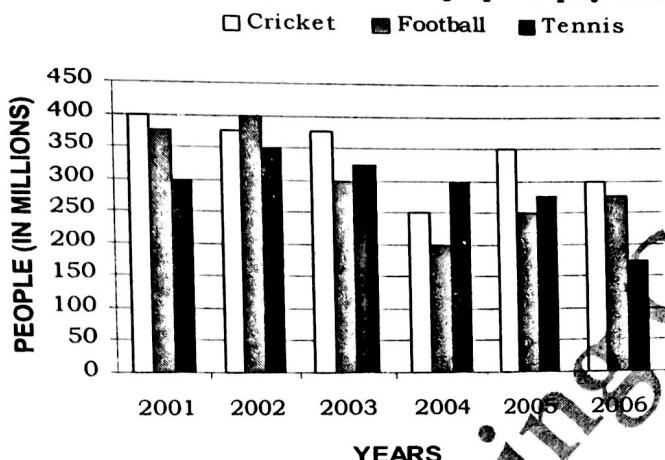


- Q. 24.** Who has scored the highest marks in all the subjects together ?  
 (1) E                   (2) C                   (3) F                   (4) A                   (5) D

**Q. 25.** Marks obtained by F in S. St. are what percent of marks obtained by E in the same subject ?  
 (1) 72               (2) 84               (3) 79               (4) 82               (5) 80

**Q. 26-30:** Study the following Graph carefully and answer the questions given below:

**Following bar diagram shows the preferences of people to play different games.**



- Q. 26. In the year 2006, the people preferring to play Tennis is what percent of the people preferring to play Cricket, Football and Tennis together in that year?

(1)  $25\frac{1}{2}$       (2)  $24\frac{3}{4}$       (3)  $21\frac{1}{3}$       (4)  $22\frac{2}{5}$       (5)  $23\frac{1}{3}$

Q. 27. From 2001 to 2006, the total number of people who preferred to play Football was how much (in millions) ?

(1) 1500      (2) 1600      (3) 1700      (4) 1800      (5) 1900

Q. 28. The number of people preferring to play Tennis in 2006, is how many millions fewer than the number of people preferring to play Tennis in 2005 ?

(1) 110      (2) 105      (3) 100      (4) 95      (5) 90

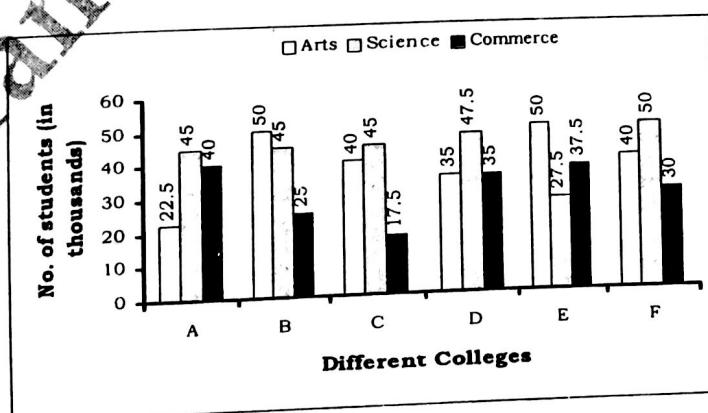
Q. 29. What is the respective ratio of the number of people preferring to play Cricket to the number of people preferring to play Tennis in the year 2003 ?

(1) 14:17      (2) 15:13      (3) 15:11      (4) 13:15      (5) 17:14

Q. 30. How many people (in millions) have preferred to play Cricket in all the years together ?

(1) 2050      (2) 2000      (3) 1850      (4) 1750      (5) 1600

**Total number of Arts, Science and Commerce students in various Colleges (in thousands)**



- Q. 31. The number of students taking Arts in college B is how many thousand fewer than the number of students taking Arts in college A and college C together?  
 (1) 12.5      (2) 27.5      (3) 50      (4) 10      (5) 62.5
- Q. 32. In college F, the students taking Commerce is what per cent of the total number of students taking Arts, Science and Commerce in all?  
 (1) 45      (2) 55      (3) 59      (4) 70      (5) 25
- Q. 33. How many candidates (in thousands) have taken Commerce from all the colleges?  
 (1) 165      (2) 177      (3) 185      (4) 193      (5) 199
- Q. 34. What is the ratio of the number of students taking Science to the number of students taking Arts in college D?  
 (1) 14 : 19      (2) 12 : 17      (3) 17 : 19      (4) 19 : 14      (5) 13 : 18
- Q. 35. What is the average number of students (in thousands) taking up Science from all the six colleges together? (Rounded off to two digits after decimal)  
 (1) 44.90      (2) 43.33      (3) 51.33      (4) 49.90      (5) 48.88

**Q.36-40:** Study the following table carefully and answer the questions given below:  
**Marks obtained by different students in different subjects**

Students	Subjects (Maximum Marks)						
	Hindi (100)	Eng (100)	Math (100)	S.St. (100)	Science (75)	Sanskrit (50)	Phy. Edu. (75)
Anupama	85	95	87	87	65	35	71
Bhaskar	72	97	55	77	62	41	64
Charu	64	78	74	63	55	25	53
Deepak	65	62	69	81	70	40	50
Garima	92	82	81	79	49	30	61
Vishal	55	70	65	69	44	28	30

- Q. 36. How many students have scored the lowest marks in two or more subjects?  
 (1) 2      (2) 3      (3) 1      (4) 0      (5) 4
- Q. 37. Who has scored the highest marks in all the subjects together?  
 (1) Deepak      (2) Charu      (3) Anupama      (4) Garima      (5) Bhaskar
- Q. 38. What is the percentage of Deepak's marks (up to two digits after decimal) in all the subjects together?  
 (1) 88.63      (2) 77.38      (3) 67.83      (4) 62.83      (5) 72.83
- Q. 39. Marks obtained by Charu in Hindi is what per cent of marks (up to two digits after decimal) obtained by Anupama in the same subject?  
 (1) 75.92      (2) 78.38      (3) 77.29      (4) 75.29      (5) 72.83
- Q.40. What is the average marks obtained by all the students together in Science?  
 (1) 55.75      (2) 57.5      (3) 60      (4) 59.5      (5) 58

## ANSWER

### **DATA INTERPRETATION-II**

1.2	2.4	3.1	4.5	5.3	6.1	7.3	8.2	9.4	10.5	11.3	12.4	13.2
14.1	15.5	16.5	17.2	18.4	19.1	20.3	21.1	22.4	23.3	24.2	25.5	26.5
27.4	28.3	29.2	30.1	31.1	32.5	33.3	34.4	35.2	36.1	37.3	38.5	39.4
40.2												

## ANSWERS WITH EXPLANATION

### **DATA INTERPRETATION-II**

1. 2; The required per cent =  $\frac{2.6}{152} \times 100 \approx 1.71\%$

2. 4; The required items  
 $= (156 - 2.2 - 145) \times 1000 = 8.8 \times 1000 = 8800$   
 Company Accepted items in the year 2002  
 (in thousands)

A	164 - 1.7	= 162.3
B	115 - 1.1	= 113.9
C	172 - 2.9	= 169.1
D	169 - 1.9	= 167.1
E	96 - 0.8	= 95.2
<b>707.6</b>		

ie 7,07,600

4. 5; The required average number of rejected items  
 $= \frac{(1.5 + 1.9 + 2.3 + 2.1 + 2.0 + 2.4) \times 1000}{6}$

$$= \frac{12.2}{6} \times 1000 = 2033$$

5. 3; The required number of items  
 $= (175 + 158 + 180 + 171 + 105) \times 1000$   
 $= 7,89,000$

6. 1; Suppose, the expenditures of companies A & B in 2007 were ₹ x (each).  
 Then 140% of x = 165% of x = ₹ 48.8 lakh  
 or, 305% of x = ₹ 48.8 lakh  
 $\therefore 200\% \text{ of } x = \frac{48.8}{305} \times 200 = ₹ 32 \text{ lakh}$

7. 3; Suppose, the expenditure of the company B in the years 2004 and 2005 were ₹ x and ₹ y respectively.

$$\text{Then } \frac{160\% \text{ of } x}{150\% \text{ of } y} = \frac{3}{5}$$

$$\therefore \frac{x}{y} = \frac{3 \times 150}{5 \times 160} = \frac{9}{16} \text{ ie } 9 : 16$$

8. 2; 150% of 25 + 160% of 30  
 $= 37.5 + 48 = 85.5 \text{ lakhs}$

9. 4; We have no clues regarding the ratio of expenditures of the company A during the given years.

10. 5; Required ratio =  $\frac{170\% \text{ of } 7}{160\% \text{ of } 8} = \frac{119}{128} \text{ ie } 119 : 128$

11. 3; In the year 2003, the number of article sold by the  
 (i) Company P = 55% of 35 lakhs = 19.25 lakhs  
 (ii) Company Q = 40% of 30 lakhs = 12 lakhs

Hence, required number of articles

$$= (19.25 + 12) \text{ lakh} = 31.25 \text{ lakhs}$$

ie 31,25,000

12. 4; Approximate average number of articles manufactured by Company P over the years (in lakhs)

$$= \frac{25 + 22.5 + 30 + 35 + 32.5 + 30}{6}$$

$$= \frac{175}{6} = 29 \frac{1}{6} \text{ lakh}$$

ie 29,16,667 (approx)

13. 2; Number of articles sold by company Q

- (i) in 2002 = 30% of 30 lakhs = 9 lakhs
  - (ii) in 2004 = 70% of 32.5 lakhs = 22.75 lakhs
- Hence, required percentage

$$= \frac{(22.75 - 9)}{9} \times 100 = 152 \frac{7}{9}\%$$

ie 152.78% (approx)

14. 1; In the year 2002, the number of articles not sold by

- (i) Company P = (100 - 40)% of 25 lakhs  
 $= 60\% \text{ of } 25 \text{ lakhs}$
- (ii) Company Q = (100 - 30)% of 30 lakhs  
 $= 70\% \text{ of } 30 \text{ lakh}$

Now, required ratio

$$= \frac{60\% \text{ of } 25 \text{ lakhs}}{70\% \text{ of } 30 \text{ lakhs}} = \frac{60 \times 25}{70 \times 30} = 5 : 7$$

15. 5; 2005 and 2007

Year	Number of articles manufactured (in lakhs)		
	S	P	Total
2002	25	30	55
2003	22.5	32.5	55
2004	30	32.5	62.5
2005	35	30	65
2006	32.5	30	62.5
2007	30	35	65

16. 5; The required no

$$= \frac{14 + 22 + 19 + 25 + 29 + 38}{6} = \frac{147}{6} = 24.5$$

17. 2; Total no of passed students in 2006 = 336  
 Total no of failed students in 2006 = 138

$$\therefore \text{the required ratio} = 336 : 138 = 56 : 23$$

18. 4; Total no of students in class VI = 480  
 Total no of passes students in class VI = 336  
 ∴ the percentage of passed students in class VI

$$= \frac{336 \times 100}{480} = 70\%$$

Total no of students in class VII = 514

Total no of passed students in class VII = 367

$$\therefore \text{the percentage of passed students in class VII}$$

$$= \frac{367 \times 100}{514} = 71.4\% \text{ (approx.)}$$

Total no of students in class VIII = 545

Total no of passed students in class VIII = 394

$$\therefore \text{the percentage of passed students in class VIII} = 72.29\% \text{ (approx)}$$

Total no of students in class IX = 472

Total no of passed students in class IX = 400

$$\therefore \text{the percentage of passed students in class IX}$$

$$= \frac{400 \times 100}{472} = 84.75\% \text{ (approx)}$$

Total no of students in class X = 518  
 Total no of passed students in class X = 402  
 $\therefore$  the percentage of passed students in class X  
 $= \frac{402 \times 100}{518} = 77.60\% \text{ (approx)}$

19. 1; Total no of passed students in 2003 = 277

20. 3; [See Q. 18]

21. 1; Total marks in all the subjects obtained by  
 $E = 120 + 114 + 133.5 + 142.5 + 59.25$   
 $+ 35 + 54.75 = 659$

22. 4

23. 3; B, C and E

24. 2; Following are the total marks in all subjects obtained by the students:

A = 653.75	B = 659.25	C = 680
D = 545.75	E = 659	F = 619.25

25. 5; The required percentage =  $\frac{76 \times 100}{95} = 80\%$

[Here, the maximum marks is the same. Hence, we can compare the marks directly from the percentages.]

