

IBPS RRB PO Prelims 2019 | Memory Based Paper | For Practice

REASONING ABILITY

Direction (1-5): Study the following information carefully and answer the questions given below:

Nine persons i.e. P, Q, R, S, T, U, V, W, X were born on different months i.e. January, March, April, May, July, August, September, October, November but not necessarily in same order.

Four persons were born between P and T. P was born before T. Q was born in the month of 30 days after July. T was born after Q and before R. There were as many persons born before X as after R. one person was born between U and V. S was born before U and after W.

- How many persons were born between X and V?
(a) Two (b) Three (c) One
(d) Four (e) More than four
- Who among the following was born on August?
(a) R (b) S (c) T
(d) P (e) None of these
- In which of the following month S was born?
(a) March (b) April (c) June
(d) October (e) None of these
- If W is related to April, V is related to July then, P is related to which of the following?
(a) March (b) May (c) June
(d) August (e) October
- Four of the following five are alike in certain way based from a group, find the one which does not belong to that group?
(a) R (b) S (c) T
(d) U (e) V

Direction (6-10): In each of the questions below are given some statements followed by two conclusions. You have to take the given statements to be true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

- If only conclusion I follows.
 - If only conclusion II follows.
 - If either conclusion I or II follows.
 - If neither conclusion I nor II follows.
 - If both conclusions I and II follow.
- Statements:** Only a few Palace is Home.
All Home is Office.
No Office is Building.
Conclusion I. All Palace is Home is a possibility.
II. Some Palace is Building.
 - Statements:** All Men is Women. Some Child is Women. No Men is Boy.
Conclusion I. Some Men is Child.
II. No Men is Child.
 - Statements:** No Professor is Student. Only a few Student is Lecturer. All Lecturer is Principal.
Conclusion I. All Professor is Principal is a possibility.
II. All Student is Lecturer is a possibility.
 - Statements:** Only a few Palace is Home.
All Home is Office.
No Office is Building.
Conclusion I. Some Home is Building.
II. No Home is Building.
 - Statements:** No Professor is Student.
Only a few Student is Lecturer.
All Lecturer is Principal.
Conclusion: I. Some Student is Principal.
II. Some Lecturer is Professor.

Direction (11-15): Study the following information carefully and answer the questions given below:

Eight persons are sitting around a square table. Four persons are sitting at middle of the sides of the square and all are facing towards inside. Remaining four are sitting at corners and they face outside.

Two persons are sitting between P and U. R who is an immediate neighbor of P, sits opposite to S. T sits 3rd to the right of V. W sits immediate right of T. Q faces W.

11. Who among the following sits opposite to T?
(a) P (b) R (c) S
(d) W (e) None of these
12. How many persons are sitting between P and V when counted from left of P?
(a) Two
(b) Three
(c) Four
(d) Either (a) or (c)
(e) None of these
13. What is the position of Q with respect to R?
(a) Immediate right
(b) Immediate left
(c) 2nd to the right
(d) 2nd to the left
(e) None of these
14. Who among the following person sit 3rd to the right of Q?
(a) P (b) U (c) R
(d) S (e) None of these
15. Four of the following five are alike in certain way based from a group, find the one which does not belong to that group?
(a) Q (b) R (c) S
(d) T (e) U

Direction (16-17): Study the following information carefully and answer the questions given below:

Eight members are living in a family. Q is the only son of P. T is wife of U. T is sister of Q and R. V is daughter in law of W. S is son of T. W is the mother of Q.

16. How is S related to R?
(a) Son (b) Daughter (c) Nephew
(d) Niece (e) Can't be determined
17. How many male members are in the family?
(a) Four (b) Five (c) Three
(d) Six (e) None of these
18. How many such numerals are there in the number '254136987' which will remain at the Same position when arranged in ascending order from left to right?
(a) one (b) two (c) three
(d) four (e) None of these
19. How many pairs of letters are there in the word 'EDUCATION', each of which have as many letters between them in the word as they have between them in the English alphabet?
(a) one (b) two (c) three
(d) four (e) more than four

20. If four letter word is formed from 1st, 3rd, 5th and 6th letter of TRANSLATE then what is the 3rd letter of newly formed word? If more than one meaningful word is formed, then the answer will be Z.
(a) L (b) T (c) A
(d) S (e) Z

Directions (21-25): Read the following information carefully and answer the questions given below:

Twelve people are sitting in two parallel rows containing six people each in such a way that there is an equal distance between adjacent persons. In row 1 – P, Q, R, S, T and U are seated (but not necessarily in the same order) and all of them are facing south. In row 2 – A, B, C, D, E and F are seated (but not necessarily in the same order) and all of them are facing North. Therefore, in the given seating arrangement each member seated in a row faces another member of the other row. P faces D. U does not face A, who sits left to E but not immediate left. R sit at one of the ends and diagonally opposite to B. Three persons sit between B and F, who does not face U. C sits immediate left to D but does not faces S. Two persons sit between Q and U, none of them sits at the end. The one who faces T sits 2nd right to A.

