geq x$

S237. Ans.(b)
Sol. (i) $2x^2 - 3x - 20 = 0$
$2x^2 - 8x + 5x - 20 = 0$
$2x(x - 4) + 5(x - 4) = 0$
$(x - 4)(2x + 5) = 0$
$x = 4, -5/2$
(ii) $2y^2 + 11y + 15 = 0$
$2y^2 + 6y + 5y + 15 = 0$
$2y(y + 3) + 5(y + 3) = 0$
$(2y + 5)(y + 3) = 0$
$y = \frac{-5}{2}, -3$
$x \geq y$

S238. Ans.(c)
Sol. (i) $x^2 - x - 6 = 0$
$x^2 - 3x + 2x - 6 = 0$
$x(x - 3) + 2(x - 3) = 0$
$(x - 3)(x + 2) = 0$
$x = 3, -2$
(ii) $y^2 - 6y + 8 = 0$
$y^2 - 2y - 4y + 8 = 0$
$y(y - 2) - 4(y - 2) = 0$
$(y - 2)(y - 4) = 0$
$y = 2, 4$
No relation can be established between x and y

S239. Ans.(c)
Sol. (i) $x^2 + 14x - 32 = 0$
$x^2 + 16x - 2x - 32 = 0$
$x(x + 16) - 2(x + 16) = 0$
$(x - 2)(x + 16) = 0$
$x = -16, 2$
(ii) $y^2 - y - 12 = 0$
$y^2 - 4y + 3y - 12 = 0$
$y(y - 4) + 3(y - 4) = 0$
$(y + 3)(y - 4) = 0$
$y = -3, 4$
No relation

S240. Ans.(a)
Sol. (i) $x^2 - 9x + 20 = 0$
$x^2 - 5x - 4x + 20 = 0$
$x(x - 5) - 4(x - 5) = 0$
$(x - 4)(x - 5) = 0$
$x = 4, 5$
(ii) $2y^2 - 12y + 18 = 0$
$2y^2 - 6y - 6y + 18 = 0$
$2y(y - 3) - 6(y - 3) = 0$
$(2y - 6)(y - 3) = 0$
$y = 3, 3$
$x > y$

S241. Ans.(d)
Sol. Total distance = 9 × 70 = 630
New speed = $\frac{630}{6}$ = 105 km/hr
Increase in speed = $\frac{105-70}{70} \times 100 = 50\%$

S242. Ans.(e)
Sol. Distance = 180 meter
Time = 20 second
Relative speed of train and car
= $\frac{180}{20}$ = 9 m/s
Let speed of car = x m/s
So speed of train = $\frac{2}{3}x$ m/s
$x - \frac{2}{3}x = 9$ m/s
$x = 27$ m/s
Speed of car in km/hr = $\frac{27 \times 18}{5}$ = 97.2 km/hr

S243. Ans.(b)
Sol. ATQ,
$\frac{112}{x} = y \Rightarrow 112 = xy$
Now x and y can be written as
(2, 56) (4, 28) (8, 14) (16, 7) or
(56, 2) (28, 4) (14, 8) (7, 16)
Hence two possible co-prime pairs are possible,
i.e. (7, 16) or (16, 7)
Hence it can't be determined

S244. Ans.(b)
Sol. Anurag's speed = $\frac{60}{10}$ = 6 km/hr
Dharam's speed = $\frac{60}{15}$ = 4 km/hr
ATQ,
Let length of race be 'D' meters.
So,
$\frac{D}{D-200} = \frac{6}{4}$
$\Rightarrow 2D = 1200$
D = 600 m

S245. Ans.(d)
Sol. Radius of wheel = $\frac{84}{2}$ cm = 42 cm
Distance travelled in one revolution
= $2\pi r = 2 \times \frac{22}{7} \times 42$
= 264 cm
Lets revolution made by wheel = X
So total distance travelled = distance travelled in X number of revolution
$132 = \frac{264X}{40 \times 60}$
$X = \frac{132 \times 40 \times 60}{264}$
X = 1200

S246. Ans.(d)
Sol. In 15 seconds,
distance travelled by First car
= $15 \times 36 \times \frac{5}{18}$ = 150 m
Distance travelled by second car = $15 \times 48 \times \frac{5}{18}$ = 200
∴ Required distance = $\sqrt{(150)^2 + (200)^2}$ = 250 m

S247. Ans.(e)
Sol. Let the speed of the car be x kmph.
So, $x - 38 = \left(\frac{40+60}{20}\right) \times \frac{18}{5}$ kmph
or, $x - 38 = 18$
∴ $x = 56$ kmph

S248. Ans.(a)
Sol. Total distance covered by Vikash =9+1=10 km.
Time taken by Vikash = 10×6
=60 min
So, time taken by Mohit = 60–4=56 min
Distance covered by Mohit = 9–1 =8 km
Speed of Mohit = $\frac{8}{56}$
=$\frac{1}{7}$ km/min.

S249. Ans.(b)
Sol. Speed of train A = $\frac{400}{16}$ = 25 m/sec
So, speed of train B = 25 m/sec
ATQ,
$\frac{400+x}{25}$ = 24
$x = 200$ m
Now time required to cross platform by B
=$\frac{400+200+400}{25}$ = 40 sec

S250. Ans.(c)
Sol. Let speed of train P = 4x m/sec
Let speed of Q = 5x m/sec
∴ Length of train P = 4x × 6 = 24x m
Length of train Q = 5x × 4 = 20x m
A/Q,
$\frac{24x+480}{4x} = 18$
⇒ $x = 10$
∴ Required time = $\frac{200+480}{50}$ = 13.6 sec

S251. Ans.(a)
Sol. Wrong number = 506
Pattern of series –

12   28   60   124   252   [508]   1020
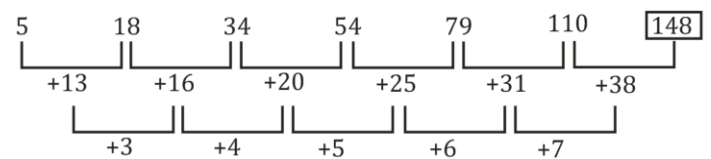 +16   +32   +64   +128   +256   +512
     ×2   ×2   ×2   ×2   ×2
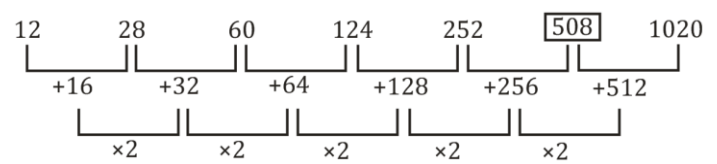
So, there should be 508 in the place of 506.

S252. Ans.(e)
Sol. Wrong number = 158
Pattern of series –

5   18   34   54   79   110   [148]
  +13   +16   +20   +25   +31   +38
     +3   +4   +5   +6   +7

So, there should be 148 in the place of 158

S253. Ans.(d)
Sol. Wrong number = 2400
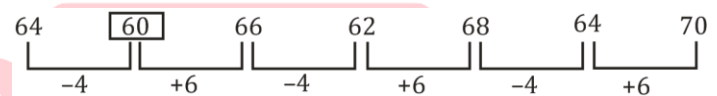Pattern of series –

8   48   240   960   [2880]   5760   5760
  ×6   ×5   ×4   ×3   ×2   ×1
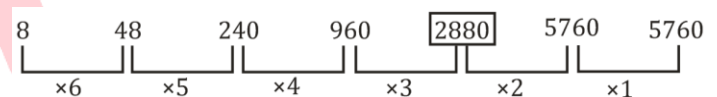
So, there should be 2880 in the place of 2400.

S254. Ans.(b)
Sol. Wrong number = 58
Pattern of series –

64   [60]   66   62   68   64   70
  −4   +6   −4   +6   −4   +6

So, there should be 60 in the place of 58.

S255. Ans.(b)
Sol.

60   56   65   49   74   38   87
  -2^2 $+3^2$ -4^2 $+5^2$ -6^2 $+7^2$
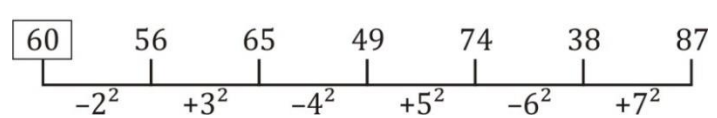
So, there should be 60 in the place of 64

S256. Ans.(a)
Sol. Wrong number = 104
Pattern of series –
12 + 27 = 39
39 + 24 = 63
63 + 27 = 90
90 + 24 = 114
114 + 27 = 141
141 + 24 = 165
So, 114 should come in the place of 104

S257. Ans.(d)
Sol. Wrong number = 562
$13 + 3^3 = 40$
$40 + 4^2 = 56$
$56 + 5^3 = 181$
$181 + 6^2 = 217$
$217 + 7^3 = 560$
$560 + 8^2 = 624$
So, 560 should come in the place of 562.

S258. Ans.(c)
Sol. Wrong number = 134
Pattern of series –
$112 + 16 = 128$
$128 – 20 = 108$
$108 + 24 = 132$
$132 – 28 = 104$
$104 + 32 = 136$
$136 – 36 = 100$
So, should be 136 come in the place of 134.

S259. Ans.(d)
Sol. Wrong number = 255
Pattern of series –
$120 = 11^2 – 1$
$145 = 12^2 + 1$
$168 = 13^2 – 1$
$197 = 14^2 + 1$
$224 = 15^2 – 1$
$16^2 + 1 = 257$
$288 = 17^2 – 1$
So, should be 257 come in the place of 255.

S260. Ans.(d)
Sol. Wrong number = 920
Pattern of series –
$5 \times 1 + 1 = 6$
$6 \times 2 + 2 = 14$
$14 \times 3 + 3 = 45$
$45 \times 4 + 4 = 184$
$184 \times 5 + 5 = 925$
$925 \times 6 + 6 = 5556$
So, 925 should come in the place of 920.

S261. Ans.(e)
Sol. I. $x^2 + 9x – 22 = 0$
$\Rightarrow x^2 + 11x – 2x – 22 = 0$
$\Rightarrow (x + 11)(x – 2) = 0$
$\Rightarrow x = – 11, 2$
II. $2y^2 – 7y + 6 = 0$
$\Rightarrow 2y^2 – 4y – 3y + 6 = 0$
$\Rightarrow 2y(y–2) – 3(y–2) = 0$
$\Rightarrow (y–2)(2y–3) = 0$
$\Rightarrow y = 2, \frac{3}{2}$
No relation

S262. Ans.(e)
Sol. I. $2y^2 – 13y – 34 = 0$
$\Rightarrow 2y^2 – 17y + 4y – 34 = 0$
$\Rightarrow y(2y–17) + 2(2y–17) = 0$
$\Rightarrow (2y–17)(y+2) = 0$
$\Rightarrow y = \frac{17}{2}, – 2$
II. $3x^2 – 11x – 20 = 0$
$\Rightarrow 3x^2 – 15x + 4x – 20 = 0$
$\Rightarrow 3x(x–5) + 4(x–5) = 0$
$\Rightarrow (x – 5)(3x + 4) = 0$
$\Rightarrow x = 5, \frac{-4}{3}$
No relation

S263. Ans.(b)
Sol. I. $x^4 = 256$
$\Rightarrow x = \pm 4$
II. $y^2 – 16y + 64 = 0$
$\Rightarrow (y – 8)^2 = 0$
$\Rightarrow y = 8$
y > x

S264. Ans.(e)
Sol. I. $x^2 + 4x – 12 = 0$
$x^2 + 6x – 2x – 12 = 0$
$x = –6, 2$
II. $2y^2 + 7y + 6 = 0$
$2y^2 + 4y + 3y + 6 = 0$
$2y(y + 2) + 3(y + 2) = 0$
$y = –2, \frac{-3}{2}$
∴ No relation

S265. Ans.(b)
Sol. I. $2x + 3y = 4$
II. $4x + 5y = 6$
Solving eq. (I) and (II),
$(2x + 3y = 4) \times 2$
$4x + 5y = 6$
$y = 2$
Put y = 2 in eq. (I),
$2x + 6 = 4$
$\Rightarrow x = – 1$
y > x

S266. Ans.(a)
Sol. Ratio of efficiency of A to B = 100y : 160y
$= 5y : 8y$
Total work = (5y + 8y) × 6 unit = 78y units
So, A alone can complete whole work in(x) = $\frac{78y}{5y}$ days
= $15\frac{3}{5}$ days

S267. Ans.(c)
Sol. Let cost price of A and B be Rs. 200 and Rs. 300 respectively
Total profit of A and B will be = $200 \times \frac{20}{100} + 300 \times \frac{25}{100}$
$= 40 + 75 = 115$ Rs.
Required profit percentage = $\frac{115}{500} \times 100 = 23\%$

S268. Ans.(b)
Sol. Sum of present age of A, B and C = 30 × 3 = 90 years
Sum of age of A, B, C and D after three years = 37.5 × 4 = 150 years
Age of D 3 years hence = 150 – (90 + 9) = 51 years
After six years age of D = 51 + 3 = 54 years.

