

### REASONING ABILITY

**Directions: (1-5):** In these questions, a relationship between different elements is shown in the statements(s). The statements are followed by two conclusions. Give answer

- (a) if only conclusion I is true.  
 (b) if only conclusion II is true.  
 (c) if either conclusion I or II is true.  
 (d) if neither conclusion I nor II is true.  
 (e) if both conclusions I and II are true.

1. **Statements:**  $A > B \geq C < D, C = E > G$

**Conclusions:** I.  $D > E$       II.  $B > E$

2. **Statements:**  $P \leq Q > M \geq N, Q = S$

**Conclusions:** I.  $S > P$       II.  $N < S$

3. **Statements:**  $S > M = Z > T < Q > V$

**Conclusions:** I.  $V = S$       II.  $Q > M$

4. **Statements:**  $T < U = V \leq S > P \geq Q$

**Conclusions:** I.  $S > T$       II.  $V \geq Q$

5. **Statements:**  $M \geq N > R > W, E = J > L \geq W$

**Conclusions:** I.  $E > W$       II.  $M > L$

**Directions (6-10):** In each of the question-sets below are three statements followed by two conclusions numbered I and II. You have to take the given statements to be true even if they seem to be at variance with commonly known facts and then decide which of the given conclusions logically follows from the given statements, disregarding commonly known facts. Give answer.

- (a) If only conclusion I follows.  
 (b) if only conclusion II follows.  
 (c) if either conclusions I or conclusion II follows.  
 (d) if neither conclusion I nor conclusion II follows.  
 (e) if both conclusion I and conclusion II follow.

6. **Statements:** All pencils are Cutter

Some Cutter are Scale.

No Scale is a compass.

**Conclusions:**

- I. All pencils being Scale is a possibility.  
 II. No compass is a Cutter.

7. **Statements:** Some circles are triangles.

All triangles are squares.

No square is a rectangle.

**Conclusions:**

- I. Some triangles being rectangles is a possibility.  
 II. All squares being circles is a possibility.

8. **Statements:** All pencils are Cutter

Some Cutter are Scale.

No Scale is a compass.

**Conclusions:**

- I. All compass being pencils is a possibility.  
 II. At least some Cutters are pencils.

9. **Statements:** Some wallets are bags.

Some bags are leather.

All purses are leather.

**Conclusions:** I. some purse are bags.

II. Some purse are wallet.

10. **Statements:** Some circles are triangles.

All triangles are squares.

No square is a rectangle.

**Conclusions:**

I. No rectangle is a triangle.

II. Some circles are not rectangles.

**Directions (11-15):** Study the following information to answer the given questions

Eight students M, N, O, P, U, V, W and X are sitting around a square table in such a way four of them sit at four corners while four sit in the middle of each of the four sides. The one who sit at the 4 corners face the centre and others facing outside.

M who faces the centre sits third to the left of V. U who faces the centre is not an immediate neighbour of V. Only one person sits between V and W. P sits second to right of N. N faces the centre. O is not an immediate neighbour of M.

11. Which one does not belong to that group out of five?

- (a)N                      (b)O                      (c)U  
 (d)P                      (e)M

12. Which will come in the place of ?

NOU UXM MWP ?

- (a)PVN                      (b)PWM                      (c)POW  
 (d)POV                      (e)None of these

13. What is the position of W with respect to O ?

- (a)Third to the right      (b)Second to the left  
 (c)Second to the right      (d)Fourth to the right  
 (e)None of these

14. Who sits third to the left of N ?

- (a)X (b)M (c)W  
(d)V (e)None of these

15. Which is true from the given arrangement ?

- (a)W faces the centre (b)N faces outside  
(c)X faces inside (d)M faces the centre  
(e)None of these

**Directions (16-18):** Study the information carefully and answer the question given below.

M is father of A and C. R is brother of C. A is Husband of T and S is daughter of T. V is grandmother of S.

16. How is T related to M?

- (a) Son in law (b) Daughter  
(c) Daughter in law (d) Can't be determined  
(e) None of these

17. If R has only one sister C than what is the relation of A to S?

- (a) Mother (b) Father (c) Uncle  
(d) Can't be determined  
(e) None of these

18. How is M related to S?

- (a) Father (b) Father in law  
(c) Grandfather (d) Granddaughter  
(e) None of these.

**Directions (19-23):** Study the following information carefully to answer the given questions:

Eight friends P, Q, R, S, T, U, V and W are seated in a straight line facing north, but not necessarily in the same order.

- Q sits second to right of U. U sits at one of the extreme ends of the line.
- Only three persons sit between Q and T.
- R sit third to the left of S. Only two persons sit between S and P.
- V is not an immediate neighbor of T.

