

## PERCENTAGES

### BASIC QUESTIONS

1. In a town 30 % were children, while 45 % were men. 25000 people in the town were women. What is the total number of men and children in the town?  
a. 65000 b. 75000 c. 85000 d. 90000
2. If a number is reduced by 20% we get the value as 960. Then what is the number?  
a. 1200 b. 1100 c. 1000 d. 850
3. A man spends 20% of his income on clothing, 25% on his personal development, 15% on food and 10% on his travel. If he is left out with Rs.9000. What is his income?  
a. Rs. 10,000 b. Rs. 30,000 c. Rs. 20,000 d. Rs. 15,000
4. 60 % of a number is added to 120, This makes the number 90%. Then what is the number ?  
a. 500 b. 400 c. 350 d. 450
5. If 40% of a number is 200 more than 30% of the number .Find the number ?  
a. 1000 b. 2000 c. 3000 d. 4000
6. 40% of 250 + 60% of 450 = ?  
a. 235 b. 335 c. 400 d. 155 *Cub ans 370*
7. If 70% of a number is 300 less than 80% of the number .Find the number ?  
a. 3000 b. 3500 c. 2500 d. 2000
8. 25 % of a number is 8 less than one-third of that number. Find the number.  
a. 100 b. 64 c. 96 d. 84
9. 45% of 750 - 25% of 480 = ?  
a. 216 b. 217.50 c. 236.50 d. 245
10. 860% of 50 + 50% of 860 = ?  
a. 430 b. 516 c. 860 d. 960

### DECIMALS TO FRACTIONS BASED QUESTIONS :

1. A person's salary is increased by 28.56% to become Rs.18000. What was the person's previous salary?  
a. Rs.12000 b. Rs.14000 c. Rs.16000 d. Rs.14000
2. A number is reduced by 8.33% making the value 3300. What is the number.  
a. 3400 b. 3500 c. 3600 d. 3800
3. A city's population is increased by 37.5% to become 48400 , What is the actual population of the city before the increase in population ?  
a. 35000 b. 35200 c. 34000 d. 30000
4. A 6.25% drop in a number brings it to 3000. Then what is the number ?  
a. 3300 b. 3200 c. 3000 d. 4000
5. Rainfall of a city is increased by 22.22% making it 220. If the rainfall had increased by 55.55 %. What would have been the total rainfall in cm.  
a. 260cm b. 230cm c. 280cm d. 300cm

### INCREASE AND DECREASE TYPE QUESTIONS

1. If the price of sugar increases by 20%, by what percentage should the consumption be reduced so overall expenditure is same as earlier?  
a. 16.66% b. 25% c. 20% d. none
2. If A got 8.33% more votes than B in an election, by what percentage is B's votes less than that received by A?  
a. 7.71% b. 9.09% c. 8.33% d. 10%
3. The government increased the price of a commodity by 25% in a particular month. By what percentage should the price be decreased in the subsequent month in order to bring it back to its original value?

- a. 80% b. 25% c. 50% d. 20%  
 4. The price of an article has been reduced by 30%. In order to restore the original price, what percentage increase is required?  
 a. 30% b. 23 1/13% c. 42 & 6/7% d. 42 & 1/9%
5. The price of a commodity increased by 20% and therefore a household reduced the consumption of the commodity by 20 kg in order to maintain the expenditure at the earlier level. What was the earlier consumption in kilogram?  
 a. 100kg b. 150kg c. 120 kg d. none
6. An increase of 25% in the price of onion results in a 5kg decrease in the quantity of onion that can be purchased for Rs.300. Find the original price of onion per kilogram before the increase.  
 a.Rs.12/kg b.Rs.20/kg c.Rs.15/ d.Rs.25/kg
7. Travelling from home to office, If I increased my speed by 12.5%, What percent of the travel time would I save?  
 a.10% b.111.11% c.12.5% d.15%
8. Prices of essential commodities decrease by 27.27%. By what percent can a household increase its consumption with the same expenditure?  
 a.37.5% b.30% c.33.33% d.25%
9. The prices of wheat reduce by 11.11%.Find the amount of wheat that can be purchased in the same amount that was sufficient to purchase 72 kg of wheat at the earlier price.  
 a. 81 kg b.100 kg c.64 kg d.78 kg
10. Owing to heavy traffic on the route, a man finds that his speed is reduced by 25% today with respect to normal days. As a result, he reaches his office 20 minutes later than normal. How much time did he take today to reach the office?  
 a.80 minutes b. 45 minutes c. 75 minute d. 60 minutes
- SUCCESSIVE PERCENTAGE QUESTIONS**
1. The population in Ahmedabad was 3000. It was increased by 4 % in the first year and then decreased by 3 % in the next year. What was the total population at the end of two years?  
 a. 3208 b. 3028 c. 2028 d. 3026
2. Every year the population in India grows at the rate of 20 %. If the population in 2010 was 50000 then what will be the population of India in 2013?  
 a. 88000 b. 86000 c. 86200 d. 86400
3. The population of Denver in 2015 was 160000. After one year there was a decrease in population of 6 %. After that, there was an increase in population by 8 %. What was the population of Denver in 2017?  
 a.162422 b. 162432 c.163422 d. 165432
4. Anil's salary was Rs. 18000. An increase of 20 % in consecutive terms is equal to a single increment of what percentage?  
 a.44 % b. 40 % c.22% d. 400 %
5. Hillary's present salary was Rs.25000 per month. She decided to switch jobs and the new company offered an increment of 10 % for two consecutive years. What was the total percentage offered in two consecutive years?  
 a.22 % b. 21 % c. 25 % d. 20 %
6. The population in a town was 1, 00,000. It was noted that every year there was an increase of 10 % per year. Find the population of the town at the start of the third year.  
 a.1,21,000 b.1,33,100 c.1, 20,000 d.118,800
7. The height of the triangle is increased by 40 %. What can be the maximum percentage increase in the length of the base so that the increase in area is restricted to a maximum of 60 %?

1) ~~2000~~ ~~X~~ Mary was reduced by 30% and then increased by 30%. What was the net %  
 a. -6% b. -4% c. +6% d. 25%

2) 9. Successive discounts of 10%, 20% and 20% is equal to a single discount of?  
 a. 50% b. 42.4% c. 43.4% d. 40%

10. A person's salary is increased by 20% twice and reduced by 10% twice. What would be the net change in his salary?  
 a. 16.64% decrease b. 16.64% increase c. 20% increase d. 20% decrease.

### EXAM & ELECTION RELATED QUESTIONS

1. To pass the exam every candidate need to score 35% of the total marks in the exam. A student got 35 marks and failed by 35 marks. What were the maximum marks for the test?  
 a. 200 b. 130 c. 100 d. 70

2. A student has to obtain 33% of the total marks to pass. he got 125 marks and failed by 40 marks. The maximum marks are:

- a. 300 b. 500 c. 800 d. 1000

3. Two students appeared in the exam. One of the students scored 6 marks more than the other and his marks were 52% of the total sum of the marks of both the students. What were the marks scored by the weaker student?

- a. 70 b. 72 c. 76 d. 78

4. Ram gets 55% of total valid votes in an election. If the total votes were 9000, what is the number of valid votes that the other candidate Shyam gets if 30% of the total votes were declared invalid?

- a. 2385 b. 29835 c. 2900 d. 3100

5. In an election between two candidates, one get 55% of the total valid votes, 20% of the votes were invalid. If the total number of votes was 7500, the number of valid votes that the other candidate got, was?

- a. 2700 b. 2900 c. 3000 d. 3100

6. In an election between two candidates, one get 55% of the total valid votes, 20% of the votes were invalid. If the total number of votes was 7500, the number of valid votes that the other candidate got, was?

- a. 2700 b. 2900 c. 3000 d. 3100

7. In an election contested by two parties, Party D secured 12% of the total votes more than Party R. If party R got 132,000 votes, by how many votes did it lose the election?

### VENN DIAGRAM BASED QUESTIONS

1. In an examination 40% failed in Hindi, 45% failed in English. If 25% students failed in both the subjects. Then the percentage of failed students is?

- a. 60% b. 40% c. 20% d. 30%

2. In an examination, 47% failed in English and 54% failed in Mathematics. Find the pass percentage in both the subjects if 31% failed in both the subjects?

- a. 20% b. 30% c. 25% d. 12%

3. In a survey of 500 students of a college, it was found that 49% liked watching football, 53% liked watching hockey and 62% liked watching basketball. Also, 27% liked watching football and hockey both, 29% liked watching basketball and hockey both and 28% liked watching football and basket ball both. 5% liked watching none of these games.

How many students like watching all the three games?

Find the ratio of number of students who like watching only football to those who like watching only hockey.

Find the number of students who like watching only one of the three given games.

Find the number of students who like watching at least two of the given games.

## PROFIT AND LOSS

### BASICS:

*Cost Price is always 100%.*

1. On selling an article for Rs. 1470 a man gets profit of 22.5%. Find the cost price of the article.

a.Rs.1000    b.Rs.1100    c.Rs.1200    d.Rs.1400

2. On selling an article for Rs. 155 a man bears loss of  $16\frac{2}{3}\%$ . Find the cost price of article.

a.Rs.176    b.Rs.186    c.Rs.196    d.Rs.200

3. In selling an article for Rs. 76, there is a profit of 52%. If it is sold for Rs. 75, the profit percent will be:

a.Rs.100    b.Rs.150    c.Rs.200    d.175

4. The ratio of cost price and selling price is 5 : 4, the loss percent is : *always take CP as 100*

a.25% loss    b.20% loss    c.10% loss    d.15% profit

5. If selling price of an article is  $\frac{8}{5}$  times of its cost price, the profit percent on it is:

a.60%    b.50%    c.25%    d.40%

6. Loss incurred by selling an article for Rs.600 is equal to profit gained by selling same article for Rs. 1000. Find the cost price of this article?

a.Rs.700    b.Rs.800    c.Rs.900    d.Rs.650

7. Loss incurred by selling an article for Rs.550 is equal to half of the profit gained by selling same article for Rs. 850. Find the cost price of this article?

a.Rs.750    b.Rs.650    c.Rs.500    d.Rs.600

8. Loss incurred by selling an article for Rs. 800 is 23% more than profit gained by selling same article for Rs. 1246. Find the cost price of this article?

a. Rs.1000    b.Rs.1046    c.Rs.900    d.Rs.1100

9. The profit earned when an article is sold for Rs. 800 is 20 times the loss incurred when it is sold for Rs. 275. At what price should the article be sold if it is desired to make a profit of 25%.

a.Rs.275    b.Rs.375    c.Rs.400    d.Rs.500

10. Ratio of Loss incurred by selling an article for Rs. 820 and profit gained by selling same article for Rs. 950 is 7 : 6. Find the cost price of this article?

a.Rs.890    b.Rs.880    c.Rs.820    d.Rs.900

*CP vs SP*

1. Cost price of 10 articles is equal to the selling price of 7 articles, then the gain or loss % is  
 a.42.84%gain    b.30%gain    c. 42.84% loss    d. 30% loss

2. If the cost price of 15 books is equal to the selling price of 20 books, the loss % is  
 a. 25% gain    b.25% loss    c.30% gain    d.30% loss

3. Cost price of 20 pens is equal to the Selling price of 15 pens, the loss or gain % is  
 a. 33.33% gain    b.25% gain    c.25% loss    d.33.33% loss

4. If by Selling 110 mangoes the CP of 120 mangoes is realized. The gain % is  
 a.9.09 % gain b.8.33 % loss c.9.09% loss d.8.33% gain

5. On selling 17 balls at Rs.720 there is a loss equal to the cost price of 5 balls. The cost price of a ball is

a.Rs.60    b.Rs.30    c.Rs.75    d.Rs.65

6. Selling price of 25 articles is equal to cost price of 20 articles. Find profit/loss %.  
 a.20% loss    b.25% gain    c. 25% loss    d. 20% gain

7. Selling price of 33 articles is equal to cost price of 44 articles. Find profit/loss %  
 a.25% gain    b.25% loss    c.33.33% loss d.33.33% gain

- 1) ~~2000~~ X A person bought some articles at rate of 11 for Rs. 10 and sold them at the rate of 10 for  
 a. 10% b. 21% c. 20% d. 30%
2. A person bought some articles at rate of 6 for Rs. 5 and sold them at the rate of 5 for Rs. 6.  
 Find the profit or loss %  
 a. 11% b. 44% c. 40% d. 33%
3. A person bought some caps at rate of 60 for Rs. 93 and sold them at the rate of 50 for Rs.  
 93. Find the profit or loss %  
 a. 20% b. 16.66% c. 25% d. 10%
4. A person bought some caps at rate of 27 for Rs. 102 and sold them at the rate of 8 for Rs.  
 34. Find the profit or loss %  
 a. 12.5% b. 10% c. 15% d. 16.66%
5. A person bought some article at rate of 36 for Rs. 189 and sold them at the rate of 45 for  
 Rs. 189. Find the profit or loss %  
 a. 20% b. 25% c. 30% d. 33.33%
6. A fruit merchant bought some oranges at the rate of 4 for Rs. 10 and same amount of  
 oranges at the rate of 5 for Rs. 10. If he sells whole stock at the rate of 9 for Rs. 20. Find his  
 profit /loss %.  
 a. 20% b. 30% c. 45% d. 15%
7. A person bought some article at rate of 6 for Rs. 20 and bought same number of articles at  
 the rate of 8 for Rs. 25 And sold all the stock at the rate of 8 for Rs 31. Find the profit or  
 loss?  
 a. 20% b. 30% c. 45% d. 15%

### SUCCESSIVE PERCENTAGES:

1. Two horses were sold at Rs. 1599 each. First was sold at 25% profit and second at 20%  
 loss. Find the over all profit or loss %.  
 a. no profit & no loss b. 10% gain c. 20% loss d. 15%gain
2. A house and a shop were sold for Rs. 1 lakh each. In this transaction, the house sale  
 resulted into 20% loss whereas the shop sale into 20% profit. The entire transaction resulted  
 in : a. 4% profit b. 4%loss c. 3% profit d. 2% loss
3. Two horses were sold for Rs. 1920 each. First was sold at 20% loss and second at 20%  
 profit. Find overall profit or loss  
 a. 4% profit b. 4%loss c. 3% profit d. 2% loss
4. Two horses were sold at Rs. 2380 each. First was sold at 20% profit and second at 25%  
 loss. Find the overall profit or loss %.  
 a. no profit & no loss b. 10% gain c. 20% loss d. 15%gain

### DISHONEST SELLER PROBLEMS

1. A shopkeeper sells his goods at C.P. but uses 900gm weight find profit %.  
 a. 11.11% b. 9.09% c. 10% d. None
2. A shopkeeper sells his goods at C.P. but cheats to the extent of 10% while buying as well  
 as selling by using false weight. Find profit %.  
 a. 22.22% b. 20% c. 11.11% d. 10%
3. A shopkeeper sells water melon at profit of 10% but cheats to the extent of 10% while  
 measuring. Find profit %.  
 a. 22.22% b. 18.18% c. 20% d. 10%
4. A shopkeeper marks his goods at 20% more and offers discount of 10%. And weights  
 100gm less. Find his overall profit %. ↓

$$\begin{aligned}
 1000 \text{ gm} &\rightarrow 1200 \text{ gm} \text{ when he applies } 10\% \text{ discount} \\
 \text{So Selling Price} &= 1200 - 120 \\
 &= 1080 \\
 \text{He fakes selling by giving } 900 \text{ gm instead of } 1000 \text{ gm} \\
 \text{So} &= \text{for } 900 \text{ gm he sells for } 1080 \\
 \frac{1080}{900} &= \frac{12}{10} = 1.2 = 20\% \text{ profit}
 \end{aligned}$$

- a. 33.33%    b. 25%    c. 20%    d. 50%

5. A shopkeeper marks his goods at 20% more and offers discount of 10%. He cheats to the extent of 10% while buying as well as selling by using false weight. Find his overall profit %.