S269. Ans.(e)
Sol. Ratio of profit share of A to B = $4x : 20000 \times 3$
So,
$\frac{4x}{20,000 \times 3} = \frac{1}{2}$
$x = $ Rs. 7500

S270. Ans.(d)
Sol. Total mixture $= \frac{10}{12.5} \times 100$
$= 80\ l$
ATQ—
$36 + x + 12 + (x + 8) = 80\ l$
$56 + 2x = 80\ l$
$x = \frac{80 - 56}{2}$
$x = 12\ l$
Water added in mixture = (12 + 8) = 20 ℓ

S271. Ans.(c)
Sol. $\approx \frac{3}{4} \times 8 + \frac{124}{100} \times 650 = x$
$\approx 6 + 806 = x$
$\approx x = 812$

S272. Ans.(e)
Sol. $\approx 275 + 188x = 2500 + 31$
$\approx 188x = 2256$
$\approx x = 12$

S273. Ans.(e)
Sol. $\approx \frac{1700}{\frac{85}{100} \times 125} - \frac{250}{\frac{5}{8} \times 100} \times \sqrt{x} = 0$
$\approx 16 - 4\sqrt{x}$
$\approx \sqrt{x} = 4$
$\approx x = 16$

S274. Ans.(a)
Sol. $\approx 32 + 8 + 31 + x = \frac{25}{100} \times 700$
$\approx 71 + x = 25 \times 7$
$\approx x = 104$

S275. Ans.(d)
Sol. $\approx \frac{350}{50} + (10)^2 \times 20 = x^3 - \frac{19}{100} \times 1000$
$\approx 7 + 2000 = x^3 - 190$
$\approx x^3 = 2007 + 190$
$\approx x = 13$

S276. Ans.(b)
Sol. Let speed of boat in still water be x km/hr & speed of current be y km/hr
ATQ,
Upstream speed $(x - y) = \frac{280}{7} = 40$ km/hr
$x - y = \frac{40}{100}(x + y)$
$5x - 5y = 2x + 2y$
$3x = 7y$
$x - y = 40$
$3x - 3y = 120$
$7y - 3y = 120$
$\therefore y = 30$ km/hr
$\therefore$ speed of current = 30 km/hr

S277. Ans.(c)
Sol. Total ways when both A's never comes together = total ways – ways when both A's comes together
$= \frac{7!}{2!} - 6!$
$= 2520 - 720$
$= 1800$

S278. Ans.(d)
Sol. Ratio of profit of Ayush to Akshay
$= \frac{1}{3} \times \frac{1}{5} : \frac{2}{5} \times \frac{2}{3}$
$= \frac{1}{15} : \frac{4}{15}$
$\frac{1}{15} \rightarrow 550$
$\therefore \frac{3}{15} \rightarrow$ Rs. 1650

S279. Ans.(e)
Sol. S.I. $= \frac{P \times R \times T}{100}$
$\frac{PR}{100} = \frac{2400}{2} = 1200$ ...(i)
We know;
Difference $= \frac{PR^2}{100^2}$
$\frac{PR^2}{100^2} = 300$ ...(ii)
From (i) and (ii)
$\frac{\frac{PR^2}{100^2}}{\frac{PR}{100}} = \frac{300}{1200}$
R = 25%

S280. Ans.(a)
Sol. Curved surface area of cylinder = 2πrh
$r = \frac{h}{2}$
$2\pi \frac{h^2}{2} = 616$
$h^2 = 196$
$h = 14$
$\therefore$ height = 14 cm = length
Radius = 7 cm = breadth
$\therefore$ Area of rectangle = 14 × 7 = 98 cm^2

S281. Ans.(b)
Sol. The pattern of series-
$50 + 4 = 54$
$54 + 8 = \textbf{62}$
$\textbf{62} + 12 = 74$
$74 + 16 = 90$
$90 + 20 = 110$

S282. Ans.(d)
Sol. The pattern of series-
$210 - 2^2 = \textbf{206}$
$\textbf{206} - 3^2 = 197$
$197 - 5^2 = 172$
$172 - 7^2 = 123$
$123 - 11^2 = 2$

S283. Ans.(e)
Sol. The pattern of series-
$1^3 = 1$
$2^2 = 4$
$\textbf{3}^3 = \textbf{27}$
$4^2 = 16$
$5^3 = 125$
$6^2 = 36$

S284. Ans.(a)
Sol. The pattern of series-
$2 \times 2 + 2 = 6$
$6 \times 2 + 2 = 14$
$14 \times 2 + 2 = 30$
$30 \times 2 + 2 = \textbf{62}$
$\textbf{62} \times 2 + 2 = 126$

S285. Ans.(c)
Sol. The pattern of series-
$5 + 2^1 = 7$
$7 + 2^2 = 11$
$11 + 2^3 = 19$
$19 + 2^4 = 35$
$35 + 2^5 = \textbf{67}$

S286. Ans.(a)
Sol. The pattern of series is-
$23 + 10 = 33$
$33 + 20 = 53$
$53 + 30 = \textbf{83}$
$\textbf{83} + 40 = 123$
$123 + 50 = 173$

S287. Ans.(e)
Sol. The pattern of series is-
$2^3 = 8$
$3^3 = 27$
$5^3 = 125$
$7^3 = 343$
$11^3 = \textbf{1331}$
$13^3 = 2197$

S288. Ans.(d)
Sol. The pattern of series is-
$2 \times 1 = 2$
$2 \times 1.5 = 3$
$3 \times 2 = 6$
$6 \times 2.5 = 15$
$15 \times 3 = \textbf{45}$

S289. Ans.(b)
Sol. The pattern of series is-
$17 + 17 = 34$
$34 + 19 = 53$
$53 + 23 = \textbf{76}$
$\textbf{76} + 29 = 105$
$106 + 31 = 136$

S290. Ans.(c)
Sol. The pattern of series is-
310　　260　　219　　187　　164　　**150**
　　-50　　-41　　-32　　-23　　-14
　　　　-9　　-9　　-9　　-9

S291. Ans.(b)
Sol. Required% $= \frac{16+24\ -8-20}{(16+24)} \times 100$
$= \frac{12}{40} \times 100$
$= 30\%$

S292. Ans.(d)
Sol. Required difference
$= \frac{[20+24\ -12\ -16]}{100} \times 15000$
$= Rs.\ 2400$

S293. Ans.(a)
Sol. It can be seen easily from the pie-chart that February month shows the highest percent increase in income as compare to previous month which is equal to
$= \frac{12\ -8}{8} \times 100$
$= \frac{4}{8} \times 100$
$= 50\%$ increment.

S294. Ans.(e)
Sol. Required central angle
$= (20 + 16) \times \frac{18}{5}$
$= 129.6°$

S295. Ans.(c)
Sol. Sandeep's average income in starting four months
$= \frac{(8+12+16+20)}{4 \times 100} \times 15000$
$= Rs.\ 2100$
Sandeep's average income in Last four months
$= \frac{(16+20+20+24)}{4 \times 100} \times 15000 = Rs.\ 3000$
Required difference = 3000 – 2100 = $Rs.900$

S295. Ans.(d)
Sol. Average number of mangoes sold by A on all the days together $=\frac{350+240+380+210+320}{5}=300$
Average number of mangoes sold by C on all the days together $=\frac{320+280+160+300+290}{5}=270$
Required difference = 300 -270=30

S297. Ans.(b)
Sol. Total mangoes sold by A and B on Monday and Tuesday together=350+230+240+340 =1160
Total mangoes sold by B and C on Wednesday and Friday together=280+160+250+290
=980
Required ratio $=\frac{1160}{980}$ =58 :49

S298. Ans.(c)
Total number of mangoes sold by seller B and C together on friday= 250+290=540
Total number of mangoes sold by seller A,B and C together on Monday =350+230+320=900
Required percentage $=\frac{540}{900}\times 100 = 60\%$

S299. Ans.(a)
Average number of mangoes sold by seller B on all the days together $=\frac{230+340+280+370+250}{5}$
=294

S300. Ans.(c)
Total Mangoes sold by seller B and C on Monday together=230+320=550
Total mangoes sold by seller B and C on Thursday together =370+300 = 670
Required difference =670 – 550 =120

S301. Ans.(d)
Sol. sum left at the end of first year = $\left(400 + 400 \times \frac{10}{100}\right)-$
$200 = Rs.240$
sum left at the end of 2nd year = $\left(240 + 240 \times \frac{10}{100}\right)-64$
$= Rs.200$
sum paid at the end of 3rd year to clear his debt.
$=\left(200 + 200 \times \frac{10}{100}\right) = Rs.220$

S302. Ans.(c)
Sol. quantity of water and acid in initial mixture
$= 50 \times \frac{40}{100}, 50 \times \frac{60}{100} = 20lit$ and 30 lit $respctively.$
Quantity of acid left after 30 lit of mixture taken out
$= 30 - 30 \times \frac{3}{5} = 12$ $lit.$
Quantity of water left after 30 lit of mixture taken out
$= 20 - 30 \times \frac{2}{5} = 8$ $lit.$
Required ratio = $\left(8 + 50 \times \frac{60}{100}\right):\left(12 + 50 \times \frac{40}{100}\right)$
$= 19:16$

S303. Ans.(a)
Sol. let total work = 96 units (multiple of 16)
Let efficiency of Hemant = 4x units/day
Then, efficiency of Manoj and Vikash = 3x units/day and 2x units/day respectively
ATQ
$4x + 2x = \frac{96}{16}$
$6x = 6$
$x = 1$
Required time $= \frac{96}{3\times 1 \times\frac{150}{100}} = 21\frac{1}{3} days.$

S304. Ans.(b)
Sol. let speed of trains – A & B are x m/s and y m/s respectively.
ATQ
$5x + 5y = 850$
$x + y = 170$ .... (i)
And
$x - y = \frac{850}{\frac{85}{3}}$
$x - y = 30$ .... (ii)
From (i) and (ii)
$x = 100$ m/s and $y = 70$ m/s
Required ratio $= \frac{5\times 100}{5\times 70} = 10:7$

S305. Ans.(a)
Sol. required probability $= \frac{13}{52} \times \frac{12}{51} + \frac{4}{52} \times \frac{3}{51}$
$= \frac{156+12}{52\times 51}$
$= \frac{14}{221}$

S306. Ans.(c)
Sol. circumference of circle of radius 'r' $= 2\pi r = 22\sqrt{2} \times \sqrt{2}$
$\Rightarrow 2\pi r = 22 \times 2$
$r = 7$ cm
Area of circle $(\pi r^2) = \frac{22}{7} \times 7 \times 7$
$= 154$ cm^2

S307. Ans.(e)
Sol. let no of first, second and third type of items are 2x, 3x and 4x respectively
Total cost price $= 2x \times 300 + 3x \times 500 + 4x \times 700 = Rs.4900x$
Total profit $= 600x \times \frac{10}{100} + 1500x \times \frac{5}{100} + 2800x \times \frac{4}{100} = Rs.247x$
Overall profit percentage $= \frac{247x}{4900x} \times 100 \approx 5\%$

S308. Ans.(b)
Sol. let total time of investment = 60t months
Ratio of profit of A, B and C
$5 \times 60t \times \frac{1}{12} : 3 \times 60t \times \frac{1}{5} : 7 \times 60t \times \frac{1}{15}$
$\Rightarrow 25:36:28$
ATQ
$(36-28)units = Rs.800$
Then, 25 units = Rs. 2500

S309. Ans.(d)
Sol. Let the length be 5x cm
And breadth = 4x cm
ATQ,
$5x \times 4x - (5x + 3)\left(4x \times \frac{5}{8}\right) = 150$
$\Rightarrow 20x^2 - (5x + 3) \times \frac{5x}{2} = 150$
$\Rightarrow 20x^2 - \frac{25x^2}{2} - \frac{15x}{2} = 150$
$\Rightarrow 15x^2 - 15x = 300$
$\Rightarrow x^2 - x - 20 = 0$
$\Rightarrow x^2 - 5x + 4x - 20 = 0$
$\Rightarrow x(x - 5) + 4(x - 5) = 0$
$\Rightarrow x = 5$
Required perimeter = 2 (5x + 4x) = 2 × 9 × 5 = 90 cm

S310. Ans.(d)
Sol. let average of seven no. = a
Then, average of first three no. = a + 11
ATQ
$3(a + 11) + 89 + a - 8 + a - 5 + a - 29 = 7 \times a$
$6a + 80 = 7a$
$a = 80$
So, $a + 11 = 91$

S311. Ans.(d)
Sol. Average number of students of school A across all the years $=\frac{280+340+370+240+210}{5}$
=288
Average number of students of school B across all the years
$=\frac{350+310+260+340+250}{5}$
=302
Required difference = 302 -288
=14

S312. Ans.(a)
Sol. Total number of students of school A in 2011 and 2012 together=280+340
=620
Total number of students of school C in 2013 and 2014 together=280+380
=660
Required ratio$=\frac{620}{660}$ =31 : 33

S313. Ans.(d)
total number of students in 2016 in all the schools together= $210 \times \frac{110}{100} + 250 \times \frac{120}{100} + 260 \times \frac{115}{100}$ =231+300+299
=830

S314. Ans.(a)
Total students of all the three schools together in 2013= 370+260+280
=910
Total students of school B in 2011 and 2015 together= 350+250
=600
Required percentage$=\frac{910-600}{600} \times 100 = 51.66\,\%$
=52% (approx.)

S315. Ans.(d)
Total number of students from all the schools in 2011 and 2013 together=(280+350+220)+(370+260+280)
=1760
Total number of students from all the schools in 2014 and 2015 together
=(240+340+380)+(210+250+260)
=1680
Required difference=1760 – 1680
=80

S316. Ans.(d)
Sol.
$19 + 13 = 32$
$32 + 26 = 58$
$58 + 39 = 97$
$97 + 52 = 149$
$149 + 65 = 214$

S317. Ans.(e)
Sol. $2^2 - 1 = 3$
$3^2 + 1 = 10$
$4^2 - 1 = 15$
$5^2 + 1 = 26$
$6^2 - 1 = 35$
$7^2 + 1 = 50$

S318. Ans.(d)
Sol. $208 \times 0.5 = 104$
$104 \times 1.5 = 156$
$156 \times 2.5 = 390$
$390 \times 3.5 = 1365$
$1365 \times 4.5 = 6142.5$

S319. Ans.(a)
Sol. $34 - 1^2 = 33$
$33 + 2^3 = 41$
$41 - 3^2 = 32$
$32 + 4^3 = 96$
$96 - 5^2 = 71$

S320. Ans.(b)
Sol. $1920 \div 5 = 384$
$384 \div 4 = 96$
$96 \div 3 = 32$
$32 \div 2 = 16$
$16 \div 1 = 16$

S321. Ans.(d)
Sol. $? = \frac{6561}{27 \times 3} = 81$

S322. Ans.(e)
Sol. $4576 + 2789 + 25 + \sqrt{?} = 1285 + 6148$
$\sqrt{?} = 7433 - 7390$
$\sqrt{?} = 43$
$? = 1849$

S323. Ans.(d)

Sol. $? = 127 \times \frac{16}{2} + 8 \times 3$

$? = 1016 + 24$

$? = 1040$

S324. Ans.(b)

Sol. $? = \left(\frac{108 \times 2000}{100 \times 10}\right)^{\frac{1}{3}} + \left(\frac{84 \times 300}{100}\right)$

$? = 6 + 252$

$? = 258$

S325. Ans.(e)

Sol. $\frac{13 \times 45 - 14 \times 20}{5} = \frac{108}{3} + ?$

$61 = 36 + ?$

$? = 25$

S326. Ans.(a)

Sol. $? = 67 \times 5 \times 245 \div 35$

$? = 335 \times \frac{245}{35}$

$? = 2345$

S327. Ans.(c)

Sol. $\frac{40}{100} \times ? - \frac{25}{100} \times 720 = \frac{20}{100} \times 520$

$? = \frac{284}{40} \times 100$

$? = 710$

S328. Ans.(a)

Sol. $? = \frac{9}{12} \times \frac{21}{15} \times 100 + \frac{3}{16} \times 1728$

$? = 105 + 324$

$? = 429$

S329. Ans.(d)

Sol. $? = 177 + 469 - 360 - 181$

$? = 105$

S330. Ans.(a)

Sol. $? = \sqrt{\frac{12}{100} \times 1125 + \frac{8}{100} \times 425}$

$? = \sqrt{135 + 34}$

$? = \sqrt{169}$

$? = 13$

S331. Ans.(b)

Sol.

2   7   16   71   346

$\times 2 + 3$ $\times 3 - 5$ $\times 4 + 7$ $\times 5 - 9$ $\times 6 + 11$

Hence, missing term is 2087

S332. Ans.(a)

Sol.

729   1331   2197   3375   4913   6859

9^3 11^3 13^3 15^3 17^3 19^3

Hence, missing term is 3375

S333. Ans.(d)

Sol.

0   7   26   63   124   215

1^3-1 2^3-1 3^3-1 4^3-1 5^3-1 6^3-1

Hence, missing term is 63.

S334. Ans.(e)

Sol.

15   17   21   29   45   77

$+2$ $+4$ $+8$ $+16$ $+32$

Hence, missing term is 45.

S335. Ans.(a)

Sol.

