1. An alloy contains 20% zinc, 45% nickel and rest aluminium. The total mass in gm of the alloy containing 105 gm of aluminium is

(A) 170

(B) 200

(C) 250

(D) 300

$Al - (100 - 65)\% = 35\%.$

$35\% \times total = 105$

$Total = \dfrac{105}{35} \times 100 = 300$

2. 19 students appear in a class test. The average of the best 10 scores is 69 while that of the worst 10 is 38. If the average of all the 19 scores is 54, the 10th score in order of magnitude is

(A) 62

(B) 58

(C) 46

(D) 44

Total of 1-19

$= 54 \times 19$

$= 1026$

| 1 - 10 | 10 - 19 |

Avg   69   38

Total 690 + 380 = 1070 → total of (1-19) + 10th

$1070, = 1026 + 10th \ score$

3. 50 added to 60% of a number is the number itself. The number is

(A) 110

(B) 125

(C) 200

(D) 300

$60\% x + 50 = x = 100\% x$

$(100\% - 60\%) x = 50 \qquad x = \dfrac{50}{40} \times 100 = 125$
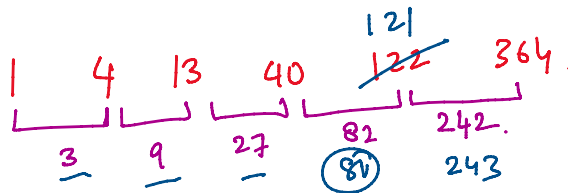
$40\% x = 50$

4. The next term in the sequence

4, 5, 5, 5, 6, 5, 7 ... 5, 8, 5, 9

(A) 5

(B) 6

(C) 7

(D) 8

5. Which number in the following sequence is incorrect ?

    1, 4, 13, 40, 122, 364

(A) 13

(B) 40

(C) 122

(D) 364

1   4   13   40   122   364.

     3   9   27   82   242.

                        81   243

6. In a college union election for the post of General Secretary, Surupa secured 60% of the total votes and defeated Ananya by a margin of 60 votes in a direct contest. Total number of valid votes was

(A) 120

(B) 150

(C) 300

(D) 360

x

$S - 60\% x \qquad A - 40\% x.$

$x = \dfrac{60}{20} \times 100$

$60\% x - 40\% x = 60$

$20\% x = 60$

7. Pinku babu purchased 4 baskets of mango containing 15, 18, 21 and 22 fruits. He kept the entire content of one of the baskets for his own family, and distributed the remaining mangoes equally among five of his friends living nearby. Number of mangoes in the basket he kept for his own family was

(A) 15

(B) 18

(C) 21

(D) 22

$$\frac{55}{5} = 11 \checkmark$$

8. 69 biscuits were distributed among 27 students in a class. If each boy got 2 biscuits and each girl 3, how many girls were there in the class ?
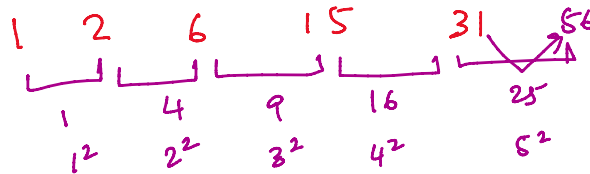
(A) 23

(B) 19

(C) 15

(D) 12

$$B \qquad G$$
$$B + G = 27$$
$$2B + 3G = 69$$
$$2B + 2G = 54$$
$$\overline{ G = 15}$$

9. The next term in the series

1, 2, 6, 15, 31, _____

(A) 47

(B) 50

(C) 56

(D) 63

$$1 \quad 2 \quad 6 \quad 15 \quad 31 \quad 56$$
$$1 \quad 4 \quad 9 \quad 16 \quad 25$$
$$1^2 \quad 2^2 \quad 3^2 \quad 4^2 \quad 5^2$$

10. Bidisha gets from her father Rs.50 every 30th day of a month and Rs.100 every 31st day. During 2008, she gets from her father a total of Rs.