- a. 25%    b. 33.33%    c. 20%    d. 11.11%

6. A dishonest dealer professes to sell his goods at cost price by using a false weight and thus gains 1.

- 11 1/9%. For weighing a kilogram, he uses a weight of  
a. 900 gm    b. 800 gm    c. 700 gm    d. 750 gm

7. A dishonest dealer sells the goods at 15% loss on cost price but uses false weight. So his over all profit is 25% find the gm. In 1 kg. that he used.

- a. 700 gm    b. 680 gm    c. 600 gm    d. 500 gm

### MISCELLANEOUS QUESTIONS

1. A man purchases 5 horses and 10 cows for Rs. 10000. He sells the horses at 15% profit and the cows at 10% loss. Thus he gets Rs. 375 as profit. Find the cost of 1 horse and 1 cow separately.

2. A man buys 5 horses and 7 oxen for Rs. 5850. He sells the horses at a profit of 10% and oxen at a profit of 16% and his whole gain is Rs. 711. What price does he pay for a horse.

## AVERAGES

### BASICS

1. The average of all natural numbers upto 100 is

- a. 50    b. 50.5    c. 51    d. 49.5

2. The average of all odd numbers less than 100 is:

- (a) 49.5    (b) 50

- (c) 50.5    (d) 51

3. If the average of 17 consecutive even number is 143. Find the difference between first and last number.

4. Average of 5 consecutive number is 23. Find the largest number.

5. Average of 6 consecutive odd number is 40. Find the largest number.

6. If the average of 116 consecutive even number is 201. Find the sum of first and last number.

7. If the average of 7 consecutive even number is 44. Find the difference between first and last number.

8. The average of nine consecutive numbers is n. If the next two number

9. Average of 13 number is 52. Average of first 7 number is 51. Average of last 7 number is 54. Find 7th number

10. Average of 17 number is 63. Average of first 9 number is 64. Average of last 9 number is 61. Find 9th number.

11. A man bought 13 shirts of Rs. 50 each, 15 pants of Rs. 60 each and 12 pairs of shoes at Rs. 65 a pair. Find the average value of all the article.

### TYPE 1:

1. Average age of 17 student of a class is 16 years. If a new student join the class then average age becomes 20. Then find the age of new student

2. Average weight of 17 players of a team is 22 kg. If a player leave the team then the average becomes

23 kg then find the weight of that player.

3. There is some average of 11 innings of a batsman. He scores 90 runs in 12th innings then average is decreased by 5 runs. Find his current average.

4. There is some average of 8 innings of a batsman. He scores 100 runs in 9th innings then average is increased by 9 runs. Find his current average

### MISCELLANEOUS TYPES :

- There are 35 students in a hostel. If the number of students increases by 7, then the expenses of the mess increased by Rs. 42 per day while the average expenditure per head diminishes by Re. 1. Find the original expenditure of the mess.
- The average temperature from Monday, Tuesday, Wednesday, Thursday is  $38^{\circ}\text{C}$ . While the average temperature Tuesday, Wednesday, Thursday is  $43^{\circ}\text{C}$ . If the average temperature of Monday and Thursday is  $18.5^{\circ}\text{C}$ . Find the temperature of Monday.
- The average expenditure of 4 Boys and 3 Girls is Rs. 120. If the average expenditure of Boy's is Rs. 150 then find out average expenditure of Girl's.
- The cost of 6 tables and 12 chairs is Rs. 7800. If the average cost of 1 table. is Rs. 750. Find the average cost of 1 chair.
- A batsman's runs just before the last match of theseason, adds up to 750. In his last two innings, he scores only 6 runs, and his average drops by 2. Find his final average of the season.
- A man bought 13 shirts of Rs. 50 each, 15 pants of Rs. 60 each and 12 pairs of shoes at Rs. 65 a pair. Find the average value of all the article.

### RATIOS AND PROPORTIONS

#### BASIC PROBLEMS :

- Sush was thrice as old as Poonam 6 years back. Sush will be  $\frac{5}{3}$  times as old as Poonam 6 years hence. How old is Poonam today?

a. 10 years    b. 12 years    c. 13 years    d. 14 years

- The ratio of present age of Kaviya and Lakshmi is 6:7, the ratio of their ages after 8 yrs would be 8:9. What is Kaviya's present age?

a. 32 years    b. 36 years    c. 40 years    d. 38 years

- X and Y invested in a business. They earned some profit which they divided in the ratio of 2 : 3. If X invested Rs. 40,000, the amount invested by Y is :  $2 \text{ part} = 40000$

a. 20000    b. 40000    c. 60000    d. 80000     $\therefore 3 \text{ part} = 60000$

- The ratio between the present ages of A and B is 6:7. If B is 4 years old than A. What will be the ratio of the ages of A and B after 4 years?

a. 24,28 b. 28,32    c. 32,36 d. 30,34

- A sum of money is to be distributed among A, B, C, D in the proportion of 5:2.4:3. If C gets Rs. 1000 more than D, what is B's share?  $\frac{5}{10} \text{ more than } \frac{3}{10} \text{ part} = 1000$

a. 5000 b. 2000 c. 4000 d. 3000

- Two numbers are in the ratio 5 : 6. If 8 is subtracted from each of the numbers the ratio is 4 : 5. Find the numbers.

a. 40,48 b. 32,40    c. 36,45 d. 40,50

- Two numbers are in the ratio 5:6 if 20 is added to each of them the ratio becomes 7:8 the numbers are

a. 100,120    b. 50,60    c. 80,100    d. 45,60

- The ratio of two numbers is 3:4 and their sum is 28. The greater of the two numbers is?

a. 21 b. 28 c. 35 d. 32

- The ratio of two numbers is 2:3 and the sum of their cubes is 945. The difference of the numbers is?

a. 27 b. 81 c. 243 d. 729

- In a college, the ratio of the number of boys to girls is 8 : 5. If there are 200 girls, the total number of students in the college is

a. 220 b. 240 c. 200 d. 180

- Income and expenditure of a person are in the ratio 5:4. If the income of the person is Rs.18000, then find his savings? Income : expenditure = 5:4

a. 2500 b. 3600 c. 4500 d. 5000

5. The average age of 11 players of a cricket team is increased by 2 months when two of aged 18 years and 20 years are replaced by two new players. The average age of the new players is

6. The average of six numbers is 32. If each of the first three numbers is increased by 2 and each of the remaining three numbers is decreased by 4, then find the new average.

7. The average age of 11 persons in a committee is increased by 2 years when three men aged 32 years, 33 years and 34 years are substituted by three women. Find the average age of these three women

8. The average height of 40 students is 163 cm. On a particular day, three students A, B, C were absent and the average of the remaining 37 students was found to be 162 cm. If A, B have equal height and the height of C be 2 cm less than that of A, find the height of A

**TYPE 2:**

1. If the average of 64 innings of a batsman is 62. If highest and lowest innings are excluded then the average of remaining 62 innings is 60. If the difference between highest and the lowest innings 180 runs. Find his highest and lowest score.

2. If the average of 42 innings of a batsman is 30. If highest and lowest innings are excluded then the average of remaining 40 innings is 28. If the difference between highest and lowest innings is 100 runs. Find his highest and lowest score

3. If the average of 40 innings of a batsman is 50. highest and lowest innings are excluded then the average of remaining 38 innings is 48. If the difference between highest and lowest innings is 172 runs. Find his highest and lowest score.

4. The average marks obtained by 45 students in a class is 80. The difference between the marks of the student who got the highest mark and the student who got the least mark is 99. If both these students are not considered, the average of the class falls by 1 mark. Find the highest mark.

**TYPE 3:**

1. The average weight of 3 men A, B and C is 84 kg. Another man D joins the group and the average now becomes 80 kg. If another man E, whose weight is 3 kg more than that of D, replaces A, then average weight of B, C, D and E becomes 79 kg. The weight of A is

2. The average weight of 4 men A, B, C and D is 67 kg. Another man E joins the group and the average now becomes 65 kg. If another man F, whose weight is 4 kg more than that of E, replaces A, then average weight of B, C, D, E and F becomes 64 kg. The weight of A is

3. The average weight of 5 men A, B, C, D and E is 94 kg. Another man F joins the group and the average now becomes 96 kg. Weight of E is 6 kg less than that of F. Now A is replaced

4. The average weight of A, B, C and D is 40 kg. A new person E is also included in the group, then the average weight of the group is increased by 1 kg. Again a new person F replaces A,

**TYPE 4:**

1. Average marks of 100 students of a class is 58. Later it was found that 86 was mistakenly written as 68. Find the actual average.

2. Average marks of maths of 5 students is 50. Later it was found that 48 was mistakenly reworded as 84. Find the actual average

3. Average marks of 40 students is 72. Three numbers 64, 62 & 84 were mistakenly read as 68, 65, 73 respectively. Find the actual average.

4. Average price of 100 articles is 46. Later it was found that 16 was read as 61 and 43 was read as 34 and the articles were 90 instead of 100. Find the actual average.

12. Three numbers are in the ratio 5:6:7. The sum of its largest and smallest numbers equals the sum of the third number and 48. Find the third number?  
 a. 48   b. 36   c. 30   d. 42

**TYPE 2:**

- Salaries of Ravi and Sumit are in the ratio 2 : 3. If the salary of each is increased by Rs. 4000, the new ratio becomes 40 : 57. What is Sumit's salary?
- The salary of two friends Ramu and Raju are in the ratio 4:5. If the salary of each one increases by Rs. 6000, then the new ratio becomes 48:55. What is Raju's present salary?  
 a. 9500   b. 10500   c. 11500   d. 12500   e. None
- The monthly salaries of two persons are in the ratio of 4:7. If each receives an increase of Rs. 25 in their salary, the ratio is altered to 3:5. Find their respective salaries  
 a. 200,350   b. 160,250   c. 300,350   d. 150,400
- The ratio between the present age of A and B is 7:4. The ratio between the age of A and B four years ago is 2:1. What is the ratio of age of A and B four years hence?  
 a. 5:8   b. 8:5   c. 3:4   d. 4:3
- At present Priya is twice Sariga's age. 8 yrs hence the respective ratio between Priya and Sariga's age will be 22 : 13. What is Sariga's present age?  
 a. 36 years   b. 18 years   c. 20 years   d. 25 years
- The ratio of the present ages of A to B is 5 : 3. The ratio of A's age 4 years ago to B's age 4 years hence is 1 : 1. What is the ratio of A's age 4 years hence to B's age 4 years ago?  
 a. 1:1   b. 2:3   c. 3:2   d. 4:5

**COMBINED RATIOS:**

- The sum of three numbers is 98. If the ratio of the first to second is 2 : 3 and that of the second to the third is 5 : 8, then the second number is:  
 a. 30   b. 48   c. 24   d. 25
- If  $a:b = 7:5$ ,  $b:c = 9:11$ , find  $a:b:c$ ?  
 a. 45:54:63   b. 63:45:55   c. 54:45:55   d. 62:60:55
- A, B and C play a cricket match. The ratio of the runs scored by them in the match is A:B = 2:3 and B:C = 2:5. If the total runs scored by all of them are 75, the runs scored by B are?  
 a. 12   b. 18   c. 45   d. 0
- Rs. 8400 is divided among A, B, C and D in such a way that the shares of A and B, B and C, and C and D are in the ratios of 2:3, 4:5 and 6:7 respectively. The share of A is
- Out of three positive numbers, the ratio of the first and the second numbers is 3 : 4 that of the second and the third numbers is 5 : 6 if the product of the second and the third numbers is 4320. What is the sum of three numbers?  
 a. 177   b. 165   c. 185   d. 160

**COIN PROBLEMS:**

- In a bag, there are coins of 25 p, 10 p and 5 p in the ratio of 1 : 2 : 3. If there is Rs. 30 in all, how many 5 p coins are there?  
 a. 50 coins   b. 200 coins   c. 150 coins   d. 300 coins
- A bag contains 50 P, 25 P and 10 P coins in the ratio 5:9:4, amounting to Rs. 206. Find the number of coins of each type respectively.  
 a. 360, 160, 200   b. 160, 360, 200   c. 200, 360, 160   d. 200, 160, 300
- Anmol had 10 paise, 25 paise and 50 paise coins in the ratio of 10 : 8 : 9 respectively. After giving Rs. 20 his mother he has Rs. 40. How many 50 paise coins did he have?  
 a. 72   b. 60   c. 54   d. 35

**MISCELLANEOUS PROBLEMS :**

- Rs. 120 are divided among A, B, C such that A's share is Rs. 20 more than B's and Rs. 20 less than C's. What is B's share
- Rs. 850 was divided among three sons Prasath, Baskar, Chadru. If each of them had received Rs 35 less, their shares would have been in the ratio of 2:3:5. What was the amount received by Prasath?