2   11   45   136   273   274

$\times 5 + 1$ $\times 4 + 1$ $\times 3 + 1$ $\times 2 + 1$ $\times 1 + 1$

Hence, missing term is 273.

S336. Ans.(c)

Sol. Total number of males employees in company E = $5400 \times \frac{22}{100} \times \frac{2}{3} = 792$

Total number of female employees in company D = $5400 \times \frac{20}{100} \times \frac{3}{5} = 648$

Required ratio $= \frac{792}{648} = 11 : 9$

S337. Ans.(a)

Sol. Total number of male employees in company A $= 5400 \times \frac{18}{100} \times \frac{2}{3} = 648$

Total number of female employees in company E = $5400 \times \frac{22}{100} \times \frac{1}{3} = 396$

Required percentage $= \frac{648}{396} \times 100 = 163.63\%$

$= 164\%$ (approx.)

S338. Ans.(b)

Sol. total male employees in company B,C and D together $= 5400 \times \frac{28}{100} \times \frac{3}{4} + 5400 \times \frac{12}{100} \times \frac{1}{3} + 5400 \times \frac{20}{100} \times \frac{2}{5}$

$= 1134 + 216 + 432$

$= 1782$

Required percentage $= \frac{1782}{5400} \times 100 = 33\%$

S339. Ans.(d)

Sol. Total female employees in all the 5 companies together $= 5400 \times \frac{18}{100} \times \frac{1}{3} + 5400 \times \frac{28}{100} \times \frac{1}{4} + 5400 \times \frac{12}{100} \times \frac{2}{3} + 5400 \times \frac{20}{100} \times \frac{3}{5} + 5400 \times \frac{22}{100} \times \frac{1}{3}$

$= 324 + 378 + 432 + 648 + 396$

$= 2178$

S340. Ans.(e)
Sol. Central angle of total employees from company B and D together=$(28+20)\times\frac{360}{100}$
=172.8°

S341. Ans.(e)
Sol. Bulbs produced by Havells and Orient together
= 2000 + 3000 = 5000
AC produced by Havells and Anchor together
= 4800 + 2400 = 7200
Required difference = 7200 − 5000 = 2200

S342. Ans.(e)
Sol. total number of items produced by Havells
= 2000 + 4200 + 1600 + 4800 = 12600
total number of items produced by Anchor
= 4200 + 1600 + 3800 + 2400 = 12000
Required Ratio = $\frac{12600}{12000}$ = 21: 20

S343. Ans.(c)
Sol. AC and Heater together produced by Havells
= 4800 + 1600 = 6400
Bulb and Heater together produced by Anchor
= 4200 + 3800 = 8000
Required % = $\frac{6400}{8000}\times100 = 80\%$

S344. Ans.(a)
Sol. Required Average = $\frac{3000+1200+2600+3200}{4} = 2500$

S345. Ans.(a)
Sol. Bulb, Fan and AC together produced by Havells
= 2000 + 4200 + 4800 = 11000
Heater produced by orient and Anchor together
= 2600 + 3800 = 6400
Required difference = 11000 − 6400 = 4600

S346. Ans.(b)
Sol. Discount percent due to free shirt = $\frac{1}{4}\times100 = 25\%$
Overall discount percent = $25 + 20 - \frac{20\times25}{100} = 40\%$

S347. Ans.(d)
Sol. Let the distance covered be 204x meter (LCM of 12 and 17)
Speed of Mohit = $\frac{204x}{17} = 12x\ m/min$
Speed of Maanik = $\frac{204x}{12} = 17x\ m/min$
ATQ
$17x - 12x = 10$
$x = 2$
Required distance = $17\times2\times2\times60 = 4080m$

S348. Ans.(b)
Sol. Let total rivers and total lakes in India are 3x and 7x respectively
Total ponds in India = $\frac{5}{7}\times3x = \frac{15x}{7}$
Required % = $\frac{7x\times7}{15x}\times100 = \frac{980}{3}\%$

S349. Ans.(c)
Sol. Let the present age of A and B is p years and q years respectively
ATQ
$\frac{p+q}{2} = p - q + 31$
$3q - p = 62$........(i)
$\frac{p-9}{q-2} = \frac{8}{7}$
$8q - 7p = -47$........(ii)
On solving (i) and (ii)
q = 37 and p=49
Present age of A = 49 years.

S350. Ans.(d)
Sol. Let the speed of train A be x m/sec and length of train B be L meter
ATQ
$L + 340 = 10(x + 18)$ ....(1)
$L + 340 = 25(x - 18)$ ....(2)
Equating (1) and (2), we get
x=42
Length of train B = $10(42 + 18) - 340 = 260\ meter$

S351. Ans.(b)
Sol. $23 \times 23 + 12 \times 8 \approx ?^2$
$? \approx 25$

S352. Ans.(e)
Sol. $87 + 914 - 338 \approx \frac{75}{100}\times(?)$
$\frac{663\times100}{75} = ?$
$? = 884$

S353. Ans.(b)
Sol. $?\% \text{ of } 1050 + \frac{75}{100}\times420 = \frac{750\times70}{100}$
$?\% \text{ of } 1050 = 525 - 315$
$? = \frac{210}{1050}\times100 \approx 20$

S354. Ans.(a)
Sol. $\sqrt{324\sqrt{20\times50\times8\times20}} + \frac{25\times32}{100} \approx ?$
$\sqrt{324\times20\times20} + 8 \approx ?$
$360 + 8 \approx ?$
$? = 368$

S355. Ans.(e)
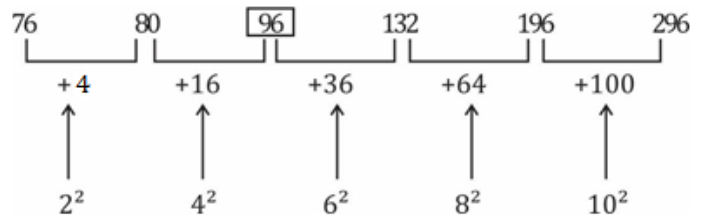**Sol.** $\frac{360\times288}{15\times18} = \frac{(?)^2}{6}$
$(?)^2 = 2304$
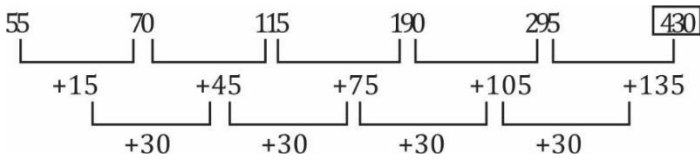$(?) \approx 48$

S356. Ans.(d)
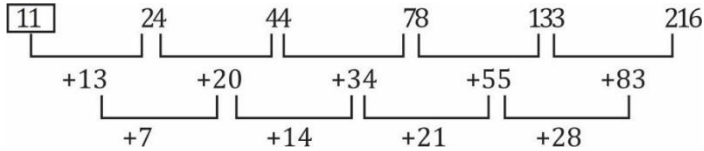**Sol.** Missing number = 96
Pattern of series –

S357. Ans.(a)
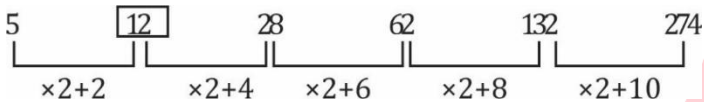**Sol.** Missing number = 430
Pattern of series –

S358. Ans.(b)
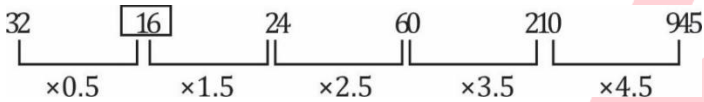**Sol.** Missing number = 11
Pattern of series –

S359. Ans.(a)
Sol. Missing number = 12
Pattern of series –

S360. Ans.(c)
Sol. Missing number = 945
Pattern of series –

S361. Ans.(a)
Sol. $\frac{11}{100} \times 250 + 31 = ? \times 2$
$? = \frac{27.5 + 31}{2} = 29.25$

S362. Ans.(c)
Sol. $\frac{16}{100} \times 225 + 45 = ?^2$
$?^2 = 36 + 45$
$? = 9$

S363. Ans.(d)
Sol. $115 - \frac{25}{100} \times 220 = \frac{?}{4}$
$? = (115 - 55) \times 4$
$? = 240$

S364. Ans.(e)
Sol. $\sqrt{\frac{40}{100} \times 500 + \frac{6.25}{100} \times 400 \div 9 + ?} = \frac{8}{3}$
$\sqrt{225} \div 9 + ? = \frac{8}{3}$
$? = \frac{8}{3} - \frac{15}{9} = 1$

S365. Ans.(d)
Sol. $56 - \frac{24}{100} \times 125 + 91 = ?$
$56 - 30 + 91 = ?$
$? = 117$

S366. Ans.(c)
Sol. Wrong number = 10
Pattern of series –
$8 \times 0.5 = 4$
$4 \times 1 = 4$
$4 \times 1.5 = \mathbf{6}$
$\mathbf{6} \times 2 = 12$
$12 \times 2.5 = 30$
$30 \times 3 = 90$

S367. Ans.(c)
Sol. Wrong number = 11
Pattern of series –
$\mathbf{12} + 2^2 = 16$
$16 + 3^2 = 25$
$25 + 4^2 = 41$
$41 + 5^2 = 66$
$66 + 6^2 = 102$
$102 + 7^2 = 151$

S368. Ans.(d)
Sol. Wrong number = 25
Pattern of series –
$21 + 2^3 = \mathbf{29}$
$\mathbf{29} - 3^2 = 20$
$20 + 2^3 = 28$
$28 - 3^2 = 19$
$19 + 2^3 = 27$
$27 - 3^2 = 18$

S369. Ans.(a)
Sol. Wrong number = 104
Pattern of series –
$20 + 8 = 28$
$28 + 12 = 40$
$40 + 16 = 56$
$56 + 20 = 76$
$76 + 24 = \mathbf{100}$
$\mathbf{100} + 28 = 128$

S370. Ans.(e)
Sol. Wrong number = 20
Pattern of series –
$1 \times 1 + 1 = 2$
$2 \times 2 + 2 = 6$
$6 \times 3 + 3 = \mathbf{21}$
$\mathbf{21} \times 4 + 4 = 88$
$88 \times 5 + 5 = 445$
$445 \times 6 + 6 = 2676$
Sol (1-5)
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 = $\frac{15000}{140000} \times 100 = 10.71\%$

S371. Ans.(b)
Sol. USA has lowest mortality rate, which is 3.14%

S372. Ans.(d)
Sol. Required % = $\frac{350000-17500}{17500} \times 100 = 1900\%$

S373. Ans.(c)
Sol. Required ratio = $\frac{\frac{15000}{140000} \times 100}{\frac{4000}{80000} \times 100} = 15 : 7$

S374. Ans.(a)
Sol. Required % = $\frac{4000+11000+17500+15000}{80000} \times 100 = 59.375\%$

S375. 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 = $100000 \times \frac{5}{100} = 5000$

S376. Ans.(e)
Sol. Price of a one kg sugar = $84 \times \frac{11}{21} = Rs\ 44$
Price of one kg of salt = $840 \times \frac{10}{21} = Rs 40$
Required difference = $(20 \times 44 - 15 \times 40)$
= 880 – 600
= $Rs. 280$

S377. Ans.(a)
Sol. Price of one kg of tea = $\frac{900}{18} = Rs 50$
Price of one kg of rice = $\frac{1500}{30} = Rs 50$
Required % = $\frac{50-50}{50} \times 100 = 0\%$

S378. Ans.(d)
Sol. Required ratio = $\frac{63 \times 12}{42 \times 25} = \frac{18}{25}$

S379. Ans.(b)
Required% = $\frac{20+15}{30+12} \times 100 = 83\frac{1}{3}\%$

S380. Ans.(b)
Sol. Required sum = (56 × 15) + (32 × 30) + (40 × 25)
= 2800 Rs.

S381. Ans.(e)
Sol. I. $x^2 + 6x + 5 = 0$
$x^2 + x + 5x + 5 = 0$
$x(x + 1) + 5(x + 1) = 0$
$(x + 1)(x + 5) = 0$
$x = -1, -5$
II. $y^2 + 6y + 8 = 0$
$y^2 + 4y + 2y + 8 = 0$
$y(y + 4) + 2(y + 4) = 0$
$(y + 2)(y + 4) = 0$
$y = -2, -4$
So, no relation.

S382. Ans.(d)
Sol. I. $x^2 - 9x + 14 = 0$
$x^2 - 7x - 2x + 14 = 0$
$x(x - 7) - 2(x - 7) = 0$
$(x - 2)(x - 7) = 0$
$x = 2, 7$
II. $y^2 - 16y + 63 = 0$
$y^2 - 9y - 7y + 63 = 0$
$y(y - 9) - 7(y - 9) = 0$
$(y - 7)(y - 9) = 0$
$y = 7, 9$
So, $x \le y$.

S383. Ans.(c)
Sol. I. $2x^2 - 17x + 35 = 0$
$2x^2 - 7x - 10x + 35 = 0$
$x(2x - 7) - 5(2x - 7) = 0$
$(2x - 7)(x - 5) = 0$
$x = \frac{7}{2}, 5$
II. $(y + 7)^3 = 2197$
$(y + 7) = 13$
$y = 6$
So, $x < y$.

S384. Ans.(d)
Sol. I. $(x + 16)^2 = 529$
$x + 16 = \pm23$
$\quad x + 16 = 23 \qquad\qquad x + 16 = -23$
$\qquad\quad x = 7 \qquad\qquad\quad x = -39$
II. $y^3 = 343$
$y = 7$
So, $x \le y$.

S385. Ans.(a)
Sol. I. $x^2 - 10x + 21 = 0$
$x^2 - 7x - 3x + 21 = 0$
$x(x - 7) - 3(x - 7) = 0$
$(x - 3)(x - 7) = 0$
$x = 3, 7$
II. $6y^2 - 23y + 20 = 0$
$6y^2 - 8y - 15y + 20 = 0$
$2y(3y - 4) - 5(3y - 4) = 0$
$(2y - 5)(3y - 4) = 0$
$y = \frac{5}{2}, \frac{4}{3}$
So, $x > y$.

S386. Ans.(a)
Sol. Missing number = 132
Pattern of series –
8 + 4 = 12
12 + 8 = 20
20 + 16 = 36
36 + 32 = 68
? = 68 + 64 = **132**

S387. Ans.(d)
Sol. Missing number = 2
Pattern of series –
$0.25 \times 2 = 0.5$
$? = 0.5 \times 4 = \mathbf{2}$
$2 \times 6 = 12$
$12 \times 8 = 96$
$96 \times 10 = 960$

S388. Ans.(b)
Sol. Missing number = 124
Pattern of series –
$\mathbf{124} + (40 \times 1) = 164$
$164 + (40 \times 3) = 284$
$284 + (40 \times 5) = 484$
$484 + (40 \times 7) = 764$
$764 + (40 \times 9) = 1124$

S389. Ans.(c)
Sol. Missing number = 734
Pattern of series –
$1600 - 8^3 = 1088$
$1088 - 7^2 = 1039$
$1039 - 6^3 = 823$
$823 - 5^2 = 798$
$798 - 4^3 = \mathbf{734}$

S390. Ans.(a)
Sol. Missing number = 124
Pattern of series –
$12^2 + 3 = 147$
$11^2 + 3 = \mathbf{124}$
$10^2 + 3 = 103$
$9^2 + 3 = 84$
$8^2 + 3 = 67$
$7^2 + 3 = 52$
Or
$147 - 23 = \mathbf{124}$
$124 - 21 = 103$
$103 - 19 = 84$
$84 - 17 = 67$
$67 - 15 = 52$

S391. Ans.(c)
Sol. Let the speed of Abhishek and Rahul be 6x and 5x respectively.
Required time $= \frac{6x \times 5}{5x} = 6 \ hours$.