21. Who among the following faces A?
(a) S (b) T (c) Q
(d) R (e) none of these
22. How many persons sit to the right of R?
(a) No One (b) one (c) two
(d) three (e) four
23. Four of the following five form a group, who among the following does not belongs to that group?
(a) U (b) T (c) E
(d) F (e) A
24. If in a certain way R is related to C, T is related to E, then who among the following is related to D?
(a) U (b) T (c) E
(d) F (e) Q
25. Who among the following sit 3rd right to U?
(a) R (b) T (c) P
(d) S (e) Q

Directions (26-30): Study the following information carefully and answer the questions given below:

In a certain code language

'left right centre' is written as 'yo vo na',
'ahead below behind' is written as 'sa ra la',
'above centre right' is written as 'ha vo na', and
'behind below above' is written as 'ha ra la'.

26. What is the code for 'left'?
(a) sa (b) ha (c) yo
(d) na (e) None of these

27. 'behind' will be written as?
 (a) ra (b) ha (c) la
 (d) Either (a) or (c) (e) None of these
28. What is the code for 'ahead'?
 (a) sa (b) yo (c) la
 (d) ha (e) Can't be determined
29. What does 'ha' stand for?
 (a) behind (b) below (c) ahead
 (d) above (e) None of these
30. What is the code for 'centre'?
 (a) la (b) yo (c) sa
 (d) ha (e) Can't be determined

Directions (31-35): Study the following information and answer the questions given below:

There are eleven boxes placed one above the other. Five boxes are placed between F and T. Not more than five boxes are kept above T. Two boxes are kept between T and M. Three boxes are kept between M and S and M is kept at one of the positions above S. There are only three boxes kept above the box J. One box is kept between R and S. Two boxes are kept between R and H. Box D is kept at one of the positions below box K and at one of the positions above box C which is not above R. Box E is kept immediately above K.

31. How many boxes are placed between J and R?
 (a) 5 (b) 6 (c) 3
 (d) 4 (e) None of these
32. Which of the following statement is true regarding C?
 (a) C is placed at one of the positions above D
 (b) C is placed immediately below F.
 (c) R is placed just above C
 (d) C is placed at the bottom most position
 (e) None of these

33. Which of the following is not true regarding J?
 (a) J is immediately below box T
 (b) One of the boxes below J is D
 (c) Number of boxes between J and S is four
 (d) One of the boxes above J is K
 (e) One box is kept between J and M
34. Number of boxes above K is one less than the number of boxes below _____.
 (a) S (b) R (c) F
 (d) D (e) None of these
35. How many boxes are there between M and H?
 (a) One (b) Two (c) Three
 (d) None (e) More than three

Directions (36-40): In each of the question, relationships between some elements are shown in the statements. These statements are followed by conclusions numbered I and II. Read the statements and give the 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.
36. **Statements:** $C \leq L = E \leq R \leq K = P \geq O$
Conclusions: I. $P = C$ II. $C < P$
37. **Statements:** $W > A = S \geq H < I \leq N \leq G$
Conclusions: I. $H < W$ II. $G > H$
38. **Statements:** $C < O \leq D = S > A \geq P \geq Q$
Conclusions: I. $Q < D$ II. $C < A$
39. **Statements:** $F \leq B = I \leq C = A \geq S > E$
Conclusions: I. $S \geq B$ II. $F > E$
40. **Statements:** $I \geq N = T \geq E > L \geq G > M$
Conclusions: I. $G < N$ II. $I \geq L$

Quantitative Aptitude

Directions (41-45): Study the table given below and answer the following Question

Company	Total employee	Employee in HR dept	% of Female in HR dept
A	300	80	75
B	250	50	80
C	400	100	60
D	200	60	60

41. Find the average no. of Females in HR department together ?
 (a) 54 (b) 46 (c) 49
 (d) 50 (e) 52

42. Females in the HR dept of company C is what % more than male in HR department of company A ?
 (a) 250% (b) 200% (c) 100%
 (d) 300% (e) 150%
43. If total no. of employee in E is 25% more than D and no. of employee in HR dept is same as in company C, then employee other than HR dept in company E is what % of other dept employee in company B.
 (a) 60% (b) 80% (c) 75%
 (d) 50% (e) 55%

44. Find the difference between males of HR dept in company C and D together and females of HR dept in company B and C together ?