3. Two vessels of equal volumes contains milk and water mixed in the ratio 1:2. These mixtures are mixed to form a new mixture, what is the ratio of milk and water?
4. If Rs. 900/- Rupees are divided among a, b and c in such a way that A's share is 3 times B and B's share is 2 times that of C. The A's share is?
5. 96 is divided into two parts in such a way that seventh part of first and ninth part of second are equal. Find the smallest part?
6. If 40% of a number is equal to two-third of another number, what is the ratio of first number to the second number?
7. Seats for Mathematics, Physics and Biology in a school are in the ratio 5 : 7 : 8. There is a proposal to increase these seats by 40%, 50% and 75% respectively. What will be the ratio of increased seats?
8. Two numbers are respectively 20% and 50% more than a third number. The ratio of the two numbers is

## NUMBER SYSTEM

### LCM PROBLEMS:

1. Six bells commence tolling together and toll at intervals of 2, 4, 6, 8, 10 and 12 seconds respectively. In 30 minutes, how many times do they toll together?  
A. 8    B. 11    C. 13    D. 16    E. None of these
2. Four bells commence tolling together and toll at the intervals of 3, 9, 12, 15 seconds resp. In 60 minutes how many times they will toll together.  
A) 20    B) 21    C) 24    D) 30    E) None of these
3. John, Smith and Kate start at same time, same point and in same direction to run around a circular ground. John completes a round in 250 seconds, Smith in 300 seconds and Kate in 150 seconds. Find after what time will they meet again at the starting point?  
a. 30 min    b. 25 min    c. 20 min    d. 15 min
4. The traffic lights at three different road crossings change after every 40 sec, 72 sec and 108 sec respectively. If they all change simultaneously at 5 : 20 : 00 hours, then find the time at which they will change simultaneously.  
a. 5 : 28 : 00 hrs    b. 5 : 30 : 00 hrs  
c. 5 : 38 : 00 hrs    d. 5 : 40 : 00 hrs
5. Five bells first begin to toll together and then at intervals of 5, 10, 15, 20 and 25 seconds respectively. After what interval of time will they toll again together?  
a. 5 mins    b. 25 mins    c. 20 mins    d. 15 mins

### HCF PROBLEMS

1. A man was employed on the promise that he will be paid the highest wages per day. The contract money to be paid was Rs. 1189. Finally he was paid only Rs. 1073. For how many days did he actually work?  
HCF of  $1189, 1073 \Rightarrow 29$   
 $1073 = 29 \times 37$   
 $37 = 39 \text{ days}$   
A. 39 B. 40 C. 37 D. 35
2. An officer was appointed on maximum daily wages on contract money of Rs. 4956. But on being absent for some days, he was paid only Rs. 3894. For how many days was he absent?  
A. 3 B. 4 C. 5 D. 6
3. A merchant has three different types of milk: 435 liters, 493 liters and 551 liters. Find the least number of casks of equal size required to store all the milk without mixing.  
A. 51 B. 61 C. 47 D. 45
4. A wholesale tea dealer 408 kilograms, 468 kilograms and 516 kilograms of three different qualities of tea. He wants it all to be packed into boxes of equal size without mixing. Find the capacity of the largest possible box?  
A. 50 B. 36 C. 24 D. 12
5. Find the size of the largest square slabs which can be paved on the floor of a room 5 meters 44 cm long and 3 meters 74 cm broad?  
A. 56 B. 42 C. 38 D. 34

## TYPE 2

1. The least multiple of 7, which leaves a remainder of 4, when divided by 6, 9, 15 and 18 is:  
A) 68 B) 98 C) 180 D) 364 E) None of these
2. The least number which should be added to 2497 so that the sum is exactly divisible by 5, 6, 4 and 3 is:  
A) 10 B) 14 C) 23 D) 30 E) None of these
3. The least number, which when divided by 12, 15, 20 and 54 leaves in each case a remainder of 8 is:  
A) 534 B) 486 C) 544 D) 548 E) None of these
4. What will be the least number which when doubled will be exactly divisible by 12, 18, 21 and 30?  
$$\text{LCM} = \text{lcm}(12, 18, 21, 30) = 1260$$
  
A) 630 B) 360 C) 603 D) 306 E) None of these
5. In a college, all the students can stand in a row, so that each row has 9, 7 and 12 students. Find the least no of students in the school?  
A) 145 B) 265 C) 186 D) 252 E) None of these
6. Find the least number exactly divisible by 10, 15, 18 and 30.  
A) 85 B) 90 C) 88 D) 93 E) 105
7. Find the least number which when divided by 15, 21, 24 and 32 leaves the same remainder 2 in each case.  
A) 3362 B) 3360 C) 3456 D) 3266 E) 3364
8. Find the least number which when divided by 10, 15, 18 and 30 leaves remainders 6, 11, 14 and 26 respectively.  
A) 72 B) 86 C) 85 D) 90 E) 94
9. Find the smallest number of 4 digits which is exactly divisible by 12, 15, 21 and 30.  
A) 1580 B) 1420 C) 1260 D) 1056 E) None of these
10. Find the least number which when divided by 2, 5, 9 and 12 leaves a remainder 3 but leaves no remainder when same number is divided by 11.  
A) 281 B) 357 C) 360 D) 363 E) 224
11. Find the least number which when divided by 2, 3, 4 and 5 leaves a remainder 3. But when divided by 9 leaves no remainder?  
a) 33 b) 63 c) 81 d) 123 e) None of these
12. Find the 4-digit smallest number which when divided by 12, 15, 25, 30 leaves no remainder?  
a) 1020 b) 1120 c) 1200 d) 1800
13. Find the least number which when divided by 12, 27 and 35 leaves 6 as a remainder?  
a) 3774 b) 3780 c) 3786 d) 4786
14. Find the last number which when divided by 6, 8, 15 and 30 leaves remainder 2, 4, 11 and 26 respectively?  
a) 124 b) 116 c) 120 d) 134
15. The least number which when divided by 4, 5 and 6 leaves remainder 1, 2, and 3 respectively is given by?  
a. 57 b. 117 c. 157 d. none
16. Three buckets contains balloons filled with water. First bucket contains 243 balloons. Second contains 304 balloons and last bucket contains 127 balloons. Find the largest number of balloons that can be given equally to the children such that 3, 4 and 7 balloons are left in first, second and third bucket respectively?  
a. 20 b. 30 c. 40 d. 60
17. What will be the sum of the biggest 3-digit number and smallest 4-digit number whose HCF is 23?

- a. 30 b. 40 c. 60 d. None of these  
 18. The HCF of 3 different no is 17, Which of the following cannot be their LCM ?  
 a. 540 b. 289 c. 340 d. 425 e. None of these  
 19. Two containers contain 50 and 125 litres of water respectively. Find the maximum capacity of a container which can measure the water in each container an exact number of times(in litres)  
 a. 25 b. 11 c. 12 d. 15 e. None of these

### LCM and HCF

1. The HCF and LCM of two numbers are 21 and 84 respectively. If the ratio of the two numbers is 1:4. Then find the numbers.  
 a. 21, 42 b. 21, 84 c. 21, 33 d. 42, 168  
 2. The LCM of two numbers is 495 and their HCF is 5. If sum of the numbers is 100, then find their difference.  
 a. 10 b. 20 c. 30 d. 40  
 3. The HCF and LCM of two numbers are 12 and 336 respectively. If one number is 84, then the other number is?  
 a. 24 b. 36 c. 48 d. 60  
 4. If the ratio of two numbers is 2:3 and their LCM is 54. Then the sum of the two numbers is?  
 a. 36 b. 45 c. 40 d. None  
 5. The H.C.F. of two numbers is 11 and their L.C.M. is 7700. If one of the numbers is 275, then the other is:  
 a. 269 b. 275 c. 308 d. 310 e. None of these  
 6. The product of two number is 2736. If their LCM is 1368 .what is their hcf?  
 A. 3 B. 2 C. 5 D. 6  
 7. The product of two numbers is 2160 and their HCF is 12. What is their LCM?  
 A. 135 B. 200 C. 180 D. 160  
 8. The product of two numbers is 2286. If their HCF is 9, what is their LCM?  
 A. 306 B. 276 C. 254 D. 264  
 10. HCF and LCM of two numbers is 5 and 275 respectively and the sum of these two numbers is 80. Find the sum of the reciprocals of these numbers  
 a) 16/125 b) 32/275 c) 32/125 d) 16/275 e) None of these

### HIGH LEVEL QUESTIONS:

1. When 2388, 4309 and 8151 are divided by a certain 3-digit number, the remainder in each case is the same. The remainder is;  
 2. Let x be the least number divisible by 16, 24, 30, 36 and 45 and x is also a perfect square. What is the remainder when x is divisible by 123?  
 3. The sum of two numbers is 1215 and their HCF is 81. If the numbers lie between 500 and 700, then the sum of the reciprocals of the numbers is

### TIME & DISTANCE

#### RELATION BETWEEN SPEED AND TIME

1. Walking  $\frac{6}{7}$ th of his usual speed, a man is 12 minutes too late. What is the usual time taken by him to cover that distance?  
 a. 60mins b. 50mins c. 72mins d. 80mins

2. Walking  $\frac{3}{5}$ th of his usual speed, a man is 20 minutes too late. What is the usual time taken by him to cover that distance?  
 a. 60mins b. 100mins c. 70mins d. 80mins  
 3. By walking at  $\frac{3}{4}$ th of his usual speed, a man reaches office 20 minutes later than usual. What is his usual time?

- a. 60mins b. 75mins c. 80mins d. 65mins  
 4. By walking at  $\frac{5}{7}$ th of his usual speed, a man reaches office 20 minutes later than usual. What is his usual time?  
 a. 50mins b. 60mins c. 70mins d. 40mins  
 5. The ratio of the speeds of A and B is 2:5. To cover a certain distance, if takes 15 minutes more than B, then how much time (in minutes) will B take to cover the same distance?  
 a. 12 b. 8 c. 10 d. 9  
 6. The speeds of A and B are in the ratio 3:4. A takes 20 minutes more than B to reach a destination. In what time does A reach the destination?  
 a. 80mins b. 120mins c. 100mins d. 160mins  
 7. A train covers a distance in 50 min, if it runs at a speed of 48kmph on an average. The speed at which the train must run to reduce the time of journey to 40min will be.  
 8. A bus running at  $\frac{3}{5}$  of its usual speed reaches its destination in 15 hrs. If the bus runs at his usual speed, how much time would be saved.

#### **EXCLUDING STOPPAGE PROBLEMS:**

1. Excluding stoppages, the speed of a bus is 54 kmph and including stoppages, it is 36 kmph. For how many minutes does the bus stop per hour?  
 a. 40mins b. 20mins c. 30mins d. 10mins  
 2. Excluding stoppages, the speed of a bus is 42 kmph and including stoppages, it is 35 kmph. For how many minutes does the bus stop per hour?  
 a. 10mins b. 20mins c. 15mins d. 20mins  
 3. Excluding stoppages, the speed of a bus is 18 kmph and including stoppages, it is 15 kmph. For how many minutes does the bus stop per hour?  
 a. 10mins b. 20mins c. 40mins d. 40mins  
 4. Excluding stoppages, the speed of a bus is 60 kmph and including stoppages, it is 55 kmph. For how many minutes does the bus stop per hour?  
 a. 10mins b. 5mins c. 15mins d. 20mins

#### **DIFFERENCE IN TIME QUESTIONS:**

1. A person walks from home to office at 6km/hr and reaches the office 12 minutes late and if he walks at 9km/hr he is 8 minutes early to office. What is the distance between home and office?  
 A. 6 km b. 9 km c. 10 km d. 20 km  
 2. A person walks from home to office at 36km/hr and reaches the office 40 minutes late and if he walks at 72 km/hr he is 10 minutes late to office. What is the distance between home and office?

- a. 72km b. 54km c. 36km d. 60km  
 3. A person walks from home to office at 36km/hr and reaches the office 40 minutes late and if he walks at 72 km/hr he is 10 minutes late to office. What is the distance between home and office?  
 A. 36km b. 48km c. 72km d. 90km  
 4. Arun is traveling on his cycle and has calculated to reach point A at 2 pm if he travels at 10 kmph, he will reach there at 12 noon if he travels at 15 kmph. At what speed must he travel to reach A at 1 pm?  
 a. 12.5km/hr b. 12km/hr c. 14km/hr d. 15km/hr  
 5. Moving at 50 kmph, a person reaches his office 10 min late. Next day, he increases his speed and moves at 60 kmph and reaches his office 5 min early. What is the distance from his home to his office?  
 a. 75km b. 60km c. 90km d. 100km  
 6. If a Car runs at 45Km/hr it reaches its destination by 10 min late. If it runs at 60Km/hr it is late by 4min. Then what is the correct time for the journey?  
 a. 20mins b. 24mins c. 25mins d. 30mins aw. 14  
 7. A person when he travels at 12km/hr reaches a destination at 8 pm and when he walks at 15km/hr reaches a place at 4pm. At what speed should he travel to reach the place at 6pm?  
 a. 240/19km/hr b. 240/18km/hr  
 c. 240/21 km/hr d. 240/22 km/hr  
 8. A man completes a journey in 10 hours. He travels first half of the journey at the rate of 21 km/hr and second half at the rate of 24 km/hr. Find the total journey in km.  
 A. 224km b. 168km c. 225km d. 104km

#### **RELATIVE SPEED:**

1. The driver of an ambulance sees a college bus 40 m ahead of him after 20 seconds, the college bus is 60 meter behind. If the speed of the ambulance is 30 km/h, what is the speed of the college bus?  
 a. 12km/hr b. 18km/hr c. 20km/hr d. 25km/hr  
 2. Two cities A and B are at a distance of 120 km from each other. Two persons P and Q start from First city at a speed of 20km/hr and 10km/hr respectively. P reached the second city B and returns back and meets Q at Y. Find the distance between A and Y.  
 3. A thief is spotted by a policeman from a distance of 100 metres. When the policeman starts the chase, the thief also starts running. If the speed of the thief be 8km/hr and that of the policeman

10km/hr, how far the thief will have run before he is overtaken?

- a. 400m b. 500m c. 600m d. 700m

4. Two places A and B are 80km apart from each other on a highway. A car starts from A and another from B at the same time. If they move in the same direction they meet each other in 8 hours. If they move in opposite direction towards each other, they meet in 1 hr and 20 minutes. Determine the speeds of the cars.

- a. 40km/hr, 25km/hr b. 35km/hr, 25km/hr  
c. 60km/hr, 50km/hr d. 24km/hr, 16km/hr

5. A goods train leaves at a certain time and at a fixed speed. After 6 hours, an express train leaves the same direction and moves in the same direction at a uniform speed of 90km/hr. The train catches up the goods train in 4 hours. Find the speed of the goods train.

- a. 45km/hr b. 36km/hr c. 40km/hr d. 35km/hr

6. Car A leaves Delhi at a certain time, after 5 hours Car B leaves Delhi in the same direction as of A. Speed of Car A is 20Km/hr and Speed of Car B is 40Km/hr. In how much time Car B will be 20Km ahead of Car A?

7. Two places A and B are at a distance of 480Km. Sita started from A towards B at the speed of 40Kmph. After 2 hours Gita started from B towards A at speed of 60 Kmph. They meet at a Place C then what is the difference between the time taken by them to reach their destinations from Place C?

#### AVERAGE SPEED:

1. A car covers a distance from Town 1 to Town 2 at the speed of 20km/hr and from Town 2 to Town 1 at the speed of 30km/hr. What is the average speed of the car?

- a. 22km/hr b. 23km/hr c. 24km/hr d. 35km/hr

2. A car covers a distance from a point A to point B at 80km/hr and from B to A at 120km/hr. What is the average speed of the car.

- a. 96km/hr b. 90km/hr  
c. 100km/hr d. 112km/hr

3. A man on tour travels 160km by car at 64km/hr and another 160km by bus at 80km/hr. The average speed of the whole journey is

- a. 35.55 km/hr b. 36 km/hr  
c. 71.11 km/hr d. 71 km/hr

4. A boy rides his bicycle 10km at an average speed of 12km/hr and again travels 12 km at an average

speed of 10 km/hr. His average speed for the trip is approximately

- a. 10.4 km/hr b. 10.8 km/hr  
c. 11 km/hr d. 12.2 km/hr

5. A train travels at a speed of 30km/hr for 2 minutes and at a speed of 45km/hr for the next 2 minutes. The average speed of the train for the journey is

- a. 30km/hr b. 36km/hr  
c. 37.5km/hr d. 48km/hr

#### MISCELLANEOUS QUESTIONS:

1. Rahul takes 4 hr in walking at certain place and return back. While it takes 3 hrs in walking at certain place and riding back. Find the time Rahul will take to ride both sides

- a. 2 hrs b. 2.5 hrs c. 3 hrs d. 3.5 hrs

2. A man covers  $\frac{2}{3}$  distance at a speed of 30 km/hr and the remaining at 60 km/hr. If the total distance he covers is 300 km. Find the average speed of the man.