S392. Ans.(b)
Sol. S.I. $= \frac{P \times R \times T}{100}$
$= \frac{10000 \times 12.5 \times 2}{100}$
= 2500 Rs.

S393. Ans.(c)
Sol. 1 day work of A $= \frac{1}{5} - \frac{1}{10} = \frac{1}{10} \ Units$.
Required time = 10 days.

S394. Ans.(b)
Sol. Let initial quantity of milk and water be 4x lit & 5x lit respectively.
A.T.Q,
$\frac{4x}{5x+25} = \frac{2}{5}$
$20x = 10x + 50$
$X = 5$
Initial quantity of mixture = 9x = 45 lit.

S395. Ans.(d)
Sol. Sum of ages of all the 20 members = 20 × 25 = 500
Sum of ages of first 18 members = 18 × 24 = 432
Sum of ages of last 2 members = 500 –432 = 68
∴ Average age $= \frac{68}{2} = 34$

S396. Ans.(c)
Sol.

A		B
25000	:	75000

∴ Ratio of investment = 1 : 3
Ratio of time = 7 : 4
So, ratio of profit = (1 × 7) : (3 × 4) = 7 : 12
Total profit $= \frac{19}{5} \times 500 = Rs. \ 1900$

S397. Ans.(b)
Sol. A.T.Q,
$2 \times \frac{22}{7} \times r = 88$
∴ r = 14 cm
So, side of square = 28 cm
Required ratio $= \frac{22}{7} \times 14 \times 14 : 28 \times 28$
= 11 : 14

S398. Ans.(d)
Sol. Required probability $= \frac{7C_2}{10C_2} \Rightarrow \frac{7}{15}$

S399. Ans.(b)
Sol. ATQ,
Tank filled by all 3 pipes together in 1 hour $= \frac{1}{5} + \frac{1}{10} - \frac{1}{15} = \frac{7}{30} units$.
Time taken by all 3 pipes together to fill the tank $= \frac{30}{7} hours$.

S400. Ans.(a)
Sol. Since, 4 person sit with each other and in a fix pattern so they are to be treated as one and there will be no arrangement for them so number of ways that all 8 can sit
= 5! × 70
= 8400

S401. Ans.(c)
Sol. Let no. of items sold by A in Feb be x
$(x + 48) = \frac{80}{100} \times (36 + 54)$
x = 72 – 48 = 24
Items sold by A in Jan = 150 – 24 = 126

S402. Ans.(a)
Sol. Let total items sold by B in March be 'x '
Item sold by C in may =64
ATQ,
$\frac{42+x}{48+64} = \frac{1}{2}$
84 +2x = 112
$x = \frac{28}{2} = 14$

S403. Ans.(b)
Sol. Average of item sold in April is equal to average of item sold in March by all sellers. So, total item sold in march is equal to total item sold in April
Total items sold by all sellers in March = 32 + 28 + 48 + 56 = 164
No. of item sold by seller B in March =164 – 48 – 24 – 74 = 18
Required percentage = $\frac{18}{36} \times 100 = 50\%$

S404. Ans.(e)
Average items sold by seller D in June
$= 64 \times \frac{150}{100} = 96$
Required difference = (96 + 32) – (48 + 32)
= 128 – 80 = 48

S405. Ans.(d)
Sol. Items sold by seller C in May
$= 81 \times \frac{1}{3} = 27$
Required ratio $= \frac{42+81}{27+36} = \frac{123}{63}$
= 41 : 21

S406. Ans.(e)
Sol. $\frac{1}{8} \times 1440 - 867 + 721 = ?$
180 – 867 + 721 = ?
? = 34

S407. Ans.(d)
Sol. 64 + 624 - ? = 296
? = 392

S408. Ans.(c)
Sol. 289 + 896 + 144 – 275 = ?
? = 1054

S409. Ans.(a)
Sol. $3 \times 98 + \frac{4}{3} \times 33 - 69 = ?$
? = 269

S410. Ans.(b)
Sol. $33 + \frac{1}{16} \times 4096 = ? + 238$
? = 33+256 – 238
? = 51

S411. Ans.(b)
Sol. White chocolates sold by company – A & C together in 2016
$= \left[6000 \times \frac{(100-70)}{100} + 7500 \times \frac{(100-40)}{100}\right]$
= 1800 + 4500 = 6300
Brown chocolates sold by company – B & D together in 2016
$= \left[2000 \times \frac{75}{100} + 5000 \times \frac{30}{100}\right]$
= 1500 + 1500 = 3000
Required % = $\frac{6300-3000}{3000} \times 100 = 110\%$

S412. Ans.(c)
Sol. Required ratio = $\frac{(6000+7500)}{(5000+4000)} = \frac{13500}{9000} = 3 : 2$

S413. Ans.(e)
Sol. Average number of white chocolates sold by company – B, C & D in 2017
$= \frac{1}{3} \times \left[4500 \times \frac{(100-60)}{100} + 6000 \times \frac{(100-50)}{100} + 4000 \times \frac{(100-25)}{100}\right]$
$= \frac{1}{3}[1800 + 3000 + 3000] = 2600$

S414. Ans.(c)
Sol. Total number of brown chocolates sold by company – A, C & D together in 2017
$= \left[5000 \times \frac{80}{100} + 6000 \times \frac{50}{100} + 4000 \times \frac{25}{100}\right]$
= 4000 + 3000 + 1000 = 8000

S415. Ans.(d)
Sol. Required % = $\frac{(6000+2000)}{(6000+4000)} \times 100$
$= \frac{8000}{10000} \times 100 = 80\%$

S416. Ans.(a)
Sol. Pattern of series –
$12 \times 4 = 48$
$48 \div 2 = 24$
$24 \times 4 = 96$
$? = 96 \div 2 = 48$
$48 \times 4 = 192$

S417. Ans.(d)
Sol. Pattern of series –
$756 + (18 \times 1) = 774$
$774 - (18 \times 2) = 738$
$738 + (18 \times 3) = 792$
$? = 792 - (18 \times 4) = 720$
$720 + (18 \times 5) = 810$

S418. Ans.(e)
Sol. Pattern of series –
$? = 1.3 + (1.7 \times 1) = 3$
$3 + (1.7 \times 2) = 6.4$
$6.4 + (1.7 \times 3) = 11.5$
$11.5 + (1.7 \times 4) = 18.3$
$18.3 + (1.7 \times 5) = 26.8$

S419. Ans.(c)
Sol. Pattern of series –
$4 + (16^2 + 2) = 262$
$262 + (14^2 + 2) = 460$
$460 + (12^2 + 2) = 606$
$606 + (10^2 + 2) = 708$
$? = 708 + (8^2 + 2) = 774$

S420. Ans.(c)
Sol. Pattern of series –
$120 + 88 = 208$
$208 + 78 = 286$
$? = 286 + 68 = 354$
$354 + 58 = 412$
$412 + 48 = 460$

S421. Ans.(a)
Sol. I. $6x^2 + 5x + 1 = 0$
6x²+3x +2x +1=0
3x(2x+1)+1(2x+1)=0
(3x+1)(2x+1)=0
x = $-\frac{1}{3}$,$-\frac{1}{2}$
II. $2y^2 + 5y + 3 = 0$
2y²+2y +3y +3=0
2y(y+1) +3(y+1)=0
(2y+3)(y+1)=0
y= $-\frac{3}{2}$,-1
So, x > y

S422. Ans.(d)
Sol. x²=4
x = ± 2
y⁵ = 32
y =2
So, $x \leq y$

S423. Ans.(c)
Sol. I. $x^2 - 11x + 30 = 0$
x²-5x-6x+30=0
x(x-5)-6(x-5)=0
(x-5) (x-6)=0
x= 5, 6
II. $y^2 - 15y + 56 = 0$
y²-7y-8y+56 =0
y(y-7)-8(y-7)=0
(y-7) (y-8)=0
y = 7, 8
So, x < y

S424. Ans.(e)
Sol. I. $3x^2 - 14x + 15 = 0$
3x²-9x-5x+15=0
3x(x-3)-5(x-3)=0
(x-3)(3x-5)=0
x= 3, $\frac{5}{3}$

II. $5y^2 - 14y + 8 = 0$
5y²-10y-4y+8 =0
5y(y-2)-4(y-2)=0
(y-2)(5y-4)=0
y = 2, $\frac{4}{5}$
So, No relation

S425. Ans.(b)
Sol. I. $x^2 + 13x + 42 = 0$
x²+6x+7x+42=0
x(x+6)+7(x+6)=0
(x+6)(x+7)=0
x= -6, -7
II. $y^2 + 16y + 63 = 0$
y²+9y+7y+63 =0
y(y+9)+7(y+9)=0
(y+9)(y+7)=0
y = -7,-9
So, x $\geq$ y

S426. Ans.(a)
Sol. I:
$4x^2 - 20x + 25 = 0$
$4x^2 - 10x - 10x + 25 = 0$
$2x(2x - 5) - 5(2x - 5) = 0$
$(2x - 5)(2x - 5) = 0$
$x = \frac{5}{2}, \frac{5}{2}$
II:
$5y^2 - 6y - 8 = 0$
$5y^2 - 10y + 4y - 8 = 0$
$5y(y - 2) + 4(y - 2) = 0$
$(5y + 4)(y - 2) = 0$
$y = 2, -\frac{4}{5}$
So, $x > y$

S427. Ans.(b)
Sol. I:
$x^2 - 2x - 15 = 0$
$x^2 - 5x + 3x - 15 = 0$
$x(x - 5) + 3(x - 5) = 0$
$(x + 3) (x - 5) = 0$
$x = -3, 5$
II:
$y^2 - 15y + 56 = 0$
$y^2 - 8y - 7y + 56 = 0$
$y(y - 8) - 7(y - 8) = 0$
$(y - 7)(y - 8) = 0$
$y = 7, 8$
So, $x < y$

S428. Ans.(e)
Sol. I:
$10x^2 + 19x + 7 = 0$
$10x^2 + 14x + 5x + 7 = 0$
$2x(5x + 7) + 1(5x + 7) = 0$
$(2x + 1)(5x + 7) = 0$
$x = -\frac{1}{2}, -\frac{7}{5}$
II:
$5y^2 + 16y + 12 = 0$
$5y^2 + 6y + 10y + 12 = 0$
$y(5y + 6) + 2(5y + 6) = 0$
$(y + 2)(5y + 6) = 0$
$y = -2, -\frac{6}{5}$
So, no relation can be established.

S429. Ans.(a)
Sol. I:
$x^2 - 20x + 75 = 0$
$x^2 - 15x - 5x + 75 = 0$
$x(x - 15) - 5(x - 15) = 0$
$(x - 5)(x - 15) = 0$
$x = 5, 15$
II:
$y^2 + 19y + 84 = 0$
$y^2 + 12y + 7y + 84 = 0$
$y(y + 12) + 7(y + 12) = 0$
$(y + 12)(y + 7) = 0$
$y = -12, -7$
So, $x > y$

S430. Ans.(e)
Sol. I:
$x^2 - 9x - 22 = 0$
$x^2 - 11x + 2x - 22 = 0$
$x(x - 11) + 2(2x - 11) = 0$
$(x + 2)(x - 11) = 0$
$x = -2, 11$
II:
$y^2 - 17y + 66 = 0$
$y^2 - 11y - 6y + 66 = 0$
$y(y - 11) - 6(y - 11) = 0$
$(y - 11)(y - 6) = 0$
$y = 6, 11$
So, no relation can be established.

S431. Ans.(b)
Sol. $\sqrt{841} + \sqrt{1296} - \sqrt{1024} = \sqrt{?}$
29+36 -32=$\sqrt{?}$
$\sqrt{?}$=33
?=$(33)^2$
=1089

S432. Ans.(d)
Sol. 14400÷ 36+15600 ÷ 12 + 450 = 1800 + ?
400+1300+450=1800+ ?
2150=1800 +?
?=2150-1800
=350

S433. Ans.(a)
Sol. 7450 +5880 − 6890 = 9000 - ?
?=9000 -6440
=2560

S434. Ans.(c)
Sol. 32× 25 + 44 × 18 + 348 ÷ 6 = ?
?=800+792+58
=1650

S435. Ans.(c)
Sol. $\sqrt{1225} \times 28 + 203 \times 7 = (?)^2$
$(?)^2$= 35× 28 + 203 × 7
=980+1421
=2401
? =$\sqrt{2401}$
= 49

S436. Ans.(b)
Sol. required average = $\frac{2000\times2+1500\times2+800+900}{2} = Rs.\,4350$

S437. Ans.(d)
Sol. let cost price of purse be Rs 100x
MP = $\frac{130}{100} \times 100x = Rs.\,130x$
SP = $\frac{80}{100} \times 130x = Rs.\,104x$
CP (3 purses) = $3 \times 100x = Rs.\,300x$
SP (3 purses) = $3 \times 104x = Rs.\,312x$
But shopkeeper offered 10% extra discount
Actual SP (3 purses) = $\frac{90}{100} \times 312x = Rs.\,280.8x$
Loss % = $\frac{300x - 280.8x}{300x} \times 100 = 6.4\%$

S438. Ans.(a)
Sol. required probability = $\frac{^{26}C_2}{^{50}C_2} = \frac{26\times25}{50\times49} = \frac{13}{49}$

S439. Ans.(c)
Sol. Probability of 2 balls selected are green = $\frac{^{x}C_2}{^{5+x}C_2} = \frac{2}{9}$
$\frac{\frac{x!}{2!(x-2)!}}{\frac{(x+5)!}{2!(x+3)!}} = \frac{2}{9}$
$\frac{x(x-1)}{(x+5)(x+4)} = \frac{2}{9}$
$9x^2 - 9x = 2x^2 + 18x + 40$
$7x^2 - 27x - 40 = 0$
$7x^2 - 35x + 8x - 40 = 0$
$7x(x - 5) + 8(x - 5) = 0$
$x = \frac{-8}{7}, 5$
As number of balls can't be in negative. So, x=5

S440. Ans.(c)
Sol. distance covered is directly proportional to speed
When they start at same time, they will cover distance in ratio of their speeds
Let distance covered by Kappu & Chandu be 5x km & 6x km respectively
Required answer = $\frac{6x-5x}{6x+5x} \times 110 = 10\,kms$

S441. Ans.(b)

Sol. Simple interest = $\frac{2500 \times 225 \times 8}{100 \times 10}$

= Rs 4500

Simple interest becomes = $\frac{4500}{2500}$

= 1.8 times

S442. Ans.(b)

Sol. Let father and son present age are 'F' and 'S' yrs. respectively.