- (a) 36 (b) 42 (c) 48
(d) 40 (e) 30

45. Find the average no. of employee other than HR dept. in A, B and C together ?

- (a) 280 (b) 270 (c) 220
(d) 300 (e) 240

46. If there are total 150 females in company C then how many female employees are there other than females of HR department

- (a) 90 (b) 100 (c) 80
(d) 110 (e) 120

Directions (47-51): Find the missing term in the following number series:

47. 1864, 1521, 1305, ?, 1116, 1089

- (a) 1160 (b) 1180 (c) 1095
(d) 1205 (e) 1220

48. 18, ?, 9, 18, 72, 576

- (a) 12 (b) 9 (c) 18
(d) 10 (e) 6

49. 12, 6.5, 7.5, 12.75, 27.5, ?

- (a) 66.5 (b) 68.75 (c) 63.75
(d) 71.25 (e) None of these

50. 5, 15, 50, ?, 1030, 6185

- (a) 210 (b) 205 (c) 225
(d) 200 (e) 195

51. 130, 154, 186, ?, 274, 330

- (a) 216 (b) 220 (c) 240
(d) 226 (e) 230

52. If a boat travels 18 km more in downstream than in upstream in 3 hr. and if the speed of the Boat in still water is 20 km/hr. find the distance travelled by boat in downstream in 4 hr. ?

- (a) 86 (b) 92 (c) 68
(d) 96 (e) None of these

53. If A invested Rs. 12000 at some rate of interest of S.I and B joined him after 3 months investing 16000 at same rate of interest if A leaves before 2 month of completion, then what will be the share of B's profit after 1 year if total profit is 22000 Rs. ?

- (a) 10000 (b) 14000 (c) 12000
(d) 8000 (e) 11000

54. If ratio of ages of P and Q before 4 year ago is 5 : 4 and after 12 years sum of their ages will be 68 years, their what was P's age 2 years ago ?

- (a) 24 years (b) 22 years (c) 18 years
(d) 26 years (e) 20 years

55. If Pipes A and B can fill a tank in 15 min and 20 mins respectively and pipe C empties the tank in 12 mins. what will be the time taken by A, B and C together to fill the tank completely?

- (a) 25 min (b) 30 min (c) 40 min
(d) 20 min (e) 35 min

Directions (56-60): Solve the given quadratic equations and mark the correct option based on your answer—

- (a) $x > y$
(b) $x < y$
(c) $x \geq y$
(d) $x \leq y$
(e) $x = y$ or there is no relationship

56. (i) $x^2 = 81$ (ii) $y^2 - 18y + 81 = 0$

57. (i) $4x^2 - 24x + 32 = 0$ (ii) $y^2 - 8y + 15 = 0$

58. (i) $x^2 - 21x + 108 = 0$ (ii) $y^2 - 17y + 72 = 0$

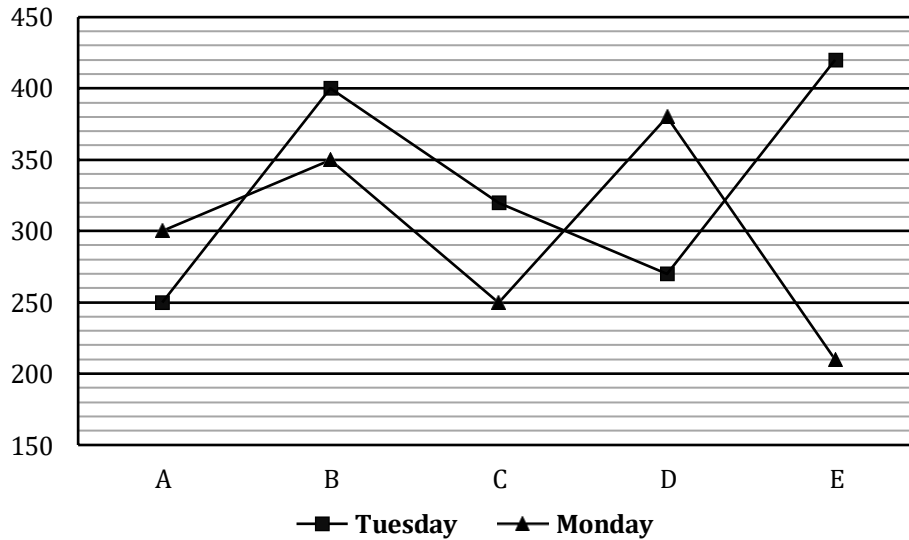
59. (i) $x^2 - 11x + 30 = 0$ (ii) $y^2 - 15y + 56 = 0$