19. Who among the following represents the person seated at the extreme right of the line?

- (a) V (b) W (c)U  
(d) R (e) P

20. Who among the following sit exactly between S and P?

- (a) U, P (b) Q, U (c) U, V  
(d) T, W (e) Q, T

21. What is the position of V with respect to T?

- (a) Third to the left (b) Second to the right  
(c) Fourth to the right (d) Third to the right  
(e) Second to the left

22. Based on the given arrangement, which of the following is true with respect to W?

- (a) Only two persons sit between W and R.  
(b) Only two persons sit to the right of W.

(c) None of the given options is true.

(d) Both R and P are immediate neighbors of W.

(e) V sits on the immediate right of W.

23. How many persons are seated between V and P?

- (a) None (b) One (c) Two  
(d) Four (e) Three

24. In a certain code language SERIES is written as QCGTGU. How is EXPERT written in that code language?

- (a) VTGRZG (b) RPCRZG (c) GZRCPR  
(d) RPCGZR (e) None of these

25. How many such pairs of letters are there in the word COMPOSE each of which has many letters between them in the word as they have between them in the English alphabetical series?

- (a) None (b) One (c) Two  
(d) Three (e) None of these

**Directions (26-30):** Study the information carefully and answer the question given below.

Nine persons P, Q, R, S, T, U, V, W and X. they live on a separate floor each of a 9-floor building but not necessarily in the same order. The ground floor is numbered 1, the first floor is numbered 2 and so on until the topmost floor is numbered Nine.

Only two persons live below the floor on which V lives. Only one person lives between V and P. W lives on an odd-numbered floor but not on floor no. 7.

Only two persons live between W and Q. X does not live on the topmost floor. P does not live on the lowermost floor. S lives immediately below R but R does not sit on topmost floor. Neither R nor T live on floor no 6. U lives immediately above P.

26. How many persons live between the floors on which P and S live?

- (a) Three (b) More than three  
(c) None (d) Two (e) One

27. Who lives on the floor immediately below V?

- (a) U (b) T (c) S  
(d) Q (e) X

28. On which of the following floor numbers does X live?

- (a) Four (b) One (c) Two  
(d) Five (e) Seven

29. Which of the following is true with respect to U as per the given arrangement?

- (a) Only three persons live between U and Q  
(b) Only three persons live above U.  
(c) Only one person sits between U and S.  
(d) U sits on odd numbered floor.  
(e) None of these.

30. Who lives on the floor numbered 5?  
 (a) U (b) Q (c) S  
 (d) P (e) None of these

**Directions (31-33):** Study the information carefully and answer the question given below.

Mark starts from his house and moving in the south direction and after moving 25m, he took a right turn and move 40 m to reach his uncle house. again Mark start moving southwards and after travelling 50m he took a left and travels 80 m to reach his aunt home.

31. In which direction his aunt house is located with respect to his house?  
 (a) south west (b) south east (c) north east  
 (d) north west (e) None of these
32. Uncle house in which direction with respect to aunt house?  
 (a) North east (b) North west (c) South west  
 (d) South east (e) None of these
33. If Point A is 25m. to the north of uncle's house then what is the distance between A and Mark house?  
 (a) 40 m. (b) 30 m. (c) 20 m.  
 (d) Can't be determined  
 (e) None of these.

**Directions (34-38):** Study the information carefully and answer the question given below.

Gaurav Join classes from Monday to Sunday of the same week for different subject viz. Biology, Chemistry, Physics, Hindi, - Mathematics, English and Geography.

- Hindi class taken by him on Wednesday.
- There is one day gap between Hindi class and Mathematics class.
- And there is three day gap between mathematics class and English class.
- English class is scheduled immediately before Physics class but not in Monday.
- Chemistry is scheduled immediately after mathematics class.

- There is one day gap between Chemistry class and Geography class. And biology class scheduled on Sunday.

34. How many days gap between Maths and Chemistry class?  
 (a) One (b) Two (c) Three  
 (d) Four (e) None
35. Hindi class is scheduled on which day?  
 (a) Monday (b) Wednesday (c) Thursday  
 (d) Friday (e) None of these
36. Which of the following is correct combination given below?  
 (a) Hindi= Monday  
 (b) Physics= Tuesday  
 (c) Chemistry= Thursday  
 (d) Mathematics= Monday  
 (e) Biology= Friday
37. On which day of the week is Chemistry class is schedule?  
 (a) Monday (b) Tuesday (c) Wednesday  
 (d) Thursday (e) None of these.
38. Four of the followings five are alike in a certain ways form a group which one does not belong to the group?  
 (a) Tuesday=Hindi  
 (b) Monday=Chemistry  
 (c) Friday=Physics  
 (d) Wednesday=Hindi  
 (e) Thursday=English
39. If Divyaraj finds that he is fourteenth from the left end of the row and 7th from the right end of the row, then how many boys must be added to the row such that there are 30 boys in the row?  
 (a) 8 (b) 10 (c) 12  
 (d) 14 (e) None of these
40. Find odd one out from given series-  
 AZD FUI HSK OLP SHV  
 (a) AZD (b) FUI (c) HSK  
 (d) OLP (e) None of these