Atq,

$(F - 10) = 12(S - 10)$

F – 10 = 12S – 120   ...(i)

And,

F = 7S   ...(ii)

Put (ii) in (i)

7S – 10 = 12S – 120

5S = 110

S = 22 yrs

S443. Ans.(d)

Sol. let total time of investment be 15x months

Ratio of profit share of A to B

= $2000 \times 15x \times \frac{2}{3} : 5000 \times 15x \times \frac{2}{5}$

= 2: 3

Required percentage = $\frac{3-2}{3} \times 100 = 33.33\%$

S444. Ans.(a)

Sol. let population of city initially = 100a

ATQ

$100a \times \frac{115}{100} \times \frac{2400}{2300} = 24024$

$120a = 24024$

So, 100a= $\frac{24024}{120} \times 100 = 20020$

S445. Ans.(d)

Sol. Required number of results = 4 × 36 =144

S446. Ans.(e)

Sol. let time of investment of A and B are $\frac{1}{2}a$ and $\frac{2}{3}a$ years respectively

Let profit share of A and B are Rs. 6b and 5b respectively

ATQ

$\frac{5000 \times \frac{1}{2}a}{X \times \frac{2}{3}a} = \frac{6b}{5b}$

$X = Rs. 3125$

S447. Ans.(c)

Sol. total possible outcomes = 6 × 4 = 24

Required no. of outcome (HH1) = 1

Required probability = $\frac{1}{24}$

S448. Ans.(a)

Sol. ratio of sides shows that it's a right-angle triangle

Let sides of triangle are 5a, 13a and 12a m respectively

ATQ

$5a + 12a + 13a = 600$

$30a = 600$

$a = 20$

Area of triangle = $\frac{1}{2} \times 5 \times 20 \times 12 \times 20 = 12000 \, m^2$

S449. Ans.(b)

Sol. rate of interest = $\frac{264 \times 100 \times 5}{11 \times 1200} = 10\%$

Required amount = $1200 \left[1 + \frac{10}{100}\right]^3 = Rs. 1597.2$

S450. Ans.(d)

Sol. let C.P. of article = Rs.100x

Then, M.R.P. of article = $100x \times \frac{120}{100} = Rs. 120x$

S.P. of article = $120x \times \frac{95}{100} = Rs. 114x$

ATQ

$114x - 100x = 28$

$14x = 28$

x = 2

So, required difference = $(120x - 100x) = 20x$ =Rs.40

S451. Ans.(b)

Sol. Total admission in school 'C' in 2013

= $\frac{4}{3} \times (210 - 60)$

= $\frac{4}{3} \times 150$

= 200

Required average = $\frac{200+240}{2}$

= $\frac{440}{2}$

= 220

S452. Ans.(a)

Sol. Boys who take admission in school A in 2012= $\frac{9}{17} \times 170 = 90$

Girls who take admission in school A in 2012= $\frac{8}{17} \times 170 = 80$

Boys who take admission in school A in 2015

= $90 + 11\frac{1}{9}\% \, of \, 90 = 90 + 10 = 100$

Girls who take admission in school A in 2015 = 200 – 100 = 100

Required sum = 100 + 80 =180

S453. Ans.(e)

Sol. Total number of admission taken place in 2017

= $\frac{160}{100} \times (70 + 150)$

= $\frac{8}{5} \times 220$

= 352

S454. Ans.(b)
Sol. Total admission in year 2014 = 140 + 160 = 300
Total admission in year 2016 = 70 + 150 = 220
Required% = $\frac{300-220}{220} \times 100$
= $\frac{80}{220} \times 100$
= $36\frac{4}{11}$%

S455. Ans.(d)
Sol. Required ratio = $\frac{60+210}{70+150}$
= $\frac{270}{220}$
= 27 : 22

S456. Ans.(b)
Sol. $\frac{8400 \times 15}{375} + \sqrt{16} \approx ?$
$336 + 4 \approx ?$
$340 \approx ?$

S457. Ans.(c)
Sol. $\sqrt{2500} + \frac{15}{100} \times 14 \approx ?$
$50 + 2.1 \approx ?$
$52 \approx ?$

S458. Ans.(c)
Sol. $? \approx 25\% \times 640 + 45\%$ of 360
$? \approx 160 + 162 \approx 322$

S459. Ans.(d)
Sol. 33.33% of $510 \approx ?$
$\frac{510}{3} \approx ?$
$? \approx 170$

S460. Ans.(b)
Sol. 75% of $1344 + 12.5\%$ of $128 \approx ?$
$\frac{3}{4} \times 1344 + \frac{1}{8} \times 128 \approx ?$
$1008 + 16 \approx ?$
$1024 \approx ?$

S461. Ans.(c)
Sol. $4900 \times \frac{1}{28} \times 444 \times \frac{1}{12} - 6450 = (?)^2$
$\Rightarrow 6475 - 6450 = (?)^2$
$\Rightarrow \sqrt{25} = ?$
$\Rightarrow ? = 5$

S462. Ans.(a)
Sol. $\frac{38}{100} \times 250 - \frac{85}{100} \times 560 + 13 \times ? = 61$
$\Rightarrow 95 - 476 + 13 \times ? = 61$
$\Rightarrow 13 \times ? = 61 + 381$
$\Rightarrow ? = 34$

S463. Ans.(e)
Sol. $\frac{19}{9} \times \frac{21}{19} \times \frac{3}{7} - \frac{1}{2} = ? - \frac{3}{2}$
$1 - \frac{1}{2} = ? - \frac{3}{2}$
$? = 2$

S464. Ans.(b)
Sol. $12\sqrt{?} - \frac{26}{100} \times 1650 + 19 = 13 \times 34$
$12\sqrt{?} - 429 + 19 = 442$
$12\sqrt{?} = 871 - 19$
$\sqrt{?} = \frac{852}{12} = 71$
$? = 5041$

S465. Ans.(a)
Sol. $575 \times \frac{24}{8} - 125 = (?)^2$
$1725 - 125 = (?)^2$
$1600 = (?)^2$
$? = 40$

S466. Ans.(a)
Sol. $\frac{25 \times 1.8}{22 + 0.5} \times 4 = ?$
$\frac{45}{22.5} \times 4 = ?$
$8 = ?$

S467. Ans.(c)
Sol. $\frac{80 \times 125}{100} + \frac{350}{100} \times 18 + 6 = ?^2$
$100 + 63 + 6 = ?^2$
$\sqrt{169} = ?$
$? = 13$

S468. Ans.(e)
Sol. $\sqrt{\frac{24}{100} \times 225 + 10} = ? + 11$
$8 = ? + 11$
$? = -3$

S469. Ans.(b)
Sol. $\frac{100 + \frac{64 \times 64}{32}}{121 + 81 - 145} = ?$
$? = \frac{228}{57}$
$? = 4$

S470. Ans.(d)
Sol. $\frac{60}{7} \times \frac{98}{6} - 2 \times ? = 324 \times \frac{1}{9} \times \frac{1}{2}$
$2 \times ? = 140 - 18$
$? = \frac{122}{2}$
$? = 61$

S471. Ans.(e)
Sol. I. $x^2 - 25x + 100 = 0$
x² -20x -5x +100=0
x(x-20)-5(x-20)=0
(x-20) (x-5)=0
x =20,5
II. $y^2 - 27y + 110 = 0$
y²-22y -5y +110=0
y(y-22) -5(y-22)=0
(y-22)(y-5)=0
y=22,5
So, no relation can be established between x and y.

S472. Ans.(d)
Sol. I. $x^2 = 289$
x =$\sqrt{289}$
x =$17, -17$
II. $y = \sqrt{289}$
y =17
So, x ≤ y

S473. Ans.(d)
Sol. I. $x^2 + 12x + 32 = 0$
x²+8x+4x+32=0
x(x+8)+4(x+8)=0
(x+8)(x+4)=0
x= $-8, -4$
II. $y^2 + 7y + 12 = 0$
y²+ 3y+4y+12 =0
y(y+3)+4(y+3)=0
(y+4)(y+3)=0
y = $-4, -3$
So, $y \geq x$

S474. Ans.(a)
Sol. I. $3x^2 + 16x + 20 = 0$
3x² +6x +10x +20 =0
3x(x+2) +10(x+2)=0
(3x+10)(x+2)=0
x= $-2, -\frac{10}{3}$
II. $y^2 + 14y + 48 = 0$
y² +8y +6y +48 =0
y(y +8)+6(y+8)=0
(y+6)(y+8)=0
y =$-6, -8$
So, x > y

S475. Ans.(e)
Sol. I. $x^2 + x - 72 = 0$
x²+ 9x-8x-72=0
x(x+9)-8(x+9)=0
(x+9)(x-8)=0
x = $8, -9$
II. $y^2 + 13y + 42 = 0$
y² +6y+7y+42 =0
y(y+6)+7(y+6)=0
(y+6)(y+7)=0
y = -6,-7
So, no relation can be established between x and y.

S476. Ans.(c)
Sol. Given distance between P and Q is 900 km.
speed of car B = $\frac{900}{(X+4)}$ km/h.
Speed of car A = $\frac{900}{X}$ km/h.
ATQ,
Car B started from P at 6:00am
and car A started from P at 8:00 am

They both met at 10:30 am i.e.
$\frac{900}{(X+4)} \times \frac{9}{2} = \frac{900}{X} \times \frac{5}{2}$
$\Rightarrow$ 9X = 5 (X+4)
$\Rightarrow$ 4X = 20
X = 5 hours
So, speed of car B = $\frac{900}{(5+4)}$ =100 kmph.
Required distance= 100 $\times \frac{9}{2}$ = 450 km

S477. Ans.(b)
Sol. Now, let speed of the boat in still water and the speed of the stream be a km/hr. & b km/hr. respectively.
So, upstream speed of boat = $(a - b)$ km/hr.
ATQ,
$a - b = 15$
Required time= $\frac{120}{(a-b)}$
= $\frac{120}{15}$
=8 hr.

S478. Ans.(c)
Sol. Let the distance between Amit's home and his office is D km.
ATQ, $\frac{D}{30} + \frac{D}{X} = \frac{2D}{33}$
X = 36.67 km/hr

S479. Ans.(a)
Sol. Time taken by X = 8 hr.
Time taken by Y = 7 hr.

	Time	Speed	LCM
X	8 hr	7	
Y	7 hr	8	56 (Total distance)

∴ time taken to cross each other
= $\frac{56}{15} = 3\frac{11}{15}$ hr.
= 3 hr 44 min.
∴ Required time to cross = 11 : 44 am

S480. Ans.(b)
Sol. Let initial speed of the car = s kmph.
And initial time taken by the car to cover the distance = t hours.
So, Total Distance = $s \times t$ km.
ATQ,
$(s - 9)(t + 2) = (s + 5)\left(t - \frac{48}{60}\right)$
s-5t = 5 .....(i)
and,
st = (s-9) (t+2)
2s-9t = 18 ....(ii)
From eq(i) & eq(ii)
t=8 hours
and s= 45 kmph
so, required distance = $45 \times 8 = 360\ km$.

S481. Ans.(e)
Sol. Let total no. Of students, be 100.
∴ Required Ratio = $\frac{25+20}{15+12} = \frac{45}{27}$ = 5:3.

S482. Ans.(a)
Sol. ATQ,
8% → 512
1% → 64
25% → 64 ×25 = 1600
Number of students studying science = 1600.

S483. Ans.(b)
Sol. Required % = $\frac{(20-15)}{15} \times 100$
= $\frac{5}{15}$×100 = $33\frac{1}{3}$ %

S484. Ans.(d)
Sol. ATQ,
5% → 20
1% → 4
100% → 400
∴ Required average
= $\frac{15\%\times400+12\%\times400+18\%\times400}{3}$
= $\frac{60+48+72}{3} = \frac{180}{3} = 60$

S485. Ans.(c)
Sol. Required number of students = $\frac{15}{100} \times 1800 + \frac{12}{100} \times 1800$
= 270 + 216
= 486

S486. Ans.(d)
Sol. $109 + 1^2 + 1 = 111$
$111 + 2^2 + 2 = 117$
$117 + 3^2 + 3 = 129$
$129 + 4^2 + 4 = 149$
$149 + 5^2 + 5 = \mathbf{179}$

S487. Ans.(a)
Sol. 15   27   47   77   119   175
    +12   +20   +30   +42   +56
       +8   +10   +12   +14

S488. Ans.(c)
Sol. $27 + 2^2 = 31$
$31 + 4^2 = 47$
$47 + 6^2 = 83$
$83 + 8^2 = 147$
$147 + 10^2 = 247$

S489. Ans.(b)
Sol. $5 \times 1 + 1 = 6$
$6\times 2 + 2 = 14$
$14 \times 3 + 3 = 45$
$45\times 4 + 4 = 184$
$184\times 5 + 5 = \mathbf{925}$

S490. Ans.(b)
Sol. 150   162   180   190   210   **218**
      +12   +18   +10   +20   +8
        +6   −8   +10   −12

S491. Ans.(a)
Sol. I:
$2x^2 + x - 10 = 0$
$2x^2 + 5x - 4x - 10 = 0$
$x(2x + 5) - 2(2x + 5) = 0$
$(2x + 5)(x - 2) = 0$
$x = -2.5, 2$
II:
$y^2 + 6y + 9 = 0$
$y^2 + 3y + 3y + 9 = 0$
$y(y + 3) + 3(y + 3) = 0$
$(y + 3)(y + 3) = 0$
$y = -3, -3$
So, $x > y$

S492. Ans.(b)
Sol. I:
$2x^2 - 8x + 8 = 0$
$2x^2 - 4x - 4x + 8 = 0$
$2x(x - 2) - 4(x - 2) = 0$
$(2x - 4)(x - 2) = 0$
$x = 2, 2$
II:
$y^2 - 10y + 24 = 0$
$y^2 - 6y - 4y + 24 = 0$
$y(y - 6) - 4(y - 6) = 0$
$(y - 6)(y - 4) = 0$
$y = 6, 4$
So, $x < y$

S493. Ans.(e)
Sol. I:
$2x^2 + 7x - 4 = 0$
$2x^2 + 8x - 1x - 4 = 0$
$2x(x + 4) - 1(x + 4) = 0$
$(x + 4)(2x - 1) = 0$
$x = -4, \frac{1}{2}$
II:
$3y^2 + 11y + 10 = 0$
$3y^2 + 6y + 5y + 10 = 0$
$3y(y + 2) + 5(y + 2) = 0$
$(3y + 5)(y + 2) = 0$
$y = -\frac{5}{3}, -2$
So, no relation can be established.