60. (i) $x^3 = 512$ (ii) $y^2 = 64$

61. If a shopkeeper marks an item 50% above its CP and if 12% discount is given on the marked price and the shopkeeper makes profit of 256 Rs, then what will be the actual cost price of the item?

- (a) 1000 Rs. (b) 800 Rs. (c) 750 Rs.
(d) 1200 Rs. (e) 900 Rs.

Directions (62-67): The line graph shows the data of five seller selling an items (in units) on Monday and Tuesday.



62. The no. of item sold by A and C together is how much more or less then items sold by B and D together on both days?

- (a) 250 (b) 280 (c) 300
(d) 320 (e) 350

63. What is the average no. of items sold by all five sellers on Monday ?

- (a) 298 (b) 305 (c) 280
(d) 300 (e) 315

64. Items sold by B and C on Tuesday together is what % more than same sellers on Monday together ?

- (a) 25% (b) 30% (c) 20%
(d) 15% (e) 24%

65. Find the difference between items sold by B, D, E on Monday together items sold by B and E on Tuesday together

- (a) 150 (b) 180 (c) 160
(d) 120 (e) 200

66. Item sold On Monday by C and E together is approximately what percentage of total items sold by A and B together on Tuesday ?

- (a) 71% (b) 80% (c) 55%
(d) 85% (e) 65%

67. Find the difference between the average items sold by A and B together on Monday and average of items sold by B and C together on Tuesday?

- (a) 45 (b) 35 (c) 25
(d) 40 (e) 50

68. If A start from P with speed 60 km/hr at 8:00 am and B starts with speed 70 km/hr. at 8 : 30 am from Q and total distance between P and Q is 680 km, find at what time they will cross each other?

- (a) 2 : 30pm (b) 1 : 30pm (c) 12 : 30pm
(d) 3 : 00pm (e) 4 : 00pm

69. If a person invested 6000 at T% S.I for 3 year and same amount at $(T + 5)\%$ CI for 2 year and difference between both interest is 60 Rs. then find T?(in %)

- (a) 15 (b) 18 (c) 20
(d) 24 (e) 25

Direction (70–74): Read the data carefully and answer the question.

There are 1800 students in two school 'A' & 'B' and three streams in each school i.e. art, science & commerce. $18\frac{3}{4}\%$ of total students in school A are in commerce stream and $28\frac{4}{7}\%$ of total students in school B are in science stream. Sum of total students in commerce stream in A & science stream in B is 420. $19\frac{1}{21}\%$ of total students in school B are in commerce stream and 50% of total students in school A are in Art stream.

70. Total students in art stream in A is what percent more than total students in science stream in B?

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

71. Find the ratio of total students in commerce stream in B to total students in science stream in A?

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

72. If in school C total students are 720 students and total students in science stream of school C are 25% more than total students in commerce stream in school B, then find total students of art & commerce stream in school C is how much less than total students in art and commerce stream in school A?