## QUANTITATIVE APTITUDE

41. Two pipes can fill a tank in 10 hours and 16 hours respectively. A third pipe can empty the tank in 32 hours. If all the three pipes are opened simultaneously then in how much time the tank will be full? (in hours)  
 (a)  $7\frac{11}{21}$  (b)  $7\frac{13}{21}$  (c)  $8\frac{4}{21}$   
 (d)  $6\frac{5}{14}$  (e)  $8\frac{9}{14}$

42. a, b, c and d are four consecutive even numbers, if the sum of 'a' and 'c' is 120, what is the product of 'b' and 'd'?
- (a) 4030 (b) 3780 (c) 3900  
 (d) 3900 (e) 3840

43. Three numbers are given. The average of first and third numbers is 24 more than that of average of second and third numbers. Find out the difference between the first and second numbers.

- (a) 36 (b) 40 (c) 42  
(d) 48 (e) 46

44. If 3 men or 9 boys can finish a piece of work in 21 days. In how many days can 5 men and 6 boys can complete the same piece of work?

- (a) 12 days (b) 8 days (c) 14 days  
(d) 10 days (e) 9 days

45. A sum of money fetches Rs 240 as simple interest at the rate of 5 p.c.p.a. after 6 years. What is the principal?

- (a) Rs 200 (b) Rs 400 (c) Rs 800  
(d) Rs 1,200 (e) Rs 1,000

**Directions (46- 50):** Study the given table carefully and answer the questions.

Table shows the total population in six different cities and the ratio of literate to illiterate population and also the percentage of graduate out of literate population in each city.

Cities	Population (in thousand)	Literate: Illiterate	Percentage Graduate out of literate
A	22	5 : 6	20%
B	16	3 : 5	35%
C	96	2 : 1	32%
D	20	2 : 3	25%
E	24	5 : 3	$33\frac{1}{3}\%$

46. Graduate population of city B and D together is approximately what percent more/less than graduate population of city A and E together?

- (a) 54% (b) 50% (c) 47%  
(d) 42% (e) 37%

- (a) 82% (b) 72% (c) 93%  
(d) 79% (e) 89%

**Directions (51-55):** What will come in the place of the question mark (?) in the following number series?

47. Population of city C who are literate but not graduate is how much more than the average graduate population of city D and E together?

- (a) 40020 (b) 4020 (c) 4200  
(d) 4420 (e) 40040

51. 1, 11, 59, 239, 719, ?

- (a) 1438 (b) 1439 (c) 1428  
(d) 1429 (e) 1419

48. If the ratio of illiterate male to female in city B is 3:5 and ratio of graduate male to female population in city D is 2 : 3. Then find the ratio of total illiterate male in city B and graduate female in city D?

- (a) 23 : 7 (b) 8 : 25 (c) 75 : 16  
(d) 21 : 8 (e) 25 : 8

52. 18, 8, 30, 20, 42, ?

- (a) 38 (b) 36 (c) 28  
(d) 32 (e) 30

49. Illiterate population of city D is what percent of the illiterate population of city 'C'?

- (a) 25% (b) 37.5% (c) 40%  
(d) 50% (e) 62.5%

53. 2880, 480, 96, ?, 8, 4

- (a) 16 (b) 24 (c) 20  
(d) 28 (e) 32

50. Literate population of cities A and B together is approximately what percentage of the population which are not graduate of city D?

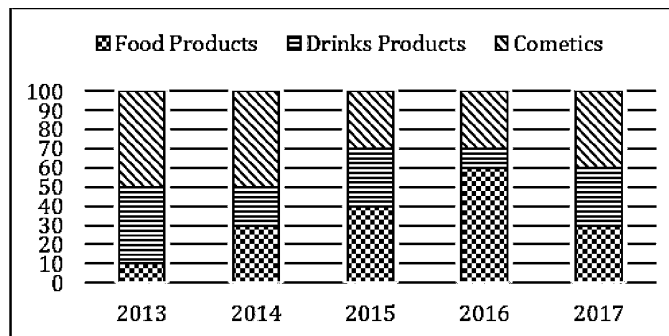
54. 8, 10, 20, 50, ?, 248

- (a) 115 (b) 103 (c) 113  
(d) 108 (e) 118

55. 8, 6, 8, 14, 30, ?

- (a) 75 (b) 76 (c) 77  
(d) 78 (e) 79

**Directions (56-60):** A Company produces three different products namely food, drinks and cosmetic products. If total production of the company was same for all years and % production of three products in particular years given below, then answer the questions that follows:



56. In 2013, number of food products produced by the company is what percent more/less than cosmetic products produced in year 2016?

- (a)  $33\frac{1}{3}\%$       (b) 25%      (c)  $66\frac{2}{3}\%$   
 (d) 20%      (e) 50%

57. If total production in year 2017 was 1,20,000. Find the difference between number of food products produced in 2017 and drink products produced in 2014?