S494. Ans.(d)
Sol. I:
$x^2 - 2x - 48 = 0$
$x^2 - 8x + 6x - 48 = 0$
$x(x - 8) + 6(x - 8) = 0$
$(x - 8)(x + 6) = 0$
$x = 8, -6$
II:
$y^2 - 16y + 64 = 0$
$y^2 - 8y - 8y + 64 = 0$
$y(y - 8) - 8(y - 8) = 0$
$(y - 8)(y - 8) = 0$
$y = 8, 8$
So, $x \leq y$

S495. Ans.(c)
Sol. I:
$4x^2 + 15x + 9 = 0$
$4x^2 + 12x + 3x + 9 = 0$
$4x(x + 3) + 3(x + 3) = 0$
$(4x + 3)(x + 3) = 0$
$x = -\frac{3}{4}, -3$
II:
$y^2 + 10y + 21 = 0$
$y^2 + 7y + 3y + 21 = 0$
$y(y + 7) + 3(y + 7) = 0$
$(y + 7)(y + 3) = 0$
$y = -7, -3$
So, $x \geq y$

S496. Ans.(e)
Sol. I:
$4x^2 - 52x + 25 = 0$
$4x^2 - 50x - 2x + 25 = 0$
$2x(2x - 25) - 1(2x - 25) = 0$
$(2x - 1)(2x - 25) = 0$
$x = \frac{1}{2}, \frac{25}{2}$
II:
$5y^2 - 2y - 3 = 0$
$5y^2 - 5y + 3y - 3 = 0$
$5y(y - 1) + 3(y - 1) = 0$
$(5y + 3)(y - 1) = 0$
$y = 1, -\frac{3}{5}$
So, no relation can be established.

S497. Ans.(d)
Sol. I:
$3x^2 - 12x - 15 = 0$
$3x^2 - 15x + 3x - 15 = 0$
$3x(x - 5) + 3(x - 5) = 0$
$(3x + 3)(x - 5) = 0$
$x = -1, 5$

II:
$y^2 - 13y + 40 = 0$
$y^2 - 8y - 5y + 40 = 0$
$y(y - 8) - 5(y - 8) = 0$
$(y - 5)(y - 8) = 0$
$y = 5, 8$
So, $x \leq y$

S498. Ans.(a)
Sol. I:
$10x^2 + 17x + 6 = 0$
$10x^2 + 12x + 5x + 6 = 0$
$2x(5x + 6) + 1(5x + 6) = 0$
$(2x + 1)(5x + 6) = 0$
$x = -\frac{1}{2}, -\frac{6}{5}$
II:
$5y^2 + 22y + 24 = 0$
$5y^2 + 12y + 10y + 24 = 0$
$y(5y + 12) + 2(5y + 12) = 0$
$(y + 2)(5y + 12) = 0$
$y = -2, -\frac{12}{5}$
So, $x > y$

S499. Ans.(a)
Sol. I:
$3x^2 - 34x + 75 = 0$
$3x^2 - 9x - 25x + 75 = 0$
$3x(x - 3) - 25(x - 3) = 0$
$(x - 3)(3x - 25) = 0$
$x = 3, \frac{25}{3}$
II:
$2y^2 + 41y + 90 = 0$
$2y^2 + 36y + 5y + 90 = 0$
$2y(y + 18) + 5(y + 18) = 0$
$(y + 18)(2y + 5) = 0$
$y = -18, -\frac{5}{2}$
So, $x > y$

S500. Ans.(b)
Sol. I:
$2x^2 - 7x - 22 = 0$
$2x^2 - 11x + 4x - 22 = 0$
$x(2x - 11) + 2(2x - 11) = 0$
$(x + 2)(2x - 11) = 0$
$x = -2, \frac{11}{2}$
II:
$y^2 - 15y + 54 = 0$
$y^2 - 9y - 6y + 54 = 0$
$y(y - 9) - 6(y - 9) = 0$
$(y - 6)(y - 9) = 0$
$y = 6, 9$
$y > x$

S501. Ans.(b)
Sol. $135.20 \times 5.15 + 7799.89 \div 26.03 + 124.8 = ?$
$? = 135 \times 5 + \frac{7800}{26} + 125$
$? = 675 + 300 + 125$
$? = 1100$

S502. Ans.(d)
Sol. $115.05 \times 6.98 + 8749 \div 13.98 - 21.97 \times 8 = ?$
$? = 115 \times 7 + \frac{8750}{14} - 22 \times 8$
$? = 805 + 625 - 176$
$? = 1254$

S503. Ans.(a)
Sol. $(25.98)^2 + (33.97)^2 + \sqrt{1440} - \sqrt{3136} = ?$
$? = (26)^2 + (34)^2 + \sqrt{1444} - \sqrt{3136}$
$? = 676 + 1156 + 38 - 56$
$? = 1814$

S504. Ans.(e)
Sol. $12449.5 + 7649.7 - 9874.8 + 8274.9 = ?$
$? = 12450 + 7650 - 9875 + 8275$
$? = 18500$

S505. Ans.(b)
Sol. $(15.98)^3 + 9320 \div 7.99 - 7304.8 \div 4.99 = ?$
$? = (16)^3 + 9320 \div 8 - 7305 \div 5$
$? = 4096 + 1165 - 1461$
$? = 3800$

S506. Ans.(a)
Sol. $1999.92 \div 49.87 \times 3.01 + 5.13 = (?)^3$
$2000 \div 50 \times 3 + 5 = (?)^3$
$(?)^3 = 125$
$? = 5$

S507. Ans.(c)
Sol. 59.9% of $319.94 + 9.99\%$ of $1600.01 = -177 + (?)^2$
$\frac{6}{10} \times 320 + \frac{1}{10} \times 1600 = -177 + (?)^2$
$(?)^2 = 529$
$? = 23$

S508. Ans.(d)
Sol. $1.101 + 11.01 + \frac{101.01}{1.01} = ?$
$\Rightarrow ? = 1 + 11 + 101$
$? = 113$

S509. Ans.(a)
Sol. $\sqrt{2024} \times \sqrt{9.21} - 35.01 = ? \times 10.1$
$45 \times 3 - 35 = ? \times 10$
$? = \frac{100}{10}$
$? = 10$

S510. Ans.(e)
Sol. $1390.98 \div 26.04 \times 1.99 = ? - 16^2$
$\frac{1391}{26} \times 2 + 256 = ?$
$? = 363$

S511. Ans.(a)
Sol. Total bike sold by all shopkeeper
$= \frac{1250}{25} \times 100 = 5000$
Total Bajaj bike sold by A & E together
$= 5000 \times \frac{18}{100} \times \frac{3}{5} + 1250 \times \frac{2}{5}$
$= 540 + 500 = 1040$
Total Hero bike sold by A & B together
$= 5000 \times \frac{18}{100} \times \frac{2}{5} + 5000 \times \frac{22}{100} \times \frac{3}{10}$
$= 360 + 330 = 690$
Required difference = 1040 – 690 = 350

S512. Ans.(c)
Sol. Required percentage $= \frac{5000 \times \frac{22}{100} \times \frac{7}{10} - 5000 \times \frac{15}{100} \times \frac{7}{10}}{5000 \times \frac{22}{100} \times \frac{7}{10}} \times 100$
$= \frac{770 - 525}{770} \times 100 = \frac{24500}{770} = \frac{350}{11}$
$= 31\frac{9}{11}\%$

S513. Ans.(c)
Sol. Total bike sold by C in 2017
$= \frac{1250}{25} \times 20 \times \frac{120}{100} = 1200$
Total bike sold by D in 2017
$= \frac{1250}{25} \times 15 \times \frac{140}{100} = 1050$
Required percentage $= \frac{1050}{1200} \times 100 = 87.5\%$

S514. Ans.(b)
Sol. Required ratio $= \frac{18 \times \frac{3}{5}}{20 \times \frac{9}{14}}$
$= 21 : 25$

S515. Ans.(a)
Sol. Required total
$= \frac{1250}{25} \times 22 \times \frac{7}{10} + \frac{1250}{25} \times 15 \times \frac{7}{10} + 1250 \times \frac{3}{5}$
$= 770 + 525 + 750 = 2045$

S516. Ans.(c)
Sol. Required difference $= 18000 \times \frac{15}{100} \times \frac{1}{9}$
$= 300$

S517. Ans.(a)
Sol. Required average $= \frac{\frac{15000 \times 75}{100} + \frac{17800 \times 82}{100}}{2}$
$= \frac{11250 + 14596}{2} = 12,923$

S518. Ans.(d)
Sol. Required % $= \frac{(77 - 23) \times \frac{15400}{100}}{16800} \times 100$
$= \frac{8316}{16800} \times 100 = \frac{99}{2}\% = 49\frac{1}{2}\%$

S519. Ans.(b)

Sol. Number of Indian visitors on Monday

$= 15000 \times \frac{75}{100} = 11,250$

Number of Indian male visitors on Monday

$= 11,250 - 15,000 \times \frac{32}{100} = 6450$

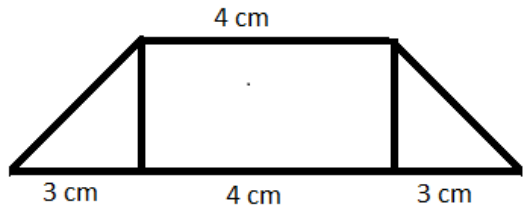Required ratio $= \frac{6450}{15000 \times \frac{25}{100}} = 43 : 25$

S520. Ans.(e)

Sol. Required difference $= 18000 - \left(\frac{17800 \times 18}{100} + \frac{15400 \times 23}{100} \right)$

$= 18000 - (3204 + 3542)$

$= 11,254$

S521. Ans.(d)

Sol. side of square $= \sqrt{25} = 5\ cm$

Since non-parallel sides are equal,

Height of trapezium $= \sqrt{5^2 - 3^2} = 4\ cm$

Area of trapezium $= \frac{1}{2}(base1 + base2) \times height$

$\frac{1}{2} \times (4 + 10) \times 4 = 28\ cm^2$

S522. Ans.(c)

Sol. let rate of interest be R% & principal be Rs. P

$SI = 2P - P = Rs.\,P$

$P = \frac{P \times R \times 5}{100}$

$R = 20\%$

To become 12 times, SI $= 12P - P = Rs.\,11P$

$11P = \frac{P \times 20 \times T}{100}$ where T is time period in years

$T = 55\ years$

S523. Ans.(b)

Sol.

	Time (days)	Work (units)	Efficiency (units/day)
A + B	12		25
A	25	300	12
B			25 - 12 = 13

Half work done by A & half by B

Required time $= \frac{150}{12} + \frac{150}{13} = \frac{625}{26} = 24\frac{1}{26}\ days$

S524. Ans.(b)

Sol. let marks scored by Ravi = x

Marks of Ronit $= \frac{90}{100}x = 0.9x$

Marks of Raj $= \frac{130}{100} \times 0.9x = 1.17x$

Marks of Jai $= \frac{120}{100} \times 1.17x = 1.404x$

Required % $= \frac{1.404x}{x} \times 100 = 140.4\%$

S525. Ans.(e)

Sol. in mixture I juice : water $= \frac{120}{100} \times 100 : 100 = 6 : 5$

Mixtures are mixed in ratio 3 : 4

In final mixture,

$\frac{juice}{water} = \frac{6 \times 3 + 5 \times 4}{5 \times 3 + 6 \times 4} = 38 : 39$

S526. Ans.(a)

Sol. If x litres of water is added to the mixture, the ratio of milk and water will be 14:5

$\frac{14}{5} = \frac{\frac{7}{8} \times 64}{\frac{1}{8} \times 64 + x}$

$\frac{14}{5} = \frac{56}{x + 8}$

14x+112=280

14x=168

x =12 litres

S527. Ans.(c)

Sol. Let son's present age= x years

Then, person's present age=(x+16) year

After 2 yrs, (x+16)+2=2(x+2)

x +18=2x +4

x=14 years

Hence, son's age after 8 years =14+8= 22 yrs

S528. Ans.(a)

Sol. Overall rate for 2 yrs at the rate of 10% compounded yearly =10+10+$\frac{10 \times 10}{100}$=21%

According to the question,

21%=672

100%=$\frac{672}{21} \times 100$= 3200 rs

Simple interest=$\frac{3200 \times 14 \times 4}{100}$

=Rs 1792

S529. Ans.(d)

Sol. Required number of ways= 7_{P_4}=7× 6 ×5 × 4=840 ways

S530. Ans.(b)

Sol. Let 2 digit number be 10a + b= x

Now, reversing of the 2 digit number becomes 10b+a

According to the question,

10b+a= 10a+b+63

9b- 9a =63

b-a=7 .... (1)

a+b=11 ..... (Given)   (2)

Solving equation (1) &(2), we get a=2, b=9

Original number=10a+b =29

Required number=x+15

=44

S531. Ans.(c)
Sol. Total cars sold by showroom Q in February and March together= 270 +380
= 650
Total cars sold by showroom R in February and March together =390 +410
=800
Required percentage = $\frac{650}{800} \times 100$
=81.25%

S532. Ans.(e)
Sol. Average numbers of cars sold by the showroom P in all months together = $\frac{380+440+530+290+440}{5}$
=416
Average number of cars sold by the showroom Q in all the months together
= $\frac{460+270+380+340+510}{5}$
=392
Required difference = 416 – 392
=24

S533. Ans.(b)
Sol. Average number of cars sold by all the 3 showrooms in March month = $\frac{530+380+410}{3}$
=440

S534. Ans.(d)
Sol. Total numbers of cars sold by showroom P in March, April and May together
= 530+290+ 440
=1260
Total number of cars sold by showroom R in January, February and march together
= 320+390+410
=1120
Required ratio = $\frac{1260}{1120}$ = 9 : 8

S535. Ans.(a)
Sol. Total cars sold by all the 3 showrooms together in June
= $530 \times \frac{120}{100} + 380 \times \frac{125}{100} + 410 \times \frac{130}{100}$
= 636+ 475+533
= 1644

S536. Ans.(d)
Sol. $30 \div 1 = 30$
$30 \times 2 = 60$
$60 \div 3 = 20$
$20 \times 4 = 80$
$80 \div 5 = 16$
$16 \times 6 = \mathbf{96}$

S537. Ans.(a)
Sol. $14 + 5 = 19$
$19 - 7 = 12$
$12 + 9 = 21$
$21 - 11 = 10$
$10 + 13 = 23$
$23 - 15 = \mathbf{8}$

S538. Ans.(d)
Sol. $\mathbf{101} + 9 = 110$
$110 + 18 = 128$
$128 + 27 = 155$
$155 + 36 = 191$
$191 + 45 = 236$
$236 + 54 = 290$

S539. Ans.(c)
Sol. $2 \times 1 = 2$
$2 \times 1.5 = 3$
$3 \times 2 = 6$
$6 \times 2.5 = 15$
$15 \times 3 = 45$
$45 \times 3.5 = 157.5$

S540. Ans.(e)
Sol. 117   134   159   193   237   292   **359**
       +17   +25   +34   +44   +55   +67
           +8   +9   +10   +11   +12

S541. Ans.(b)
Sol. I. $x^2 + x - 6 = 0$
$x^2 + 3x - 2x - 6 = 0$
$x(x + 3) - 2(x + 3) = 0$
$(x + 3)(x - 2) = 0$
$x = -3, 2$
II. $y^2 + 7y + 12 = 0$
$y^2 + 4y + 3y + 12 = 0$
$y(y + 4) + 3(y + 4) = 0$
$y = -3, -4$
So, $x \geq y$

S542. Ans.(a)
Sol. $2x^2 - 17x + 35 = 0$
$2x^2 - 10x - 7x + 35 = 0$
$2x(x - 5) - 7(x - 5) = 0$
$(2x - 7)(x - 5) = 0$
$x = \frac{7}{2}, 5$
II. $4y^2 - 19y + 21 = 0$
$4y^2 - 12y - 7y + 21 = 0$
$4y(y - 3) - 7(y - 3) = 0$
$(4y - 7)(y - 3) = 0$
$y = \frac{7}{4}, 3$
So, x > y

S543. Ans.(c)
Sol. I. $x - 512 = 1331$
$x = 1843$
II. $y = 2197 - 353$
$y = 1844$
So, y > x

S544. Ans.(d)
Sol. I. $x^2 + 39x + 380 = 0$
$x^2 + 19x + 20x + 380 = 0$
$x(x + 19) + 20(x + 19) = 0$
$(x + 19)(x + 20) = 0$
$x = -19, -20$
II. $y^2 + 37y + 342 = 0$
$y^2 + 18y + 19y + 342 = 0$
$y(y + 18) + 19(y + 18) = 0$
$(y + 18)(y + 19) = 0$
$y = -18, -19$
So, $y \geq x$

S545. Ans.(e)
Sol. I. $x = \frac{2}{x} + \frac{2}{x}$
$x^2 = 4$
$x = \pm 2$
II. $y^2 - y - y + 1 = 0$
$y(y - 1) - 1(y - 1) = 0$
$(y - 1)^2 = 0$
$y = 1$
So, no relation can be established.