- a. 32km/hr b. 34km/hr c. 35km/hr d. 36km/hr

3. Mani drove at the speed of 45 kmph. From home to a resort. Returning over the same route, he got stuck in traffic and took an hour longer, also he could drive only at the speed of 40 kmph. How many kilo meters did he drive each way?

- a. 320km b. 160km c. 240km d. 220km

4. Vivek travelled a distance of 50km in 7hrs. He travelled the distance partly on foot at 5kmph and partly on bicycle at 8kmph. What is the distance that he travelled on foot?

- a. 10km b. 15km c. 20km d. 12km

5. Pranav walked at 5 kmph for certain part of the journey and then he took an auto for the remaining part of the journey travelling at 25 kmph. If he took 10 hours for the entire journey, what part of journey did he travelled by auto if the average speed of the entire journey be 17 kmph

- a. 4 hours b. 5 hours c. 6 hours d. 7 hours

6. A car travels from a place A to B in 7 hour. It covers half the distance at 30 kmph and the remaining distance at 40 kmph, what is the total distance between A and B?

- a. 120km b. 240km c. 180km d. 160km

### BOATS & STREAMS

1. A man's speed with the current is 15 km/hr and the speed of the current is 2.5 km/hr. The man's speed against the current is:
- 8.5 km/hr
  - 10 km/hr
  - 12.5 km/hr
  - 9 km/hr
2. A motorboat, whose speed in 15 km/hr in still water goes 30 km downstream and comes back in a total of 4 hours 30 minutes. The speed of the stream (in km/hr) is:
- 10
  - 6
  - 5
  - 4
3. In one hour, a boat goes 14 km/hr along the stream and 8 km/hr against the stream. The speed of the boat in still water (in km/hr) is:
- 12 km/hr
  - 11 km/hr
  - 10 km/hr
  - 8 km/hr
4. A man rows to a place 48 km distant and come back in 14 hours. He finds that he can row 4 km with the stream in the same time as 3 km against the stream. The rate of the stream is:
- 1 km/hr.
  - 2 km/hr.
  - 1.5 km/hr.
  - 2.5 km/hr.
5. A boatman goes 2 km against the current of the stream in 2 hour and goes 1 km along the current in 20 minutes. How long will it take to go 5 km in stationary water?
- 2 hr 30 min
  - 2 hr
  - 4 hr
  - 1 hr 15 min
6. Speed of a boat in standing water is 14 km/hr and the speed of the stream is 1.2 km/hr. A man rows to a place at a distance of 4864 km and comes back to the starting point. The total time taken by him is:
- 700 hours
  - 350 hours
  - 1400 hours
  - 1010 hours
7. The speed of a boat in still water is 22 km/hr and the rate of current is 4 km/hr. The distance travelled downstream in 24 minutes is:
- 9.4 km
  - 10.2 km
  - 10.4 km
  - 9.2 km
8. A boat covers a certain distance downstream in 1 hour, while it comes back in  $\frac{11}{2}$  hours. If the speed of the stream be 3 km/hr, what is the speed of the boat in still water?
- 14 km/hr
  - 15 km/hr
  - 13 km/hr
  - 12 km/hr
9. A boat running upstream takes 8 hours 48 minutes to cover a certain distance, while it takes 4 hours to cover the same distance running downstream. What is the ratio between the speed of the boat and speed of the water current respectively?
- 5 : 6
  - 6 : 5
  - 8 : 3
  - 3 : 8
10. A boat can travel with a speed of 22 km/hr in still water. If the speed of the stream is 5 km/hr, find the time taken by the boat to go 54 km downstream.
- 5 hours
  - 4 hours
  - 3 hours
  - 2 hours
11. A boat running downstream covers a distance of 22 km in 4 hours while for covering the same distance upstream, it takes 5 hours. What is the speed of the boat in still water?
- 5 km/hr
  - 4.95 km/hr
  - 4.75 km/hr
  - 4.65
12. A man takes twice as long to row a distance against the stream as to row the same distance in favour of the stream. The ratio of the speed of the boat (in still water) and the stream is:
- 3 : 1
  - 1 : 3
  - 1 : 2
  - 2 : 1
13. A man can row at 5 km/hr in still water. If the velocity of current is 1 km/hr and it takes him 1 hour to row to a place and come back, how far is the place?
- 3.2 km
  - 3 km
  - 2.4 km
  - 3.6 km
14. A man can row three-quarters of a kilometre against the stream in  $11 \frac{1}{4}$  minutes and down the stream in  $7 \frac{1}{2}$  minutes. The speed (in km/hr) of the man in still water is:
- 4 km/hr
  - 5 km/hr
  - 6 km/hr
  - 8 km/hr
15. In a river flowing at 2 km/hr, a boat travels 32 km upstream and then returns downstream to the starting point. If its speed in still water be 6 km/hr, find the total journey time.
- 10 hours
  - 12 hours
  - 14 hours
  - 16 hours
16. A boat covers a certain distance downstream in 4 hours but takes 6 hours to return upstream to the starting point. If the speed of the stream be 3 km/hr, find the speed of the boat in still water
- 15 km/hr
  - 12 km/hr
  - 13 km/hr
  - 14 km/hr

17. If a man rows at the rate of 5 km/hr in still water and his rate against the current is 3 km/hr, then his rate along the current is  
 A. 5 km/hr    B. 7 km/hr    C. 12 km/hr    D. 8 km/hr
18. A man can row 8 km/hr in still water. If the river is running at 3 km/hr, it takes 3 hours more to go upstream than to go downstream for the same distance. How far is the place?  
 A. 32.5 km    B. 25 km    C. 27.5 km    D. 22.5 km
19. A man can row 4 km/hr in still water. If the river is running at 2 km/hr it takes 90 min to row to a place and back. How far is the place?  
 A. 2 km    B. 4 km    C. 5 km    D. 2.25 km
20. A man can row 40 km/hr in still water and the river is running at 10 km/hr. If the man takes 1 hr to row to a place and back, how far is the place?  
 A. 16.5 km    B. 12.15 km    C. 2.25 km    D. 18.75 km
- (21) A boatman can row 96 km downstream in 8 hr. If the speed of the current is 4 km/hr, then find in what time will be able to cover 8 km upstream?  
 A. 6 hr B. 2 hr C. 4 hr D. 1 hr
22. The speed of a boat in still water is 10 km/hr. If it can travel 78 km downstream and 42 km upstream in the same time, the speed of the stream is  
 A. 3 km/hr    B. 12 km/hr    C. 1.5 km/hr    D. 4.4 km/hr
23. A man can row at a speed of 12 km/hr in still water to a certain upstream point and back to the starting point in a river which flows at 3 km/hr. Find his average speed for total Journey.  
 A. 12 3/4 km/hr    B. 11 3/4 km/hr    C. 12 1/4 km/hr    D. 11 1/4 km/hr
24. A boatman can row 3 km against the stream in 20 minutes and return in 18 minutes. Find the rate of current  
 A. 1/2 km/hr    B. 1 km/hr    C. 1/3 km/hr    D. 2/3 km/hr
- (25) If a man's rate with the current is 15 km/hr and the rate of the current is 1 1/2 km/hr, then his rate against the current is  
 A. 12 km/hr    B. 10 km/hr    C. 10.5 km/hr D. 12.5 km/hr

### PROBLEMS ON TRAINS

#### BASICS

1. A train moves with the speed of 180 km/hr. Its speed (in metres per second) is  
 a. 40m/s    b. 50m/s    c. 60m/s    d. 80m/s
2. A train having length 150 m passes a platform of 550 m length. The time taken for it is 56 seconds. In how much time will this train take to pass the platform of 250 m length?  
 a. 24 s    b. 32 s    c. 40 s    d. 35 s
3. A train passes a stationary pole in 8 seconds. The train also passes a 200 m long bridge in 28 seconds. What is the length and the speed of the train?  
 a. 80m, 36km/hr    b. 100m, 40km/hr    c. 120m, 45km/hr    d. 150m, 50km/hr
4. How long does a train 90 metres long running at the speed of 72 km/hr take to cross a bridge 132 metres in length?  
 a. 11.1s b. 10s    c. 12s    d. 14s
5. A train takes 20 seconds to pass completely through a station 160 m long and 15 seconds through another station 110 m long. Find the length of the train.  
 a. 200mb. 100m    c. 250md. 300m
6. If a 90-meter long train crosses a pole in 24 seconds, what is the speed of the train?  
 a. 35km/hr    b. 120km/hr    c. 100km/hr    d. 90km/hr
7. A train runs at 66kmph. How far does it go in 12 sec?  
 a. 220mb. 230m    c. 210md. 250m

$$180 \times \left(\frac{5}{18}\right) = 50 \text{ m}$$

$$S = \frac{D}{T} = \frac{900}{24} = 37.5 \text{ m/s}$$

$$= 37.5 \times \frac{18}{5}$$

$$= 135 \text{ km/hr}$$

8. A business man travelled 120km by bus, which formed  $\frac{2}{5}$  of his trip. He travelled  $\frac{1}{3}$  of the whole trip by car and the rest by train. The distance travelled by train is

- a. 60km b. 90km c. 80km d. 100km

**TYPE 1:**

1. A train crosses an electric pole in 10 second. It crosses a bridge 800 meters long in 90 seconds. What is the speed of the train?

- a. 18km/hr b. 36km/hr c. 72km/hr d. 90km/hr

2. A train of length 240 meters crosses a pole in 12 seconds. In what time will it cross a platform of length 400 meters?

- a. 24s b. 32s c. 25s d. 40s

3. If a train that is running at 30 meters per second, speed crosses one electric pole in 3 seconds, then what is the length of the train?

- a. 90m b. 100m c. 120m d. 150m

4. A train moving with uniform speed crosses a pole in 4 second and the 300 metre long bridge in 7 seconds find the length of the train?

- a. 400m b. 700m c. 300m d. 900m

5. A train is running at a speed of 40 km/hr and it crosses a post in 18 seconds. What is the length of the train?

- a. 200m b. 400m c. 500m d. 300m

6. A train running at the speed of 50 km/hr crosses a pole in 9 seconds. What is the length of the train?

- a. 125m b. 250m c. 200m d. 150m

7. A 750 meter long train crosses a platform double its length in 60 seconds. What is the speed of the train?

- a. 130km/hr b. 135km/hr c. 140km/hr d. 150km/hr

8. A train crosses a pole in 15 seconds. If the length of train is 125 meters, what is the speed of the train in kilometer per hour?

- a. 20km/hr b. 30km/hr c. 45km/hr d. 50km/hr

9. A goods train runs at the speed of 52 kmph and crosses a 250 m long platform in 36 seconds. What is the length of the goods train?

- a. 170m b. 270m c. 320m d. 300m

10. A train crosses a pole in 12 seconds. If the length of a train is 160 meters, what is the speed of the train in kmph?

- a. 48km/hr b. 45km/hr c. 54km/hr d. 32km/hr

11. A train of length 240 meters crosses a pole in 12 seconds. In what time will it cross a platform of length 400 meters?

- a. 22s b. 32s c. 40s d. 42s

12. A train crosses a platform 100 meters long in 60 seconds at a speed of 45 km per hour. The time taken by the train to cross an electric pole is?

- a. 52s b. 60s c. 30s d. 40s

13. A train crosses an electric pole in 10 second. It crosses a bridge 800 meters long in 90 seconds. What is the speed of the train?

- a. 36km/hr b. 45km/hr c. 54km/hr d. 60km/hr

14. A train 120m long passes an electric pole in 6s. How long will it take to cross a bridge of 240m long?

- a. 18s b. 24s c. 20s d. 25s

**RELATIVE SPEED:**

1. Two trains are moving in opposite directions at 60 km/hr and 90 km/hr. Their lengths are 1.10 km and 0.9 km respectively. The time taken by the slower train to cross the faster train in seconds is:

- a. 36 b. 45 c. 48 d. 49

2. A 270 m long train running at the speed of 120 kmph crosses another train running in opposite direction at the speed of 80 kmph in 9 seconds. What is the length of the other train?

- a. 220m b. 225m c. 230m d. 200m

3. Two trains of equal length are running on parallel lines in the same direction at 46 km/hr and 36 km/hr. The faster train passes the slower train in 36 seconds. The length of each train is:  
 a. 50m b. 72m c. 80m d. 82m
4. A train 125 m long passes a man, running at 5 kmph in the same direction in which the train is going, in 10 seconds. The speed of the train is:  
 a. 45km/hr b. 50km/hr c. 54km/hr d. 55km/hr
5. A train travelling at a speed of 75 mph enters a tunnel  $\frac{7}{2}$  miles long. The train is  $\frac{1}{4}$  mile long. How long does it take for the train to pass through the tunnel from the moment the front enters to the moment the rear emerges?  
 a. 2 mins b. 3 mins c. 4 mins d. 5 mins
6. Two trains running in opposite directions cross a man standing on the platform in 27 seconds and 17 seconds respectively and they cross each other in 23 seconds. The ratio of their speeds is:  
 a. 2:3 b. 3:2 c. 4:5 d. 5:4
7. The distance between two cities A and B is 330 km. A train starts from A at 8 a.m. and travels towards B at 60 km/hr. Another train starts from B at 9 a.m. and travels towards A at 75 km/hr. At what time do they meet?  
 a. 10am b. 10:30am c. 11am d. 11:30am
8. Two trains of length 100 meter and 125 meter are travelling at a speed of 45 km/hr and 60km/hr respectively in same direction. In what time they will completely cross each other.  
 a. 52s b. 54s c. 56s d. 58s
9. Two trains are travelling in same direction with 60 km/hr and 75 km/hr respectively. The faster train crosses a man sitting in the slower train in 30 sec. find the length of faster train.  
 a. 100m b. 125m c. 140m d. 150m
10. A train running at 45 km/hr takes 36 sec to pass a platform. Next, the train takes 12 sec to pass a man walking at the speed of 15 km/hr in the same direction. Find the length of the platform.  
 a. 250m b. 300m c. 350m d. 400m
11. Two stations P and Q are 400 km apart from each other. One train starts from P at a speed of 60km/hr towards Q and after 2 hours another train starts from Q towards P at 45 km/hr. At what distance from P the train will meet.  
 a. 220km b. 240km c. 260km d. 280km
12. Two stations A and B are 150 km apart from each other. One train starts from A at 6 AM at a speed of 30 km/hr and travels towards B. Another train starts from station B at 7 AM at a speed of 20 km/hr. At what time they will meet.  
 a. 9.24am b. 10.34am c. 8.34am d. 7.34am
13. A train Express A leaves Delhi at 5 a.m and reaches Mumbai at 9 a.m. Another train Express B leaves Mumbai at 7 a.m and reaches Delhi at 10.30 a.m. At what time do they cross each other after 7 a.m ?  
 a. 50 mins b. 54 mins c. 56 mins d. 58 mins
14. Two trains one from Hyderabad to Cochin and another from Cochin to Hyderabad start simultaneously. After they meet, Trains reach their destinations after 4hrs and 9hrs respectively. Find the ratio of the speeds  
 a. 2:3 b. 3:2 c. 4:9 d. 9:4

Mixture and Allegations

Basic Modals

**MODEL 1:**

- Ex 1: Average age of Boys is 20 years and that of girls is 25 years. If average of class is 22 years. What is the ratio of Boys towards girls?
- Ex 2: C.P. of variety I is Rs. 5 per Kg and Variety II is Rs. 7 per Kg. Mixed average cost is Rs. 6.5 per Kg. In what ratio he mixed both?
- Ex 3: A man mixes 80 kg of 1<sup>st</sup> variety Sugar costing Rs.7 with another variety Rs.12, average cost per kg is Rs.10. how much sugar of 2<sup>nd</sup> variety he mixed?
- Ex 4: In what ratio should a shopkeeper mix two variety of rice costing Rs.20/Kg and Rs. 32/Kg so that by selling the mixture at Rs. 36/Kg he gains 20% profit?
- Ex 5: Student of a class collected money for a museum. Each boy donated Rs. 3.40 and each girl donated Rs. 4.30. If the class strength is 60 and the total amount collected is Rs.222 then find the number of boys and girls in the class?

