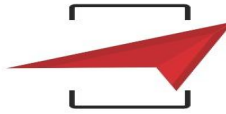


PERCENTAGE

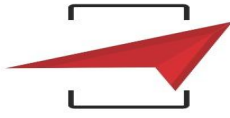
1. If 80% of A = 50% of B and B = x% of A, then the value of x is :
- (1) 400 (2) 300
(3) 160 (4) 150
2. If x is 80% of y, what percent of x is y ?
- (1) 75% (2) 80%
(3) 100% (4) 125%
3. What is 20% of 25% of 300?
- (1) 150 (2) 60
(3) 45 (4) 15
4. Which number is 40% less than 90% of 100?
- (1) 36 (2) 54
(3) 50 (4) 60
5. If x% of $\frac{25}{2}$ is 150, then the value of x is :
- (1) 1000 (2) 1200
(3) 1400 (4) 1500
6. If 50% of (x - y) = 30% of (x + y), then what percent of x is y ?
- (1) 25% (2) $33\frac{1}{3}\%$
(3) 40% (4) 400%
7. If 120 is 20% of a number, then 120% of that number will be :
- (1) 20 (2) 120
(3) 600 (4) 720
8. 18% of which number is equal to 12% of 75
- (1) 50 (2) 100
(3) 2 (4) $\frac{3}{2}$
9. If the income of Ram is $12\frac{1}{2}\%$ more than that of Shyam, the income of Shyam is less than that of
- Ram by
- (1) $11\frac{1}{9}\%$ (2) $12\frac{1}{8}\%$
(3) $9\frac{1}{11}\%$ (4) $11\frac{1}{11}\%$
10. X's income is 20% more than that of Y. What percent is Y's income less than X?
- (1) $83\frac{1}{3}\%$ (2) $16\frac{2}{3}\%$
(3) $183\frac{2}{3}\%$ (4) $16\frac{1}{3}\%$
11. The difference of two numbers is 15% of their sum. The ratio of the larger number to the smaller number is :
- (1) 23 : 17 (2) 11 : 9
(3) 17 : 11 (4) 23 : 11
12. Given that 10% of A's income = 15% of B's income = 20% of C's income. If sum of their income is Rs. 7800, then B's income is
- (1) Rs. 3600 (2) Rs. 3000
(3) Rs. 2400 (4) Rs. 1800
(5) None of these
13. The price of sugar rises by 25%. If a family wants to keep their expenses on sugar the same as earlier, the family will have to decrease its consumption of sugar by
- (1) 25% (2) 20%
(3) 80% (4) 75%
(5) None of these
14. The price of sugar is increased by 20%. As a result, a family has decreased its consumption by 20%. The expenditure of the family on sugar is decreased by
- (1) 0% (2) 2.5%
(3) 4% (4) 5%
(5) None of these
15. Salary of a person in first increased by 20%, then it is decreased by 20%. Change in his sal-



- ary is
- (1) 4% decreased (3) Rs. 42,000 (4) Rs. 38,000
(2) 4% increased (5) None of these
- (3) 8% decreased
- (4) neither decrease nor increase
- (5) None of these
16. The price of an article is reduced by 25% but the daily sale of the article is increased by 30%. The net effect on the daily sale receipts is
- (1) $2\frac{1}{2}$ % increase (2) $2\frac{1}{2}$ % decrease
(3) 2% increase (4) 2% decrease
(5) None of these
17. The cost of an article was Rs 75. The cost was first increased by 20% and later on it was reduced by 20%. The present cost of the article is
- (1) Rs. 72 (2) Rs. 60
(3) Rs. 75 (4) Rs. 90
(5) None of these
18. If the radius of a circle is increased by 50%, its areas is increased by
- (1) 125% (2) 100%
(3) 75% (4) 50%
(5) None of these
19. Each side of a rectangular field is diminished by 40%. By how much percent is the area of the field diminished?
- (1) 32 (2) 64
(3) 25 (4) 16
(5) None of these
20. Mr. Giridhar spends 50% of his monthly income on household items and out of the remaining he spends 50% on transport, 25% on entertainment, 10% on sports and remaining amount of Rs. 900 is saved. What is Mr. Giridhar's monthly income?
- (1) Rs. 6,000 (2) Rs. 12,000
(3) Rs. 9,000 (4) Cannot be determined
(5) None of these
21. Mr. More Spent 20% of his monthly income on food and 15% on children's education, 40% of the remaining he spent on entertainment and transport together and 30% on medical. He is left with an amount of Rs. 8775 after all these expenditures. What is Mr. More's monthly income?
- (1) Rs. 40,000 (2) Rs. 35,000
- (3) Rs. 42,000 (4) Rs. 38,000
(5) None of these
22. Gaurav spends 40% of the amount he received from his father on hostel expenses, 20% on books and stationery and 50% of the remaining on transport. He saves Rs 450 which is half the remaining amount after spending on hostel expenses, books etc. and transport. How much money did he get from his father?
- (1) Rs 3,000
(2) Rs 6,000
(3) Rs 4,500
(4) Can't be determined
(5) None of these
23. In an examination, 35% of the candidates failed in Mathematics and 25% in English. If 10% failed in both Mathematics and English, then how much percent passed in both the subjects?
- (1) 50 (2) 55
(3) 57 (4) 60
(5) None of these
24. In a class of 60 students 40% can speak only Hindi, 25% can speak only English and rest of the students can speak both the languages. How many students can speak English?
- (1) 32 (2) 28
(3) 36 (4) 15
(5) None of these
25. In examination, 65% of the students passed in Mathematics, 48% passed in Physics and 30% passed in both. How much per cent of students failed in both the subjects?
- (1) 17% (2) 43%
(3) 13% (4) 47%
(5) 52%
26. In a test consisting of 80 questions carrying one mark each, Arpita answers 65% of the first 40 questions correctly. What per cent of the other 40 questions does she need to answer correctly to score 75% on the entire test?
- (1) 60 (2) 80
(3) 75 (4) 40
(5) None of these
27. On a test consisting of 250 questions, Jassi answered 40% of the first 125 questions