S546. Ans.(d)
Sol. $\frac{132}{100} \times 55 + \frac{685}{1200} \times 48 = ?^2$
$72.6 + 27.4 = ?^2$
$? = \sqrt{100}$
$? = 10$

S547. Ans.(c)
Sol. $52703 + 41297 - 58000 = 100 \times ?$
$94000 - 58000 = 100 \times ?$
$\frac{36000}{100} = ?$
$? = 360$

S548. Ans.(a)
Sol. $\frac{13.2 \times 6}{4.4} - \frac{27.5}{13.75} = ?$
$18 - 2 = ?$
$? = 16$

S549. Ans.(b)
Sol. $\frac{2744}{28 \times 14} + 42 = 7^?$
$7 + 42 = 7^?$
$7^2 = 7^?$
$? = 2$

S550. Ans.(d)
Sol. $\frac{264}{24} + \frac{190}{5} = \frac{?}{5}$
$? = (11 + 38) \times 5$
$? = 49 \times 5$
$? = 245$

S551. Ans.(d)
Sol. Required time $= \frac{720 \times \frac{3}{4}}{\frac{720}{8} \times \frac{4}{3}} = \frac{540}{120} = 4.5 \ hours$

S552. 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
$\frac{x \times 12.5 \times 2}{100} - \frac{(10000-x) \times 21}{100} = 660$
$\frac{25x}{100} - \frac{210000 - 21x}{100} = 660$
$25x - 210000 + 21x = 66000$
$46x = 276000$
$x = 6000$

S553. Ans.(b)
Sol. Total time taken $= \frac{180}{36+9} + \frac{180}{36-9}$
$= \frac{180}{45} + \frac{180}{27} = 4 + \frac{20}{3}$
$= 10 \ hour \ 40 \ min$

S554. Ans.(a)
Sol. let r cm and h cm respectively be the radius and height of the cylinder
ATQ
$\frac{2\pi r h}{2\pi r(r+h)} = \frac{3}{5}$
$\frac{h}{r+h} = \frac{3}{5}$
$\frac{r}{h} = \frac{2}{3}$
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
$\therefore curved \ surface \ area \ of \ cylinder = 2\pi \times 4 \times 6 = 48\pi \ cm^2$

S555. 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. $= a \times (a + 6) = 34 \times 40$
$= 1360$

S556. Ans.(d)
Sol. I. 2x² - 17x+ 36 = 0
2x² - 8x – 9x + 36 = 0
2x (x – 4) – 9 (x – 4) = 0
(2x – 9) (x- 4) = 0
$x = \frac{9}{2}, 4$
II. 2y² - 19y + 45 = 0
2y² - 10y – 9y + 45 = 0
2y (y- 5) – 9 (y- 5) = 0
(2y- 9) (y- 5) = 0
$y = \frac{9}{2}, 5$
$\therefore$ y ≥ x

S557. Ans.(e)
Sol. I. $x^2 - 25x + 154 = 0$
$x^2 - 14x - 11x + 154 = 0$
$x (x - 14) - 11 (x- 14) = 0$
$(x - 11) (x- 14) = 0$
$x = 11, 14$
II. $y^2 - 28y + 195 = 0$
$y^2 - 13y - 15y + 195 = 0$
$y (y- 13) - 15 (y-13) =0$
$(y- 13) (y - 15) = 0$
$y = 13, 15$
∴ no relation

S558. Ans.(a)
Sol. I. $\frac{10}{x} - \frac{24}{x^2} = 1$
Multiplying by x^2 on both side
$10x - 24 = x^2$
$x^2 - 10x + 24 = 0$
$x^2 - 6x -4x+ 24 = 0$
$x(x - 6) - 4 (x- 6) = 0$
$(x - 4) (x- 6) = 0$
$x= 4, 6$
II. $\frac{5}{y} - \frac{6}{y^2} = 1$
Multiplying by y^2 on both side
$5y - 6 = y^2$
$y^2 - 5y + 6 = 0$
$y^2 - 3y - 2y + 6 = 0$
$y (y- 3) - 2 (y- 3) = 0$
$(y - 2) (y- 3) = 0$
$y = 2, 3$
∴ x > y

S559. Ans.(d)
Sol. I. $3x^2 - 10x - 8 = 0$
$3x^2 - 12x + 2x - 8 = 0$
$3x (x - 4) + 2 (x- 4) = 0$
$(3x+ 2) (x- 4) = 0$
$x = -\frac{2}{3}, 4$
II. $2y^2 - 23y + 60 = 0$
$2y^2 - 8y- 15y + 60 = 0$
$2y (y- 4) -15(y-4) = 0$
$(y- 4) (2y- 15) = 0$
$y = 4, \frac{15}{2}$
∴ y ≥ x

S560. Ans.(a)
Sol. I. $12x - 16y +16 = 0$
$3x - 4y + 4 = 0$ ...(i)
II. $17y- 13x = 12$ ...(ii)
By multiplying equation (i) by 13 & equation (ii) by 3
$39x - 52y = -52$
$-39x + 51y = 36$
$y = 16$ & $x = 20$
∴ x > y

S561. Ans.(a)
Sol. The pattern of the series—
$11 + 2 = 13$
$13 + 4 = 17$
$17 + 8 = 25$
$25 + 16 = 41$
$41 + 32 = \mathbf{73}$

S562. Ans.(b)
Sol. The pattern of the series—
$21 + 10 = \mathbf{31}$
$\mathbf{31} + 15 = 46$
$46 + 20 = 66$
$66 + 25 = 91$
$91 + 30 = 121$

S563. Ans.(c)
Sol. The pattern of the series—
$3 + (2^2 - 1) = 6$
$6 + (3^2 - 1) = 14$
$14 + (5^2 - 1) = 38$
$38 + (7^2 - 1) = \mathbf{86}$
$\mathbf{86} + (11^2 - 1) = 206$

S564. Ans.(d)
Sol. The pattern of the series—
$2 \times 6 = 12$
$12 \times 5 = \mathbf{60}$
$\mathbf{60} \times 4 = 240$
$240 \times 3 = 720$
$720 \times 2 = 1440$

S565. Ans.(c)
Sol. The pattern of the series—
$3 \times 3 - 3 = 6$
$6 \times 3 - 3 = \mathbf{15}$
$\mathbf{15} \times 3 - 3 = 42$
$42 \times 3 - 3 = 123$
$123 \times 3 - 3 = 366$

S566. Ans.(e)
Sol. The pattern of the series—
$11 + 5.5 = 16.5$
$16.5 + 5.5 = 22$
$22 + 5.5 = 27.5$
$27.5 + 5.5 = \mathbf{33}$
$\mathbf{33} + 5.5 = 38.5$

S567. Ans.(e)
Sol. The pattern of the series—
$390 - (10 \times 9) = 300$
$300 - (8 \times 7) = 244$
$244 - (6 \times 5) = 214$
$214 - (4 \times 3) = \mathbf{202}$
$\mathbf{202} - (2 \times 1) = 200$

S568. Ans.(a)
Sol. The pattern of the series—
$\mathbf{38} + 7 = 45$
$45 - 9 = 36$
$36 + 7 = 43$
$43 - 9 = 34$
$34 + 7 = 41$

S569. Ans.(d)
Sol. The pattern of the series—

7		25		**45**		69		99		137
	+18		+20		+24		+30		+38	
		+2		+4		+6		+8		

S570. Ans.(e)
Sol. The pattern of the series—
$761 - 13^2 = 592$
$592 - 12^2 = 448$
$448 - 11^2 = 327$
$327 - 10^2 = \mathbf{227}$
$\mathbf{227} - 9^2 = 146$

S571. Ans.(a)
Sol. $= \frac{725}{25} + 240$
$= 29 + 240$
$= 269$

S572. Ans.(c)
Sol. $12 \times 4 - 12 = ?^2$
$? = 6$

S573. Ans.(d)
Sol. $\frac{2343}{11} + \frac{126}{3} = ?$
$213 + 42 = ?$
$? = 255$

S574. Ans.(b)
Sol. $\frac{1}{7} \times 350 - \frac{2}{3} \times ? = 30$
$50 - 30 = \frac{2}{3} \times ?$
$? = 30$

S575. Ans.(a)
Sol. $\frac{42 \times 12}{36 \times 7} + 11 = ?$
$? = 13$

S576. Ans.(c)
Sol. $\frac{50}{300} \times 684 \div \left(\frac{100}{900} \times 171\right) = ?$
$114 \times \frac{1}{19} = ?$
$? = 6$

S577. Ans.(b)
Sol. $360 \div 120 + \sqrt{?} = 26$
$\sqrt{?} = 26 - 3$
$\sqrt{?} = 23$
$? = 529$

S578. Ans.(a)
Sol. $?^2 \%$ of $125 = 625 - 20$
$?^2 = \frac{605 \times 100}{125}$
$?^2 = 121 \times 4$
$?^2 = 11 \times 11 \times 2 \times 2$
$? = 11 \times 2 = 22$

S579. Ans.(d)
Sol. $2 \times 1.25 + \frac{15 \times 150}{900} = ?$
$2.5 + 2.5 = ?$
$? = 5$

S580. Ans.(e)
Sol. $15 \times 21 \times \frac{2}{15} = ? - 8$
$? = 42 + 8$
$? = 50$

S581. Ans.(b)
Sol. let total number of article manufactured by company C and E are m and 2m respectively
Required ratio $= \frac{\left(2m \times \frac{13.6}{100}\right)}{m \times \frac{6.8}{100}} = 4:1$

S582. Ans.(b)
Sol. let total article manufactured in each company = 100m
Non-defective article manufactured in company D = $100m \times \frac{96}{100} = 96m$
Non-defective article manufactured in company B = $100m \times \frac{88}{100} = 88m$
Required percentage $= \frac{96m - 88m}{88m} \times 100 = 9\frac{1}{11}\%$

S583. Ans.(b)
Sol. Total no. of article manufactured by company A = $\frac{96}{8} \times 100 = 1200$

S584. Ans.(c)
Sol. let total no. of article manufactured by company C and company D are c and d respectively.
ATQ
$\frac{6.8\% \times c}{4\% \times d} = \frac{2}{3}$
$\frac{c}{d} = \frac{2}{3} \times \frac{40}{68}$
$c:d = 20:51$

S585. Ans.(a)
Sol. non-defective article manufactured by company A
$= \frac{200}{7-6} \times 7 \times \frac{92}{100} = 1288$
S (6-10):

S586. Ans.(b)
Sol. required percentage $= \frac{8500}{13600} \times 100 = 62.5\%$

S587. Ans.(b)
Sol. No. of defective article manufactured by firm S
$= \frac{15000}{75} \times 2 = 400$
Required ratio = 13600 : 400
$\qquad\qquad$ = 34 : 1

S588. Ans.(d)
Sol. Average no. of non-defective article manufactured by firm Q and R
$= \frac{1}{2} \times (8500 + 13500) = 11000$
Required percentage $= \frac{11000}{15000} \times 100 = 73\frac{1}{3}\%$

S589. Ans.(c)
Sol. $30\% = \frac{3}{10}$ and $30\frac{10}{13}\% = \frac{4}{13}$
Let total no. of article manufactured by firm P and R are 10x and 13y respectively.
So, non-defective article manufactured by firm P $= 10x \times \frac{7}{10} = 7x$
Non-defective article manufactured by firm R $= 13y \times \frac{9}{13} = 9y$
ATQ
defective article manufactured by firm P $= \frac{7000}{7x} \times 3x = 3000$
defective article manufactured by firm R $= \frac{13500}{9y} \times 4y = 6000$
required percentage $= \frac{(6000-3000)}{6000} \times 100 = 50\%$

S590. Ans.(b)
Sol. Required ratio = (8500 + 13500) : (7000 + 15000)
= 1 : 1

S591. Ans.(d)
Sol. Let original price of laptop = 100x
Cost price for Manoj = 100x $\times \frac{75}{100}$
= 75x
Selling price for Manoj = 100x $\times \frac{120}{100}$
= 120x
Required profit % $= \frac{120x - 75x}{75x} \times 100$
$= \frac{45}{75} \times 100$
= 60%

S592. Ans.(d)
Sol. Quantity of water and sulphuric acid after replacing 30 lit of sulphuric acid with water is 30 lit and 70 lit.
Required ratio
$= \dfrac{30 - 40 \times \frac{3}{10} + 40}{70 - 40 \times \frac{7}{10}}$
$\Rightarrow \dfrac{58}{42}$
$\Rightarrow 29 : 21$

S593. Ans.(b)
Sol. Let initial investment of Vikash = Rs. x
ATQ,
$\dfrac{12000 \times 12}{x \times 4 + 12000 \times 4} = \dfrac{9}{5}$
80000 = 4x + 48000
32000 = 4x
x = Rs. 8000
Investment increased by Vikash = 12000 – 8000
= Rs. 4000

S594. Ans.(e)
Sol. Time taken by pipe B alone to fill the tank $= \frac{24}{2} \times 1 = 12 \ hours$
Required time $= \frac{24 \times 12}{24 + 12} = 8 \ hours$

S595. Ans.(c)
Sol. Let total capacity of tank = 60 lit (L.C.M of 12 and 15)
Efficiency of inlet tap $= \frac{60}{12} = 5$ lit/hr.
Efficiency of outlet tap $= 5 - \frac{60}{12 + 3}$
= 1 lit/hr.
Required time $= \frac{60}{1} = 60$ hr.