- (a) 12000      (b) 15000      (c) 12500  
 (d) 10000      (e) 11500

58. Find the ratio b/w number of cosmetic products produced in 2017 and number of food products produced in 2013.

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

59. The difference b/w food products and drink products produced by the company in 2015 is 15000. Find the average of food and cosmetic products produced by company in 2013?

- (a) 30000      (b) 50000      (c) 40000  
 (d) 45000      (e) 25000

60. Find the total production in 2018 if there is an increase of 10% in total production in 2018 as compared to previous year given that number of drink products produced in 2015 was 12000?

- (a) 55000      (b) 44000      (c) 66000  
 (d) 33000      (e) None of these

**Directions (61-65):** 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  $x \geq y$   
 (c) if  $x < y$       (d) if  $x \leq y$   
 (e) if  $x = y$  or no relation can be established between  $x$  and  $y$

61. I.  $x^2 - 264 = 361$       II.  $y^3 - 878 = 453$

62. I.  $3x^2 + 14x + 15 = 0$       II.  $3y^2 - 13y + 14 = 0$

63. I.  $12x^2 - 17x + 6 = 0$       II.  $y^2 - 16y + 63 = 0$

64. I.  $x^2 - 48x + 575 = 0$       II.  $46y^2 - 35y - 11 = 0$

65. I.  $15x^2 - 11x - 12 = 0$       II.  $20y^2 - 49y + 30 = 0$

66. Three friends Satish, Bhavya and Abhi complete the work in 10 days, 15 days & 12 days respectively. They started to work together but Satish left the work after two days and Abhi left the work 1 day before the completion of the work. In how many days the whole work will be completed?

- (a)  $5\frac{8}{9}$  days      (b) 6 days      (c)  $7\frac{7}{8}$  days  
 (d) 8 days      (e) 9 days

67.  $\frac{2}{3}$ rd of first number is equal to the cube of the second number. If the second number is equal to 12% of 100, what is sum of the first & 2nd number?

- (a) 2408      (b) 2640      (c) 2426  
 (d) 2604      (e) 2804

68. A wholeseller sells an item to a retailer at 20% discount, but charges 10% on the discounted price for packaging & delivery. The retailer sells it for 1023 more, thereby earning a profit of 25%. At what price had the wholeseller marked the item?

- (a) Rs. 4620      (b) Rs. 4650      (c) Rs. 4850  
 (d) Rs. 5240      (e) Rs. 5445

69. The present age of Bhagat and Abhi are in ratio of 9 : 8 respectively. After 10 years the ratio of their ages will be 10 : 9. What is the difference in their present age?

- (a) 8 years      (b) 6 years      (c) 12 years  
 (d) 4 years      (e) 10 years

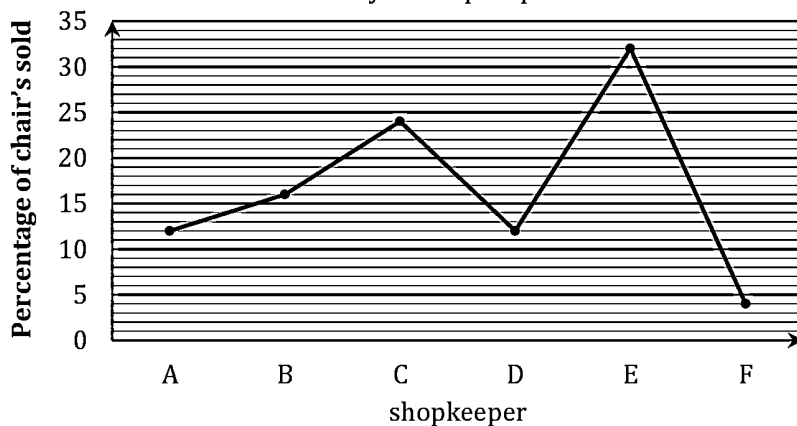
70. The circumference of two circles is 132 m and 176 m respectively. What is difference between the area of larger circle and smaller circle? (in  $m^2$ )

- (a) 1052      (b) 1128      (c) 1258  
 (d) 1078      (e) 1528

**Directions (71-75):** Study the given line graph carefully and answer the questions.

Line graph shows the percentage of chair sold by six shopkeepers.

Total chair sold by all shopkeepers = 96 thousands.