**Class Work:**

1. In what ratio must a shopkeeper mix two type rice worth Rs.50 a kg and Rs.58 a Kg. So that by selling the mixture at Rs. 58.30 a kg and he may gain 10%?  
 a. 2:5      b. 5:2      c. 3:5      d. 5:3
2. In what proportion sugar at 3.25 per kg is mixed with sugar at Rs. 3.80 per kg. So that the mixture is worth Rs. 3.50 a kg?  
 a. 3:5      b. 6:5      c. 5:3      d. 5:6
3. In what ratio Wheat at Rs. 12.30 per kg is mixed with Wheat 18.30 per kg, so that the mixture is worth Rs.15 per kg?  
 a. 5:7      b. 11:9      c. 11:5      d. 11:7
4. In a mixture of water and milk with 18 liters of water worth 96 paise per liter. If milk be worth Rs.112 per liter. Find how much milk is present in that mixture?  
 a. 100      b. 104      c. 108      d. 120
5. In what ratio must water is mixed with milk that would worth Rs.18 per liter to obtain a mixture worth Rs.12 per liter?  
 a. 1:3      b. 1:2      c. 1:4      d. 1:5
6. In how many kilogram of tea worth Rs.9 per kg mixed with 36 kg of tea worth Rs.6 per kg. So that its gain is 20% and that mixture is selling at the price of Rs. 8.40 per kg?  
 a. 12      b. 14      c. 16      d. 18
7. If a goldsmith has two qualities of gold one of 14 carats and another of 17 carats purity. In what proportion should he mix both to make an ornament of 16 carats purity?  
 a. 1:2      b. 1:3      c. 2:1      d. 3:1
8. A grocery has 600 kg of rice, in part of which he sells at 12% profit and the rest of at 24% profit, and he gains 16% on the entire. Find quantity sold at 24% profit.  
 a. 125      b. 150      c. 200      d. 175
9. Find the ratio in which fresh sugar at Rs. 8.40 a kg is mixed with sugar at Rs. 4.80 a kg to produce a mixture worth Rs. 6.80 a kg?  
 a. 2:3      b. 5:4      c. 6:7      d. 8:3
10. Find what ratio must a grocer mix two type of tea price Rs.16 per kg and Rs.22 per kg. So as to get a mixture worth Rs. 18.50 kg?  
 a. 3:4      b. 3:1      c. 7:3      d. 7:5
11. If the average age of students in a class is 15.8 years the average age of boys is 16.4 years that of girls is 15.4 years. What is the ratio of the no. of boys to the girls?  
 a. 1:2      b. 1:3      c. 2:3      d. 2:1
12. The average salary of staff of company is Rs.1200. If the average salary of officers is Rs. 4600 and that of non-officers is Rs.1100. If the no. of Officers are 15. Find the no. of non-officers?  
 a. 500      b. 510      c. 520      d. 530
13. In what ratio must a grocer mix two varieties of pulses costing Rs. 15 per kg. and Rs. 20 per kg respectively so as to get a mixture worth Rs. 16.50 per kg?  
 a. 3:7      b. 5:7      c. 7:3      d. 7:5
14. Find the ratio in which rice at Rs. 7.20 kg be mixed with rice at Rs. 5.70 a kg to produce a mixture worth Rs. 6.30 a Kg?  
 a. 1:3      b. 2:3      c. 3:4      d. 4:5

30

10

0

15. In what ratio must tea at Rs. 62 per kg be mixed with tea at Rs. 72 per kg so that the mixture must be Rs. 64.50 per Kg?  
 a. 3:1      b. 3:2      c. 4:3      d. 5:3
16. A man has 50 kg of rice. A part of which he sells at 10% profit and remaining at 5% loss. He gains 7%.  
 whole, Find the quantity sold at 10% profit?  
 a. 20Kg      b. 30 Kg      c. 40 Kg      d. 45Kg
17. A merchant has 88kg of sugar. A part of this he sells at a gain of 10% and the remaining at a loss of 12% on the total he loss 3%. What is the quantity sold at a loss of 12%?  
 a. 52Kg      b. 60 Kg      c. 64 Kg      d. 68 Kg
18. Average cost of 1<sup>st</sup> variety is Rs. 20/Kg and 2<sup>nd</sup> Variety is Rs. 35/kg, he sold the mixture at Rs. 40 at the profit of  $33\frac{1}{3}\%$ ?  
 a. 1:1      b. 2:1      c. 1:2      d. None
19. There are 65 students in a class; Rs. 39 is to be distributed among them so that each boy get 80 paise and each girl get 30 paise. Find the number of boys and girls in the class?  
 a. 25,40      b. 40,25      c. 39,26      d. 26,39

### Model 2:

1. A man has some hens and some cows. If heads are counted, it comes to 48 but feet are counted, it comes to 140. Find the number of hens?  
 a. 22      b. 26      c. 30      d. 32
2. In a zoo there are some parrots and some deers. If their heads are counted these are 400 in number and if their legs are counted these are 850. How many deers are there in zoo?  
 a. 20      b. 25      c. 16      d. 120
3. A zookeeper counted the heads of the animals in a zoo and found it to be 80. When he counted the legs of the animals he found it to be 260. If the zoo had either ~~horses or~~ horses, how many horses were there in the zoo? Option (a. 30      b. 40      c. 50      d. 60)
4. In a zoo there are some rabbits and pigeons. If their heads are counted these are 100 in number and if their legs are counted these are 290. How many rabbits are there in zoo?  
 a. 20      b. 55      c. 16      d. 45
5. In a room, there are some peacocks and some cats. If the total number of eyes in the room is 1246 and the total number of legs is 1406, what is the number of cats in the room?  
 a. 65      b. 80      c. 54      d. 70

*2 more fires ne varchi  
3 times ne mane*

### Model 3: (Removal and Replacement)

1. A container contain 90 Liter Petrol , 9 liter petrol was taken out and replaced by kerosene , this process is repeated two times more. Find how much petrol is now rest?  
 a. 55.42      b. 65.61      c. 58.32      d. 60.50
2. From a cask of milk containing 30 litres, 6 litres are drawn out and the cask is filled up with water. If the same process is repeated a second, then a third time, what will be the number of litres of milk left in the cask?  
 a. 5.12 Ltrs      b. 12 Ltrs      c. 14.28 Ltrs      d. 15.36 Ltrs
3. From a tank of petrol which contains 200 liters of petrol. The seller replaces each time with kerosene when he sells 40 liters of petrol. Every time he sells only 40 liters. After replacing the petrol with kerosene 4 times, the total amount of kerosene in the tank?  
 a. 81.92 ltrs      b. 118.08 ltrs      c. 121.3 ltrs      d. 112.75 ltrs
4. A container contain 80 Liter milk, 8 liter milk was taken out and replaced by water , this process is repeated two times more. Find how much milk is now rest?  
 a. 55.42      b. 50      c. 58.32      d. 60.50
5. 450 liters of a mixture of milk and water contain the milk and water in the ratio 9:1. How much water should be added to get a new mixture containing milk and water in the ratio 3:1?  
 a. 85 L      b. 90L      c. 95 L      d. 115 L
6. A mixture of 20 Kg of spirit and water contains 10% water. How much water must be added to this mixture to raise the percentage of water to 25%?  
 a. 4 Kg      b. 5 Kg      c. 8Kg      d. 30 Kg
7. A mixture of 45 Liters of spirit and water contains 20% water in it. How much water must be added to it to make water 25% in the new mixture?  
 a. 5 liter      b. 4 Liter      c. 6 Liter      d. 3 Liter

### 1. Blood Relationship

1. Pointing to a lady in photograph, Rajini said 'Her son's father is the son-in-law of my mother'. How is Rajini related to the lady?
- A. Brother      B. Uncle      C. Father      D. None
2. Kamalesh points to a photograph and said, "His only brother is father of my daughter's father".
- A. Grandfather      B. Brother      C. Uncle      D. Uncle
3. Pointing to Sharma, Shobhana told, "His mother's brother is father of my son Mohan". How is Sharma related to Shobhana's husband?
- A. Nephev      B. Niece      C. Son      D. Brother
4. Kumar informed Prathik by pointing towards photograph that "She is the mother of my wife's daughter". How is Kumar related to that lady?
- A. Father      B. Father-in-Law      C. Uncle      D. None
5. When Alay saw Manjula, he recalled "He is the son of father of my daughter's mother". Who is Manjula to Alay?
- A. Brother-in-Law      B. Brother      C. Son      D. Uncle
6. Hassan said to Vimal that "Ravi's mother is only daughter of my mother". Who is Hassan related to Ravi?
- A. Uncle      B. Paternal Uncle      C. Son      D. Uncle
7. Kabbar said "This girl is wife of grandson of my mother". Who is Kabbar to the girl?
- A. Daughter      B. Wife      C. Aunt      D. Father-in-Law
8. If Swaroopa says "Anita's father Raman is the only son of my father-in-law Mahesh". Then how is Bhavya who is sister of Anita related to Mahesh?
- A. Daughter-in-Law      B. Daughter      C. Grand Daughter      D. Mother
9. Pointing to a picture, a woman says, "This man son's sister is my mother-in-law". How is woman's husband related to man in picture?
- A. Son      B. Son-in-Law      C. Brother      D. Grandson
10. Kumar told Anil, "On Friday, I defeated only brother of daughter of my grandmother". Who did Kumar defeat?
- A. Brother      B. Son      C. Uncle      D. Father-in-Law
11. Shalmal on pointing to a woman in a photo said "Her mother has only one grandchild whose mother is my wife". How is woman in picture related to Shalmal?
- A. Daughter      B. Daughter-in-Law      C. Wife      D. Mother-in-Law
12. P is Q's sister. R is Q's mother. S is R's father. T is S's mother. How is P related to S?
- A. Granddaughter      B. Sister      C. Nephew      D. None
13. E and F are brothers. G and H are sisters. E's son is H's brother. How is F related to G?
- A. Uncle      B. Son      C. Son-in-Law      D. None
14. Rahul is son of Aman's father's sister. Sahil is son of Divya who is mother of Jagan and grandmother of Aman. Ashish is father of Tanu and grandfather of Rahul. Divya is wife of Ashish. (Solve the questions and 15.)
- From the above, how is Rahul related to Divya?
- A. Son      B. Brother      C. Grandson      D. None
- How is Jagan's wife related to Tanu?

### 2. Coding and Decoding

- 1) In a certain language TEACHER is written as VGCEIGT, then how is CHILDREN written in same code language?
- a. ENAGITEV      b. PGTFNKE      c. EJKNFTGP      d. MGAETVIE
- 2) If LIGHT is coded as LIGIT, how is FLAMES coded in that code?
- a. GLBNET      b. FKALER      c. FMANET      d. GLBMFS
- 3) In a certain language SISTER is written as 595201, UNCLE is coded as 78960 how is NEER coded in that code?
- a. 8001      b. 8901      c. 8210      d. 8100
- 4) In a certain code, a number 13479 is written as AQFJL and 5268 is written as DMPN. How is 396824 written in that code?
- a. QLPNKJ      b. QLPNMF      c. QLPMFN      d. QLPNDF
- 5) If 'EYE' is called 'HAND', 'HAND' is called 'MOUTH', 'MOUTH' is called 'EAR', 'EAR' is called 'NOSE'. 'NOSE' is called 'TONGUE'. With which of the following would a person hear?
- a. Eye      b. Mouth      c. Nose      d. Ear