- (a) 120 (b) 110 (c) 150
(d) 100 (e) 140

73. Find the average number of students in science stream in school A & B?
 (a) 250 (b) 270 (c) 240
 (d) 200 (e) 225
74. If out of total students in art stream of school A & B ratio of boys to girl is 5 : 3 and 7 : 4 respectively, then find difference between boys and girls in art stream of school A & B together?
 (a) 220 (b) 225 (c) 240
 (d) 248 (e) 224
75. P invested 60% more than Q and R invested 20% more than Q. If ratio of investment time-period (P: Q: R) is 2: 4: 3 and the sum of profit shares of Q and R is Rs. 8550 then find the profit share of P.
 (a) Rs. 3200 (b) Rs. 4000 (c) Rs. 2400
 (d) Rs. 3600 (e) Rs. 3000
76. When a person sold an article, his profit percent is 60% of the selling price. If the cost price is increased by 75% and the selling price remains the same, then find decrement in the profit is what percent of the selling price of the article?
 (a) 25% (b) 30% (c) 40%
 (d) 27.5% (e) None of these
77. Area of Ist circle and circumference of IInd circle is 1386 cm² and 176 cm respectively. There is a square whose side is $35\frac{5}{7}\%$ of twice of sum of the radius of both the circles. Find the perimeter of the square (in cm)?
 (a) 132 (b) 136 (c) 140
 (d) 116 (e) 124
78. There are 5 red, 6 black and 5 blue balls in a bag. Out of these balls, four balls are picked at random from the bag. Then, what is the probability that one is red, two are black and one is blue ball?
 (a) $\frac{75}{362}$ (b) $\frac{75}{364}$ (c) $\frac{71}{362}$
 (d) $\frac{70}{363}$ (e) $\frac{5}{26}$
79. An article is marked $66\frac{2}{3}\%$ above the cost price and loss incurred on selling that article is 25% of the discount given on it. Then, find the discount % given?
 (a) $48\frac{1}{3}\%$ (b) $53\frac{1}{3}\%$ (c) $58\frac{1}{3}\%$
 (d) $63\frac{1}{3}\%$ (e) 60 %
80. A train travelling at 72 km/hr. crosses a platform of 160 m in 18 second and another train travelling at 90 km/hr crosses the same platform in 15 second. Find the length of another train?
 (a) 160 m (b) 180 m (c) 140 m
 (d) 200 m (e) 215 m

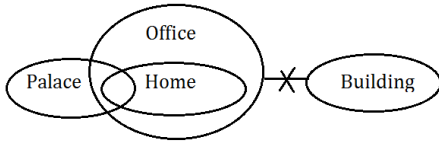
Solutions

REASONING ABILITY

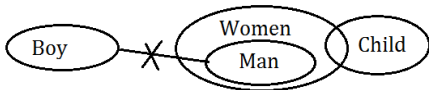
Direction (1-5):

Months	Persons
January	X
March	W
April	P
May	V
July	S
August	U
September	Q
October	T
November	R

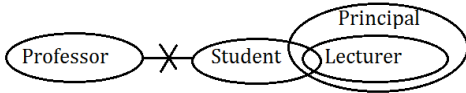
1. (a); 2. (e); 3. (e);
 4. (b); 5. (a);
 6. (d);



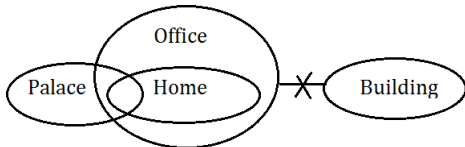
7. (c);



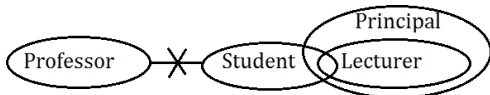
8. (a);



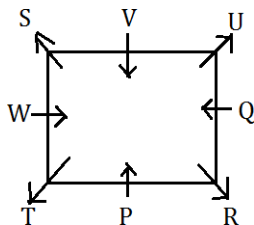
9. (b);



10. (a);

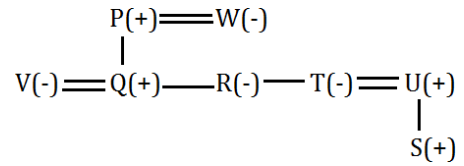


Direction (11-15):

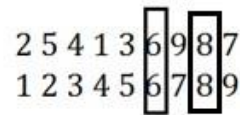


11. (e); 12. (b); 13. (b);
 14. (d); 15. (a);

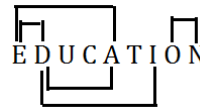
Direction (16-17):



16. (c); 17. (a);
 18. (b);

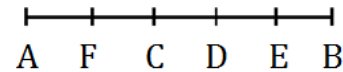
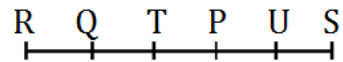


19. (e);



20. (e);

Directions (21-25):



21. (d); 22. (a); 23. (e);
 24. (e); 25. (e);

Directions (26-30):

Word	Code
Right/centre	vo/na
Left	yo
Below/behind	ra/la
Ahead	sa
above	ha

26. (c); 27. (d); 28. (a);
 29. (d); 30. (e);

Directions (31-35):