26. 5; The required percentage

$$= \frac{175 \times 100}{(300 + 275 + 175)} = \frac{175 \times 100}{750} = 23 \frac{1}{3}\%$$

27. 4; The required no

$$= (375 + 400 + 300 + 200 + 250 + 275) m$$
 $= 1800 \text{ million}$

28. 3; The required no =  $(275 - 175) m = 100 \text{ million}$

29. 2; The required ratio =  $375 : 325 = 15 : 13$

30. 1

31. 1; The required number of students

$$= 22.5 + 40 - 50 = 12.5 \text{ thousands}$$

32. 5; The required per cent

$$= \frac{30}{(40 + 50 + 30)} \times 100 = 25\%$$

33. 3; The required number of students (in thousands)  
 $= 40 + 25 + 17.5 + 35 + 37.5 + 30 = 185$

34. 4; The required ratio =  $\frac{47.5}{35} = 19 : 14$

35. 2; The required average number of students (in thousands)  
 $= \frac{45 + 45 + 45 + 47.5 + 27.5 + 50}{6} \times \frac{1000}{100} = 43.75$

36.1; Lowest marks	Student
Hindi	Vishal
English	Deepak
Maths	Bhaskar
S St	Charu
Science	Vishal
Sanskrit	Charu
Phy Edu	Vishal

Now, it is obvious from the table that the students who have scored the lowest marks in two or more subjects are Vishal and Charu.

37. 3; Students Total marks

Deepak 437

Charu 412

Anupama 525

Garima 474

Bhaskar 468

38. 5; The required percentage =  $\frac{437}{600} \times 100 \approx 72.83$

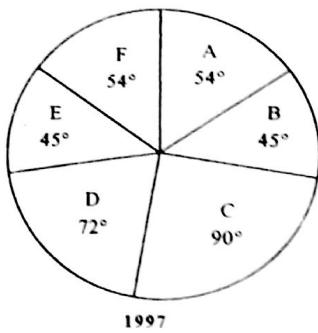
39. 4; The required per cent =  $\frac{64}{85} \times 100 \approx 75.29$

40. 2; The required average marks

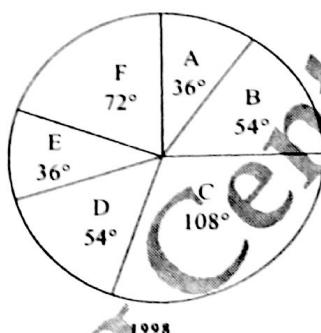
$$= \frac{65 + 62 + 55 + 70 + 49 + 44}{6} = \frac{345}{6} = 57.5$$

## DATA INTERPRETATION-III

**Directions (Q. 1-5):** Study the following pie-charts carefully and answer accordingly. The pie-charts show the distribution of expenses over the six different items A, B, C, D, E and F of a person for 1997 and 1998. He spent Rs 36000 in 1997 and Rs 40000 in 1998.



1997



1998

- Q. 1. Find the average of increased amount (in Rs) of the items which have shown increase.

(1) 2400      (2) 1333.33      (3) 2333.33      (4) 2433.33      (5) None of these

- Q. 2. What is the no. of items of 1997 and 1998 on which less money has been spent than the average of their respective years?

(1) 5      (2) 4      (3) 3      (4) 6      (5) None of these

- Q. 3. If the amount spent for F in 1998 were the same as that in 1997, what would have been its angular share in the pie-chart?

(1) 54°      (2) 48.6°      (3) 72°      (4) 46.4°      (5) None of these

- Q. 4. Find the difference (in Rs) between the amounts spent for E in 1998 and F in 1997?

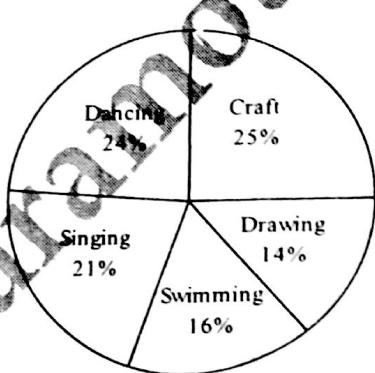
(1) 3500      (2) 500      (3) 1400      (4) 2600      (5) None of these

- Q. 5. Find the sum of the differences between expenditure in 1997 and 1998 on D and that on C as a percentage of the change in total expenditure between the two years.

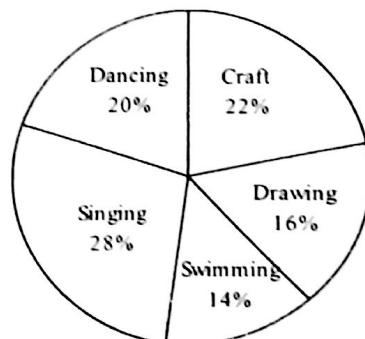
(1) 115      (2) 45      (3) 55      (4) 105      (5) None of these

- Q. 6-10: Study the pie-chart carefully to answer the following questions.

**Percentage of students enrolled in different activities in a school N.**  
Total no. of students = 3000



**Percentage break-up of girls enrolled in these activities**  
Total no. of girls = 1750



- Q. 6. The number of girls enrolled in Dancing forms what per cent of the total number of students in the school? (rounded off to two digits after decimal)

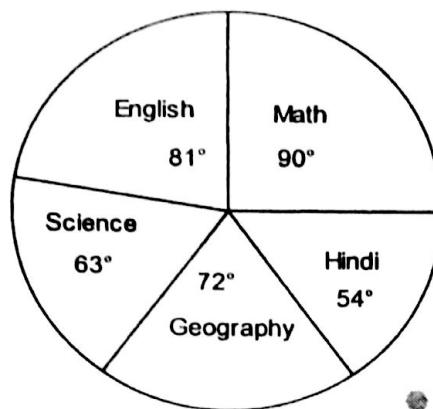
(1) 12.35      (2) 14.12      (3) 11.67      (4) 10.08      (5) None of these

- Q. 7. What is the ratio of the number of girls enrolled in Swimming to the number of boys enrolled in Swimming?

(1) 47 : 49      (2) 23 : 29      (3) 29 : 23      (4) 49 : 47      (5) None of these

- Q. 8. What is the approximate percentage of boys in the school?  
 (1) 34                    (2) 56                    (3) 28                    (4) 50                    (5) None of these
- Q. 9. How many boys are enrolled in Singing and Craft together?  
 (1) 505                    (2) 610                    (3) 485                    (4) 420                    (5) None of these
- Q. 10. What is the total number of girls enrolled in Swimming and Drawing together?  
 (1) 480                    (2) 525                    (3) 505                    (4) 495                    (5) None of these

**Directions (Q. 11-12): Study the graph carefully and answer the questions given below it.**



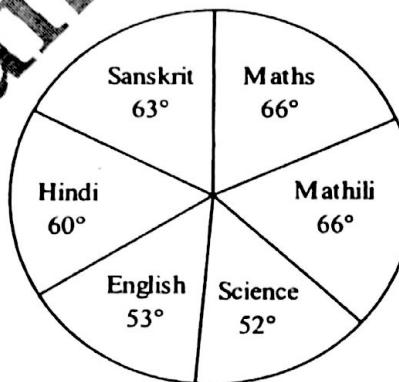
**Total marks = 590**

- Q. 11. How much marks was obtained by a student in Geography?  
 (1) 125                    (2) 118                    (3) 116                    (4) 112                    (5) None of these
- Q. 12. The marks scored in Hindi and English exceed the marks scored in Math by:  
 (1) 72.75                    (2) 83.75                    (3) 67.25                    (4) 73.75                    (5) None of these

**Directions (Q. 13-15): Study the following pie chart carefully and answer the questions given below it.**

Pie-chart shows the marks obtained by a student in different subjects in a board examination.

Total marks obtained in the examination were 606.



- Q. 13. The subject in which the student scored 111 marks approximately is  
 (1) Maths                    (2) Sanskrit                    (3) Hindi                    (4) English                    (5) Science

- Q. 14. What is the percentage difference between marks obtained in Maithili and Hindi?

- (1)  $1\frac{2}{3}\%$                     (2)  $2\frac{2}{3}\%$                     (3)  $1\frac{3}{5}\%$                     (4)  $2\frac{1}{3}\%$                     (5) None of these

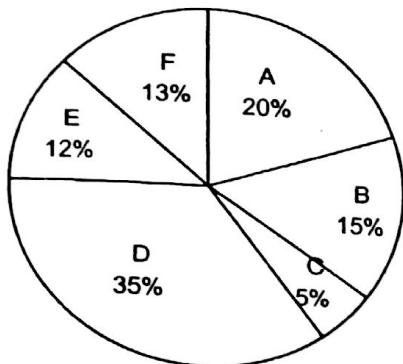
- Q. 15. Find the total marks scored in Science and English approximately.

- (1) 165                    (2) 168                    (3) 172                    (4) 177                    (5) 181

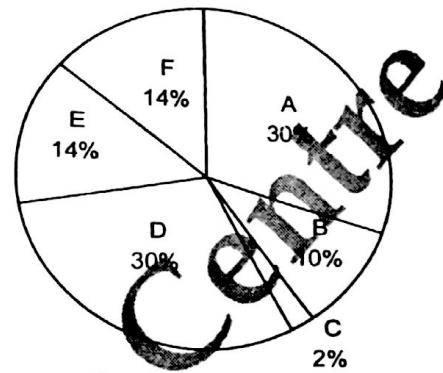
**Q. 16-20:** Study the following information to answer the given questions.

Total students : 1200 (800 girls + 400 boys) PERCENTAGE IN VARIOUS COURSES

## **PERCENTAGE IN VARIOUS COURSES**



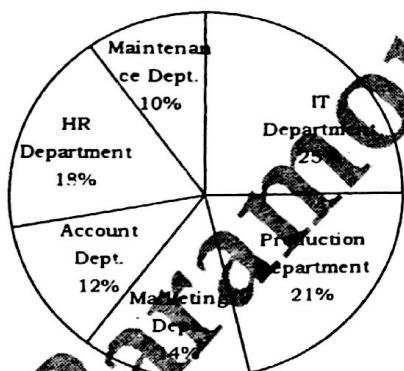
**PERCENTAGE OF GIRLS IN COURSES**



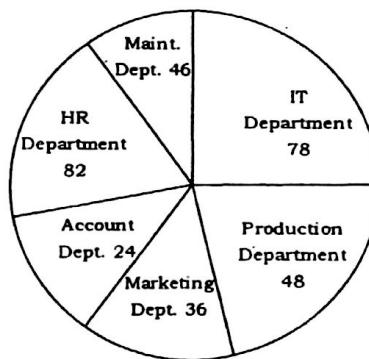



5: Study the pie-charts carefully to answer the questions that follow :  
Percentage of employees in different departments of an Organization out of which the number of employees promoted

**PERCENTAGE OF EMPLOYEES IN  
DIFFERENT DEPARTMENTS N = 4200**



**OUT OF WHICH THE NUMBER OF  
EMPLOYEES PROMOTED**



21. What is the number of employees working in the IT department ?  
(1) 1020      (2) 1045      (3) 1150      (4) 1140      (5) None of these

22. The number of employees who got promoted from the Marketing department is what percent of total number of employees in that department ? (rounded off to the nearest integer)  
(1) 12      (2) 10      (3) 3      (4) 6      (5) None of these

23. What is the respective ratio of number of employees not promoted from HR department to those from Production department ?  
(1) 216 : 389      (2) 337 : 417      (3) 389 : 216      (4) 417 : 337      (5) None of these

- Q. 24. What is the percentage of employees promoted from the Maintenance and Accounts departments together to the total number of employees from these two departments ? (rounded off to two digits after decimal)

(1) 7.58      (2) 6.27      (3) 9.15      (4) 8.34 (5) None of these

- Q. 25. Which department has the highest percentage of promoted employees to the total number of employees of that department ?

(1) IT      (2) Marketing (3) Maintenance      (4) HR      (5) None of these

- Q. 26-30: Study the pie-chart and table carefully to answer the questions that follow.

**Number of employees working in various departments of an Organisation and the Ratio of Men to Women in the same**

**Total number of Employees = 4600**

**Ratio of Men to Women**



Department	Men	Women
HR	1	1
Accounts	3	1
Production	3	2
IT	1	3
Marketing	1	1
Merchandising	5	1

- Q. 26. What is the number of women in the accounts department?

(1) 86      (2) 102      (3) 80      (4) 92      (5) None of these

- Q. 27. What is the total number of employees working in the IT department and HR department together?