71. Chairs sold by shopkeeper B and D together is how much more than chairs sold by shopkeeper A and F together?  
 (a) 10420 (b) 11520 (c) 12480  
 (d) 11740 (e) 15220
72. Chairs sold by shopkeeper A and E together is how much percentage more than chairs sold by shopkeeper B and C together?  
 (a) 10% (b) 6% (c) 8%  
 (d) 12% (e) 14%
73. F sold only three types of chairs i.e. K, L and M in the ratio 3 : 5 : 4. Find the difference of chairs sold by F of type K and M together and that of type L?  
 (a) 320 (b) 840 (c) 740  
 (d) 420 (e) 640
74. If there is another shopkeeper P who sells three types of chairs i.e. X, Y and Z. If chairs of type X sold is half of the total chairs sold by shopkeeper F, Chairs of type Y sold is 20% of the chairs sold by shopkeeper A and chairs of type Z sold is  $\frac{2}{5}$  th of total chairs sold by shopkeeper B. Then find total number of chairs sold by Shopkeeper P?  
 (a) 12348 (b) 16368 (c) 12244  
 (d) 10368 (e) 10428

75. What is the ratio of average of chairs sold by shopkeeper B, C and D together to average of chairs sold by shopkeeper A and E together?  
 (a) 25 : 33 (b) 21 : 11 (c) 26 : 33  
 (d) 11 : 24 (e) 11 : 26

**Directions (76-80):** What should come in place of question mark (?) in the following questions?

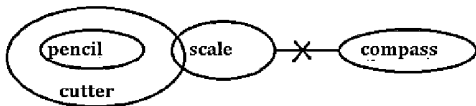
76.  $1528 + 525 \div 25 - 840 = 510 + ?$   
 (a) 199 (b) 299 (c) 159  
 (d) 189 (e) 165
77.  $\sqrt{1225} \div 7 + 18.5 \times 16 - 18\% \text{ of } 10800 = ? - 1800$   
 (a) 259 (b) 169 (c) 157  
 (d) 129 (e) 141
78.  $65\% \text{ of } 180 + ?\% \text{ of } 210 = 80\% \text{ of } 225$   
 (a) 45 (b) 30 (c) 40  
 (d) 50 (e) 25
79.  $\sqrt{1500 + ?} + 17.5 \times 8 - 5\% \text{ of } 20 = 42$   
 (a) 145 (b) 115 (c) 120  
 (d) 135 (e) 125
80.  $\frac{13}{17} \text{ of } \frac{8}{156} \text{ of } 153 = ?$   
 (a) 8 (b) 12 (c) 7  
 (d) 6 (e) 4

## Solutions

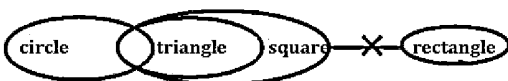
### REASONING ABILITY

1. (a);  $D > C = E$  (True)  $B \geq C = E$  (False)
2. (b);  $S = Q \geq P$  (False)  $S = Q > M \geq N$  (True)
3. (d);  $V = S$  (False)  $Q > M$  (False)
4. (a);  $S \geq V = U > T$  (True)  $V \geq Q$  (False)
5. (a);  $E = J > L \geq W$  (True)  $M \geq N > R > W \leq L$  (False)

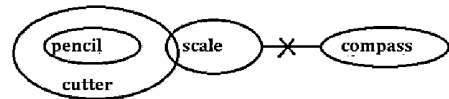
6. (a);



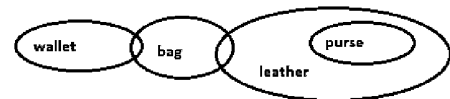
7. (b);



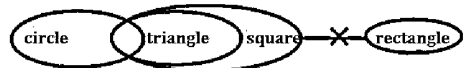
8. (e);



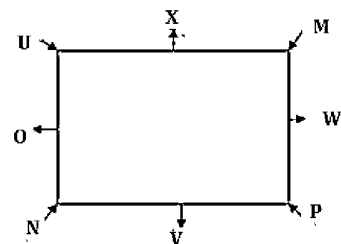
9. (d);



10. (e);

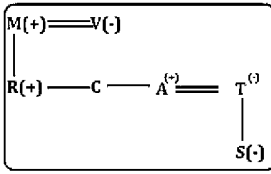


**Direction (11-15);**

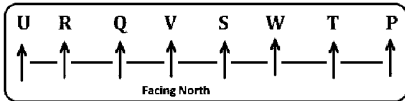


11. (b);            12. (a);            13. (d);  
 14. (a);            15. (d);

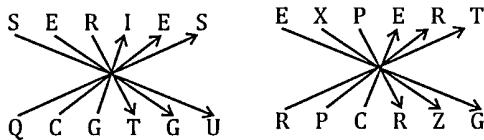
Direction (16-18);



16. (c);            17. (b);            18. (c);  
 Direction (19-23);



19. (e);            20. (d);            21. (a);  
 22. (b);            23. (e);  
 24. (b);



25. (d);

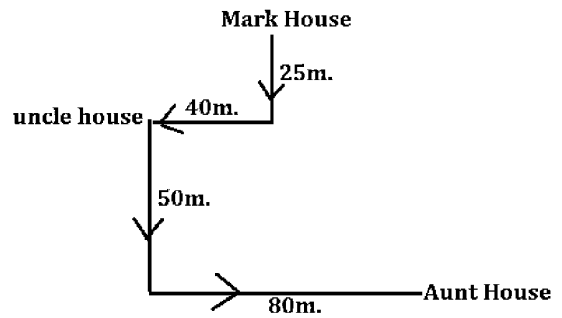


Direction (26-30);