(A) 900

(B) 950

(C) 1250

(D) 1300

J	F	M	A	M	J	J	A	S	O	N	D
31	28	31	30	31	30	31	31	30	31	30	31
			50		50			50		50	
100		100	100	100		100	100		100		100
50		50	50	50		50	50		50		50

$$200$$
$$900 \quad 700$$
$$1250 \quad 350$$

Directions (36-40): In each question two equations numbered (I) and (II) are given. You should solve both the equations and mark appropriate answer.

(a) if x > y
(b) if x ≥ y
(c) if x < y
(d) if x ≤ y
(e) if = y or the relationship cannot be established

Q36. I. $x^2 - 7x + 10 = 0$ (e)
II. $y^2 - 2y - 3 = 0$

$$y^2 - 3y + y - 3 = 0$$
$$y(y-3) + 1(y-3) = 0$$
$$(y-3)(y+1) = 0$$
$$y = 3, -1$$

$$x^2 - 5x - 2x + 10 = 0$$
$$(x^2 - 5x) - (2x - 10) = 0$$
$$x(x-5) - 2(x-5) = 0$$
$$(x-5)(x-2) = 0$$
$$x = 5, 2$$

$$10 = 2 \times 5$$
$$2 + 5 = 7$$

Q37. I. $x^2 - 24x + 143 = 0$ (e)
II. $y^2 - 29y + 210 = 0$

$$-y^2 - 29y + 210 = 0 -- \quad x^2 - 24x + 143 = 0 \qquad 143 = 13 \times 11$$
$$(y-14)(y-15) = 0 \quad x^2 - 13x - 11x + 143 = 0$$
$$y = 14, 15 \quad x(x-13) - 11(x-13) = 0$$
$$(x-13)(x-11) = 0$$
$$x = 13, 11$$
$$210 = 14 \times 15$$
$$13 \times 9 = 117$$

Q38. I. $x^2 + 22x + 117 = 0$ (e)
II. $y^2 + 23y + 132 = 0$

$$(x+13)(x+9) = 0 \quad x = -13, -9$$
$$(y+11)(y+12) = 0 \quad y = -11, -12$$
$$132 = 11 \times 12$$

Q39. I. $2x^2 - 3x - 20 = 0$ (b)
II. $2y^2 + 11y + 15 = 0$

$$2x^2 - 8x + 5x - 20 = 0 \quad 2x(x-4) + 5(x-4) = 0 \quad (x-4)(2x+5) = 0$$
$$2y^2 + 6y + 5y + 15 = 0 \quad 2y(y+3) + 5(y+3) = 0 \quad x = 4, -\frac{5}{2}$$
$$(y+3)(2y+5) = 0 \quad y = -3, -\frac{5}{2}$$
$$2x - 20 = -40$$
$$-40 = -8 \times 5$$

Q40. I. $x^2 - 12x + 32 = 0$ (d)
II. $y^2 - 20y + 96 = 0$

$$(x-4)(x-8) = 0$$
$$x = 4, 8$$
$$(y-12)(y-8) = 0$$
$$y = 12, 8$$

Q40. I. $x^2 - 12x + 32 = 0$
II. $y^2 - 20y + 96 = 0$

(d)

$(x-4)(x-8)=0$ $(y-12)(y-8)=0$ $(y+3)(2y+5)=0$ $y=-3, -\frac{3}{2}$
$x=4,8$ $y=12,8$

Q41. A boat travels in upstream. If the speed of boat in upstream is decreased by 40% then it is equal to the speed of current and speed of boat in still water is given as 240 km/hr. Then find upstream speed of boat? (in km/hr).
(a) 120
(b) 180
(c) 150
(d) 210
(e) 125

Boat Upstream
$\rightarrow$ $\leftarrow$
x Current
$x=240$ Rel Speed $= x-y$

$60\% (x-y) = y$
$60\% x - 60\% y = 100\% y$
$60\% x = 160\% y$
$6x = 16y$
$3x = 8y$
$y = \frac{3}{8}x = \frac{3}{8} \times 240 = 90$

Q43. Length of train A is 400 meters and length of train B is 'x' meters more than train A. If speed of both train A & B is equal and they cross 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