Boxes
E
K
T
J
H
M
D
R
F
S
C

31. (c); 32. (d); 33. (c);

34. (c); 35. (d);

Direction (36-40):

36. (c); I. $P = C$ (False) II. $C < P$ (False)

37. (e); I. $H < W$ (True) II. $G > H$ (True)

38. (a); I. $Q < D$ (True) II. $C < A$ (False)

39. (d); I. $S \geq B$ (False) II. $F > E$ (False)

40. (a); I. $G < N$ (True) II. $I \geq L$ (False)

Quantitative Aptitude

41. (c); Average no. of females in HR dept

$$\begin{aligned} & \frac{75}{100} \times \frac{80}{100} + \frac{60}{100} \times \frac{60}{100} + \frac{60}{100} \times \frac{80+50}{100} \times \frac{60}{100} \\ &= \frac{75 \times 80 + 60 \times 60 + 60 \times 130 \times 60}{100 \times 100} \\ &= \frac{60+40+60+36}{4} = \frac{196}{4} = 49 \end{aligned}$$

42. (b); Females in company C (HR) = $100 \times \frac{60}{100} = 60$

Males in company A (HR) = $80 \times \frac{25}{100} = 20$

Difference = $60 - 20 = 40$

$\therefore \% = \frac{40}{20} \times 100 = 200\%$ more

43. (c); Total employee in E = $200 \times \frac{125}{100} = 250$

\therefore employee of HR dept in E = 100

\therefore other employee = 150

\therefore % of other employee = $150 \times \frac{100}{200} = 75\%$

44. (a); Males in HR dept in C and D

$$= 100 \times \frac{40}{100} + 60 \times \frac{40}{100} = 40 + 24 = 64$$

Females in HR dept of B and C = $50 \times \frac{80}{100} +$

$$100 \times \frac{60}{100} = 100$$

\therefore Difference = $100 - 64 = 36$

45. (e); Average of A, B, C = $\frac{220+200+300}{3} = \frac{720}{3} = 240$

46. (a); Total females in company C = 150

females in HR department in company C

$$= 100 \times \frac{60}{100} = 60$$

therefore females other than in HR department = $150 - 60 = 90$

47. (b);

$$\begin{array}{cccccc} 1864 & 1521 & 1305 & \boxed{1180} & 1116 & 1089 \\ -343 & -216 & -125 & -64 & -27 & \\ = -7^3 & = -6^3 & = -5^3 & = -4^3 & = -3^3 & \end{array}$$

48. (b); 18, ?, 9, 18, 72, 576

$$18 \times 0.5 = \boxed{9}$$

$$9 \times 1 = 9$$

$$9 \times 2 = 18$$

$$18 \times 4 = 72$$

$$72 \times 8 = 576$$

49. (d); $12 \times 0.5 + 0.5 = 6.5$

$$6.5 \times 1 + 1 = 7.5$$

$$7.5 \times 1.5 + 1.5 = 12.75$$

$$12.75 \times 2 + 2 = 27.5$$

$$27.5 \times 2.5 + 2.5 = \boxed{71.25}$$

50. (b); $5 \times 2 + 5 = 15$

$$15 \times 3 + 5 = 50$$

$$50 \times 4 + 5 = \boxed{205}$$

$$205 \times 5 + 5 = 1030$$

$$1030 \times 6 + 5 = 6185$$

51. (d);

$$130 \quad 154 \quad 186 \quad \boxed{226} \quad 274 \quad 330$$

$$+24 \quad +32 \quad +40 \quad +48 \quad +56$$

52. (b); $(D_s - D_u) \times 3 = 18 \text{ km}$

Different in 1 hr. = 6km

D_s and D_u

\therefore Speed of boat in still water = 20 km/hr.

$D_s = 23 \text{ km/hr.}, D_u = 17 \text{ km/hr.}$

Distance travelled = $4 \times 23 = 92 \text{ km}$

53. (c);

A	B
12000	16000
$\times 10$	$\times 9$
120	144
5	6

$$\therefore \text{B's share} = 22000 \times \frac{6}{11} = 12000$$

54. (b); P Q

$$\begin{array}{ccc} -4 & 5 & 4 \end{array}$$

$$+12 \quad P + Q = 68$$

Age increased in 16 year = 32 years

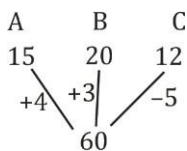
Sum of Age of P and Q before 4 years = 36

$$\therefore 5x + 4x = 36$$

$$X = 4$$

P's age 2 years ago = $5x + 2 = 22$ years

55. (b);



