

$$\frac{1}{2} = \frac{50}{100}$$

PERCENTAGE

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CONCEPT - PERCENTAGE

50 \rightarrow 60

$$\frac{10}{50} \times 100$$

$$= +20\%$$

50 \rightarrow 40

$$\frac{10}{50} \times 100$$

$$= -20\%$$

$$\begin{aligned} \text{CHANGE\%} &= \frac{NV - OV}{OV} \times 100 \\ &= \frac{\text{Change}}{\text{Old Value}} \times 100 \end{aligned}$$

I. The population of a town, named Mirzapur, is 8000. It decreases annually at the rate of 20% p. a. What will be its population after 2 years?

A) 1600

B) 4800

C) 6400

✓ D) 5120

$$\begin{array}{l} 8000 \\ \text{I } \downarrow -20\% = 1600 \\ 6400 \\ \text{II } \downarrow -20\% = 1280 \\ \underline{\underline{5120}} \end{array}$$

$$\begin{array}{l} 8000 \times \frac{80}{100} \times \frac{80}{100} \\ = \underline{\underline{5120}} \end{array}$$

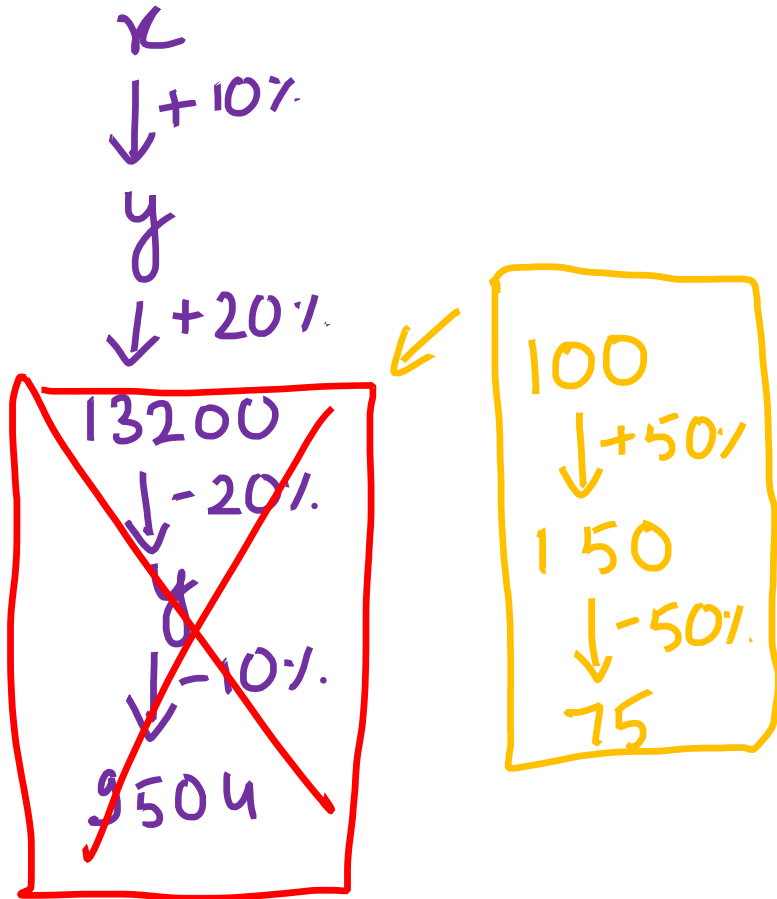
2. The population of a town, named Winterfell, increases 10% and 20% respectively in two consecutive years. The present population of the town is 13200. Then what was the population of the town 2 years ago?