(1) 1628      (2) 1742      (3) 1766      (4) 1646

(5) None of these

- Q. 28. What is the ratio of the total number of the men to the total number of women working in all the departments together?

(1) 63 : 41      (2) 41 : 27      (3) 53 : 47

(4) 27 : 19      (5) None of these

- Q. 29. The number of women in the Merchandising department forms what per cent of the total number of employees in the organisation?

(1) 3      (2) 6      (3) 1

(4) 12      (5) None of these

- Q. 30. What is the ratio of the number of Men in the Production department to the number of Men in the Marketing department?

(1) 7 : 13

(2) 9 : 11

(3) 13 : 7

(4) 11 : 9

(5) None of these

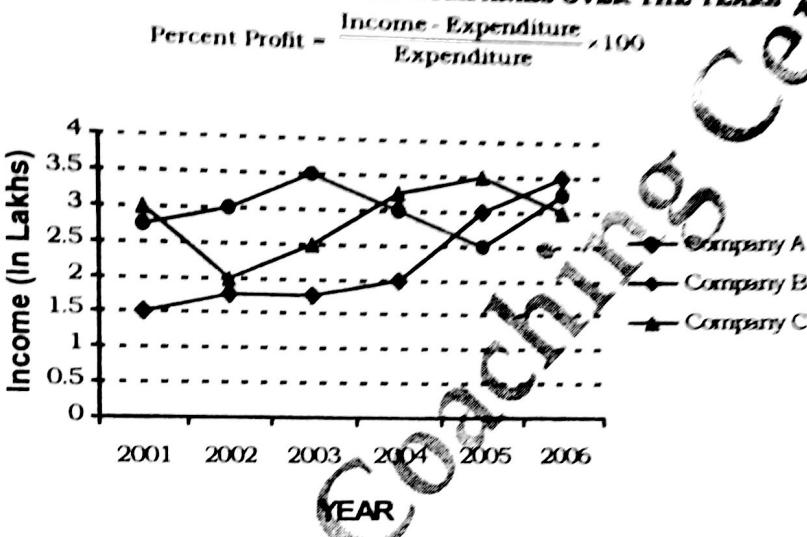
- Q. 31-35 Study the table carefully to answer the questions that follow :

**Number of people (in thousands) staying in 6 different Cities and the Percentage of Men, Women and Children in those Cities**

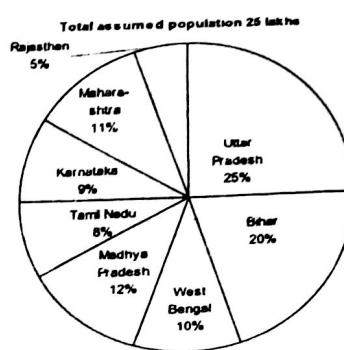
CITY	Total no. of people (in thousands)	PER CENT OF		
		Men	Women	Children
P	48.35	38	36	26
Q	32.16	45	30	25
R	54.20	47	31	22
S	44.42	35	45	20
T	65.25	54	28	18
U	56.80	53	25	22

- Q. 31. What is the respective ratio of number of women from City R to those from City T ?  
 (1) 8401:9135 (2) 7325:8462 (3) 9124:10131 (4) 6487:7758 (5) None of these
- Q. 32. Which City has the lowest number of children ?  
 (1) R (2) S (3) T (4) Q (5) None of these
- Q. 33. Total number of people from City U form approximately what percent of the total number of people from all cities together ?  
 (1) 28 (2) 11 (3) 6 (4) 24 (5) 19
- Q. 34. Number of women from City S form what percent of those from City P ? (rounded off to two digits after decimal)  
 (1) 87.08 (2) 124.68 (3) 114.84 (4) 92.16 (5) None of these
- Q. 35. What is the average number of men from all the cities together ?  
 (1)  $21450 \frac{1}{3}$  (2)  $23200 \frac{5}{6}$  (3)  $19445 \frac{5}{6}$  (4)  $18620 \frac{2}{3}$  (5) None of these
- Q. 36-40:** Study the graph carefully to answer the questions that follow :

**INCOME (IN LAKHS) OF THREE COMPANIES OVER THE YEARS**



- Q. 36. If the expenditure of Company C in 2003 was Rs. 1.75 lakh, what was its percent profit in that year ? (rounded off to two digits after decimal)  
 (1) 38.29 (2) 42.86 (3) 53.41 (4) 58.64 (5) None of these
- Q. 37. What is the average Income of Company A over the years ?  
 (1) Rs. 2,75,000 (2) Rs. 30,00,000 (3) Rs. 27,50,000 (4) Rs. 30,000 (5) None of these
- Q. 38. What is the approximate percent increase in Income of Company B in the year 2006 from the previous year?  
 (1) 28 (2) 1 (3) 17 (4) 8 (5) 22
- Q. 39. If the percent profit of Company A in the year 2002 was 20, what was its expenditure in that year ?  
 (1) Rs. 2,50,000 (2) Rs. 2,75,000 (3) Rs. 1,75,000 (4) Rs. 1,50,000 (5) None of these
- Q. 40. Percent increase / decrease in Income of Company C was highest for which year ?  
 (1) 2004 (2) 2006 (3) 2003 (4) 2002 (5) None of these
- Q. 41-45:** Study the graph carefully to answer the questions that follow :

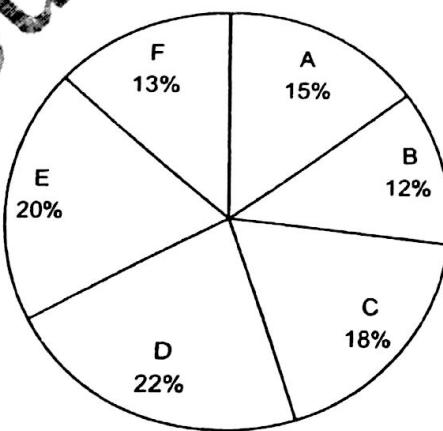


State	Ratio of literate & illiterate persons of the population	Ratio of males and females of the population
Bihar	5 : 4	3 : 2
Uttar Pradesh	2 : 3	5 : 4
Rajasthan	4 : 5	3 : 2
Maharashtra	3 : 2	4 : 5
Karnataka	1 : 2	2 : 5
Tamil Nadu	3 : 1	3 : 5
Madhya Pradesh	2 : 5	2
West Bengal	3 : 5	3 :



**Directions (Q 46-51): Study the following graph and table and answer accordingly:**

**There are six companies which are responsible for the production of two items. The pie-chart shows the percentage of the total production by the six companies.**



**Cost of the total production (both items together) by six companies = Rs 40 crores.**  
**The following table shows the ratio of production between items I and II and the per cent profit earned for the two items.**

Company	Ratio of production		% profit earned	
	Item I	Item II	Item I	Item II
A	2	1	25	30
B	7	5	35	15
C	3	5	20	25
D	1	3	28	20
E	1	3	24	32
F	6	7	25	35

- Q. 46.** What is the total profit earned by company C for items I and II together (in Rs crore)?  
(1) 1.166      (2) 1.665      (3) 1.125      (4) 1.765      (5) None of these

**Q. 47.** What is the total cost of the production of item I by companies B and F together (in Rs' crore)?  
(1) 10      (2) 4.8      (3) 5.2      (4) 12      (5) 9

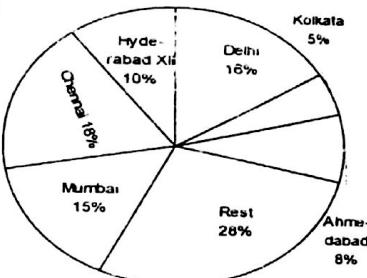
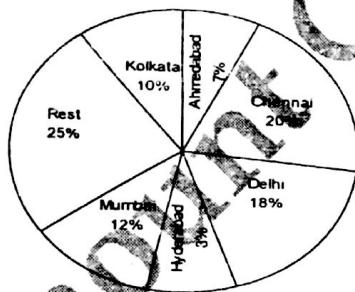
**Q. 48.** Cost of production of item II of company D is what per cent more than the profit earned by company A on item I?  
(1) 550%      (2) 580%      (3) 560%      (4) 490%      (5) None of these

**Q. 49.** What is the total profit earned by company E on item II and the profit earned by company B on item I (in Rs crore)?  
(1) 2.80      (2) 1.90      (3) 3.10      (4) 2.90      (5) None of these

**Q. 50.** What is the ratio of the cost of production of item I of company F to that of item II of company C?  
(1) 15:8      (2) 8:13      (3) 4:7      (4) 48:65      (5) None of these

**Q. 51.** Find the difference in the

**Directions (Q. 52-58):** Study the following graphs and table carefully and answer accordingly:  
**The following pie-charts show the percentage number of students passed in CBSE's X and XII examinations in 2003 from different cities.**



Class X

Class XII

The following table shows the ratio of the number of boys and girls passing from different cities.

City ↓	X		XII	
	Boys	Girls	Boys	Girls
Delhi	2	3	3	5
Kolkata	9	8	7	8
Mumbai	4	7	3	5
Chennai	13	11	9	7
Ahmedabad	7	5	4	7
Hyderabad	12	13	5	8
Rest	5	9	7	8

- Q. 52. In X exam, if there are 1000 girls passing from Ahmedabad, then find the approx number of boys passing from Chennai in the same exam.  
(1) 3250      (2) 3430      (3) 3750      (4) Data inadequate      (5) 3715

Q. 53. If 9000 students passed in XII exam from Mumbai, then find the number of girls passing from Delhi in the same exam.  
(1) 9600      (2) 5760      (3) 6000      (4) Data inadequate      (5) None of these

Q. 54. Which of the following cities shows the maximum percentage of girls passing (with respect to total students passing in that city) in X examination?  
(1) Delhi      (2) Mumbai      (3) Chennai      (4) Rest      (5) Hyderabad

Q. 55. If the difference between the number of boys passing from Chennai and that from Delhi in XII exam is 3630, find the total number of students passed in XII exam in 2003.  
(1) 72000      (2) 88000      (3) 90000      (4) Can't say      (5) None of these

Q. 56. In X exam, if 1.20 lakh students pass, then what will be the approx number of boys passing in the remaining part of the country?  
(1) 10700      (2) 10720      (3) 10740      (4) 10680      (5) 10760

Q. 57. Find the difference between the number of boys passing from Kolkata and Hyderabad, if there are 17000 students passing from Chennai in X exam.  
(1) 964      (2) 1012      (3) 832      (4) 800      (5) None of these

Q. 58. In 2003 as compared to 2002, there is an increase of 4% in the number of students passing in XII exam. Find the approx number of students passing in XII exam in 2002.  
(1) 1 lakh      (2) 1.20 lakhs      (3) 1.40 lakhs      (4) Data inadequate      (5) None of these

# **ANSWER**

## **DATA INTERPRETATION - III**

<b>1.5</b>	<b>2.1</b>	<b>3.2</b>	<b>4.3</b>	<b>5.4</b>	<b>6.3</b>	<b>7.4</b>	<b>8.5</b>	<b>9.1</b>	<b>10.2</b>	<b>11.2</b>	<b>12.4</b>	<b>13.1</b>
<b>14.1</b>	<b>15.4</b>	<b>16.4</b>	<b>17.2</b>	<b>18.1</b>	<b>19.3</b>	<b>20.1</b>	<b>21.5</b>	<b>22.4</b>	<b>23.2</b>	<b>24.1</b>	<b>25.3</b>	<b>26.4</b>
<b>27.5</b>	<b>28.3</b>	<b>29.1</b>	<b>30.2</b>	<b>31.1</b>	<b>32.4</b>	<b>33.5</b>	<b>34.3</b>	<b>35.2</b>	<b>36.2</b>	<b>37.5</b>	<b>38.3</b>	<b>39.1</b>
<b>40.4</b>	<b>41.2</b>	<b>42.1</b>	<b>43.2</b>	<b>44.2</b>	<b>45.5</b>	<b>46.2</b>	<b>47.3</b>	<b>48.3</b>	<b>49.4</b>	<b>50.5</b>	<b>51.1</b>	<b>52.5</b>
<b>53.3</b>	<b>54.4</b>	<b>55.2</b>	<b>56.2</b>	<b>57.5</b>	<b>58.4</b>							

## ANSWERS WITH EXPLANATION

### DATA INTERPRETATION-III

(1-5): First of all we have,

$$45^\circ \equiv \left( \frac{100}{360} \times 45 = \frac{100}{8} = \right) 12.5\%,$$

$$90^\circ \equiv 25\%, 72^\circ \equiv 20\%, 54^\circ \equiv 15\%,$$

$$108^\circ \equiv 30\%$$

Now for 1997 we find that  $2x$

$$= 100 - (12.5 + 25 + 20 + 12.5) = 70 = 30\%$$

$$\therefore x = 15\%$$

and for 1998 we have,

$$2y = 100 - (15 + 30 + 15 + 20) = 80 = 20\%$$

$$\therefore y = 10\%$$

	1997	1998	Change in amount from '97 to '98
A →	15% of 36000 = Rs 5400	10% of 40000 = Rs 4000	- 1400
Similarly;			
B →	12.5% → 4500	15% → 6000	+ 1500
C →	25% → 9000	30% → 12000	+ 3000
D →	20% → 7200	15% → 6000	- 1200
E →	12.5% → 4500	10% → 4000	- 500
F →	15% → 5400	20% → 8000	+ 2600
	1500 + 3000 + 2600		

$$1. 5; \frac{1500 + 3000 + 2600}{3} = 500 + 1000 + 866.67 = 2366.67$$

$$2. 1; \text{Average for } 1997 = \frac{36000}{6} = 6000 \text{ and for } 1998 = \frac{40000}{6} = 6666.7$$

So, the desired items for 1997 are A, B, E and F and for 1998 are A, B, D and E.