Floor	Persons
9	T
8	R
7	S

6	U
5	P
4	Q
3	V
2	X
1	W

26. (e);            27. (e);            28. (c);  
 29. (b);            30. (d);  
 Direction (31-33);



31. (b);            32. (b);            33. (a);  
 Direction (34-38);

Day	Subjects
Monday	Mathematics
Tuesday	Chemistry
Wednesday	Hindi
Thursday	Geography
Friday	English
Saturday	Physics
Sunday	Biology

34. (e);            35. (b);            36. (d);  
 37. (b);            38. (d);            39. (b);  
 40. (d);

## QUANTITATIVE APTITUDE

41. (b); Part of the tank filled in 1 hour  
 $= \frac{1}{10} + \frac{1}{16} - \frac{1}{32} = \frac{16+10-5}{160} = \frac{21}{160}$   
 $\therefore$  Tank will be filled in  $\frac{160}{21} = 7\frac{13}{21}$  hours

42. (e);  $\therefore$  a, b, c and d are four consecutive numbers and a + c = 120  
 $\therefore a + a + 4 = 120$   
 $\Rightarrow 2a = 116 \Rightarrow a = 58$   
 $\therefore b = 60$  and  $d = 64$   
 $\therefore b \times d = 60 \times 64 = 3840$

43. (d); Let the numbers be a, b, and c respectively.  
 $\therefore \frac{a+c}{2} - \frac{b+c}{2} = 24$   
 $\Rightarrow (a+c) - (b+c) = 24 \times 2 = 48$   
 $\Rightarrow a - b = 48$

44. (e);  $\therefore$  3 men = 9 boys  
 $\therefore$  1 man = 3 boys  
 $\therefore$  5 men + 6 boys  
 $= (5 \times 3 + 6)$  boys = 21 boys  
 $\therefore M_1 D_1 = M_2 D_2$   
 $= 9 \times 21 = 21 \times D_2$   
 $= D_2 = \frac{9 \times 21}{21} = 9$  days

45. (c); Principal =  $\frac{SI \times 100}{Time \times Rate}$   
 $\therefore \frac{240 \times 100}{5 \times 6} = Rs\ 800$

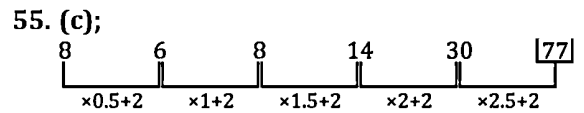
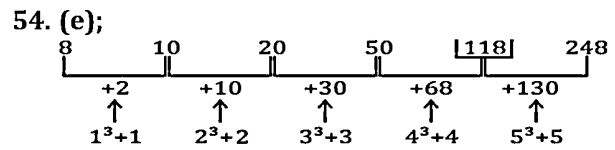
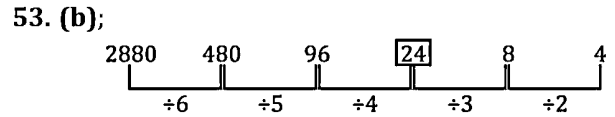
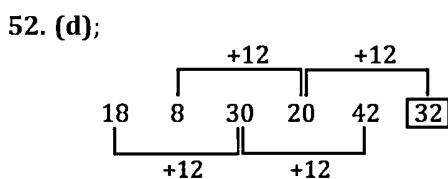
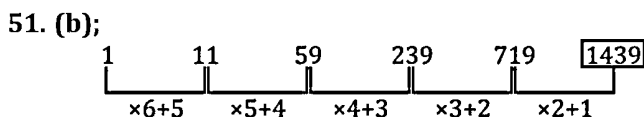
46. (d); Graduate population of city A and E together  
 $= 22000 \times \frac{5}{11} \times \frac{20}{100} + 24000 \times \frac{5}{8} \times \frac{1}{3}$   
 $= 2000 + 5000 = 7000$   
 Graduate population of city B and D together  
 $= 16000 \times \frac{3}{8} \times \frac{35}{100} + 20000 \times \frac{2}{5} \times \frac{25}{100}$   
 $= 2100 + 2000 = 4100$   
 Required percentage =  $\frac{7000 - 4100}{7000} \times 100$   
 $= \frac{2900}{7000} \times 100 \approx 42\%$

47. (a); Population who are literate but not graduate of city C  
 $= 96000 \times \frac{2}{3} \times \frac{68}{100}$   
 $= 43520$   
 Average graduate population of city D & E together  
 $= \frac{1}{2} \left[ 20000 \times \frac{2}{5} \times \frac{25}{100} + 24000 \times \frac{5}{8} \times \frac{1}{3} \right]$   
 $= \frac{1}{2} [2000 + 5000] = 3500$   
 $\therefore$  Required difference =  $43520 - 3500 = 40020$