A) 9504

B) 10001

✓ C) 10000

D) 10100



$$x \times \frac{110}{100} \times \frac{120}{100} = 13200$$

$$x = \frac{13200 \times 100}{110} \times \frac{100}{120} = 10000$$

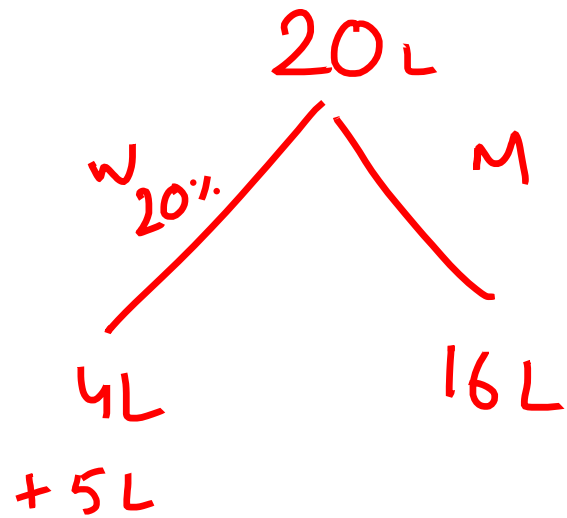
3. A mixture of 20 litres of milk and water contains 20% of water. A new mixture is formed by adding 5 litres of water. What is the percentage of milk in the new mixture?

A) 36%

B) 20%

✓ C) 64%

D) 46%



✓ Milk in new mix

$$= \frac{16}{25} \times 100 = \frac{\text{Milk}}{\text{New Mix}} \times 100$$

$$= \underline{\underline{64\%}}$$

4. When a number is first increased by 10% and then reduced by 10%, the number:

- A) Does not change ☒ B) Decreases by 1% C) Increases by 1% D) None of these

100
↓ +10%
110
↓ -10% = 11
99

-1%

-10% +10%

100
↓ -10%
90
↓ +10%
99

+20% -10%

100
↓ +20%
120
↓ -10% = 12
108

-10% +20%

100
↓ -10%
90
↓ +20% = 18
108

5. In an election between two candidates, 20% of votes were declared invalid. First candidate got 70% of the valid votes and a lead of 1600 votes. The total number of votes enrolled in that election was:

- ✓ A) 5000 votes B) 5400 votes C) 10000 votes D) 6667 votes

$T = 100$
↓ -20% INVALID
80 VALID

win 70% 30% Lose

56 — 24 = 32 = Lead

Lead Total

32 100

1600 T

$T = \frac{100 \times 1600}{32}$
 $= \underline{\underline{5000}}$

6. If the price of petrol increases by 25%, by how much must Batman cut down his consumption so that his expenditure on petrol remains constant?

A) 25%

B) 16.67%

✓ C) 20%

~~D) 33.33%~~

$$P = 100$$

$$C = 100$$

$$\text{Exp} = 100 \times 100 = 10000$$

$$P_2 = 125$$

$$C_2 = ?$$

$$\text{Exp}_2 = 10000$$

$$P \times C = E$$

$$C = \frac{E}{P} = \frac{10000}{125} = 80$$

-20%

$$P = 100$$

$$E = 100$$

$$P_2 = 125$$

$$E = 100$$

$$\frac{25}{125} \times 100 = \underline{\underline{20}}$$

7. If the price of petrol increases by 50% and Stark intends to spend only an additional 25% on petrol, by how much will he reduce the quantity of petrol purchased?

A) 25%

✓ B) 16.66%

C) 50%

D) 20%

$$P = 100$$

$$C = 100$$

$$E = 100 \times 100 = 10000$$

$$P_2 = 150$$

$$C_2 = ?$$

$$E_2 = 10000 \times \frac{125}{100} = 12500$$

$$-16.66\%$$

$$C = \frac{12500}{150} = 83.33$$

$$P = 100$$

$$E = 100$$

$$\frac{25}{150} \times 100$$

$$P_2 = 150$$

$$E_2 = 125$$

$$= 16.66\%$$

$$100$$

$$75\%$$

$$125\%$$

8. If X and Y are 20% and 25% greater than Z respectively, by how much percentage is X smaller than Y?

A) 20%

☒ B) 4%

C) 5%

☒ D) 4.16%

$$Z = 100$$

$$X = 120$$

$$Y = 125$$

$$\frac{5}{125} \times 100 = 4\%$$

$$\frac{5}{120} \times 100 = 4.16\%$$

9. In XYZ College, 65% of students are less than 20 years of age. The number of students more than 20 years of age is $\frac{2}{3}$ rd of number of students of 20 years of age, which is 42. What is the total number of students in the college?