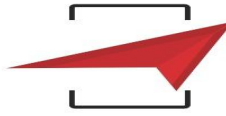
- correctly. What per cent of the other 125 questions does she need to answer correctly for her grade on the entire exam to be 60%?
- (1) 75
(2) 80
(3) 60
(4) Cannot be determined
(5) None of these
28. A candidate who scores 30% fails by 5 marks, while another candidate who scores 40% marks gets 10 more than minimum pass marks. The minimum marks required to pass are—
- (1) 50 (2) 70
(3) 100 (4) 150
(5) None of these
29. In a college election fought between two candidates, one candidates got 55% of the total valid votes. 15% of the votes were invalid. If the total votes were 15,200, what is the number of valid votes the other candidate got?
- (1) 7106 (2) 6840
(3) 8360 (4) 5814
(5) None of these
30. In an election between two candidates, one candidates got 60% of the total valid votes and won by 1920 votes. If 20 % of the votes were invalid then find the number of valid votes the other candidate got?
- (1) 3260 (2) 3600
(3) 3840 (4) 3648
(5) None of these
31. In a class of 65 students and 4 teachers, each student got sweets that are 20% of the total number of students and each teacher got sweets that are 40% of the total number of students. How many sweets were there?
- (1) 845 (2) 897
(3) 949 (4) 104
(5) None of these
32. In a class of 35 students and 6 teachers, each student got sweets that are 20% of the total number of students and each teacher got sweets that are 40% of the total number of students. How many sweets were there?
- (1) 245 (2) 161
(3) 406 (4) 84
- (5) None of these
33. If the numerator of a fraction is increased by 200% and the denominator is increased by 350%, the resultant fraction is $\frac{5}{12}$. What was the original fraction?
- (1) $\frac{5}{9}$ (2) $\frac{5}{8}$
(3) $\frac{7}{12}$ (4) $\frac{11}{12}$
(5) None of these
34. If the numerator of a fraction is increased by 200% and the denominator is increased by 400%, the resultant fraction is $1\frac{1}{20}$. What was the original fraction?
- (1) $1\frac{3}{4}$ (2) $\frac{11}{10}$
(3) $\frac{6}{5}$ (4) $1\frac{1}{2}$
(5) None of these
35. In a two digit positive number, the digit in the units place is equal to the square of the digit in ten's place, and the difference between the number and the number obtained by interchanging the digits is 54. What is 40% of the original number?
- (1) 15.6 (2) 39
(3) 37.2 (4) 24
(5) None of these
36. The population of a village was 9800. In a year, with the increase in population of males by 8% and that of females by 5%, the population of the village became 10458. What was the number of males in the village before increase?
- (1) 4200 (2) 4410
(3) 5600 (4) 6048
(5) None of these
37. In a town, the population was 8000. In one year, male population increased by 10% and female population increased by 8% but the total population increased by 9%. The number of males in



the town was:

- (a) 4000 (b) 4500
(c) 5000 (d) 6000

38. The population of a town is 64000. It increases by 10% during the first year. During the second year, it decreases by 25% and increased by 5% during the third year. What is the population after 3 years?
(1) 654400 (2) 56440 (3) 55450
(4) 55440 (5) None of these
39. What quantity of water should be added to reduce 6 litres of 50% acidic liquid to 20% acidic liquid?
(1) 8 litres (2) 9 litres (3) 12 litres
(4) 9.5 litres (5) None of these
40. What quantity of water should be taken out to concentrate 12 litres of 30% acidic liquid to 40% acidic liquid.
(1) 4 litres (2) 6 litres (3) 3 litres
(4) 8 litres (5) None of these



HINTS & SOLUTIONS

1. 3; 80% of A = 50% of B

$$\text{p } \frac{80}{100}A = \frac{50}{100}B$$

$$\text{p } A = \frac{5}{8}B$$

Put value of A in given equation,

$$B = x\% \text{ of } A$$

$$\text{p } B = \frac{x}{100} \cdot \frac{5}{8}B$$

$$\text{p } x = \frac{100 \cdot 8}{5}$$

$$\text{p } x = 160$$

2. 4

3. 4; Required answer

$$= 300 \times \frac{1}{4} \cdot \frac{1}{5} = 15$$

4. 2; Required answer

$$= 100 \times \frac{90}{100} \cdot \frac{(100 - 40)}{100}$$

$$= 90 \times \frac{60}{100} = 54$$

$$\text{So, } 120\% = \frac{120}{20} \cdot 120 = 720$$

5. 2; $\frac{25}{2} \cdot \frac{x}{100} = 150$

$$\text{p } x = \frac{150 \cdot 200}{25} = 1200$$

6. 1; $50(x - y) = 30(x + y)$

$$\text{p } 5x - 5y = 3x + 3y$$

$$\text{p } 2x = 8y$$

$$x = 4y$$

$$\text{Required \%} = \frac{y}{x} \times 100$$

$$= \frac{1}{4} \cdot 100$$

$$= 25\%$$

7. 4; Let the number = x

According to the question,

$$x \times \frac{20}{100} = 120$$

$$x = 600$$

Required answer

$$= 600 \times \frac{120}{100} = 720$$

Alternate%

20% represents = 120

$$1\% = \frac{120}{20}$$

$$120\% = \frac{120}{20} \times 120 = 720$$

8. 1; Let the number = x

According to the question,

$$\text{p } x \times \frac{18}{100} = \frac{12}{100} \times 75$$

$$\text{p } 18x = 12 \times 75$$

$$\text{p } x = \frac{12 \cdot 75}{18} = 50$$

Hence, required number = 50

9. 1; $12\frac{1}{2}\% = \frac{1}{8}$

$$= \frac{9 \text{ @ Income of Ram}}{8 \text{ @ Income of Syam}}$$

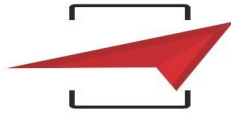
According to the question

Ratio of Income →	Ram	:	Shyam
	9	:	8

$$\text{Required \%} = \frac{1}{9} \times 100$$

$$= 11\frac{1}{9}\%$$

10. 2



11. 1; Let the numbers are a and b where

$$a > b.$$

According to the question,

$$(a - b) = \frac{15}{100}(a + b)$$

$$(a - b) = \frac{3}{20}(a + b)$$

$$20a - 20b = 3a + 3b$$

$$17a = 23b$$

$$\frac{a}{b} = \frac{23}{17}$$

Required ratio = **23 : 17**

12. 3 13. 2 14. 1 15. 1

16. 2; Let the price of the article be Rs. 100 and the daily sale be 100 units

$$\therefore \text{Revenue day} = 100 \times 100 = \text{Rs. } 10000$$

Case II:

$$\text{New receipts} = 75 \times 130 = \text{Rs. } 9750$$

$$\text{Decrease} = \text{Rs. } (10000 - 9750) = \text{Rs. } 250$$

$$\therefore \% \text{ decrease} = \frac{250}{10000} \times 100 = 2\frac{1}{2}\%$$

17. 1; Effective decrease

$$= \left(20 - 20 - \frac{20 \times 20}{100} \right) \% = -4\%$$

$$\therefore \text{Present cost of the article} = 96\% \text{ of Rs. } 75$$

$$= \frac{75 \times 96}{100} = \text{Rs. } 72$$

18. 1

19. 2; If the length and breadth of a rectangle are changed by x% and y% respectively, the effective change in area

$$= \left(x + y + \frac{xy}{100} \right) \%$$

$$\text{Here, } x = -40\%, y = -40$$

\therefore Percentage decrease

$$= \left(-40 - 40 + \frac{40 \times 40}{100} \right) \%$$

$$= (-80 + 16)\% = -64\%$$

Negative sign shows decrease.