$D = 400 + 600 = 1000$ m
$T = \frac{D}{S} = \frac{1000}{25} = 40$ s
$\frac{1}{24} + \frac{1}{30} = \frac{5+4}{120} = \frac{9}{120} = \frac{3}{40}$
$L_B = 600$ m

$A = \frac{400}{16}$ m/s $= 25$ m/s
$B = \frac{400+x}{24} = 25$ $x = 200$
$400 + x = 600$

Q44. 'A' is 40% less efficient than 'B' who can do the same work in 20% less time than 'C'. If A and B together can complete 80% of work in 12 days, then in how many days 60% of work can be completed by B and C together.
(a) 2 days
(b) 4 days
(c) 6 days
(d) 8 days
(e) 10 days

$W\left(\frac{8}{40}\right)N = \frac{2}{5}W$
$\left(\frac{W}{24} + \frac{W}{30}\right)M = \frac{60W}{100}$
$(A+B)12 = 80\% W$
$(60\% B + 100\% B) \times 12 = 80\% W$
$160\% B \times 12 = 80\% W$
$B = \frac{W}{24}$
$B \rightarrow \frac{1}{24}$ in 1 day.

$A = 60\% B$
If $C \rightarrow x$ hrs $B \rightarrow 80\% x$ hrs.
$(B+C) \times N = 60\% W$.
$\frac{1}{24} = \frac{1}{80\% x}$
$x = \frac{24}{80\%} = \frac{24}{80\%} \times 5$
$= 30$
$C = \frac{W}{30}$
$B = \frac{1}{80\% x}$ work/day

Q45. Perimeter of rectangle is equal to the perimeter of square whose area is 400 cm² and length of rectangle is 40% more than the side of a square then find the area of rectangle?
(a) 248 cm²
(b) 420 cm²
(c) 356 cm²
(d) 336 cm²
(e) 348 cm²

$a^2 = 400$ $a = 20$ $P = 80 = 2(L+B)$
$L = \frac{140}{100} \times 20$ $L = 28$
$L + B = 40$
$B = 12$
$28 \times 12 = 336$

Q46. A shopkeeper has two articles jeans and shirt. Cost price of a jeans is 32.5% more than cost price of a shirt and cost price of jeans is increased by 30% and it sold in Rs. 4134 at the profit of 25%. If shirt marked up 15% above cost price, then find the marked price of shirt (in Rs.)?
(a) 2200
(b) 2208
(c) 2280
(d) 2820
(e) 2082

$132.5\% S = 2544$
$S = \frac{2544 \times 100}{132.5} = 1920$
192
96
288

$\frac{13}{10}J = 4134 \times 4$
$J = \frac{4134 \times 8}{13} = 318 \times 8 = 2544$

$J \times 130\%$ $SP = 125\% CP$
$125\% CP = 4134$
$CP = 4134 \times \frac{4}{5}$
$= 1920$

48 20 2
$2544 \times 100 \times 10$
1325
265
53 $= 96 \times 20$
$= 1920$

$53 \times 8 = 424$

1920
288
2208

Q49. The salary of A man is Rs. 50000 per month from which he spends 20% on rent, 10% of remaining on bills, 20% of further remaining on miscellaneous expenses. From the remaining amount, man gives some money to his wife and rest he invests in mutual funds in the ratio of 5 : 4. Find amount spent on rent is how much less or more than amount invested in mutual funds.
(a) 2800 Rs.
(b) 2400 Rs.
(c) 2600 Rs.
(d) 3200 Rs.
(e) 3000 Rs.

Direction (51 – 55): Table Given below shows total number of male visitors on four different days to a park and it also shows percentage of female visitors on these four days. Read the data carefully and answer the questions.

Days	Total male visitors	Percentage of female visitors
Sunday	120	76%
Monday	280	30%
Tuesday	500	37.5%
Wednesday	420	40%

Q51. Total female visitors on Sunday & Monday together is how much more or less than total number of female visitors on Tuesday & Wednesday together.