∴ reqd no. of the items = 5 (A, B, D, E and F)

3. 2; According to the condition of the question,  
The amount spent for F in 1998 = 4000  
Now, 40000 ≡ 360°

$$\therefore 5400 \equiv \frac{360}{40000} \times 5400 = \frac{9}{10} = 48.6^\circ$$

4. 3; Reqd difference = (4000 - 3400 - 1400, i.e.) 1400

$$5. 4; \text{Reqd percentage} = \frac{1200 + 3000}{40000 - 36000} \times 100 = \frac{4200}{4000} \times 100 = 105$$

6. 3; The required per cent

$$= \frac{25\% \text{ of } 1750}{3000} \times 100 = \frac{350}{3000} \times 100 = 11.67\%$$

7. 4; The number of girls enrolled in swimming  
= 14% of 1750 = 245

The number of students enrolled in swimming  
= 16% of 3000 = 480

Hence, the required ratio  
= 245 : (480 - 245) = 245 : 235 = 49 : 47

8. 5; The required per cent

$$= \frac{(3000 - 1750)}{3000} \times 100 = \frac{1250}{3000} \times 100 \approx 41.67\%$$

9. 1; Here, total number of students enrolled in singing and

craft together

$$= (21 + 25)\% \text{ of } 3000 = 1380$$

Whereas total number of girls enrolled in singing and

craft together

$$= (28 + 22)\% \text{ of } 1750 = 875$$

Hence, the total number of boys enrolled in singing and craft together = 1380 - 875 = 505

10. 2; The required number of girls

$$= (14 + 16)\% \text{ of } 1750 = 30\% \text{ of } 1750 = 525$$

11-12:

11. 2; Marks obtained in Geography

$$= \frac{72}{360} \times 590 = 118$$

12. 4; Total marks scored in Hindi and English =

$$\frac{81+54}{360} \times 590 = \frac{135}{360} \times 590 = 221.25$$

Marks scored in Math

$$= \frac{90}{360} \times 590 = \frac{590}{4} = 147.5$$

∴ Required difference = 221.25 - 147.5 = 73.75

(13-15):

$$13. 1; \frac{111}{606} \times 360 = 66^\circ$$

$$14. 1; \frac{66^\circ - 60^\circ}{360^\circ} \times 100 = \frac{6^\circ}{360^\circ} \times 100 = 1\frac{2}{3}\%$$

$$15. 4; \frac{52+53}{360} \times 606 = 177 \text{ (approx)}$$

	Total	Boys	Girls
A	240	Nil	240
B	180	100	80
C	60	44	16
D	420	180	240
E	144	32	112
F	156	44	112
	<b>1200</b>	<b>400</b>	<b>800</b>

16. 4; Look at the table shown above.

17. 2; 2% of 800 = 16

18. 1; The required ratio =  $\frac{180}{240} = \frac{3}{4}$  ie 3 : 4

19. 3; It is obvious from the table.

20. 1; The required per cent

$$= \frac{(112 - 32)}{32} \times 100 = \frac{80}{32} \times 100 = 250\%$$

21-25:

Department	No. of Employees	No. of Employee Promoted
Maintenance	420	46
HR	756	82
Accounts	504	24
Marketing	588	36
Production	882	48
IT	1050	78
Total	4200	314

21. 5; Required number of employees

$$= 25\% \text{ of } 4200 = \frac{25 \times 4200}{100} = 1050$$

22. 4; Required percentage =  $\frac{36}{588} \times 100 \approx 6.122\%$

23. 2; Look at the table.

$$\text{Required ratio} = \frac{(756 - 82)}{(882 - 48)} = \frac{674}{834} = 337 : 417$$

24. 1; Required percentage

$$= \frac{(46 + 24)}{(420 + 504)} \times 100 = \frac{70}{924} \times 100 \approx 7.58\%$$

25. 3; Department Promoted Employees (in %)

1. Maintenance  $\frac{46}{420} \times 100 \approx 10.95\%$

2. HR  $\frac{82}{756} \times 100 \approx 10.84\%$

3. Accounts  $\frac{24}{504} \times 100 \approx 4.76\%$

4. Marketing  $\frac{36}{588} \times 100 \approx 6.12\%$

5. Production  $\frac{48}{882} \times 100 \approx 5.44\%$

6. IT  $\frac{78}{1050} \times 100 \approx 7.42\%$

26. 4; Total number of employees in Accounts department =

$$4600 \times \frac{8}{100} = 368$$

Number of women in Accounts department

$$= \frac{368}{(3+1)} \times 1 = 92$$

27. 5; Total number of employees working in IT department and HR department together

$$= 4600 \times \frac{(26+11)}{100} = 4600 \times \frac{37}{100} = 1702$$

28. 3;

Department	Men	Women
HR	253	253
Accounts	276	92
Production	414	276
IT	299	897
Marketing	506	506
Merchandising	690	138
Total	2438	2162

ie  $2438 : 2162 = 53 : 47$

29. 1; Number of employees working in Merchandising

$$= 4600 \times \frac{8}{100} = 828$$

Number of women employee =  $\frac{828}{5+1} \times 1 = 138$

∴ Required per cent =  $\frac{138 \times 100}{4600} = 3\%$

30. 2; Number of men in Production

$$= 4600 \times \frac{15}{100} \times \frac{3}{5} = 414$$

Number of men in Marketing

$$= 4600 \times \frac{22}{100} \times \frac{1}{2} = 506$$

∴ Required ratio =  $414 : 506 = 9 : 11$

31. 1; Required ratio

$$= \frac{31\% \text{ of } 54.20}{28\% \text{ of } 65.25} = \frac{8401}{9135} \text{ ie } 8401 : 9135$$

32. 4; In this type of questions, try to reject some options by observation with the help of concept of approximation'

City Number of children (in thousand)  
1. P  $\frac{42.35 \times 26}{100} = 11.011$

2. Q  $\frac{32.16 \times 25}{100} = 8.04$

3. R  $\frac{54.20 \times 22}{100} = 11.924$

4. S  $\frac{44.42 \times 20}{100} = 8.884$

5. T  $\frac{65.25 \times 18}{100} = 11.745$

6. U  $\frac{56.80 \times 22}{100} = 12.496$

33. 5; Required percentage

$$= \frac{\frac{56.80}{301.18} \times 100}{(48.35 + 32.16 + 54.20 + 44.42 + 65.25 + 56.80)}$$

$$= \frac{56.80}{301.18} \times 100 \approx 18.86 \approx 19\%$$

34. 3; Required percentage =  $\frac{45\% \text{ of } 44.42}{36\% \text{ of } 48.35} \times 100$

$$= \frac{45 \times 44.42}{36 \times 48.35} \times 100 \approx 114.84\%$$

35. 2; Required average

$$= \frac{(48.35 \times 38 + 32.16 \times 45 + 54.20 \times 47 + 44.42 \times 35 + 65.25 \times 54 + 56.80 \times 53)}{100 \times 6}$$

$$= \frac{13920.5}{600} \text{ thousands} = \frac{13920.5}{6} = 23200 \frac{5}{6}$$

36. 2; Required per cent profit

$$= \frac{(2.5 - 1.75)}{1.75} \times 100 = \frac{0.75}{1.75} \times 100 = \frac{300}{7} = 42 \frac{6}{7}\%$$

ie  $42.86\%$

37. 5; Required average income (in lakhs)

$$= \frac{(2.75 + 3 + 3.5 + 3 + 2.5 + 3.25)}{6} = \frac{18}{6} = 3 \text{ lakh}$$

38. 3; Required per cent increase =  $\frac{(3.5 - 3)}{3} \times 100 = 16 \frac{2}{3}\%$

39. 1; Required expenditure

$$= \frac{3}{(100 + 20)} \times 100 = \frac{300}{120} = 2.5 \text{ lakh ie } 2,50,000$$

40. 4; For company C

Year Percent increase/decrease

2002  $- \frac{(3-2)}{3} \times 100 = -33 \frac{1}{3}\%$

2003  $\frac{(2.5-2)}{2} \times 100 = +25\%$

2004  $\frac{(3.5-2.5)}{2.5} \times 100 = 30\%$

2005  $\frac{(3.5-3.25)}{3.25} \times 100 \approx 7.7\%$

2006  $- \frac{(3.5-3)}{3.5} \times 100 \approx 14.3\%$

$$41.2; \text{Population of Bihar} = \frac{2500000 \times 20}{100} = 500000$$

$$\therefore \text{No. of literates} = \frac{500000 \times 5}{9} \approx 277000$$

$$42.1; 25 \times \frac{25}{100} \times \frac{2}{5} + 25 \times \frac{11}{100} \times \frac{5}{9} = 1$$

$$43.2; 25 \times \frac{12}{100} \times \frac{5}{7} + 25 \times \frac{9}{100} \times \frac{2}{7} = 2.7$$

$$44.2; \text{No. of illiterates in Tamil Nadu} = \frac{2500000 \times 8 \times 1}{100 \times 4} = 50000$$

$$\text{No. of males in UP} = \frac{2500000 \times 25 \times 5}{100 \times 9} \approx 347000$$

$$\therefore \text{Reqd percentage} = \frac{50000}{347000} \times 100 \approx 14\%$$

$$45.5; \text{No. of illiterates in Rajasthan} = \frac{2500000 \times 5 \times 5}{100 \times 9} \approx 69400$$

$$\text{No. of females in Rajasthan} = \frac{2500000 \times 5 \times 2}{100 \times 5} = 50000$$

$$\therefore \text{Total} = 119400$$

$$\text{No. of illiterates in Bihar} = \frac{2500000 \times 20 \times 4}{100 \times 9} \approx 222000$$

$$\text{No. of males in Bihar} = \frac{2500000 \times 20 \times 3}{100 \times 5} \approx 300000$$

$$\therefore \text{Total} = 222000 + 300000 = 522000$$

$$\therefore \text{Percentage} = \frac{119400}{522000} \times 100 \approx 23\%$$

46.2

$$47.3; \text{Total cost} = \left( \frac{7}{12} \times \frac{12}{100} + \frac{6}{13} \times \frac{13}{100} \right) 40 \\ = \text{Rs } 5.2 \text{ cr}$$

$$48.3; 40 \times \frac{22}{100} \times \frac{3}{4} = 6.6 \text{ crore}$$

$$\text{And } 40 \times \frac{15}{100} \times \frac{2}{3} \times \frac{13}{100} = 1 \text{ crore}$$

$$\text{Thus required percent} = \frac{5.6 \times 100}{1} = 560\%$$

49.4; Total profit

$$= \left( \frac{3}{4} \times \frac{20}{100} \times \frac{32}{100} + \frac{7}{12} \times \frac{12}{100} \times \frac{35}{100} \right) 40 \\ = \text{Rs } 2.90 \text{ cr}$$

$$50.5; \frac{40 \times \frac{13}{100} \times \frac{6}{13}}{40 \times \frac{18}{100} \times \frac{5}{8}} = \frac{\frac{13}{18} \times 5}{8} = \frac{6 \times 8}{90} = \frac{8}{15} \text{ ie } 8:15$$

$$51.1; 40 \times \frac{22}{100} \times \frac{3}{4} \times \frac{20}{100} - 40 \times \frac{15}{100} \times \frac{2}{3} \times \frac{25}{100} = 0.32 \text{ crore}$$

$$52.5; \text{No. of students passing from Ahmedabad} = 1000 \times \frac{12}{5}$$

$$\text{No. of boys passing from Chennai} \\ = 1000 \times \frac{12}{5} \times \frac{100}{7} \times \frac{20}{100} \times \frac{13}{24} \approx 3715$$

$$53.3; \text{No. of girl students passing from Delhi} \\ = 9000 \times \frac{16}{15} \times \frac{5}{8} = 6000$$

54.4; For answering this question, we do not need the data provided in pie-chart. Simply we find out which city shows the maximum percentage of girls passing? The answer is 'Rest'.