- 5) Mohan and Kannan started walking from two different points A and B respectively. Kannan walks 2 km from his point towards north then turns left walks for 3 km then turns right and walk for 4 km to reach point C. Mohan walks 2 km north from A and then turns right walks 3 km, then turns left walks 4 kms and then turns east and walks 5 kms to reach point D. What is the distance between Mohan and Kannan's starting points?
- 23 kms
  - 21 kms
  - 11 kms
  - 5 kms
- 6) Kapil is jogging in the morning. He started from his home, jogs 200m towards east and turns to right and run 100m. Then he turns to the right and runs 100m. Then he turns to the right and runs 90m. Again he turns to right and runs 50m. After this he turns to left and runs 120 m and finally he turns to right and 60 m. now to which direction is Kapil facing?
- North
  - East
  - West
  - South
- 7) Balaji started walking positioning his back towards the sun. After some time, he turned left, then turned right and towards the left again. In which direction is he going now?
- East or west
  - North or west
  - South or north
  - East or west
- 8) Priya walked from P to Q in the east 10m. Then she turned to the right and walked 3m. Again she turned to the right and walked 14m. How far is she from P?
- 3m
  - 5m
  - 8m
  - 22m
- 9) A father went in search of his lost child in a fair as follows.
- He went 90m in east, then turned right and went 20m. After this he turned right and after going 30m he reached to his Aunt's house. His child was not there. From there he went 100m to his north and met his child. How far did he meet his child from the starting point?
- 100m
  - 60m
  - 90m
  - 30m
- 10) Calculate the total distance covered by pet dog which runs along four walls and finally along diagonal order; if the length and breadth of the room is 8m and 6m respectively
- 28m
  - 10m
  - 45m
  - 38m
- 11) Ramakrishna was sitting on a chair facing south. He stands and turns right and walks 20m. Then he turns right again and walks 10m. Then he turns left and walks 10m and then turns right walks 20m. Then he turns right again and walks 60m. In which direction is Ramakrishna present now from the starting point?
- North
  - North east
  - South west
  - East
- 12) Bahubali started from his house towards west. After walking a distance of 30m. He turned to the right and walked 15m. He then again turned to the right and walked 20m. After this he turns right at 135° and cover 30m. In which direction he is going?
- South east
  - North
  - South east
  - South west
- 13) If  $p \neq q$  means  $p$  is to the south of  $q$   
And  $p = q$  means  $p$  is to the north of  $q$   
And  $p - q$  means  $p$  is to the west of  $q$   
And  $p + q$  means  $p$  is to the east of  $q$
- Then,  $x \% y + z - u$ ,  $u$  is in which direction with respect to  $y$ ?
- East
  - South west
  - North west
  - North east
- 14) Mastila Mani in order to go to swimming pool started from her home in the east and came to a crossing. The road to the left ends in a playground, straight ahead is the bus stand. Which direction is the swimming pool?
- North
  - East
  - West
  - South
- 15) Kamala met Nikhil after many days in a morning at a park. Kamala's shadow was exactly towards left of Nikhil and Nikhil was talking face to face with Kamala. In which direction is Nikhil facing?
- South and north
  - North and south
  - South and south
  - South and north
- 16) A lady is facing north-west. He turns 90° in the clockwise direction, then 180° in the anticlockwise direction and then another 90° in the same direction. Which direction is he facing now?
- South east
  - North west
  - South west
  - West
- 17) Linga walked 20m towards north. Then he turned right and walks 30m. Then he turns right and walks 35m. Then he turns left and walks 15m. In which direction and how many meters is he from the starting position?
- 20m south
  - 30m north
  - 45m east
  - 30m east
- 18) One day, Rajini left home and cycled 20km southwards, turned right and cycled 10km and turned right and cycled 20 km and turned left and cycled 20km. How many kilometers will he have to cycle to reach his home straight?
- 50km
  - 40km
  - 20km
  - 30km
- 19) A mouse runs 20 mts towards east and turns right, runs 10 meters and turns to right, runs 9 meters and again turns to left, runs 5 meter and then turns to left runs 12 meters and finally turns to left and runs 6 meters. Now which direction cat is facing?
- North
  - East
  - West
  - South
- 20) From Teach house, Jansi went 15km to the north. Then she turned west and covered 10km. Then she turned south and covered 5km. Finally, turning to east, she covered 10km. In which direction is she from her house?
- North
  - West
  - East
  - South
- Seating Arrangement:**
- 1) 6 Boys are sitting in a circle and facing towards the centre of the circle. Rajeev is sitting to the right of Mohan, but he is not just to the left of Vijay. Suresh is between Babu and Vijay. Ajay is sitting to the left of Vijay.
- Who is sitting between Babu and Rajeev?
    - Mohan
    - Suresh
    - Ajay
    - None
  - What is the position of Suresh with respect to Mohan in clockwise direction?
    - 4<sup>th</sup> left
    - 4<sup>th</sup> right
    - 2<sup>nd</sup> left
    - 2<sup>nd</sup> right
  - Who is 3<sup>rd</sup> to the right of Suresh?
    - Ajay
    - Vijay
    - Babu
    - Rajeev
  - Which of the following is true?
    - Vijay is between Rajeev and Suresh
    - Mohan is between Rajeev and Ajay
    - Mohan is to the left of Babu
    - After interchanging the position of Babu and Ajay, who is to the left of Vijay?
    - Suresh
    - Babu
    - Ajay
    - Mohan

- 2) 11 students A,B,C,D,E,F,G,H,I,J and K are sitting in first row facing the teacher. D, who is just to the left of F, is at second place to the right of E who is at one end. J is the nearest neighbor of A and B and is to the left of G at third place. H is to the left of D and is at the third place to the right of I.
- What is the position of D with respect to B?
    - 5<sup>th</sup> to the right. 5<sup>th</sup> to the left
    - 4<sup>th</sup> to the right
    - 4<sup>th</sup> to the left
  - Who are at the extreme ends?
    - A and F
    - E and F
    - E and D
    - I and G
  - Who is sitting between A and B?
    - G
    - C
    - J
    - C
  - Who is 2<sup>nd</sup> to the right of B?
    - A
    - G
    - C
    - K
  - Who is sitting at middle?
    - B
    - G
    - J
    - J

- 3) Shiva, Satish, Amar and Praveen are playing cards. Amar is to the right of Satish, who is to the right of Shiva. Square arrangement.
- What is the position of Shiva with respect to Amar in Anti-Clockwise direction?
    - 2<sup>nd</sup> Left
    - 2<sup>nd</sup> right
    - Immediate left
    - Immediate right
  - Who is Amar for Praveen?
    - 2<sup>nd</sup> Left
    - 2<sup>nd</sup> Right
    - Immediate neighbor
    - Can't say
  - If Satish and Amar interchange their positions, who is 2<sup>nd</sup> to the right of Satish?
    - Siva
    - Praveen
    - Amar
    - Can't say
  - If Satish and Praveen interchange their positions, Amar and Shiva Interchange their positions?
  - Praveen is to the left of Amar. Shiva is to the left of Satish
  - Shiva is to the right of Satish. Amar and Shiva are neighbors
  - Which of the following is correct?
    - Amar, Praveen, Shiva, Satish
    - Amar, Praveen, Satish, Amar, Satish, Praveen, Shiva
    - Amar, Shiva, Praveen, Satish

- 4) A, B and C are three boys while D and E are three girls. They are sitting such that the boys are facing the girls.
- A and R are diagonally opposite to each other
    - C is not sitting at any of the ends.
    - T is left to R but opposite to C.
    - Find the wrong pair?
  - Who is sitting opposite to B?
    - S II, T III, R IV, A
    - S II, T III, A, R IV, R
  - After A and R Interchanging their positions, who is opposite to B?
    - S II, T III, A, R IV, R
    - Who is sitting diagonally opposite to B?
  - P, Q, R, S, T, U, V and W are sitting around the circle and are facing the centre

- P is second to the right of T who is the neighbor of R and V  
 S is not the neighbor of P  
 V is the neighbor of U  
 W is sitting between U and S  
 Which two of the following are not neighbors?  
 i. P is to the immediate right of Q  
 ii. S is to the immediate left of W  
 iii. P is to the immediate right of V  
 iv. Data inadequate

- i. P is to the immediate right of V?  
 ii. U is between W and S  
 iii. U is between V and V  
 iv. Data inadequate

- i. R is between U and V  
 ii. R is to the immediate left of W  
 iii. To the immediate right of W  
 iv. Data inadequate

- i. R is to the immediate right of Q  
 ii. S is to the immediate left of W  
 iii. U is between W and S  
 iv. U is between V and V

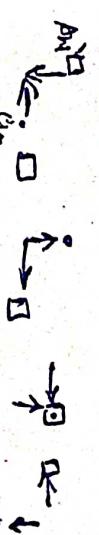
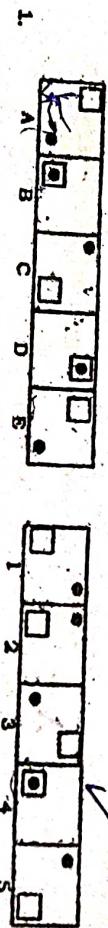
- i. R is to the immediate right of P?  
 ii. R is to the immediate left of P  
 iii. S is to the immediate right of P  
 iv. Data inadequate

- i. If B shifts to the place of E, E shifts to the place of Q, and Q shifts to the place of B, then who will be the second to the left of the person opposite to O?

- i. Q ii. P iii. E iv. D  
 b. If O and P, A and E and N and Q Interchange their positions, then who will be the second person to the right of the person who is opposite to the person second of the right of P?

- i. D ii. A iii. E iv. O  
 c. Who is sitting third to the right of O?  
 i. Q ii. N iii. M iv. Data Inadequate v. None  
 d. Which of the following pair is diagonally opposite to each other?  
 i. EQ ii. BO iii. AN iv. AM v. EN

### Analogy



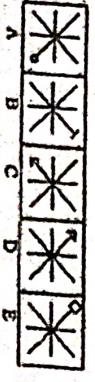
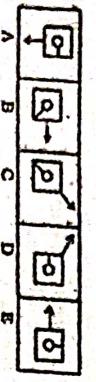
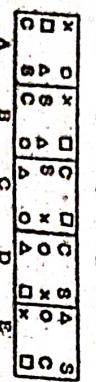
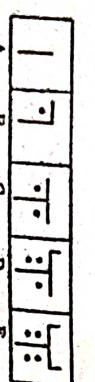
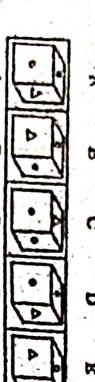
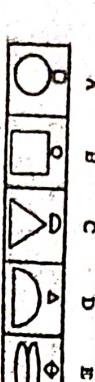
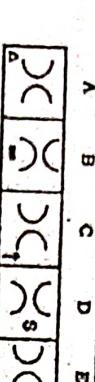
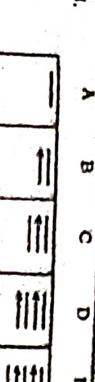
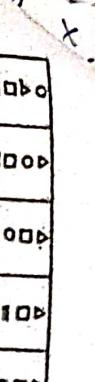
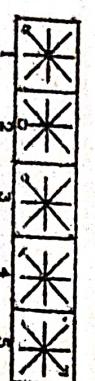
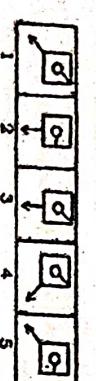
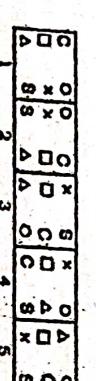
a. RT b. TP c. SF d. DIAM



- 5) P,Q,R,S,T,U,V and W are sitting around the circle and are facing the centre

Date: 25/11/2013  
Page No. 2

005 = 50 - 005

1.  A B C D E
2.  A B C D E
3.  A B C D E
4.  A B C D E
5.  A B C D E
6.  A B C D E
7.  A B C D E
8.  A B C D E
9.  A B C D E
10.  A B C D E
11.  A B C D E
12.  A B C D E
13.  A B C D E
14.  A B C D E
15.  A B C D E
16.  A B C D E
17.  A B C D E
18.  A B C D E
19.  A B C D E
20.  A B C D E

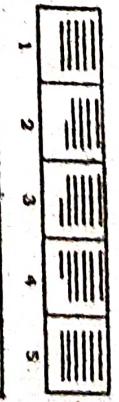
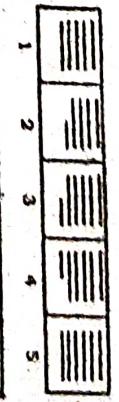
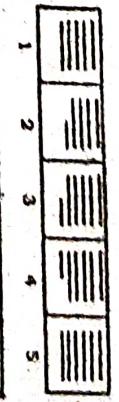
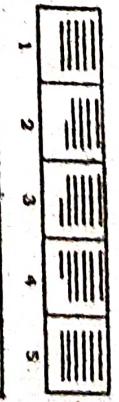
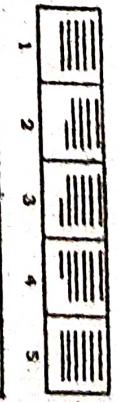
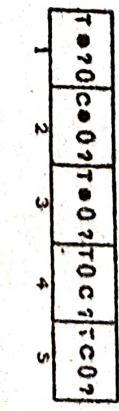
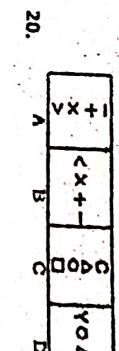
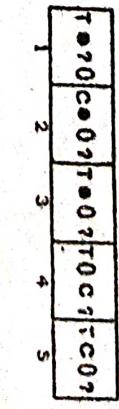
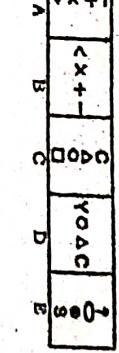
Select a suitable figure from the Answer Figures that would replace the question mark (?)

- 1) Problem Figures:

Answer Figures:

(A) (B) (C) (D)

(1) (2) (3) (4) (5)



5)



6) Problem Figures:

(A) (B) (C) (D)



7)



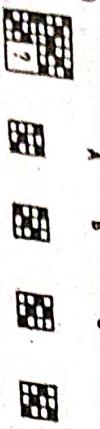
8) Fill the question mark.



9)

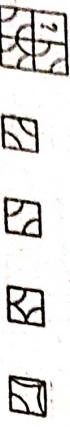
Complete the pattern

A B C D



10) Complete the pattern

A B C D



Answer Figures:

(1) (2) (3) (4) (5)



Spiral Arrangement PUZZLES

(6-7) Five friends P, Q, R, S and T travelled to five different cities as Chennai, Kolkata, Delhi, Bangalore and Hyderabad by different modes of transports as Bus, Train, Airplane, Car and Boat from Mumbai.

The person who travelled to Delhi did not travel by Boat. R went to Bangalore by Car and Q went to Kolkata by Airplane. S travelled by Boat whereas T travelled by train. Mumbai is not connected by bus to Delhi and Chennai.

1. Where does S go?  
 a. Hyderabad b. Kolkata c. Bangalore d. Delhi e. Chennai

2. By which transport does S go?  
 a. Airplane b. Car c. Bus d. Boat e. None

3. Draw the formation in tabular structure.

(4-5) A is older than M. G is older than M but younger than A. K is younger than R and M. M is older than R.

4. Who is the youngest?  
 a. A b. M c. R d. K e. None

5. Who is oldest?  
 a. A b. M c. G d. K e. None

(6-7) Eight students A, B, C, D, E, F, G and H are planning to enjoy car racing. There are only two cars and following are the conditions.

- One car can accommodate maximum five and minimum four students
- A will sit in the same car in which D is sitting but H is not in the same car.
- B and C can't sit in the same car in which D is sitting.
- F will sit in the car of four people only along with A and E but certainly not with G.

- If H and G are sitting in the same car, who are other two students sitting in the same car?  
 a. B and C b. C and D c. B and D d. E and B e. None
- If E and A are sitting in the same car, which of the following statements are true?  
 a. 5 students are sitting in the same car. F is not sitting in the same car  
 b. B is sitting in the same car  
 c. G is not sitting in the same car  
 d. G is not sitting in the same car

(B-9) P, Q, R, S, T and X are members of a family. There are two married couples. Q is an engineer and the father of T. X is the grandfather of R and is a lawyer. S is the grandmother of T and is housewife. There are one engineer, one lawyer, one teacher, one house wife and two students in the family.

8. How many male members are there in the family?  
 a. 4 b. 2 c. 6 d. Can't say

9. Among them who is the spouse of Q?  
 a. P b. S c. X d. T e. R



Choose the alternative which is closely resembles the mirror image of the given combination.