S596. Ans.(d)
Sol. Let the length of train be L meter.
ATQ
$25 = \dfrac{5L + L}{90 \times \frac{5}{18}} - \dfrac{L}{90 \times \frac{5}{18}}$
$25 = \dfrac{6L}{25} - \dfrac{L}{25}$
$5L = 625$
$L = \dfrac{625}{5} = 125 \ m$

S597. Ans.(c)
Sol. Downstream speed of boat $= 11.2 \times \frac{60}{48} = 14$ km/hr
Speed of boat $= 14 \times \frac{3}{4} = 10.5$ km/hr
Speed of current $= 14 \times \frac{1}{4} = 3.5$ km/hr
Required time $= \frac{42}{(10.5 + 3.5)} + \frac{42}{(10.5 - 3.5)}$
= 3 + 6
= 9 hours

S598. Ans.(a)
Sol. Let the total capacity of the cistern is 24 units. (LCM)
So, the efficiency of the pipe A and pipe B are 2 units/ hour and 3 units/hour respectively.
ATQ
Total time taken to fill the cistern $= \frac{24}{2+3} + \frac{12}{60} = 5$ hour
Efficiency of leakage $= (2 + 3) - \frac{24}{5}$ units/hour
$$= \frac{1}{5} \text{ units/hour}$$
$\therefore$ time taken by leakage to empty the full tank alone $= \frac{24}{\frac{1}{5}} =$

120 hours

S599. Ans.(c)
Sol. Let speed of the boat in still water and speed of the current be x km/hr and y km/hr respectively.
ATQ
$$\frac{30}{x-y} + \frac{45}{x+y} = 13 \dots\dots (i)$$
$$\frac{24}{x-y} + \frac{30}{x+y} = 10 \dots\dots (ii)$$
By equating (i) and (ii)
$$\frac{300}{x-y} + \frac{450}{x+y} = \frac{312}{x-y} + \frac{390}{x+y}$$
$$\frac{60}{x+y} = \frac{12}{x-y}$$
$$\frac{x}{y} = \frac{3}{2}$$
Let x = 3a and y = 2a
Now, $\frac{30}{3a-2a} + \frac{45}{3a+2a} = 13$
$$\frac{30}{a} + \frac{45}{5a} = 13$$
$$a = 3$$
$\therefore$ speed of the current = 6 km/hr

S600. Ans.(d)
Sol. Let total work be 60 units (LCM)
So, efficiency of Raghav and Dev be 4 units/day and 3 units/day respectively.
4-day work of Raghav and Dev $=(4 + 3) \times 4 = 28$ units
Remaining work $= 60 - 28 = 32$ units
So, fraction of work left $= \frac{32}{60} = \frac{8}{15}$

S601. Ans.(d)
Sol. $\sqrt{?} - 1331 + 1444 = 144$
$\sqrt{?} = 144 - 113$
$? = 961$

S602. Ans.(b)
Sol. $\frac{120}{100} \times 175 - ? = 1124 - 1089$
$210 - ? = 35$
$? = 175$

S603. Ans.(d)
Sol. $\sqrt[3]{1331} + ? + \sqrt[5]{243} = \sqrt[2]{361}$
$11 + ? + 3 = 19$
$? = 19 - 14$
$? = 5$

S604. Ans.(b)
Sol. $\frac{168.98}{12.97}$ of $49.86 = ? - 32.09\%$ of 799.95
$\frac{169}{13}$ of $50 = ? - 32\%$ of 800
$13 \times 50 = ? - 256$
$650 + 256 = ?$
$? = 906$

S605. Ans.(a)
Sol. 39.88% of 819.97 + 25.02% of 240.021 - ? = 59.98% of 500.12
40% of 820 + 25% of 240 - ? = 60% of 500
$328 + 60 - ? = 300$
$? = 88$

S606. Ans.(a)
Sol. Required percentage $= \frac{45}{75} \times 100$
= 60%

S607. Ans.(b)
Sol. Required average $= \frac{1}{5} \times (64 + 60 + 72 + 40 + 84)$
$= \frac{1}{5} \times 320$
= 64

S608. Ans.(c)
Sol. Required ratio $= \frac{(80+60)}{(60+40)}$
$= \frac{140}{100} = \frac{7}{5}$

S609. Ans.(d)
Sol. Required difference
= (60 + 80 + 45 + 75 + 90) - (64 + 60 + 72 + 40 + 84)
= 350 - 320
= 30

S610. Ans.(b)
Sol. Required percentage $= \frac{90-84}{90} \times 100$
$= \frac{100}{15} = \frac{20}{3}\%$ $= 6\frac{2}{3}\%$

S611. Ans.(b)
Sol. Required ratio $= \frac{12000+18000}{10000+8000} = \frac{30}{18}$
$= 5 : 3$

S612. Ans.(c)
Sol. Required difference $= 14000 - 12000$
$= 2000$

S613. Ans.(d)
Sol. Required average $= \frac{20000+18000+10000+8000+14000}{5} = \frac{70000}{5}$
$= 14000$

S614. Ans.(a)
Sol. Required percentage $= \frac{18000}{15000} \times 100$
$= 120\%$

S615. Ans.(a)
Sol. Required percentage $= \frac{(20000+10000)-(15000+10000)}{20000+10000} \times 100$
$= \frac{30000-25000}{30000} \times 100$
$= \frac{5000}{30000} \times 100 = \frac{50}{3}\% = 16.67\%$

S616. Ans.(b)
Sol. $5013 + 987 \approx \frac{?}{100} \times 4000$
$? \approx \frac{6000}{4000} \times 100$
$? \approx 150$

S617. Ans.(d)
Sol. $\sqrt{1024} + \frac{20}{100} \times 20 \approx ?^2$
$32 + 4 \approx ?^2$
$? \approx \sqrt{36}$
$? \approx 6$

S618. Ans.(a)
Sol. $? \approx \frac{321}{595} \times \frac{119}{107} \times \frac{500}{100}$
$? \approx 3$

S619. Ans.(b)
Sol. $\frac{20}{100} \times 150 + \frac{11}{100} \times 300 = ?^2$
$30 + 33 = ?^2$
$? \approx \sqrt{64}$
$? \approx 8$

S620. Ans.(c)
Sol. $? \approx 322 - 136 + 23$
$? \approx 209$

S621. Ans.(e)
Sol. I. $2x^2 - 11x + 15 = 0$
$2x^2 - 6x - 5x + 15 = 0$
$2x(x - 3) - 5 (x - 3) = 0$
$(2x - 5) (x - 3) = 0$
$x = \frac{5}{2}, 3$
II. $2y^2 - 13y + 20 = 0$
$2y^2 - 5y - 8y + 20 = 0$
$y(2y - 5) - 4 (2y - 5) = 0$
$(y - 4) (2y - 5) = 0$
$y = \frac{5}{2} , 4$
∴ no relation

S622. Ans.(a)
Sol. I. $\frac{30}{x^2} = \frac{11}{x} - 1$
Multiply by x^2 on both sides
$30 = 11x - x^2$
$x^2 - 11x + 30 = 0$
$x^2 - 5x - 6x + 30 = 0$
$x(x - 5) - 6 (x - 5) = 0$
$(x - 5) (x - 6) = 0$
$x = 5, 6$

II. $y^2 - 7y + 12 = 0$
$y^2 - 3y - 4y + 12 = 0$
$y(y - 3) - 4 (y - 3) = 0$
$(y - 3) (y - 4) = 0$
$y = 3, 4$
So, x > y

S623. Ans.(b)
Sol. I. $x^2 - 84 = 112$
$x^2 = 196$
$x = \pm 14$
II. $y^3 + 1845 = 5220$
$y^3 = 3375$
$y = 15$
So, y > x

S624. Ans.(d)
Sol. I. $x^2 + 18x + 80 = 0$
$x^2 + 10x + 8x + 80 = 0$
$x(x + 10) + 8 (x + 10) = 0$
$(x + 8) (x + 10) = 0$
$x = -8, -10$
II. $y^2 + 14y + 48 = 0$
$y^2 + 8y + 6y + 48 = 0$
$y(y + 8) + 6 (y + 8) = 0$
$(y + 6) (y + 8) = 0$
$y = -6, -8$
So, y ≥ x

S625. Ans.(b)
Sol. Multiply eq I by 4 and multiply eq II by 3.
After adding eq I and eq II.
$72x - 48y + 48y - 60x = 36 + 6$
$12x = 42$
$x = \frac{7}{2}$
$y = \frac{9}{2}$
So. y > x

S626. Ans.(d)
Sol. Required average $= \frac{2000+2400+1800+2500}{4} = \frac{8700}{4}$
$= 2175$

S627. Ans.(a)
Sol. Required percentage $= \frac{(2000+2250)-(1500+1850)}{(2000+2250)} \times 100$
$= \frac{4250-3350}{4250} \times 100 = \frac{900}{4250} \times 100$
$= \frac{360}{17} = 21.176 \simeq 21\%$

S628. Ans.(c)
Sol. Required ratio $= \frac{1750+2000+2250+2400}{1200+1350+800+1250} = \frac{8400}{4600}$
$= 42 : 23$

S629. Ans.(e)
Sol. Difference in revenue $= (1850 - 1350) \times 120$
$= 500 \times 120 = Rs\ 60,000$

S630. Ans.(b)
Sol. Required percentage $= \frac{1800}{2000} \times 100$
$= 90\%$

S631. Ans.(d)
Sol. total watches manufactured by Casio, Titan & Sonata =
$\frac{20+15+25}{100} \times 1000 = 600$
required average $= \frac{600}{3} = 200$

S632. Ans.(c)
Sol. required ratio $= \frac{10+25}{100} \times 1000 : \frac{20+20}{100} \times 1000 = 7:8$

S633. Ans.(b)
Sol. watches manufactured of Sonata $= \frac{25}{100} \times 1000 = 250$
Watches manufactured of Rado $= \frac{10}{100} \times 1000 = 100$
Required % $= \frac{250-100}{100} \times 100 = 150\%$

S634. Ans.(e)
Sol. in next year
No. of Titan watches manufactured $= \frac{110}{100} \times \frac{15}{100} \times 1000 = 165$
No. of Timex watches manufactured $= \frac{90}{100} \times \frac{10}{100} \times 1000 = 90$
Required difference $= 165 - 90 = 75$

S635. Ans.(b)
Sol. Average no. of watches manufactured $= \frac{1000}{6} = 166.67$
Watches manufactured
Casio $= \frac{20}{100} \times 1000 = 200$
Titan $= \frac{15}{100} \times 1000 = 150$
Sonata $= \frac{25}{100} \times 1000 = 250$
Timex $= \frac{10}{100} \times 1000 = 100$
Fossil $= \frac{20}{100} \times 1000 = 200$
Rado $= \frac{10}{100} \times 1000 = 100$
Required answer = Casio, Sonata, Fossil = 3

S636. Ans.(a)
Sol. No. of valid votes cast in village B
$= 10000 \times \frac{25}{100} \times \frac{80}{100} \times \frac{90}{100} = 1800$

S637. Ans.(d)
Sol. Total valid votes cast in village C
$= 10000 \times \frac{20}{100} \times \frac{90}{100} = 1800$
Let winning candidate got x% of votes cast and Losing Candidate got (x-12)% of votes cast.
ATQ,
$x + x - 12 = 100$
$x = 56\%$
Votes obtained by losing candidate $= \frac{44}{100} \times 1800 = 792$

S638. Ans.(e)
Sol. Average registered voters of B,C,D
$= \frac{(25+20+15)}{100} \times \frac{10000}{3} = 2000$

S639. Ans.(c)
Sol. votes cast -
A $= 10000 \times \frac{20}{100} \times \frac{70}{100} = 1400$
B $= 10000 \times \frac{25}{100} \times \frac{65}{100} = 1625$
D $= 10000 \times \frac{15}{100} \times \frac{80}{100} = 1200$
E $= 10000 \times \frac{20}{100} \times \frac{75}{100} = 1500$
Maximum voters cast their votes in village B.

S640. Ans.(b)
Sol. average number of registered voters from village A & C
$= \frac{10000}{2} \times \frac{20+20}{100} = 2000$
Average no. of registered voters from village B, D & E
$= \frac{10000}{3} \times \frac{(25+15+20)}{100} = 2000$
Required % $= \frac{2000}{2000} \times 100 = 100\%$

S641. Ans.(c)
Sol. The pattern of the series−
$3 + 2^3 = 11$
$11 + 3^3 = 38$
$38 + 4^3 = \mathbf{102}$
$\mathbf{102} + 5^3 = 227$
$227 + 6^3 = 443$
$443 + 7^3 = 786$
So, the wrong number is 100.

S642. Ans.(b)
Sol. The pattern of the series−
$\mathbf{5} \times 2 + 1 = 11$
$11 \times 2 - 1 = 21$
$21 \times 2 + 1 = 43$
$43 \times 2 - 1 = 85$
$85 \times 2 + 1 = 171$
$171 \times 2 - 1 = 341$
So, the wrong number is 6.

S643. Ans.(a)
Sol. The pattern of the series−
$7.5 \div 1 = 7.5$
$7.5 \times 2 = 15$
$15 \div 3 = 5$
$5 \times 4 = 20$
$20 \div 5 = 4$
$4 \times 6 = \mathbf{24}$
So, the wrong number is 28.

S644. Ans.(e)
Sol. The pattern of the series−
$5 \times 0.5 + 0.5 = 3$
$3 \times 1 + 1 = 4$
$4 \times 1.5 + 1.5 = 7.5$
$7.5 \times 2 + 2 = \mathbf{17}$
$\mathbf{17} \times 2.5 + 2.5 = 45$
$45 \times 3 + 3 = 138$
So, the wrong number is 15.

S645. Ans.(b)
Sol. The pattern of the series–

604	572	537	499	458	414	**367**
	−32	−35	−38	−41	−44	−47
		3	3	3	3	3

So, the wrong number is 368.

S646. Ans.(e)
Sol. The pattern of the series–(Addition of prime number to the resultant)
$23 + 23 = 46$
$46 + 29 = 75$
$75 + 31 = 106$
$106 + 37 = 143$
$143 + 41 = 184$
$184 + 43 = $ **227**
So, the wrong number is 224.

S647. Ans.(a)
Sol. The pattern of the series–,
$0.5 \times 3 + 0.50 = 2$
$2 \times 2 + 0.50 = 4.5$
$4.5 \times 3 + 0.50 = $ **14**
14 $\times 2 + 0.50 = 28.5$
$28.5 \times 3 + 0.50 = 86$
$86 \times 2 + 0.50 = 172.5$
So, the wrong number is 18.

S648. Ans.(d)
Sol. The pattern of the series–
$730 - 25 = 705$
$705 - 50 = 655$
$655 - 75 = 580$
$580 - 100 = $ **480**

$480 - 125 = 355$
$355 - 150 = 205$
So, the wrong number is 475.

S649. Ans.(d)
Sol. The pattern of the series–
$57 + 7 = 64$
$64 + 14 = 78$
$78 + 28 = 106$
106 $+ 56 = $ **162**
$162 + 112 = 274$
$274 + 224 = 498$
So, the wrong number is 170.

S650. Ans.(c)
Sol. The pattern of the series–

198	186	172	154	130	**98**	56
	−12	−14	−18	−24	−32	−42
		-2	-4	-6	-8	-10

So, the wrong number is 104.