55.2; Let the total no. of passing students be 'x'.

$$\text{Then, } 18\% \text{ of } x \times \frac{9}{16} - 16\% \text{ of } x \times \frac{3}{8} = 3630$$

$$\text{or, } x = 88000$$

56.2; No. of boys passing from the rest part of the country in

$$X \text{ exam} = 25\% \text{ of } 1.20 \times \frac{5}{14} \approx 10720$$

57.5; No. of students passing from Kolkata in X exam =

$$17000 \times \frac{10}{20} = 8500$$

No. of students passing from Hyderabad in X exam =

$$17000 \times \frac{8}{20} = 6800$$

$$\text{Reqd difference} = \frac{9}{17} \times 8500 - \frac{12}{25} \times 6800 \\ = 4500 - 3264 = 1236$$

58.4; Without knowing the absolute value, the total number can't be determined.

# EQUATION-I

**1-5:** In the following questions two equations numbered I and II are given. You have to solve both the equations and give answer

- (1)  $x > y$       (2)  $x \geq y$       (3)  $x < y$       (4)  $x \leq y$   
 (5)  $x = y$  or the relationship cannot be established.

1. I.  $x = \sqrt[3]{10648}$       II.  $y = \pm\sqrt{484}$
2. I.  $x^2 + 17x + 72 = 0$       II.  $y^2 + 15y + 56 = 0$
3. I.  $x^2 + 12x + 27 = 0$       II.  $y^2 + 11y + 30 = 0$
4. I.  $4x + 2y = 8.5$       II.  $2x + 4y = 9.5$
5. I.  $\frac{3}{4}y = \frac{2}{3}x$       II.  $24.1 - y = 19.6$

**6-10:** In the following questions two equations numbered I and II are given. You have to solve both equations and give answer

- (1) if  $x > y$       (2) if  $x \geq y$       (3) if  $x < y$       (4)  $x \leq y$   
 (5) if  $x = y$  or the relationship can't be established

6. I.  $x^2 - 7x + 10 = 0$       II.  $y^2 + 11y + 10 = 0$
7. I.  $x^2 + 28x + 192 = 0$       II.  $y^2 + 16y + 48 = 0$
8. I.  $2x - 3y = -3.5$       II.  $3x - 2y = -6.5$
9. I.  $x^2 + 8x + 15 = 0$       II.  $y^2 + 11y + 30 = 0$
10. I.  $x = \sqrt{3136}$       II.  $y^2 = 3136$

**11-15:** In the following questions, two equations I and II are given. You have to solve both the equations and give answer

- (1) if  $x > y$       (2) if  $x \geq y$       (3) if  $x < y$       (4) if  $x \leq y$   
 (5) if  $x = y$  or the relationship cannot be determined.

11. I.  $2x - 15y = 5$       II.  $6x - 5y = -1$
12. I.  $x^2 = 1521$       II.  $y = \sqrt{1521}$
13. I.  $x^2 - 12x + 35 = 0$       II.  $y^2 - 9y + 20 = 0$
14. I.  $4x + 3y = 16$       II.  $2x + 2y = 9$
15. I.  $x^2 + 7x + 12 = 0$       II.  $y^2 + 5y + 6 = 0$

**16-20:** In each of these questions, two equations are given. You have to solve these equations and find out the values of  $x$  and  $y$  and give answer

- (1) if  $x < y$       (2) if  $x > y$       (3) if  $x \leq y$       (4) if  $x \geq y$   
 (5)  $x = y$  or if the relationship cannot be established

16. I.  $12x^2 = 6x$       II.  $y + x^2 = 0.45$
17. I.  $x = \sqrt{25}$       II.  $y^2 = 6.25$
18. I.  $20x^2 - 3x + 7 = 0$       II.  $y = \sqrt{0.0625}$
19. I.  $6x^2 + 28x + 16 = 0$       II.  $14y^2 + 15y + 4 = 0$
20. I.  $4x + 3y = 16$       II.  $2x + 4y = 13$

## ANSWER

### EQUATION - I

1.2	2.4	3.5	4.3	5.1	6.1	7.4	8.3	9.2	10.2	11.3	12.4	13.2
14.1	15.4	16.5	17.4	18.4	19.1	20.2						

## ANSWERS WITH EXPLANATION

### **EQUATION-I**

1. 2; I.  $x = \sqrt[3]{10648} = 22$   
 II.  $y = \pm \sqrt{484} = +22 \text{ or } -22 \quad \therefore x \geq y$
2. 4; I.  $x^2 + 17x + 72 = 0$   
 or,  $x^2 + 9x + 8x + 72 = 0$   
 or,  $(x+9)(x+8) = 0 \quad \therefore x = -9 \text{ or } -8$   
 II.  $y^2 + 15y + 56 = 0$   
 or,  $y^2 + 7y + 8y + 56 = 0$   
 or,  $y(y+7) + 8(y+7) = 0$   
 or,  $(y+8)(y+7) = 0 \quad \therefore y = -8 \text{ or } -7$   
 Hence,  $x \leq y$
3. 5; I.  $x^2 + 12x + 27 = 0$   
 or,  $x^2 + 9x + 3x + 27 = 0$   
 or,  $x(x+9) + 3(x+9) = 0$   
 or,  $(x+3)(x+9) = 0 \quad \therefore x = -3 \text{ or } -9$   
 II.  $y^2 + 11y + 30 = 0$   
 or,  $y^2 + 6y + 5y + 30 = 0$   
 or,  $y(y+6) + 5(y+6) = 0$   
 or,  $(y+5)(y+6) = 0 \quad \therefore y = -5 \text{ or } -6$   
 Hence, the relationship cannot be established between  $x$  and  $y$ .
4. 3; I.  $4x + 2y = 8.5$       II.  $2x + 4y = 9.5$   
 Solving the above two equations we get,  
 $x = 1.25$  and  $y = 1.75$       Hence,  $x < y$
5. 1; From II:  $y = 24.1 - 19.6 = 0.45$   
 Now, from I  $\frac{3}{4}y = \frac{2}{3}x \quad \text{or, } 9y = 8x$   
 $\therefore x = \frac{9}{8} \times y = \frac{9}{8} \times 0.45 = 0.50625$   
 Hence,  $x > y$ .
6. 1; I.  $x^2 - 7x + 10 = 0$   
 or,  $x^2 - 2x - 5x + 10 = 0$   
 or,  $(x-2)(x-5) = 0 \quad \therefore x = 2, 5$   
 II.  $y^2 + 11y + 10 = 0$   
 or,  $y^2 + y + 10y + 10 = 0$   
 or,  $(y+1)(y+10) = 0 \quad \therefore y = -10, -1$
7. 4; I.  $x^2 + 28x + 192 = 0$   
 or,  $x^2 + 16x + 12x + 192 = 0$   
 or,  $(x+16)(x+12) = 0 \quad \therefore x = -16, -12$   
 II.  $y^2 + 16y + 48 = 0$   
 or,  $y^2 + 4y + 12y + 48 = 0$   
 or,  $(y+4)(y+12) = 0 \quad \therefore y = -4, -12 \Rightarrow x \leq y$
8. 3; Solving (I) and (II)  
 We get  $x = -2.5$ ,  $y = 0.5 \Rightarrow x < y$
9. 2; I.  $x^2 + 8x + 15 = 0$   
 or,  $x^2 + 3x + 5x + 15 = 0$   
 or,  $(x+3)(x+5) = 0 \quad \therefore x = -3, -5$   
 II.  $y^2 + 11y + 30 = 0$   
 or,  $y^2 + 5y + 6y + 30 = 0$   
 or,  $(y+5)(y+6) = 0 \quad \therefore y = -5, -6$
10. 2; I.  $x = \sqrt{3136} \quad \therefore x = 56$   
 II.  $y^2 = 3136 \quad \therefore y = \pm 56 \Rightarrow x \geq y$
11. 3; I.  $2x - 15y = 5$   
 $6x - 45y = 15 \dots (\text{i})$   
 II.  $6x - 5y = -1 \dots (\text{ii})$   
 From (i) and (ii), we get  
 $-40y = 16$   
 $\therefore y = -\frac{16}{40} = -\frac{2}{5}$   
 Now, using I, we get

2.  $2x - 15(-\frac{2}{5}) = 5$   
 or,  $2x + 6 = 5 \quad \text{or, } x = -\frac{1}{2}$   
 Hence,  $x < y \quad [\because -\frac{2}{5} > -\frac{1}{2}]$
12. 4; From I:  $x = \pm 39$   
 From II:  $y = 39 \quad \text{Hence, } x \leq y$
13. 2; I.  $x^2 - 12x + 35 = 0$   
 or,  $x^2 - 7x - 5x + 35 = 0$   
 or,  $x(x-7) - 5(x-7) = 0$   
 or,  $(x-5)(x-7) = 0 \quad \text{or, } x = 5 \text{ or } 7$   
 II.  $y^2 - 9y + 20 = 0$   
 or,  $y^2 - 5y - 4y + 20 = 0$   
 or,  $y(y-5) - 4(y-5) = 0$   
 or,  $(y-4)(y-5) = 0 \quad \text{or, } y = 4 \text{ or } 5 \quad \text{Hence, } x \geq y$
14. 1; I.  $4x + 3y = 16 \dots (\text{i})$   
 II.  $2x + 2y = 9 \Rightarrow 4x + 4y = 18 \dots (\text{ii})$   
 From (i) and (ii), we get  
 $-y = -2 \quad \text{or, } y = 2$   
 Now, using I, we get  
 $4x + 3 \times 2 = 16 \quad \text{or, } 4x = 10 \quad \text{or, } x = 2.5 \quad \text{Hence, } x > y$
15. 4; I.  $x^2 + 7x + 12 = 0$   
 or,  $x^2 + 4x + 3x + 12 = 0$   
 or,  $x(x+4) + 3(x+4) = 0 \quad \text{or, } x = -3 \text{ or } -4$   
 II.  $y^2 + 3y + 6 = 0$   
 or,  $y^2 + 3y + 2y + 6 = 0$   
 or,  $y(y+3) + 2(y+3) = 0$   
 or,  $(y+2)(y+3) = 0$   
 $\therefore y = -2 \text{ or } -3 \quad \text{Hence, } x \leq y$
16. 5; I.  $12x^2 = 6x$   
 $\Rightarrow 12x^2 - 6x = 0 \Rightarrow 6x(2x-1) = 0 \Rightarrow x = 0 \text{ or } \frac{1}{2}$   
 II.  $y+x^2 = 0.45 \Rightarrow y = 0.45 \text{ or } 0.2$   
 From I and II: We can't establish relationship.
17. 4; I.  $x = \sqrt{6.25} = \sqrt{\frac{625}{100}} = 2.5$   
 II.  $y^2 = 6.25 \quad \therefore y = \pm \sqrt{6.25} = 2.5 \text{ or } -2.5$   
 From I and II: We get  $x \geq y$ .
18. 4; I.  $20x^2 - 33x + 7 = 0$   
 or,  $20x^2 - 28x - 5x + 7 = 0$   
 or,  $4x(5x-7) - (5x-7) = 0$   
 or,  $(4x-1)(5x-7) = 0 \quad \text{or, } x = \frac{1}{4} \text{ or } \frac{7}{5}$   
 II.  $y = \sqrt{0.0625} = \sqrt{\frac{625}{10000}} = 0.25$   
 From I and II: We get  $x \geq y$
19. 1; I.  $6x^2 + 28x + 16 = 0$   
 or,  $3x^2 + 14x + 8 = 0$   
 or,  $3x^2 + 12x + 2x + 8 = 0$   
 or,  $3x(x+4) + 2(x+4) = 0$   
 or,  $(3x+2)(x+4) = 0 \quad \text{or, } x = -\frac{2}{3} \text{ or } -4$   
 II.  $14y^2 + 15y + 4 = 0$   
 or,  $14y^2 + 7y + 8y + 4 = 0$   
 or,  $7y(2y+1) + 4(2y+1) = 0$   
 or,  $(7y+4)(2y+1) = 0 \quad \text{or, } y = -\frac{4}{7} \quad \text{or, } y = -\frac{1}{2}$   
 From I and II: We get  $x < y$ .
20. 2; I.  $4x + 3y = 16 \dots (\text{i})$   
 II.  $2x + 4y = 13 \quad \text{or, } 4x + 8y = 26 \dots (\text{ii})$   
 From (i) and (ii), we get  $y = 2$  and  $x = 2.5 \quad \therefore x > y$