\therefore tank filled in 1 min = 2 units

$$\text{Total time} = \frac{60}{2} = 30 \text{ minutes}$$

56. (d); $x^2 = 81$

$$x = \pm 9$$

$$Y^2 - 18y + 81 = 0$$

$$(y - 9)^2 = 0$$

$$\therefore y = 9, 9$$

$$\therefore x \leq y$$

57. (e); $4x^2 - 24x + 30 = 0$

$$4x^2 - 16x - 8x + 32 = 0$$

$$4x(x - 4) - 8(x - 4) = 0$$

$$x = 4, 2$$

$$y^2 - 8y + 15 = 0$$

$$y^2 - 5y - 3y + 15 = 0$$

$$y(y - 5) - 3(y - 5) = 0$$

$$\therefore y = 5, 3$$

\therefore No relation exists

58. (c); $x^2 - 21x + 108 = 0$

$$x^2 - 9x - 12x + 108 = 0$$

$$x(x - 9) - 12(x - 9) = 0$$

$$x = 9, 12$$

$$y^2 - 17y + 72 = 0$$

$$\therefore y^2 - 8y - 9y + 72 = 0$$

$$y(y - 8) - 9(y - 8) = 0$$

$$\therefore y = 8, 9$$

$$\therefore x \geq y$$

59. (b); $x^2 - 11x + 30 = 0$

$$x^2 - 6x - 5x + 30 = 0$$

$$\therefore x(x - 6) - 5(x - 6) = 0$$

$$x = 6, 5$$

$$y^2 - 15y + 56 = 0$$

$$y^2 - 7y - 8y + 56 = 0$$

$$y(y - 7) - 8(y - 7) = 0$$

$$\therefore y = 7, 8$$

$$\therefore x < y$$

60. (c); $x^3 = 512$

$$x = \sqrt[3]{512} = 8$$

$$y^2 = 64$$

$$y = \sqrt{64} = \pm 8$$

$$\therefore x \geq y$$

61. (b); Let CP = $100x$

$$\therefore \text{marked price} = 150x$$

$$\therefore \text{selling price after giving discount} = 132x$$

$$\therefore 32x = 256$$

$$x = 8$$

$$\therefore \text{CP} = \text{Rs } 800$$

62. (b); Item sold by A and C = $550 + 570 = 1120$

$$\text{Item sold by B and D} = 750 + 650 = 1400$$

$$\therefore \text{diff.} = 1400 - 1120 = 280$$

63. (a); Average = $\frac{300+350+250+380+210}{5} = \frac{1490}{5} = 298$

64. (c); Item sold by B and C on Monday

$$= 350 + 250 = 600$$

Item sold by B and C on Tuesday

$$= 400 + 320 = 720$$

$$\therefore \% \text{ increase} = 120 \times \frac{100}{600} = 20\%$$

65. (d); Items sold on Monday by B, D and E

$$= 350 + 380 + 210 = 940$$

Item sold on Tuesday by B and E = $400 + 420$

$$= 820$$

$$\therefore \text{diff} = 940 - 820 = 120$$

66. (a); Item sold by C and E on Monday
 $= 250 + 210 = 460$
 Item sold by A and B together on Tuesday
 $= 400 + 250 = 650$
 $\therefore ? = 460 \times \frac{100}{650}$
 $\approx 71\%$ (approx)

67. (b); Avg. by A and B on Monday $= \frac{650}{2} = 325$
 Avg. of B and C on Tuesday $= \frac{720}{2} = 360$
 Diff. $= 360 - 325 = 35$

68. (b);

P	Q
A	B
8 am	8 : 30
60km/hr	70 km/hr

680 km

Dist travelled by A in $\frac{1}{2}$ hr $= 30$ km
 Remaining distance to be covered $= 680 - 30 = 650$ km
 Relative speed $= 60 + 70 = 130$
 \therefore time taken $= \frac{650}{130} = 5$ hr
 \therefore time $= 8 : 30 + 5$ hr $= 1 : 30$ pm

69. (a); By going with the options
 Interest received at SI $= \frac{6000 \times 3 \times 15}{100} = 2700$ Rs
 $\therefore T + 5 = 20\%$
 Interest received after 2 yrs at CI $= \frac{6000 \times 44}{100}$
 $= 2640$
 \therefore Difference $= 2700 - 2640 = 60$ Rs
 T = 15%