48. (e); Illiterate male in city B  
 $= 16000 \times \frac{5}{8} \times \frac{3}{8} = 3750$   
 Graduate female in city D  
 $= 20000 \times \frac{2}{5} \times \frac{25}{100} \times \frac{3}{5}$   
 $= 1200$   
 Required ratio =  $\frac{3750}{1200} = 25 : 8$

49. (b); Illiterate Population in City D  
 $= 20,000 \times \frac{3}{5} = 12000$   
 Illiterate Population in City C  
 $= 96,000 \times \frac{1}{3} = 32000$   
 Required % =  $\frac{12000}{32000} \times 100 = 37.5\%$

50. (e); Required percentage  
 $= \frac{22,000 \times \frac{5}{11} + 16,000 \times \frac{3}{8}}{20,000 \times \frac{3}{5} + 20,000 \times \frac{2}{5} \times \frac{75}{100}} \times 100$   
 $= \frac{10,000 + 6,000}{12,000 + 6,000} \times 100 = \frac{16000}{18000} \approx 89\%$



56. (c); Let total production of the company be  $x$   
 $\therefore$  Required percent =  $\frac{(0.30x - 0.10x)}{0.30x} \times 100$   
 $= \frac{2}{3} \times 100 = 66\frac{2}{3}\%$  less

57. (a); Required difference =  $30\%$  of  $1,20,000 - 20\%$  of  $1,20,000 = 12000$

58. (e); Let total production be  $x$   
 Required ratio =  $\frac{40\% \text{ of } x}{10\% \text{ of } x} = 4 : 1$

59. (d); Let total production be  $x$   
 ATQ,  
 $10\%$  of  $x = 15000$   
 $\frac{x}{10} = 15000$   
 $x = 1,50,000$   
 Required average  
 $= \frac{10\% \text{ of } 1,50,000 + 50\% \text{ of } 1,50,000}{2}$   
 $= \frac{15000 + 75000}{2} = 45000$

60. (b); Let total production of each previous years be  $x$   
 $\therefore \frac{30}{100} x = 12000 \Rightarrow x = 40000$   
 Total production in 2018 =  $\frac{110}{100} \times 40000 = 44000$ .

61. (e);

$I. x^2 - 264 = 361$ $or, x^2 = 361 + 264$ $\therefore x^2 = 625$ $\therefore x = \sqrt{625} = \pm 25$	$II. y^3 - 878 = 453$ $or, y^3 = 453 + 878$ $or, y^3 = 1331$ $\therefore y = \sqrt[3]{1331} = 11$
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Hence no relation can be established.

62. (c);

$I. 3x^2 + 14x + 15 = 0$ $or, 3x^2 + 9x + 5x + 15 = 0$ $or, 3x(x+3) + 5(x+3) = 0$ $or, (3x+5)(x+3) = 0$ $\therefore x = -\frac{5}{3}, -3$	$II. 3y^2 - 13y + 14 = 0$ $or, 3y^2 - 6y - 7y + 14 = 0$ $or, 3y(y-2) - 7(y-2) = 0$ $or, (3y-7)(y-2) = 0$ $\therefore y = \frac{7}{3}, 2$
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Hence  $x < y$



63. (c);

$$\begin{array}{l} \text{I. } 12x^2 - 17x + 6 = 0 \\ \text{or, } 12x^2 - 9x - 8x + 6 = 0 \\ \text{or, } 3x(4x - 3) - 2(4x - 3) = 0 \\ \text{or, } (3x - 2)(4x - 3) = 0 \\ \therefore x = \frac{2}{3}, \frac{3}{4} \end{array} \quad \left| \quad \begin{array}{l} \text{II. } y^2 - 16y + 63 = 0 \\ \text{or, } y^2 - 9y - 7y + 63 = 0 \\ \text{or, } y(y - 9) - 7(y - 9) = 0 \\ \text{or, } (y - 7)(y - 9) = 0 \\ \therefore y = 7, 9 \end{array} \right.$$

Hence  $x < y$

64. (a);

$$\begin{array}{l} \text{I. } x^2 - 48x + 575 = 0 \\ \text{or, } x^2 - 23x - 25x + 575 = 0 \\ \text{or, } x(x - 23) - 25(x - 23) = 0 \\ \text{or, } (x - 25)(x - 23) = 0 \\ \therefore x = 25, 23 \end{array} \quad \left| \quad \begin{array}{l} \text{II. } 46y^2 - 35y - 11 = 0 \\ \text{or, } 46y^2 - 46y + 11y - 11 = 0 \\ \text{or, } 46y(y - 1) + 11(y - 1) = 0 \\ \text{or, } (46y + 11)(y - 1) = 0 \\ \therefore y = -\frac{11}{46}, 1 \end{array} \right.$$