## EQUATION-II

**1-5:** In the following questions two equations numbered I and II are given. You have to solve both the equations and—

**Give answer:**

(1) if  $x > y$

(2) if  $x \geq y$

(3) if  $x < y$

(4)  $x \leq y$

(5)  $x = y$  or the relationship cannot be established

Q.1. I.  $3x^2 + 8x + 4 = 0$

II.  $4y^2 - 19y + 12 = 0$

Q.2. I.  $x^2 + x - 20 = 0$

II.  $y^2 - y - 30 = 0$

Q.3. I.  $x^2 - 365 = 364$

II.  $y - \sqrt{324} = \sqrt{81}$

Q.4. I.  $\frac{4}{\sqrt{x}} + \frac{7}{\sqrt{x}} = \sqrt{x}$

II.  $y^2 - \frac{(11)^2}{\sqrt{y}} = 0$

Q.5. I.  $225x^2 - 4 = 0$

II.  $\sqrt{225y} + 2 = 0$

**Q.6-10:** In the following questions two equations numbered I and II are given. You have to solve both the equations and

**Give answer:**

(1) if  $x > y$

(2) if  $x \geq y$

(3) if  $x < y$

(4)  $x \leq y$

(5)  $x = y$  or the relationship cannot be established

Q.5. I.  $225x^2 - 4 = 0$

II.  $\sqrt{225y} + 2 = 0$

Q.6. I.  $2x^2 + 11x + 14 = 0$

II.  $4y^2 + 12y + 9 = 0$

Q.7. I.  $x^2 - 4 = 0$

II.  $y^2 + 6y + 9 = 0$

Q.8. I.  $x^2 - 7x + 12 = 0$

II.  $y^2 + y - 12 = 0$

Q.9. I.  $x^2 = 729$

II.  $y = \sqrt{729}$

Q.10. I.  $x^4 - 227 = 398$

II.  $y^2 + 321 = 346$

**Q.11-15:** In the following questions two equations numbered I and II are given. You have to solve both the equations and

**Give answer:**

(1) If  $x > y$

(2) If  $x \geq y$

(3) If  $x < y$

(4) If  $x \leq y$

(5) If  $x = y$  or the relationship can not be established.

Q.11. I.  $x^2 - 1 = 0$

II.  $y^2 + 4y + 3 = 0$

Q.12. I.  $x^2 - 7x + 12 = 0$

II.  $y^2 - 12y + 32 = 0$

Q.13. I.  $x^3 - 371 = 629$

II.  $y^3 - 543 = 788$

Q.14. I.  $5x + 2y = 31$

II.  $3x + 7y = 36$

Q.15. I.  $2x^2 + 11x + 12 = 0$

II.  $5y^2 + 27y + 10 = 0$

**Q.16-20:** In each of these questions two equations numbered I and II are given. You have to solve both the equations.

**Give answer:**

(1) if  $x < y$

(2) if  $x \leq y$

(3) if  $x > y$

(4) if  $x \geq y$

(5) if  $x = y$  or the relationship cannot be established.

Q.16. I.  $x^2 - 13x + 42 = 0$

II.  $y^2 + 19y + 90 = 0$

Q.17. I.  $x^2 - 5x + 56 = 0$

II.  $y^2 - 23y + 132 = 0$

Q.18. I.  $x^2 + 7x + 12 = 0$

II.  $y^2 + 6y + 8 = 0$

Q.19. I.  $x^2 - 22x + 120 = 0$

II.  $y^2 - 26y + 168 = 0$

Q.20. I.  $x^2 + 12x + 32 = 0$

II.  $y^2 + 17y + 72 = 0$

**Q.21-25:** In the following questions two equations numbered I and II are given. You have to solve both the equations and—

**Give answer If**

(1)  $x > y$

(2)  $x \geq y$

(3)  $x < y$

(4)  $x \leq y$

(5)  $x = y$  or the relationship cannot be established.

Q.21. I.  $x^2 - x - 12 = 0$   
II.  $y^2 + 5y + 6 = 0$

Q.22. I.  $x^2 - 8x + 15 = 0$   
II.  $y^2 - 3y + 2 = 0$

Q.23. I.  $x^2 - 32 = 112$   
II.  $y - \sqrt{169} = 0$

Q.24. I.  $x - \sqrt{121} = 0$   
II.  $y^2 - 121 = 0$

Q.25. I.  $x^2 - 16 = 0$   
II.  $y^2 - 9y + 20 = 0$

Q.26-30: In the following questions two equations numbered I and II are given. You have to solve both the equations and

Give answer If

(1)  $x > y$

(2)  $x \geq y$

(3)  $x < y$

(4)  $x \leq y$

(5)  $x = y$  or the relationship cannot be established

Q.26. I.  $5x^2 - 18x + 9 = 0$   
II.  $20y^2 - 13y + 2 = 0$

Q.27. I.  $x^3 - 878 = 453$   
II.  $y^2 - 82 = 39$

Q.28. I.  $\frac{3}{\sqrt{x}} + \frac{4}{\sqrt{x}} = \sqrt{x}$   
II.  $y^2 - \frac{(7)^{\frac{5}{2}}}{\sqrt{y}} = 0$

Q.29. I.  $9x - 15.45 = 54.55 + 4x$   
II.  $\sqrt{y+155} - \sqrt{36} = \sqrt{49}$

Q.30. I.  $x^2 + 11x + 30 = 0$   
II.  $y^2 + 7y + 12 = 0$

Q.31-35: In each question below equations are given, find the relation between x and y and mark your answer:

(1) if  $x = y$

(2) if  $x > y$

(3) if  $x < y$

(4) if  $x \neq y$

(5) if  $x \leq y$

Q.31.  $\frac{3}{4}x - \frac{7}{6}x = \frac{12}{15}x - \frac{25}{24}y$

Q.32.  $\frac{42}{33}x - \frac{12}{7}x = \frac{18}{7}x - \frac{28}{27}y$

Q.33. I.  $x + y = 16$   
II.  $x^2 + y^2 + 16 = 192$

Q.34. I.  $x^2 - 8x + 16 = 0$   
II.  $y^2 - 7y + 12 = 0$

Q.35. I.  $x^2 - 10x + 24 = 0$   
II.  $y^2 - 12y + 36 = 0$

Q.36-40: In every questions one or more equations are given on the basis of which you have to find out about p and q.

Mark answer:

(1) if  $p = q$

(2) if  $p > q$

(3) if  $q > p$

(4) if  $p \geq q$  and

(5) if  $q \geq p$

Q.36. I.  $2p + 5/2 = p + 3$   
II.  $q - 5/2 = 1$

Q.37. I.  $p^2 + 3 = 12$   
II.  $3q - 5 = 1 + q$

Q.38. I.  $7p^2 - 8p + 1 = 0$   
II.  $\frac{5q}{2} - \frac{3q}{4} = \frac{1}{8}$

Q.39. I.  $\frac{p}{2} - \frac{p}{3} = 1$   
II.  $q^2 + 36 = 12q$

Q.40. I.  $\frac{p}{5} - \frac{2}{7} = 0$   
II.  $q^2 = 2q - 1$

## ANSWER

### EQUATION

1.3	2.5	3.4	4.5	5.5	6.3	7.1	8.2	9.4	10.5	11.2	12.3	13.3
14.1	15.5	16.3	17.1	18.1	19.2	20.4	21.5	22.1	23.3	24.2	25.4	26.1
27.2	28.5	29.5	30.3	31.3	32.2	33.1	34.4	35.1	36.3	37.5	38.2	39.1
40.2												

## ANSWERS WITH EXPLANATION

1.3; I.  $3x^2 + 8x + 4 = 0$

or,  $3x^2 + 6x + 2x + 4 = 0$

or,  $3x(x+2) + 2(x+2) = 0$

or,  $(3x+2)(x+2) = 0$

$$\therefore x = \frac{-2}{3} \text{ or } -2$$

II.  $4y^2 - 19y + 12 = 0$

or,  $4y^2 - 16y - 3y + 12 = 0$

or,  $4y(y-4) - 3(y-4) = 0$

or,  $(4y-3)(y-4) = 0$

$$\therefore y = \frac{3}{4} \text{ or } 4$$

Now, compare the values of x and y. We get,  $x < y$ .

2.5; I.  $x^2 + x - 20 = 0$

or,  $x^2 + 5x - 4x - 20 = 0$

or,  $x(x+5) - 4(x+5) = 0$

or,  $(x-4)(x+5) = 0$

$\therefore x = 4 \text{ or } -5$

II.  $y^2 - y - 30 = 0$

or,  $y^2 - 6y + 5y - 30 = 0$

or,  $y(y-6) + 5(y-6) = 0$

or,  $(5-6)(y+5) = 0$

$\therefore y = 6 \text{ or } -4$

Now, compare the values of x and y. We get  $x > y$  or  $x < y$  or  $x = y$ . Hence, no relationship can be established between x and y.

3.4; I.  $x^2 - 365 = 364$

or,  $x^2 = 364 + 365 = 729$

$\therefore x = +27 \text{ or } -27$

II.  $y - \sqrt{324} = \sqrt{81}$

or,  $y - 18 = 9$

$\therefore y = 9 + 18$

$= 27$

Now, compare the values of x and y.

We get,  $x \leq y$ .

4.5; I.  $\frac{4}{\sqrt{x}} + \frac{7}{\sqrt{x}} = \sqrt{x}$

$$\text{or, } \frac{4+7}{\sqrt{x}} = \sqrt{x}$$

or,  $4+7 = \sqrt{x} \cdot \sqrt{x}$

$\therefore x = 11$

$$\text{II. } y^2 - \frac{(11)^2}{\sqrt{y}} = 0$$

$$\text{or, } \frac{y^2 \times \sqrt{y} - (11)^2}{\sqrt{y}} = 0$$

$$\text{or, } y^{\frac{3}{2}} = 11^{\frac{1}{2}}$$

$\therefore y = 11$

Now, compare the values of x and y.

We get,  $x = y$ .

5.5; I.  $225x^2 - 4 = 0$

or,  $225x^2 = 4$

or,  $x^2 = \frac{4}{225}$

$$\therefore x = +\frac{2}{15} \text{ or } -\frac{2}{15}$$

II.  $\sqrt{225y} + 2 = 0$

or,  $\sqrt{225y} = -2$

Squaring both sides we get  
 $225y = 4$

or,  $y = \frac{4}{225}$

Now, compare the values of x and y.

We get  $x > y$  or  $x < y$ .

Hence, no relationship can be established between x and y.

6.3; I.  $2x^2 + 11x + 14 = 0$

or,  $2x^2 + 4x + 7x + 14 = 0$

or,  $2x(x+2) + 7(x+2) = 0$

or,  $(2x+7)(x+2) = 0$

$$\therefore x = -\frac{7}{2} \text{ or } -2$$

II.  $4y^2 + 12y + 9 = 0$

or,  $4y^2 + 6y + 6y + 9 = 0$

or,  $2y(2y+3) + 3(2y+3) = 0$

or,  $(2y+3)(2y+3) = 0$

$$\therefore y = -\frac{3}{2} \text{ or } -3$$

Now, compare the values of x and y.

We get  $x > y$ .

7.1; I.  $x^2 - 4 = 0$

or,  $x^2 = 4$

$\therefore x = +2 \text{ or } -2$

II.  $y^2 + 6y + 9 = 0$

or,  $y^2 + 3y + 3y + 9 = 0$

or,  $y(y+3) + 3(y+3) = 0$

or,  $(y+3)(y+3) = 0$

$\therefore y = -3, -3$

Now, compare the values of x and y.