(a) 160
(b) 140
(c) 120
(d) 100
(e) 80

Q52. Total visitors on Wednesday are what percent more than total number of visitors on Sunday?
(a) 60%
(b) 20%
(c) 40%
(d) 80%
(e) 50%

Q53. Total number of male visitors on Friday are 25% more than total number of male visitors on Monday, while total number of female visitors on Friday are 40% more than total number of visitors on Tuesday. Find total visitors on Friday?
(a) 1470
(b) 1050
(c) 1620
(d) 1200
(e) 1170

Q54. Total number of visitors on Wednesday is how much more than total number of female visitors on Sunday and Monday together?
(a) 300
(b) 200
(c) 250
(d) 350
(e) 150

Q55. If there is one guide for per five visitors on each day, then find total **number** of guides required for all visitors on these four days?
(a) 240
(b) 480
(c) 220
(d) 440
(e) 460

Direction (61−65): Read the data carefully and answer the questions.

There are 450 students in a school and there are two sections A & B in the school. There are three streams in each section i.e., Art, Science & Commerce. $\frac{75}{4}$% of total students in A are in Commerce and $\frac{200}{7}$% of total students in B are in Science. Sum of total students in Commerce in A & total students in Science in B is 105. $\frac{400}{21}$% of total students in B are in Commerce and 50% of total students in A are in Art.

Q61. Total students in Art in A is what percent more than total students in Science in B?

(a) 75%
(b) 70%
(c) 90%
(d) 100%
(e) 110%

Q62. Find the ratio of total students in Commerce in B to total students in Science in A?

(a) 8 : 15
(b) 8 : 17
(c) 8 : 13
(d) 8 : 11
(e) 8 : 9

Q63. If in other section C, total students are 180 and total student in Science in C are 25% more than total students in Commerce in B, then find total students in Art & Commerce in C is how much less than total students in Art &Commerce in A?
(a) 55
(b) 60
(c) 65
(d) 45
(e) 35

Q64. Find the average number of students in Science in A & B?
(a) $\frac{125}{2}$
(b) $\frac{135}{2}$
(c) 120
(d) 130
(e) 145

Q65. If out of total students in Art in A & B, ratio of boys to girl is 5 : 3 and 7 : 4 respectively, then find total boys in Art from both sections?
(a) 125
(b) 135
(c) 145
(d) 115
(e) 105

Direction (66-70): Study the following information carefully and answer the questions given below:

Eight persons i.e. A, B, C, D, P, Q, R and S are sitting around a rectangular table in such a way that four persons sit on each of the four corner of the table and other four persons sit on the middle of each side. The one who sits at the corner of table faces opposite to center of table and the one who sits at the middle side of table faces towards the center of table. Persons sitting on opposite sides are exactly opposite to each other. Q sits immediate to the right of D. Both R and C are sitting opposite to each other. Only one person sits between A and B, who does not sit near to D. C sits near to Q. Two persons sit between D and S, who faces to the center.

Q66. Who among the following sits 3rd to the right of P?

(a) A
(b) B
(c) Q
(d) D
(e) None of these

Q67. How many persons sit between P and Q, when counted to the left of P?
(a) One
(b) Two
(c) Four
(d) Either (b) or (c)
(e) None of these

Q68. Four of the following five are alike in a certain way and hence they form a group. Which one of the following does not belong to that group?
(a) R
(b) D
(c) P
(d) C
(e) B

Q69. Which of the following is not true regarding P?
(a) C sits 2nd to the left of P
(b) P sits immediate to the right of B
(c) D sits opposite to P
(d) Two persons sit between P and R, when counted to the left of R
(e) All are true

Q70. What is the position of R with respect to Q?
(a) 2nd to the right
(b) 2nd to the left
(c) 3rd to the left
(d) 3rd to the right
(e) None of these

Directions (71-73): Study the information carefully and answer the questions given below.

Eight persons in three generation of the family. K is daughter in law of G. M is father of L, who is daughter-in-law of P. H is brother-in-law of G and only son of F. T is grandson of F. H is unmarried. G is male. M has two child.