20. 2; Let his monthly income be Rs. x

$$\text{Money spent on house holds} = \frac{x}{2}$$

Money spent out of the remaining amount

$$= 85\% \text{ of } \frac{x}{2}$$

$$\text{P } 15\% \text{ of } \frac{x}{2} = 900$$

$$\text{P } x = \frac{900 \times 2 \times 100}{15}$$

$$\text{P } x = \text{Rs. } 12000$$

21. 5; 30% of 65% = 8775 P 100%

$$= \frac{8775 \times 100 \times 100}{30 \times 65} = \text{Rs. } 45000$$

22. 3; Let the Gaurav get be Rs x.

Gaurav's expenses on hostel, books and stationery

$$(40 + 20)\% = 60\% \text{ of } x = \text{Rs } \frac{3}{5}x$$

Expenses on transport

$$= 50\% \text{ of } \left(x - \frac{3}{5}x \right) = \frac{1}{2} \times \frac{2x}{5} = \frac{x}{5}$$

Now, according to the question,

$$\frac{1}{2} \left[x - \left(\frac{3x}{5} + \frac{x}{5} \right) \right] = \text{Rs } 450$$

$$\therefore x = \text{Rs } 4500$$

23. 1

24. 3; Number of students who can speak:

$$\text{Only English} = \frac{40 \times 60}{100} = 24$$

$$\text{Only Hindi} = \frac{25 \times 60}{100} = 15$$

$$\text{Both languages} = 60 - 24 - 15 = 21$$

$$\therefore \text{Number of students who can speak English} = 15 + 21 = 36$$

25. 1; $n(M) = 65, n(P) = 48, n(M \cap P) = 30$

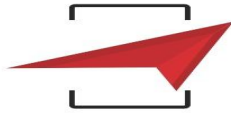
$$\therefore n(M \cup P) = n(M) + n(P) - n(M \cap P) = 65 + 48 - 30 = 83$$

$$\therefore \text{Per cent of students passed} = 83$$

$$\therefore \text{Per cent of students failed} = 17$$

26. 5; Required percentage is

$$\frac{60 - 40 \times \frac{65}{100}}{40} \times 100 = \frac{34}{40} \times 100 = 85\%$$



27. 2; Total correct questions for getting 60% grade

$$= 250 \times \frac{60}{100} = 150$$

40% of 125 = 50 questions

∴ x% of 125 = 150 - 50 = 100 questions

$$\text{P } x = \frac{100 \times 100}{125} = 80$$

Required percentage = 80%

28. (1); Let the total marks be x, then from problem.

$$\text{We have, } \left(x \times \frac{30}{100}\right) + 5 = \left(x \times \frac{40}{100}\right) - 10$$

$$\Rightarrow 15 = \frac{10x}{100}$$

$$\therefore x = 150$$

$$\begin{aligned} \Rightarrow \text{Required pass mark} &= \left(150 \times \frac{30}{100}\right) + 5 \\ &= 45 + 5 = 50 \end{aligned}$$

29. 4; Total no. of valid votes

$$= 15200 \times \frac{85}{100} = 12920$$

P No. of valid votes the other candidate got

$$= 12920 \times \frac{45}{100} = 5814$$

30. 3

31. 3; $65 \times 13 + 4 \times 26 = 949$

32. 5; Required number = $35 \times 35 \times \frac{20}{100} + 6 \times 35 \times \frac{40}{100}$
 $= 245 + 84 = 329$

33. 2; Let the original fraction be $\frac{x}{y}$.

According to the question,

$$\frac{x \times \frac{300}{100}}{y \times \frac{450}{100}} = \frac{5}{12}$$

$$\Rightarrow \frac{2x}{3y} = \frac{5}{12} \quad \Rightarrow \frac{x}{y} = \frac{5}{12} \times \frac{3}{2} = \frac{5}{8}$$

34. 1; $\frac{x + 2x}{y + 4y} = \frac{21}{20} \Rightarrow \frac{x}{y} = \frac{7}{4} = 1 \frac{3}{4}$

35. 1; Let the number be $10x + x^2$

$$\therefore (10x + x^2) \sim (10x^2 + x) = 54$$

$$\therefore 9x^2 - 9x = 54$$

$$\therefore x^2 - x - 6 = 0$$

$$\therefore (x - 3)(x + 2) = 0$$

$$\therefore x = 3$$

$$\therefore x = 3$$

∴ The original number = 39

$$\therefore 40\% \text{ of the original number} = \frac{39 \times 40}{100} = 15.6$$

36. 3

37. 1

38. 4

39. 2

40. 3