We get  $x > y$ .

8.2; I.  $x^2 - 7x + 12 = 0$

or,  $x^2 - 4x - 3x + 12 = 0$

or,  $x(x-4) - 3(x-4) = 0$

or,  $(x-4)(x-3) = 0$

$\therefore x = 4 \text{ or } 3$

II.  $y^2 + y - 12 = 0$

or,  $y^2 + 4y - 3y - 12 = 0$

or,  $y(y+4) - 3(y+4) = 0$

or,  $(y+4)(y-3) = 0$

$\therefore y = -4, 3$

Now, compare the values of x and y.

We get  $x \geq y$ .

9.4; I.  $x^2 = 729$

$\therefore x = +27 \text{ or } -27$

II.  $y = \sqrt{729}$

$\therefore y = +27$

Now, compare the values of x and y.  
 We get  $x \leq y$ .

10.5; I.  $x^4 - 227 = 398$

or,  $x^4 = 398 + 227$

or,  $x^4 = 625$

$\therefore x = +5 \text{ or } -5$

II.  $y^2 + 321 = 346$

or,  $y^2 = 346 - 321$

or,  $y^2 = 25$

$\therefore y = +5 \text{ or } -5$

Now, compare the values of x and y.  
 We get  $x = y$  or  $x < y$  or  $x = y$ .  
 Hence, no relationship can be established between x and y.

11.2; I.  $x^2 - 1 = 0$

or,  $x^2 = 1$

$\therefore x = +1 \text{ or } -1$

II.  $y^2 + 4y + 3 = 0$

or,  $y^2 + 3y + y + 3 = 0$

or,  $y(y+3) + 1(y+3) = 0$

or,  $(y+1)(y+3) = 0$

$\therefore y = -1 \text{ or } -3$

Now, compare the values of x and y.

We get  $x \geq y$ .

12.3; I.  $x^2 - 7x + 12 = 0$

or,  $x^2 - 4x - 3x + 12 = 0$

or,  $x(x-4) - 3(x-4) = 0$

$\therefore x = 3 \text{ or } 4$

II.  $y^2 - 12y + 32 = 0$

or,  $y^2 - 8y - 4y + 32 = 0$

or,  $y(y-8) - 4(y-8) = 0$

or,  $y(y-4) = 0$

$\therefore y = 4 \text{ or } 8$

Now, compare the values of x and y.  
 We get  $x < y$ .

13.3; I.  $x^3 - 371 = 629$

or,  $x^3 = 1000$

$\therefore x = 10$

II.  $y^3 - 543 = 788$

or,  $y^3 = 1331$

$\therefore y = 11$

Now, compare the values of x and y.  
 We get  $x < y$ .

14.1; I.  $5x + 2y = 31$

II.  $3x + 7y = 36$

Rewrite the above equation in the following way.  
 I.  $15x + 6y = 93$

II.  $15x + 35y = 180$

Now, we can conclude that  $(35-6)y = 180 - 93$

or,  $29y = 87$

$$\therefore y = \frac{87}{29} = 3$$

Now, put the value of y in equation I, we get.  
 $5x + 2 \times 3 = 31$

$$\text{or, } 5x - 31 - 6 = 25$$

$$\therefore x = \frac{25}{5} = 5$$

Now, compare the values of  $x$  and  $y$ .

We get  $x > y$ .

$$15.5; \text{ I. } 2x^2 + 11x + 12 = 0$$

$$\text{or, } 2x^2 + 8x + 3x + 12 = 0$$

$$\text{or, } 2x(x+4) + 3(x+4) = 0$$

$$\text{or, } (x+4)(2x+3) = 0$$

$$\therefore x = -4 \text{ or } \frac{-3}{2}$$

$$\text{II. } 5y^2 + 27y + 10 = 0$$

$$\text{or, } 5y^2 + 25y + 2y + 10 = 0$$

$$\text{or, } 5y(y+5) + 2(y+5) = 0$$

$$\text{or, } (y+5)(5y+2) = 0$$

$$\therefore y = -5 \text{ or } -\frac{2}{5}$$

Now, compare the values of  $x$  and  $y$ .

We get,  $x > y$  or  $x < y$ .

Hence, no relationship can be established between  $x$  and  $y$ .

$$16.3; \text{ I. } x^2 + 13x + 42 = 0$$

$$\text{or, } x^2 + 7x + 6x + 42 = 0$$

$$\text{or, } x(x+7) + 6(x+7) = 0$$

$$\text{or, } (x+6)(x+7) = 0$$

$$\therefore x = -6 \text{ or } -7$$

$$\text{II. } y^2 + 19y + 90 = 0$$

$$\text{or, } y^2 + 10y + 9y + 90 = 0$$

$$\text{or, } y(y+10) + 9(y+10) = 0$$

$$\text{or, } (y+9)(y+10) = 0$$

$$\therefore y = -9 \text{ or } -10$$

Now, compare the values of  $x$  and  $y$ .

We get  $x > y$ .

$$17.1; \text{ I. } x^2 - 15x + 56 = 0$$

$$\text{or, } x^2 - 7x - 8x + 56 = 0$$

$$\text{or, } x(x-7) - 8(x-7) = 0$$

$$\text{or, } (x-7)(x-8) = 0$$

$$\therefore x = 7 \text{ or } 8$$

$$\text{II. } y^2 - 23y + 132 = 0$$

$$\text{or, } y^2 - 11y - 12y + 132 = 0$$

$$\text{or, } y(y-11) - 12(y-11) = 0$$

$$\text{or, } (y-11)(y-12) = 0$$

$$\therefore y = 11 \text{ or } 12$$

Now, compare the values of  $x$  and  $y$ .

We get  $x < y$ .

$$18.1; \text{ I. } x^2 + 7x + 12 = 0$$

$$\text{or, } x^2 + 4x + 3x + 12 = 0$$

$$\text{or, } x(x+4) + 3(x+4) = 0$$

$$\text{or, } (x+3)(x+4) = 0$$

$$\therefore x = -3 \text{ or } -4$$

$$\text{II. } y^2 - 5y - 8 = 0$$

$$\text{or, } y^2 + 2y + 2y - 8 = 0$$

$$\text{or, } y(y+4) + 2(y+4) = 0$$

$$\text{or, } (y+2)(y+4) = 0$$

$$\therefore y = -2 \text{ or } -4$$

Now, compare the values of  $x$  and  $y$ .

We get  $x > y$  or  $x < y$  or  $x = y$

Hence, no relationship can be established between  $x$  and  $y$ .

$$19.2; \text{ I. } x^2 - 22x + 120 = 0$$

$$\text{or, } x^2 - 12x - 10x + 120 = 0$$

$$\text{or, } x(x-12) - 10(x-12) = 0$$

$$\text{or, } (x-10)(x-12) = 0$$

$$\therefore x = 10 \text{ or } 12$$

$$\text{II. } y^2 - 12y + 168 = 0$$

$$\text{or, } y(y-12) - 14(y-12) = 0$$

$$\text{or, } (y-12)(y-14) = 0$$

$$\therefore y = 12 \text{ or } 14$$

Now, compare the values of  $x$  and  $y$ .

We get  $x \leq y$ .

$$20.4; \text{ I. } x^2 + 12x + 32 = 0$$

$$\text{or, } x^2 + 8x + 4x + 32 = 0$$

$$\text{or, } x(x+8) + 4(x+8) = 0$$

$$\text{or, } (x+4)(x+8) = 0$$

$$\therefore x = -4 \text{ or } -8$$

$$\text{II. } y^2 + 17x + 72 = 0$$

$$\text{or, } y^2 + 9y + 8y + 72 = 0$$

$$\text{or, } y(y+9) + 8(y+9) = 0$$

$$\text{or, } (y+8)(y+9) = 0$$

$$\therefore y = -8 \text{ or } -9$$

Now, compare the values of  $x$  and  $y$ .

We get  $x \geq y$ .

$$21.5; \text{ I. } x^2 - x - 12 = 0$$

$$\text{or, } x^2 - 4x + 3x - 12 = 0$$

$$\text{or, } x(x-4) + 3(x-4) = 0$$

$$\text{or, } (x+3)(x-4) = 0$$

$$\therefore x = -3 \text{ or } 4$$

$$\text{II. } y^2 + 5y + 6 = 0$$

$$\text{or, } y^2 + 3y + 2y + 6 = 0$$

$$\text{or, } y(y+3) + 2(y+3) = 0$$

$$\text{or, } (y+2)(y+3) = 0$$

$$\therefore y = -2 \text{ or } -3$$

Now, compare the values of  $x$  and  $y$ .

We get  $x > y$  or  $x < y$  or  $x = y$

Hence, no relationship can be established between  $x$  and  $y$ .

$$22.1; \text{ I. } x^2 - 8x + 15 = 0$$

$$\text{or, } x^2 - 5x - 3x + 15 = 0$$

$$\text{or, } x(x-5) - 3(x-5) = 0$$

$$\text{or, } (x-3)(x-5) = 0$$

$$\therefore x = 3 \text{ or } 5$$

$$\text{II. } y^2 - 3y + 2 = 0$$

$$\text{or, } y^2 - 2y - y + 2 = 0$$

$$\text{or, } y(y-2) - 1(y-2) = 0$$

$$\text{or, } (y-1)(y-2) = 0$$

$$\therefore y = 1 \text{ or } 2$$

Now, compare the values of  $x$  and  $y$ .

We get  $x > y$ .

$$23.3; \text{ I. } x^2 - 32 = 112$$

$$\text{or, } x^2 = 112 + 32 = 144$$

$$\therefore x = +12 \text{ or } -12$$

$$\text{II. } y - \sqrt{169} = 0$$

$$\text{or, } y = \sqrt{169}$$

$$\therefore y = +13$$

Now, compare the values of  $x$  and  $y$ .

We get  $x < y$ .

$$24.2; \text{ I. } x - \sqrt{121} = 0$$

$$\text{or, } x = \sqrt{121}$$

$$\therefore x = +11$$

$$\text{II. } y^2 - 121 = 0$$

$$\text{or, } y^2 = 121$$

$$\therefore y = +11 \text{ or } -11$$

Now, compare the values of  $x$  and  $y$ .

$$25.4; \text{ I. } x^2 - 16 = 0$$

$$\text{or, } x^2 = 16$$

$$\therefore x = +4 \text{ or } -4$$

$$\text{II. } y^2 - 9y + 20 = 0$$

$$\text{or, } y^2 - 5y - 4y + 20 = 0$$

$$\text{or, } y(y-5) - 4(y-5) = 0$$

$$\therefore y = 4 \text{ or } 5$$

Now, compare the values of  $x$  and  $y$ .

$$26.1; \text{ I. } 5x^2 - 18x - 9 = 0$$

$$\text{or, } 5x^2 - 15x - 3x - 9 = 0$$

$$\text{or, } 5x(x-3) - 3(x-3) = 0$$

$$\text{or, } (x-3)(5x-3) = 0$$

$$\therefore x = 3 \text{ or } \frac{3}{5}$$

$$\text{II. } 20y^2 - 13y + 2 = 0$$

$$\text{or, } 20y^2 - 8y - 5y + 2 = 0$$

$$\text{or, } 4y(5y-2) - 1(5y-2) = 0$$

$$\text{or, } (4y-1)(5y-2) = 0$$

$$\therefore y = 1 \text{ or } \frac{2}{5}$$

Now, compare the values of  $x$  and  $y$ .

We get  $x > y$ .

$$27.2; \text{ I. } x^3 - 878 = 453$$

$$\text{or, } x^3 = 453 + 878 = 1331$$

$$\therefore x = 11$$

$$\text{II. } y^2 - 82 = 39$$

$$\text{or, } y^2 = 121$$

$$\therefore y = +11 \text{ or } -11$$

Now, compare the values of  $x$  and  $y$ .

We get  $x \geq y$ .

$$28.5; \text{ I. } \frac{3}{\sqrt{x}} + \frac{4}{\sqrt{x}} = \sqrt{x}$$

$$\text{or, } \frac{3+4}{\sqrt{x}} = \sqrt{x}$$

$$\text{or, } 7 = \sqrt{x} \cdot \sqrt{x}$$

$$\therefore x = 7$$

$$\text{II. } y^2 - \frac{(7)^2}{\sqrt{y}} = 0$$

$$\text{or, } \frac{y^2 - 49}{\sqrt{y}} = 0$$

$$\text{or, } y^2 - 7^2 = 0$$

$$\therefore y = 7$$

Now, compare the values of  $x$  and  $y$ .