Q71. How is M related to G?
(a) Father
(b) Brother
(c) Father-in- law
(d) Brother-in-law
(e) None of these

Q72. How is K related to L?
(a) Daughter
(b) Mother-in-law
(c) Daughter-in-law
(d) Sister
(e) None of these

Q73. Who among the following is son of M?
(a) H
(b) G
(c) T
(d) L
(e) None of these

Direction (74-77): Study the following information carefully and answer the questions given below:

In a certain code language
'work just not done' is coded as 'ds gi nj hq'
'work same and equal' is coded as 'gi sw as xz'
'same case just opposite' is coded as 'sw ds ap kl'
'not opposite but equal' is coded as 'mn ap nj as'

Q74. What is the code of 'opposite' as per the given code language?
(a) ap
(b) gi
(c) mn
(d) as
(e) None of these

Q75. What is the code of 'same' as per the given code language?
(a) ap
(b) sw
(c) mn
(d) as
(e) None of these

Q77. What is the code of 'equal work' as per the given code language?
(a) gi ds
(b) sw kl
(c) as gi
(d) as sw
(e) None of these

Directions (78-82): Study the following information carefully and answer the question given below.

Seven students A, B, D, E, G, H and L have practical exams on different day of the same week starting from Monday to Sunday, but not necessarily in the same order. Only one student has a practical exam on each day.
There are more than three students have practical exam after A. Only one student has practical exam between A and H. There are three students have practical exam between G and B. G has practical exam before H but not immediate before H. There are three students have practical exam between D and E, who does not have practical exam in the last day of week.

Q78. On which of the following day L has practical exam?
(a) Tuesday
(b) Thursday
(c) Saturday
(d) Monday
(e) None of these

Q79. Who among the following has practical exam on Wednesday?
(a) A
(b) H
(c) G
(d) E
(e) None of these

Q80. How many students have exam between E and B?
(a) No one
(b) One
(c) Two
(d) Three
(e) More than three

Q82. Four of the following five belong to a group in a certain way, find which of the one does not belong to that group?
(a) A, G
(b) H, E
(c) L, B
(d) E, A
(e) B, D

Directions (83-85): In these questions, relationship between different elements is show in the statements. The statements are followed by conclusions. Study the conclusions based on the given statements and select the appropriate answer:
(a) If only conclusion I follows.
(b) If only conclusion II follows.
(c) If either conclusion I or II follows
(d) If neither conclusion I nor II follows.
(e) If both conclusions I and II follow.

Q83. Statements: J=Q>R=V>B=Y>K≥M
Conclusion I: R>Y **II:** J<B

Q84. Statements: Q=T<I>X≥G>P=Z<O
Conclusion I: Z≤I **II:** O>G

Q85. Statements: S>F≥B=D≤P=E≤L>Q
Conclusion I: E>B **II:** B=E

Point P is 8m west of point G. Point G is 16m east of point T. Point H is east of point E. Point E is 5m north-west of point L. Point A is 12m south of point F and point P is midpoint between them. Point L is 8m south of point S. Point H is midpoint between point L and S. Point T is 14m south of point E.

Q86. If Point B is west of point A and south of point S, then what is the distance between point A and point B?

(a) 13m
(b) 7m
(c) 6m
(d) 5m
(e) None of these

Q87. In which direction point L is with respect to point F?

(a) South
(b) South-east
(c) North-east
(d) East
(e) None of these

Q88. What is the distance between point E and point H?
(a) 7m
(b) 3m
(c) 4m
(d) 5m
(e) None of these

Q89. How many pairs of letters are there in the word "**SPARKLE**" which has as many letters between them as we have in the English alphabetical series (from both forward and backward direction)?
(a) One
(b) None
(c) Two
(d) Three
(e) More than three

Q90. Which of the following is second letter from the left end of the meaningful word formed by the 1st,3rd, 5th, and 6th letter of the word **"DRAWER"** If more than one word is formed mark X as your answer. If no such word is formed mark Y as your answer?
(a) R
(b) D
(c) E
(d) X
(e) Y