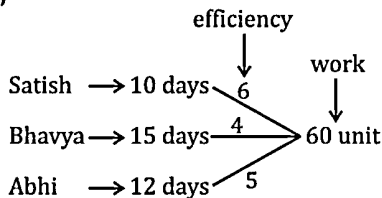
Hence  $x > y$

65. (e);

$$\begin{array}{l} \text{I. } 15x^2 - 11x - 12 = 0 \\ \text{or, } 15x^2 - 20x + 9x - 12 = 0 \\ \text{or, } 5x(3x - 4) + 3(3x - 4) = 0 \\ \text{or, } (5x + 3)(3x - 4) = 0 \\ \therefore x = -\frac{3}{5}, \frac{4}{3} \end{array} \quad \left| \quad \begin{array}{l} \text{II. } 20y^2 - 49y + 30 = 0 \\ \text{or, } 20y^2 - 25y - 24y + 30 = 0 \\ \text{or, } 5y(4y - 5) - 6(4y - 5) = 0 \\ \therefore y = \frac{5}{5}, \frac{6}{4} \end{array} \right.$$

No relation

66. (a);



(Satish + Bhavya + Abhi) 2 days work =  $15 \times 2 = 30$  unit

Bhavya 1 day work = 4 unit

$\therefore$  Whole work will be completed

$$= 2 + \frac{26}{9} + 1 = 2 + 2\frac{8}{9} + 1$$

$$= 5\frac{8}{9} \text{ days}$$

67. (d); Second no. =  $\frac{100 \times 12}{100} = 12$

$$\therefore \text{first no.} = 12^3 \times \frac{3}{2} = 1728 \times \frac{3}{2}$$

$$= 2592$$

$$\therefore \text{Required sum} = 12 + 2592 = 2604$$

68. (b); Let the price marked by whole seller be Rs.  $x$

$$\therefore \text{S.P. of article for whole seller} = x \times \frac{80}{100} \times$$

$$\frac{110}{100} = \frac{22x}{25} = \text{C.P. of article for retailer}$$

$$\text{S.P. of article for retailer} = \frac{22x}{25} \times \frac{125}{100} = \frac{11x}{10}$$

ATQ,

$$\frac{11x}{10} - \frac{22x}{25} = 1023$$

$$\frac{55x - 44x}{50} = 1023$$

$$11x = 1023 \times 50$$

$$\Rightarrow x = \text{Rs. } 4650$$

69. (e); Let present age of Bhagat & Abhi be  $9x$  and  $8x$  respectively

After 10 years.

$$\frac{9x+10}{8x+10} = \frac{10}{9}$$

$$81x + 90 = 80x + 100$$

$$x = 10$$

$\therefore$  required difference = 10 years.

70. (d); Let radius of smaller & larger circles be  $r_1$  &  $r_2$  respectively.

$$2\pi r_1 = 132$$

$$r_1 = 21 \text{ m}$$

$$2\pi r_2 = 176 \Rightarrow r_2 = 28 \text{ m.}$$

$\therefore$  Required difference

$$= \pi(r_2^2 - r_1^2) = \frac{22}{7} \times 49 \times 7 = 1078 \text{ m}^2$$

71. (b); Required difference

$$= [(16 + 12)\% - (12 + 4)\%] \times 96000$$

$$= \frac{12}{100} \times 96000 = 11520$$

72. (a); Required percentage

$$= \frac{(12+32) - (16+24)}{(16+24)} \times 100$$

$$= \frac{4}{40} \times 100 = 10\%$$

73. (e); Total chairs sold by shopkeeper F

$$= \frac{4}{100} \times 96000 = 3840$$

Required difference

$$= \frac{(7-5)}{12} \times 3840 = 640$$

74. (d); Total chairs sold by Shopkeeper P

$$= \left[ \frac{1}{2} \times 4 + \frac{1}{5} \times 12 + \frac{2}{5} \times 16 \right] \times \frac{96000}{100}$$

$$= 10368$$

75. (c); Required ratio =  $\frac{16+24+12}{\frac{3}{12+32}}$

$$= \frac{52 \times 2}{3 \times 44} = 26 : 33$$

76. (a);  $1528 + 21 - 840 - 510 = ?$

$$? = 1549 - 1350$$

$$? = 199$$

77. (c);  $\frac{35}{7} + 296 - 1944 = ? - 1800$

$$301 + 1800 - 1944 = ?$$

$$? = 157.$$

78. (b);  $\frac{65}{100} \times 180 + \frac{?}{100} \times 210 = \frac{80}{100} \times 225$

$$\frac{?}{100} \times 210 = 180 - 117$$

$$? = \frac{63 \times 100}{210} = 30$$

79. (e);  $1500 + 140 - 1 + ? = 1764$

$$? = 1764 - 1639$$

$$? = 125$$

80. (d);  $\frac{13}{17} \times \frac{8}{156} \times 153 = ? \Rightarrow ? = 6$