We get  $x = y$ .

$$29.5; I. 9x - 15 \cdot 45 = 54.55 + 4x$$

$$\text{or, } 9x - 4x = 54.55 + 15.45$$

$$\text{or, } 5x = 70$$

$$\therefore x = \frac{70}{5} = 14$$

$$\text{II. } \sqrt{y+155} - \sqrt{36} = \sqrt{49}$$

$$\text{or, } \sqrt{y+155} = \sqrt{49} + \sqrt{36}$$

$$\text{or, } \sqrt{y+155} = 7 + 6$$

$$\text{or, } \sqrt{y+155} = 13$$

Squaring both sides, we get

$$y+155 = 169$$

$$\text{or, } y = 169 - 155$$

$$\therefore y = 14$$

Now, compare the values of x and y.

We get  $x = y$ .

$$30.3; I. x^2 + 11x + 30 = 0$$

$$\text{or, } x^2 + 6x + 5x + 30 = 0$$

$$\text{or, } x(x+6) + 5(x+6) = 0$$

$$\text{or, } (x+5)(x+6) = 0$$

$$\therefore x = -5 \text{ or } -6$$

$$\text{II. } y^2 + 7y + 12 = 0$$

$$\text{or, } y^2 + 4y + 3y + 12 = 0$$

$$\text{or, } y(y+4) + 3(y+4) = 0$$

$$\text{or, } (y+3)(y+4) = 0$$

$$\therefore y = -3 \text{ or } -4$$

Now, compare the values of x and y.

We get  $x < y$ .

$$31.3; I. \frac{3}{4} \times \frac{7}{6}x = \frac{12}{15} \times \frac{25}{24}y$$

$$\text{or, } \frac{7}{8}x = \frac{5}{6}y$$

$$\text{or, } \frac{x}{y} = \frac{5}{6} \times \frac{8}{7} = \frac{20}{21}$$

Hence  $x < y$ .

$$32.2; I. \frac{42}{33} \times \frac{12}{7}x = \frac{18}{7} \times \frac{28}{27}y$$

$$\text{or, } \frac{24}{11}x = \frac{8}{3}y$$

$$\text{or, } \frac{x}{y} = \frac{8}{3} \times \frac{11}{24} = \frac{11}{9}$$

Hence  $x > y$ .

$$33.1; I. x + y = 16$$

$$\text{II. } x^2 + y^2 + xy = 192$$

From II, we get  $(x+y)^2 - xy = 192$

Now, from I and II, we get

$$(16)^2 - xy = 192$$

$$\text{or, } xy = 16^2 - 192$$

$$= 256 - 192$$

$$= 64$$

We know

$$(x-y)^2 = (x+y)^2 - 4xy$$

$$= (16)^2 - 4 \times 64$$

$$= 256 - 256 = 0$$

Thus  $x - y = 0$

Hence, we can conclude that  $x = y$ .

$$34.4; I. x^2 - 8x + 16 = 0$$

$$\text{or, } x^2 - 4x - 4x + 16 = 0$$

$$\text{or, } x(x-4) - 4(x-y) = 0$$

$$\text{or, } (x-4)(x-4) = 0$$

$$\therefore x = 4, 4$$

$$\text{II. } y^2 - 7y + 12 = 0$$

$$\text{or, } y^2 - 4y - 3y + 12 = 0$$

$$\text{or, } y(y-4) - 3(x-4) = 0$$

$$\text{or, } (y-3)(y-4) = 0$$

$$\therefore y = 3 \text{ or } 4$$

Now, compare the values of x and y.

We get  $x \geq y$ .

$$35.1; I. x^2 - 10x + 24 = 0$$

$$\text{or, } x^2 - 6x - 4x + 24 = 0$$

$$\text{or, } x(x-6) - 4(x-6) = 0$$

$$\text{or, } (x-4)(x-6) = 0$$

$$\therefore x = 4 \text{ or } 6$$

$$\text{II. } y^2 - 12y + 36 = 0$$

$$\text{or, } y^2 - 6y - 6y + 36 = 0$$

$$\text{or, } y(y-6) - 6(y-6) = 0$$

$$\text{or, } (y-6)(y-6) = 0$$

$$\therefore y = 6, 6$$

Now, compare the values of x and y.

We get  $x \leq y$ .

$$36.3; I. 2p + \frac{5}{2} = p + 3$$

$$\text{or, } 2p - p = 3 - \frac{5}{2}$$

$$\therefore p = \frac{1}{2}$$

$$\text{II. } q - \frac{5}{2} = 1$$

$$q = 1 + \frac{5}{2} = 3\frac{1}{2}$$

thus, we get  $q > p$ .

$$37.5; I. p^2 + 3 = 12$$

$$\text{or, } p^2 - 12 - 3 = 0$$

$$\therefore p = +3 \text{ or } -3$$

$$\text{II. } 3q - 5 = 1 + q$$

$$\text{or, } 3q - q = 1 + 5$$

$$\text{or, } 2q = 6$$

$$\therefore q = \frac{6}{2} = 3$$

Now compare the values of p and q.

We get  $q \geq p$ .

$$38.2; I. 7p^2 - 8p + 1 = 0$$

$$\text{or, } 7p^2 - 7p - p + 1 = 0$$

$$\text{or, } 7p(p-1) - 1(p-1) = 0$$

$$\text{or, } (7p-1)(p-1) = 0$$

$$\therefore p = \frac{1}{7} \text{ or } 1$$

$$\text{II. } \frac{5q}{2} - \frac{3q}{4} = \frac{1}{8}$$

$$\text{or, } \frac{10q}{4} - \frac{3q}{4} = \frac{1}{8}$$

$$\text{or, } \frac{7q}{4} = \frac{1}{8}$$

$$\text{or, } 7q = \frac{4}{8}$$

$$\therefore q = \frac{4}{8} \times \frac{1}{7} = \frac{1}{14}$$

Now, compare the values of p and q.

We get  $p > q$ .

$$39.1; I. \frac{p}{2} - \frac{p}{3} = 1$$

$$\frac{3p}{6} - \frac{2p}{6} = 1$$

$$\frac{3p - 2p}{6} = 1$$

$$\therefore p = 6$$

$$\text{II. } q^2 - 12q + 36 = 0$$

$$\text{or, } q^2 - 6q - 6q + 36 = 0$$

$$\text{or, } q(q-6) - 6(q-6) = 0$$

$$\text{or, } (q-6)(q-6) = 0$$

$$\therefore q = 6$$

Now compare the values of p and q.

We get  $p = q$ .

$$40.2; I. \frac{p}{5} - \frac{2}{7} = 0$$

$$\text{or, } \frac{p}{5} = \frac{2}{7}$$

$$\therefore p = \frac{2}{7} \times 5 = \frac{10}{7} = 1\frac{3}{7}$$

$$\text{II. } q^2 = 2q - 1$$

$$\text{or, } q^2 - 2q + 1 = 0$$

$$\text{or, } q^2 - q - q + 1 = 0$$

$$\text{or, } q(q-1) - 1(q-1) = 0$$

$$\text{or, } (q-1)(q-1) = 0$$

$$\therefore q = 1$$

Now compare the values of p and q.

We get  $p > q$ .

## DATA SUFFICIENCY

1-15: Each of the questions below consists of a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and Give answer

- (1) if the data in statement I alone is sufficient to answer the question while the data in statement II alone is not sufficient to answer the question.
- (2) if the data in statement II alone is sufficient to answer the question while the data in statement I alone is not sufficient to answer the question.
- (3) if the data either in statement I alone or in statement II alone is sufficient to answer the question.
- (4) if the data in both the statements I and II even together are not sufficient to answer the question.
- (5) if the data in both the statements I and II together are necessary to answer the question.

1. What is the present age of Seema?
  - I. Seema's present age is half of the Reema's present age.
  - II. Reema is 5 years younger than her sister.
2. What is the area of square?
  - I. One side of the square is 21 cm.
  - II. The perimeter of the square is 84 cm.
3. In how many days 10 men will finish the work while working together?
  - I. Only 12 women can finish the work in 16 days.
  - II. 4 men and 6 women can finish the work in 16 days.
4. What is the speed of the boat in still water?
  - I. In downstream the boat travels 12 km in 4 hours.
  - II. In still water the boat travels 12 km in 6 hours.
5. What is the two-digit number?
  - I. The difference between the two digits of the two-digit number is 9.
  - II. The sum of the two digits of the two-digit number is 9.
6. What is the area of the rectangle?
  - I. Length of the rectangle is 140% of its breadth.
  - II. Perimeter of the rectangle is 96 cms.
7. What is the rate of interest?
  - I. Compound interest earned on a certain amount in two years is more than the simple interest for the same period by ₹ 400
  - II. The amount doubles itself in 5 years.
8. What is Rasika's present age in years?
  - I. Rasika's present age is more than her brother's present age by 4 years.
  - II. Four years hence Rasika's age will be three-fourth of her brother's age at that time.
9. What is the speed of the train whose length is 250 metres?
  - I. The train crosses a signal pole in 10 seconds.
  - II. The train crosses a platform of equal length in 20 seconds.
10. What is the cost of 10 pencils?
  - I. Cost of 24 pencils and 8 pens is ₹ 168.
  - II. Cost of 12 pencils and 9 pens is ₹ 117.
11. What is the speed of a running train?
  - I. The length of the train is 180 metres.
  - II. The train crosses another stationary train of 120 metres length in 60 seconds.
12. What is the speed of a boat in still water?
  - I. The boat running downstream takes 6 hours from A to B.
  - II. The boat running upstream takes 8 hours from B to C.
13. What is the difference between the ages of Samir and Sreekant?

I. The ratio of their ages is 7 : 9.

II. 5 years hence the sum of their ages will be 58 yrs.

14. In how many days can Mohan alone complete the work?

I. Mohan and Prakash together can complete the work in 17 days.

II. Rakesh works double as fast as Mohan and can alone compete the work in 10 days.

15. What is the per cent rate of simple interest per annum?

I. The amount with the interest rate doubles in 5 yrs.

II. The interest earned in first year was ₹ 10,000.

16-25: In each of the following questions, a question is followed by information given in three statements. You have to study the question along with the statements and decide that the information given in which of the statements is necessary to answer the question.

16. What is the speed of a train?

I. The train crosses a pole in 10 seconds.

II. The length of the train is 240 metres.

III. The train crosses a platform of equal length in 20 seconds.

(1) Only I and II

(2) Only II and III

(4) Any two of the three

(5) II and either I or III

(3) All I, II and III

17. What is a two-digit number?

I. The number obtained by interchanging the digits of the number is more than the original number by 18.

II. The sum of the two digits of the number is 14.

III. The difference between the two digits of the number is 2.

(1) Any two of the three

(2) Only I and II

(4) All the three

(5) III and either I or II

(3) II and either I or III

18. In how many days can 16 men and 8 women together complete a piece of work?

I. 8 men complete the piece of work in 10 days.

II. 16 women complete the piece of work in 10 days.

III. 5 women take 32 days to complete the piece of work.

(1) Only I and II

(2) Only I and III

(4) Only I and either II or III

(5) Any two of the three

(3) Only II and III

19. What is the area of a square?

I. The measure of diagonal of the square is given.

II. The measure of one side of the square is given.

III. The perimeter of the square is given.

(1) Only II

(2) Only III

(4) Only II and III

(5) Any one of the three

(3) Only I and III

20. What is the rate of interest p.c.p.a.?

I. Simple interest earned per annum is ₹ 5,300.

II. The difference between the compound and the simple interest on an amount is ₹ 1,060 at the end of 2 years.

III. An amount doubles itself in 5 years at simple interest.

(1) All the three

(2) Only III

(4) Only II or (I and II)

(5) None of these

(3) Either II or III

21. What is the capacity of the cylindrical tank?

I. Radius of the base is half of its height.

II. Area of the base is 616 square metres.

III. Height of the cylinder is 28 metres.

(1) Only I and II

(2) Only II and III

(4) All I, II and III

(5) Any two of the three

(3) Only I and III

22. What is the speed of the train?

I. The train crosses a signal pole in 18 sees.

# ANSWER

## DATA SUFFICIENCY

EFFICIENCY 1.4 2.3 3.5 4.2 5.1 6.5 7.4 8.4 9.3 10.5 11.5 12.4 13.5  
14.2 15.1 16.5 17.2 18.4 19.5 20.4 21.5 22.4 23.5 24.2 25.3