15)



- 8) **Statements:** All gems are pearls. All pearls are balls. **Conclusions:** Some of the balls are pearls. Some of the pearls are balls.
- 9) **Statements:** Some of the detectors are producers. All the producers are engineers. **Conclusions:** All the detectors are engineers. All the engineers are producers.
- 10) **Statements:** All the actors are romantics. All the romantics are optimists. **Conclusions:** Some of the optimists are actors. All the optimists are romantics.
- 11) **Statements:** All the rooms are halls. None of the halls are ceilings. **Conclusions:** Some of the rooms are ceilings. None of the ceilings are halls.
- 12) **Statements:** Some of the trousers are chinos. Some of the chinos are cargos. Some of the cargos are shorts. **Conclusions:** Some of the shorts are trousers. Some of the trousers are chinos. Some of the chinos are cargos.
- 13) **Statements:** All the plates are glasses. All the glasses are stands. **Conclusions:** Some of the stands are plates.
- 14) **Statements:** Some of the carnivores are omnivores. Some of the omnivores are herbivores. **Conclusions:** Some of the herbivores are carnivores. Some of the carnivores are omnivores.
- 15) **Statements:** All the schools are buildings. None of the buildings are offices. **Conclusions:** None of the schools is offices. All the offices are schools.
- 16) **Statements:** None of the trains are planes. Some of the planes are aircrafts. **Conclusions:** None of the aircrafts are trains.
- 17) **Statements:** All the tigers are cats. All the cats are kings. **Conclusions:** Some of the kings are tigers. Some of the tigers are cats.
- 18) **Statements:** All the schools are institutes. All the institutes are universities. **Conclusions:** All the universities are schools. All the schools are institutes.
- 19) **Statements:** All the bulbs are tables. Some of the tables are pots. **Conclusions:** All the pots are tables. Some of the pots are bulbs.
- 20) **Statements:** All the birds are flowers. All the flowers are trees. **Conclusions:** All the trees are birds. Some of the birds are flowers.
- 21) **Statements:** Some of the trees are birds. Some of the birds are frogs. All the frogs are toads. **Conclusions:** All the toads are trees. Some of the trees are frogs.
- 22) **Statements:** Some of the jute is cars. Some of the cars are nets. Some of the nets are juice. **Conclusions:** Some of the juice is cars. Some of the cars are nets.
- 23) **Statements:** All the papers are clips. Some of the clips are boards. Some of the boards are lanes. All the lanes are roads. **Conclusions:** Some of the roads are boards. Some of the boards are lanes. All the lanes are roads.
- 24) **Statements:** All the stones are wheels. Some of the wheels are tires. Some of the tires are doors. No hammer is a ring. Some rings are doors. All the doors are windows. **Conclusions:** Some of the windows are stones. Some of the stones are doors.
- 25) **Statements:** All the furniture is jungles. No jungles are jungles. **Conclusions:** Some of the jungles are furniture. Some of the furniture is jungles.

- CLOCKS**
- What is the angle between the hour hand and minute hand of a clock at 2:15 PM?
  - What is the angle between the hour hand and minute hand of a clock at 3:30 PM?
  - What is the angle between the hour hand and minute hand of a clock at 4:45 AM?
  - How many degrees (if any) are there in the angle between the hour and minute hands of a clock when the time is a quarter past three?
  - How many degrees (if any) are there in the angle between the hour and minute hands of a clock when the time is 7:50?
  - Find the angle between the hour hand and min hand of the clock when the time is 6:10
  - At what time in minutes, between 6:00 clock and 7:00 clock do the hour hand and minute hands of the clock coincide?
    - 50 degree
    - 75 degree
    - 10 degree
    - 10.5 degree
  - At what time in minutes, between 2:00 clock and 3:00 clock do the hour hand and minute hands of the clock coincide?
    - 100 degree
    - 110 degree
    - 130 degree
    - 125 degree
  - At what time in minutes, between 5:00 clock and 7:00 clock do the hour hand and minute hands of the clock coincide?
    - 32/8/11
    - 43/8/11
    - 4/8/11
    - 35/8/11
  - At what time in minutes, between 9:00 clock and 10:00 clock do the hour hand and minute hand of the clock coincide?
    - 31/10/11
    - 12/10/11
    - 11/10/11
    - 10/10/11
  - In what time in minutes, between 2:00 clock and 3:00 clock do the hour hand and minute hand of the clock coincide?
    - 43/1/11
    - 45/1/11
    - 49/1/11
    - 46/2/11
  - In what time in minutes, between 9:00 clock and 10:00 clock do the hour hand and minute hand of the clock coincide?
    - 15/4/11
    - 16/4/11
    - 17/4/11
    - 18/4/11
  - In what time the angle in the clock becomes 30 degrees between 2 and 3 PM?
  - 5:35/2/11
  - 5:37/3/11
  - 5:38/2/11
  - 5:40/5/11
  - How often do the hour hand and minute hand of a clock coincide?
    - 64/5/11
    - 65/5/11
    - 54/5/11
    - 55/5/11
  - How many times do the hands of a clock form 30 degrees in a day?
  - 24 b. 44 c. 48 d. 42

the minute and the hour hand of a watch meet every 65 minutes. What is the loss or gain per hour?

- Loss of  $11/15$  minutes  $\rightarrow$  Gain of  $5/11$  minutes.
- What is the angle between the hands of the clock at 13:50?
  - 240 degree
  - ~~245 degree~~
  - 250 degree
  - 300 degree

- A clock seen through a mirror shows 4:40. What is the correct time?
  - 5:20
  - 6:20
  - 6:70
  - 7:20
- The hour hand of a clock has moved 12°, how many degree has the minute hand moved?
  - 144°
  - 123°
  - 156°
  - 243°
- If the minute hand of the clock has moved 300°, how many degrees has the hour hand moved?
  - 25°
  - 26°
  - 67°
  - 45°

- At what time in minutes, between 3'o clock and 4'o clock do the hands of the clock point in opposite direction?
  - 43(2/11)
  - 52(1/11)
  - 49(1/11)
  - 65(2/11)
- How many times after 7 O'clock and 9 O'clock will the hands of a clock be in opposite direction?
  - 7.45 minutes
  - 5.45 Minutes
  - 5.45 Minutes
  - 4.45 Minutes
- A watch which gains time uniformly is 2 minutes slow at 10 am on Sunday and is 4 min 48sec fast at noon on the following Sunday. When was it correct?
  - 12pm on Tuesday
  - 2 pm on Monday
  - 3.12am on Tuesday
  - 2 am on Monday

- A clock loses 2 seconds every minute. If the clock was set to correct time at 10 in the morning, find the time shown by the clock when the correct time is 5:00 pm.
  - 5.34
  - 4.46
  - 3.45
  - 5.20
- Three clocks are set to exact time. The first slows down by one minute per day. The second slows down by one minute per day. The third gains one minute per day. After how many days will all the clocks show the same time?
  - 720
  - 3600
  - 300
  - 450

- The minute and the hour hand of a watch meet every 65 minutes. What is the loss or gain per hour?
  - Loss of  $11/15$  minutes  $\rightarrow$  Gain of  $5/11$  minutes.
  - What will be the day of the week 15th August, 2010?  - Today is Monday. After 61 days, it will be
  - 8th Dec 2007 was Saturday, what day of the week was it on 8th Feb, 2004?
- On 8th Feb, 2005 it was Tuesday. What day of the week lies on Jan 1, 2010?
- If Jan 1, 2006 was a Sunday, what was the day of 17th June 1997?
- What was the day of the week on 6th March, 2004?

- If the first day of a year (other than leap year) was Friday, then which was the last day of that year?
  - 1st October
  - 1st November
  - 1st December
  - 1st January
- Arun went for a movie nine days ago. He goes to watch movies only on Thursdays. What day of the week is today?
  - 22nd
  - 24th
  - 18th
  - 23rd
- The second day of a month is Friday. What will be the last day of the next month which has 31 days?
  - 2nd, 4th, 16th, 23rd
  - 4th, 11th, 18th, 25th
  - 1st, 8th, 15th, 22nd, 29th
  - 3rd, 10th, 17th, 24th
- If the seventh day of a month is three days earlier than Friday, What day will it be on the nineteenth day of the month?
  - Friday
  - Saturday
  - Wednesday
  - Tuesday
- Second Saturday and every Sunday is a holiday. How many working days will be there in a month of 30 days beginning on a Saturday?
  - 22
  - 24
  - 18
  - 23

- On what dates of April, 2001 did Wednesday fall?
  - 2nd, 9th, 16th, 23rd
  - 4th, 11th, 18th, 25th
  - 1st, 8th, 15th, 22nd, 29th
  - 3rd, 10th, 17th, 24th
- How many days are there in  $x$  weeks  $\times$  days?
  - 14X
  - 8X
  - $7X^2$
  - 7
- The calendar for the year 2007 will be the same for the year:
  - 2017
  - 2018
  - 2014
  - 2016

- Which of the following is not a leap year?
  - 800
  - 1200
  - 700
  - 2012

- Q. 2-20) Write the appropriate day of the week from Sunday to Saturday.
- What was the day on 31<sup>st</sup> October 1984?
    - 12/12/1984
    - 11/12/1984
    - 12/12/1984
    - 11/12/1985
  - Find the day of the week 23<sup>rd</sup> April 1990?
    - 1 hr = 12 hr
    - 1 hr = 11 hr
    - 12 hr = 11 hr
    - 11 hr = 12 hr
  - What was the day of the week for 26<sup>th</sup> August 1910?
    - Wednesday
    - Thursday
    - Friday
    - Saturday
  - What day of the week does 15<sup>th</sup> August 1947 falls on?
  - What day of the week does 10<sup>th</sup> November 1997 falls on?
  - Find the day of the week 26<sup>th</sup> January 2012?

$$450$$

$$1 \text{ hr} = 60 \text{ min}$$

1 hr = 60 min

Calendari  
Date 12 hr = 11 hr  
11 hr = 1 Day  
1 Day = 12 hr  
for 12 days

$$1 \text{ hr} = 60 \text{ min}$$

$$12 \text{ hr} = 11 \text{ hr}$$

$$\frac{1440}{1440} = 12 \rightarrow \text{Due } 12 \text{ hr}$$
  
$$= \frac{1440}{1440} = 12 \text{ hr} \text{ then } 12 \times 11 \text{ hr}$$
  
$$= 132 \text{ hr}$$

The following table gives the percentage distribution of population of five states, P, Q, R, S and T on the basis of poverty line and also on the basis of sex.

State	Percentage of Population below the Poverty Line		Proportion of Males and Females	
	Below Poverty Line	Above Poverty Line	M : F	M : F
P	35	5 : 6	(5 : 6)	(6 : 7)
Q	25	3 : 5	4 : 5	
R	24	1 : 2	(2 : 3)	(7 : 5)
S	19	3 : 2	(4 : 3)	
T	15	5 : 3	3 : 2	

1. If the male population above poverty line for State R is 1.9 million, then the total population of State R is?

- a. 4.5 million    b. 4.85 million    c. 5.35 million    d. 6.25 million

2. What will be the number of females above the poverty line in the State S if it is known that the population of State S is 7 million?

- a. 2.1 million    b. 2.3 million    c. 2.7 million    d. 3.3 million

3. What will be the male population above poverty line for State P if the female population below poverty line for State P is 2.1 million?

- a. 2.1 million    b. 2.3 million    c. 3.7    d. 4.9

4. If the population of males below poverty line for State Q is 2.4 million and that for State T is 6 million, then the total populations of States Q and T are in the ratio?

- a. 1 : 3    b. 2 : 5    c. 3 : 7    d. 4 : 9

Pie-chart I shows the percentage of students in various courses B.Tech, B.Com, M.Tech, M.Com, MBA

and CA and pie-chart II shows the percentage of boys.

Total students 2600 (1800 boys + 800 girls)

Chart-I

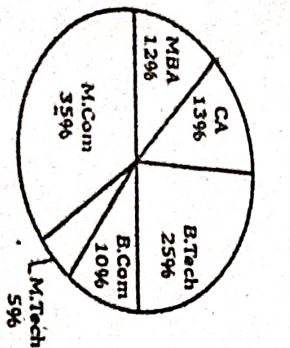
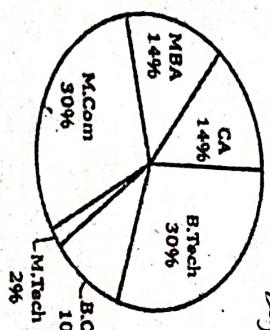
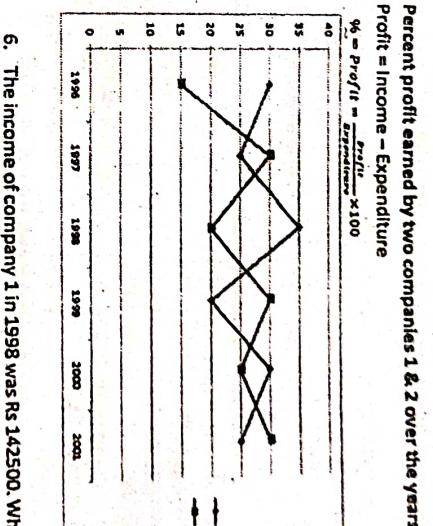


Chart-II



Boys

Boys



1. For course M.Com, what is the ratio of boys to girls? (a) A : 3    (b) 4 : 5    (c) 5 : 3    (d) 6 : 5    (e) None of the above
2. For which pair of courses is the number of girls the same? (a) B.Com and CA    (b) B.Tech and M.Com    (c) M.Tech and CA
3. For course MBA, the number of boys is how much percentage more than the number of girls for course MBA? (a) 250    (b) 350    (c) 320    (d) 140    (e) 300
4. For which course is the number of girls the minimum? (a) MBA    (b) CA    (c) M.Tech    (d) B.Tech    (e) B.Com
5. How many boys are there in course M.Tech? (a) 26    (b) 36    (c) 48    (d) 44    (e) 32

### Mensuration

- The perimeter of one side of the cube is 20 cm. Find the surface area and the volume of the cube?
- A large cube is formed from the material obtained by melting three smaller cubes of 3, 4 and 5 cm side. What is the ratio of the total surface areas of the smaller cubes and the large cube?
  - 2:1
  - 3:2
  - c. 25:18
  - d. 27:20
- Find the length of the longest diagonal of a cube whose side is  $2\sqrt{6}$ 
  - $\sqrt{6}$
  - $\sqrt{6}$
  - $3\sqrt{6}$
  - d.  $3\sqrt{2}$
- Find the TSA of the cube with length 10 cm is \_\_\_\_\_?
  - $100 \text{ cm}^2$
  - $400 \text{ cm}^2$
  - $600 \text{ cm}^2$
  - d. None
- What is the TSA of a cuboid whose length, breadth and height are 5 cm, 10 cm, and 20 cm?
 

~~Volume = L x B x H~~

  - $200 \text{ cm}^2$
  - $120 \text{ cm}^2$
  - $150 \text{ cm}^2$
  - $180 \text{ cm}^2$
- Find the total cost of painting the four walls of a room of length 12 cm, breadth 5 cm, and height 15 cm at Rs.  $2.5/\text{cm}^2$  is \_\_\_\_\_?
 

~~Volume = L x B x H~~

  - $Rs. 250$
  - $Rs. 300$
  - $Rs. 350$
  - $Rs. 400$
- The length and breadth of a rectangular solid are respectively, 25 cm and 20 cm. If the volume is  $7000 \text{ cm}^3$ , find its height?
 