Direction (70–74):

Let total students in A = x
 And, total students in B = y
 Total students in school A in commerce stream
 $= x \times \frac{75}{4} \times \frac{1}{100} = \frac{3x}{16}$
 Total students in school B in science stream
 $= y \times \frac{200}{7} \times \frac{1}{100} = \frac{2y}{7}$
 Given, $\frac{3x}{16} + \frac{2y}{7} = 420$... (i)
 And $x + y = 1800$... (ii)
 So, from (i) and (ii),
 Total students in school A = 960
 And total students in school B = 840
 Total students in school B in commerce stream
 $= \frac{400}{21} \times \frac{1}{100} \times 840 = 160$
 Total students in school A in art stream
 $= \frac{1}{2} \times 960 = 480$
 Now, total students in school A in science stream
 $= 960 - \frac{3}{16} \times 960 - 480 = 300$
 And total students in school B in art stream
 $= 840 - \frac{2}{7} \times 840 - 160 = 440$

Streams	A	B
Art	480	440
Commerce	180	160
Science	300	240

70. (d); Required percentage $= \frac{480 - 240}{240} \times 100 = 100\%$

71. (a); Required ratio $= \frac{160}{300} = 8 : 15$

72. (e); Total student art & commerce stream in C
 $= 720 - 160 \times \frac{125}{100} = 520$
 Required difference
 $= (480 + 180) - 520 = 140$

73. (b); Required average $= \frac{300 + 240}{2} = \frac{540}{2} = 270$

74. (c); Total boys in art stream of school A & B together
 $= 480 \times \frac{5}{8} + 440 \times \frac{7}{11} = 300 + 280 = 580$
 Total girls in art stream of school A & B together
 $= 480 \times \frac{3}{8} + 440 \times \frac{4}{11} = 180 + 160 = 340$
 Required difference $= 580 - 340 = 240$

75. (d); Let the investment of Q = 100x
 Investment of P = 160x
 Investment of R = 120x
 Ratio of profit:

P	Q	R
$160x \times 2$	$100x \times 4$	$120x \times 3$
8	: 10	: 9

 ATQ,
 19 unit = Rs. 8550
 8 unit = $450 \times 8 =$ Rs. 3600

76. (b); Let the selling price be 250x
 then, profit = 150x
 CP = $250x - 150x = 100x$
 Now, new C.P. = $100x \times \frac{175}{100} = 175x$
 New S.P. = 250x
 New profit = $250x - 175x = 75x$
 Required % $= \frac{150x - 75x}{250x} \times 100 = 30\%$

77. (c); Circumference of any circle $= 2\pi \times$ radius
 Radius of 1st circle $= \sqrt{\frac{1386}{\pi}} = 21$ cm
 Radius of 2nd circle $= \frac{176}{2\pi} = 28$ cm
 Side of square $= \frac{5}{14} \times 2 \times (21 + 28) = 35$ cm
 Perimeter of square $= 4 \times 35 = 140$ cm

78. (b); Ways to select 4 balls out of 16 balls = $16C_4$

Ways to select one red balls = $5C_1$

Ways to select two black balls = $6C_2$

Ways to select one blue balls = $5C_1$

∴ Required probability

$$= \frac{5C_1 \times 6C_2 \times 5C_1}{16C_4} = \frac{75}{364}$$

79. (b); Let the cost price be Rs $3x$

Then the marked price = Rs $5x$

And let the discount given be Rs $4y$

Then loss incurred = Rs y

ATQ

$$3x - y = 5x - 4y$$

$$3y = 2x$$

$$\text{Marked price} = \text{Rs } \frac{15}{2}y$$

$$\text{Required discount \%} = \frac{4y}{\frac{15}{2}y} \times 100 = 53\frac{1}{3}\%$$

80. (e); Speed of 1st train = $72 \times \frac{5}{18} = 20$ m/s

$$\therefore \text{Dist travelled by 1st train} = 20 \times 18 = 360 \text{ m}$$

$$\therefore \text{length of train (1st)} = 360 - 160 = 200 \text{ m}$$

$$\text{Speed of 2nd train} = 90 \times \frac{5}{18} = 25 \text{ m/s}$$

$$\therefore \text{Distance travelled} = 25 \times 15 = 375 \text{ m}$$

$$\therefore \text{length of 2nd train} = 375 - 160 = 215 \text{ m}$$