~~Volume = L x B x H~~

  - $14 \text{ cm}$
  - $15 \text{ cm}$
  - $16 \text{ cm}$
  - $17 \text{ cm}$
- The length of the longest rod that can be kept inside a rectangular box is 17 cm. If the inner length and breadth of the box are 12 cm and 8 cm respectively, find its inner height?
- The external dimensions of an open rectangular wooden box are  $98 \text{ cm} \times 84 \text{ cm} \times 77 \text{ cm}$ . If the wood is 2-cm thick, find the capacity of the box?
- The length, breadth, and height of a room are 15m, 9m and 6m respectively. Find the total cost of painting the room (excluding the floor) at the cost of Rs.  $12/\text{m}^2$ ?
 

~~Volume = L x B x H~~

  - $Rs. 1200$
  - $Rs. 1500$
  - $Rs. 1800$
  - $Rs. 2100$
- How many boxes of length 40 cm, width 30 cm and height 10 cm can be formed from a box of 6m length, 4m width and 2m height?
 

~~Volume = L x B x H~~

  - $100$
  - $120$
  - $140$
  - $160$
- Find the CSA of cylinder of length 14 cm and radius of base 5 cm?
- A wooden pole is 7m high and 20 cm in diameter. Find its weight if the wood weighs  $225 \text{ kg/m}^3$ ?
- If 66  $\text{cm}^3$  of silver is drawn into a wire of 1mm in diameter, the length of the wire in meters will be?
- If the radius of a cylinder is one-third of the value of the height, find the volume of the cylinder in terms of its height?
  - $\pi h^2/9$
  - $\pi h^3/9$
  - $\pi h^3/6$
  - d. None
- Two cylinders are of radius in the ratio 3:5 and heights are in the ratio 10:9. Then find the volume ratio?
- A steel cube of side 4 cm is melted and the melt is used to form a bar of diameter 4 cm. What is the length of the bar formed?
- What is the TSA of the cone where slant height  $l$  is 13 cm and radius of the base is 5 cm?
- A right triangle with sides 3 cm, 4 cm and 5 cm is rotated about the side of 3 cm to form a cone. The volume of the cone so formed is?
  - 18
  - 24
  - 30
  - 36
- How many cones of radius 4m, height 2m can be formed from a cylinder of 12m radius, 10m height?
 

~~Volume = L x B x H~~

  - 12
  - 16
  - 20
  - 24
- If the radius of a right circular cone is decreased by 20% while its height is decreased by 10%, find the % change in the volume of the cone?
- A sphere of diameter 4m is melted and drawn into a wire. If the radius of the wire is 2m, find the length of the wire that can be drawn?

- A large sphere having a radius of 4cm is melted and cast into a number of smaller spheres of radius 2 cm. Find the number of smaller spheres?
- If we have to make a football of diameter 22 cm. How much leather sheet is needed?
- $1519.76 \text{ cm}^3$
- $1915.67 \text{ cm}^3$
- $1195.56 \text{ cm}^3$
- d. None

### Time and Work

- A can do a piece of work in 30 days while B alone can do it in 40 days. In how many days can A and B working together do it?
  - 17.17
  - b. 27.17
  - c. 47.34
  - d. 70
- A, B and C can complete a piece of work in 24, 6 and 12 days respectively. Working together, they will complete the same work in:
  - 1/24 day
  - b.  $7/24$  days
  - c.  $3/7$  days
  - d. 4 days
- A and B together can complete a piece of work in 35 days while A alone can complete the same work in 60 days. B alone will be able to complete the same work in:
  - 42 days
  - b. 72 days
  - c. 84 days
  - d. 96 days
- A and B together can complete a piece of work in 12 days. A, B and C together can finish it in 5 days. A and C together can do it in 3 hours, while A and C together can do it in 2 hours. How long will B alone take to do it?
  - 4 days
  - b. 6 days
  - c. 8 days
  - d. 12 days
- A and B can do a piece of work in 72 days; B and C can do it in 120 days; A and C can do it in 90 days. In what time can A alone do it?
  - 150 days
  - b. 120 days
  - c. 100 days
  - d. 80 days
- A can do a piece of work in 15 days and B alone can do it in 10 days. B worked at it for 5 days and then leaves. A alone can finish the remaining work in:
  - 13/2 days
  - b. 120 days
  - c. 8 days
  - d. 9 days
- A can finish a work in 18 days and B can do the same work in 15 days. B worked for 10 days and left the job. In how many days, A alone can finish the remaining work?
  - 5
  - b.  $5\frac{1}{2}$
  - c. 6
  - d. 9
- P and Q can complete a work in 15 days and 10 days respectively. They started the work together and then Q left after 2 days. P alone completed the remaining work. The work was finished in \_\_\_\_ days.
  - 12
  - b. 16
  - c. 20
  - d. 24
- A and B can do a piece of work in 30 days, while B and C can do the same work in 24 days and C and A in 20 days. They all work together for 10 days when B and C leave. How many days more will A take to finish the work?
  - 18 days
  - b. 24 days
  - c. 30 days
  - d. 36 days
- A and B can together finish a work 30 days. They worked together for 20 days and then B left. After another 20 days, A finished the remaining work. In how many days A alone can finish the work?
  - 40
  - b. 50
  - c. 54
  - d. 60

12. A and B can do a piece of work in 45 days and 40 days respectively. They began to do the work together but A leaves after some days and then B completed the remaining work in 23 days. The number of days after which A left the work was:

- a. 6 b. 8 c. 9 d. 12

13. A can do a certain job in 25 days which B alone can do in 20 days. A started the work and was joined by B after 10 days. The number of days taken in completing the work was:

- a. 12% b. 14 2/9 c. 15 d. 16 2/3

14. A alone can do a work in 15 days while B alone can do it in 30 days. If they both work on alternate days when will the work get completed?

- a. 20 days b. 24 days c. 18 days d. cannot be determined

15. A can do a work in 12 days and B alone in 16 days. If they both work on alternate days, when will the work get completed?

- a. 13 6/7 days b. 13 7/5 days c. 14 5/7 days d. cannot be determined

16. A, B and C can do a piece of work in 20, 30 and 60 days respectively. In how many days can A do the work if he is assisted by B and C on every third day?

- a. 12 days b. 15 days c. 16 days d. 18 days

17. 30 men can complete a job in 40 days. Then 25 men can complete the same job in how many days?

- a. 36 days b. 33 days c. 24 days d. 12 days

18. If 24 men can do a piece of work in 15 days working 8h/day, how many men will be required to do the same work in 10 days working 6h/day?

- a. 32 b. 50 c. 48 d. 30

19. If 15 men can make 15 articles in 15 days working for 6h/day, how many articles can 25 men make in 30 days working for 3h/day?

- a. 90 b. 75 c. 150 d. 60

20. 12 men can complete a work in 18 days. Six days after they started working, 4 men joined them. How many days will all of them take to finish the remaining work?

- a. 9 b. 10 c. 12 d. 15

21. Twelve men can complete a work in 8 days. Three days after they started the work, 3 more men joined. In how many days will all of them together complete the remaining work?

- a. 2 b. 2 1/2 c. 5 d. 6

22. A job is completed by 10 men in 20 days and by 20 women in 15 days. How many days will it take for 5 men and 10 women to finish that work?

- a. 17% b. 17 1/7 c. 17 d. 17 1/12

23. A works twice as fast as B. If B can complete a work in 12 days independently, the number of days in which A and B can together finish the work is:

- a. 4 days b. 6 days c. 8 days d. 18 days

24. A is thrice as good a workman as B and takes 10 days less to do a piece of work than B takes. B alone can do the whole work in :

- a. 12 days b. 15 days c. 20 days d. 30 days

25. A is twice as good a workman as B and together they finish a piece of work in 14 days. The number of days taken by A alone to finish the work is:

- a. 11 b. 21 c. 28 d. 42

26. Two pipes A and B can fill a tank in 12 and 24 minutes respectively. If both the pipes are used together, then how long will it take to fill the tank?

- a. 9 mins b. 8 mins c. 6 mins d. 4 mins

27. Pipes A and B can fill a tank in 5 and 6 hours respectively. Pipe C can empty it in 12 hours. If all the three pipes are opened together, then the tank will be filled in:

- a. 3.52 hours b. 1.45 hours c. 3.75 hours d. 4.12 hours

28. Two taps can fill a cistern in 4 and 6 hours respectively. They both are opened for 2 hours and the first pipe was closed. How much longer will it take to fill the tank?

- a. 4 hours b. 3 hours c. 2 hours d. 5 hours

29. Three taps A, B and C can fill a tank in 12, 15 and 20 hours respectively. If A is open all the time and B and C are open for one hour each alternately, the tank will be full in:

- a. 23 hours b. 6 hours c. 13 hours d. 7 hours

30. An electric pump can fill a tank in 3 hours. Because of a leak in the tank, it took 3 hours 30 min to fill the tank. The leak can drain out all the water of the tank in:

- a. 10 hours 30 mins b. 22 hours c. 12 hours d. 24 hours

### SIMPLE INTEREST AND COMPOUND INTEREST

#### Simple Interest:

1. What is the SI on Rs. 7500/- at the rate of 12% per annum for 8 years?

2. A man borrowed Rs. 15000/- at the rate of 24% SI and to clear the debt after 5 years, much he has to return?

3. A man borrowed Rs. 12000 at the rate of 10% SI, and lent the same sum to another person at the rate of 15% what will be the gain after 5 years?

#### Class work:

1. Find the simple interest, if amount deposited is Rs. 3000 for 4 years at rate of interest 20% per annum.

- a. 600 b. 500 c. 800 d. 750

2. Sahil took a loan for 6 years at the rate of 5% per annum on Simple Interest, if the total interest paid was Rs. 1230, the principal was

- a. 4100 b. 4200 c. 4300 d. 4400

3. A sum of money lent out at simple interest amounts to Rs. 720 after 2 years and to Rs. 1020 after a further period of 5 years. Find the sum and the rate %.

- a. 600, 10% b. 600, 5% c. 500, 10% d. 500, 5%

4. Adam borrowed some money at the rate of 6% p.a. for the first two years, at the rate of 9% p.a. for the next three years, and at the rate of 14% p.a. for the period beyond five years. If he pays a total interest of Rs. 11,400 at the end of nine years, how much money did he borrow?

- a. 12000 b. 10000 c. 11000 d. 12500

#### Compound Interest:

1. An amount of Rs. 1000 is borrowed at C.I at the rate of 2% per annum. What will be the amount to be paid after 3 years if the interest is compounded annually?

- a. 926.24 b. 1248.34 c. 1061.28 d. 1678.34

2. An amount of Rs. 1000 amount equates to Rs. 1728 in 3 years when interest is compounded annually. What will be the rate per annum?

The compound interest on Rs. 7500 at 4% per annum for 2 years, compounded annually.

- a. Rs. 610      b. Rs. 612      c. Rs. 614      d. Rs. 616

Rs. 610      b. Rs. 612      c. Rs. 614      d. Rs. 616  
invested amount of 8000 in a fixed deposit for 2 years at compound interest rate of 5%  
per annum. How much Albert will get on the maturity of the fixed deposit?

- a. Rs. 8510      b. Rs. 8620      c. Rs. 8730      d. Rs. 8820

Rs. 8510      b. Rs. 8620      c. Rs. 8730      d. Rs. 8820  
It be the compound interest on Rs. 25000 after 3 years at the rate of 12% per annum

- a. Rs. 10123      b. Rs. 10138      c. Rs. 10346      d. Rs. 10548

Time will Rs. 1000 become Rs. 1331 at 10% per annum compounded annually.  
Years      b. 3 Years      c. 4 Years      d. 5 Years

Years      b. 3 Years      c. 4 Years      d. 5 Years  
Hence between the simple interest and compound interests on some principal amount

3 years is Rs. 48, then the principal amount is  
$$P = \frac{A}{(1 + \frac{R}{100})^t}$$
  
$$P = \frac{1331}{(1 + \frac{10}{100})^3}$$
  
$$P = \frac{1331}{1.10^3}$$
  
$$P = \frac{1331}{1.331}$$
  
$$P = 1000$$

3 years is Rs. 48, then the principal amount is  
Rs. 325      b. Rs. 395      c. Rs. 465      d. Rs. 375  
Hence between simple and compound interests compounded annually on a certain sum

or 2 years at 4% per annum is Rs 1. Find the sum  
a. Rs 625      b. Rs 650      c. Rs 675      d. Rs 675

sum of money becomes five times itself in 16 years at SI. In how many years it will  
times itself?

sum of money becomes four times itself in eight years at SI. In how many years it  
times itself?

16 times itself?  
a. 45      b. 32      c. 30

Money placed at compound interest doubles itself in 4 years. In how many years will  
times?

5      b. 8 years      c. 6 years      d. 12 years  
If a sum of money becomes four times in seven years at CI. In how many years it will  
times itself?

b. 144 years      c. 21 years      d. none of these  
If a sum of money becomes 3 times in 4 years, then with the same interest rate, the sum will  
in:

- b. 18 years      c. 16 years      d. 14 years

#### Class work:

9. Find the compound interest on Rs. 7500 at 4% per annum for 2 years, compounded annually.

- a. Rs. 610      b. Rs. 612      c. Rs. 614      d. Rs. 616

10. Albert invested amount of 8000 in a fixed deposit for 2 years at compound interest rate of 5%  
per annum. How much Albert will get on the maturity of the fixed deposit?

- a. Rs. 8510      b. Rs. 8620      c. Rs. 8730      d. Rs. 8820

11. What will be the compound interest on Rs. 25000 after 3 years at the rate of 12% per annum  
a. Rs.10123      b. Rs. 10138      c. Rs. 10346      d. Rs. 10548

12. In what time will Rs. 1000 become Rs. 1331 at 10% per annum compounded annually  
a. 2 Years      b. 3 Years      c. 4 Years      d. 5 Years

13. If the difference between the simple interest and compound interests on some principal amount  
at 20% for 3 years is Rs. 48, then the principal amount is  
a. Rs.365      b. Rs. 325      c. Rs. 395      d. Rs. 375

14. The difference between simple and compound interests compounded annually on a certain sum  
of money for 2 years at 4% per annum is Rs 1. Find the sum  
a. Rs600      b. Rs 625      c. Rs 650      d. Rs 675

Term Based Problems:

15. (i) A certain sum of money becomes five times itself in 16 years at SI. In how many years it will  
become 9 times itself?

(ii) A certain sum of money becomes four times itself in eight years at SI. In how many years  
it will become 16 times itself?  
a. 40      b.45      c.32      d.30

16. (i) A sum of money placed at compound interest doubles itself in 4 years. In how many ye  
It amount to 8 times?

- a. 10 years      b.8 years      c.6 years      d.12 years

(ii) A certain sum of money becomes four times in seven years at CI. In how many years  
become 64 times itself?

- b. 16 years      b.144 years      c.21 years      d. none of these

(iii) If a sum on CI becomes 3 times in 4 years, then with the same interest rate, the s  
become 81 times in:

- c. 12 years      b. 18 years      c. 16 years      d. 14 years