A) 75

B) 90

C) 130

✓ D) 200

$$N_{<20} = 65\% \text{ of } T$$

$$N_{20} + N_{>20} = 35\% \text{ of } T$$

$$N_{>20} = \frac{2}{3} \times N_{20}$$

$$N_{20} = 42$$

$$N_{>20} = \frac{2}{3} \times 42 = 28$$

$$42 + 28 = \frac{35}{100} \times T$$

$$\frac{70 \times 100}{35} = T = \underline{\underline{200}}$$

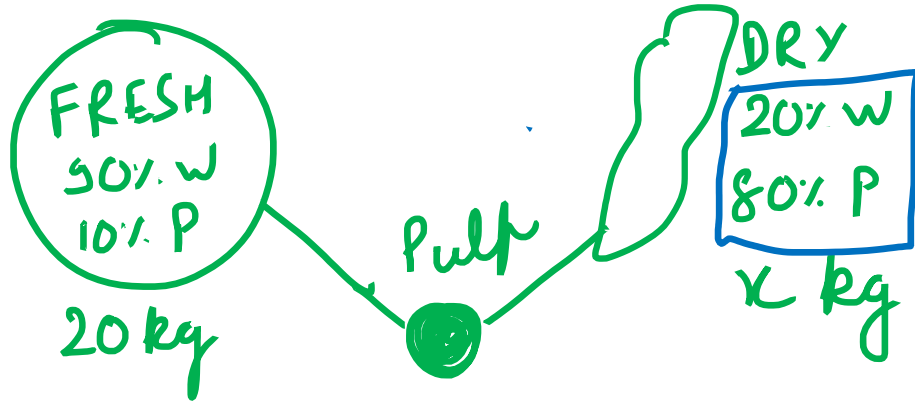
10. Fresh grapes contain 90% water by weight while dried grapes contain 20% water by weight. What is the weight of dry grapes available from 20 kg of fresh grapes?

A) 2 kg

B) 2.4 kg

☒ C) 2.5 kg

D) None of these



$$\text{Pulp Fresh} = \text{Pulp Dry}$$

$$10\% \text{ of } 20 \text{ kg} = 80\% \text{ of } x \text{ kg}$$

$$2 = \frac{80}{100} \times x \Rightarrow x = \frac{200}{80} = \underline{\underline{2.5}}$$

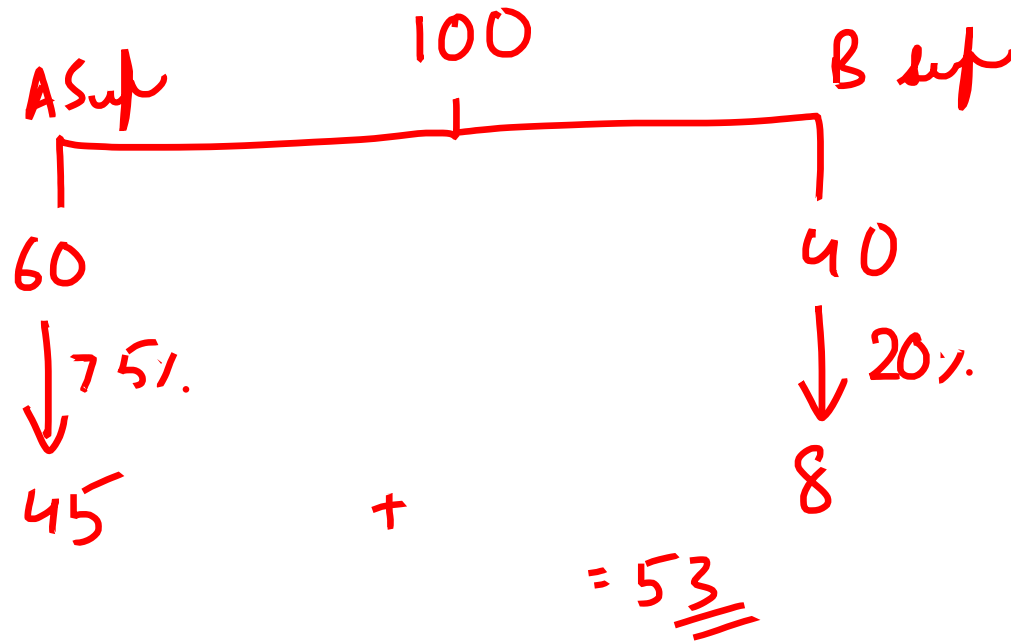
11. In a certain city, 60 percent of the registered voters are Party A supporters and the rest are Party B supporters. In an assembly election, if 75% of the registered Party A supporters and 20% of the registered Party B supporters are expected to vote for Candidate A, what percent of the registered voters are expected to vote for Candidate A?

A. 20

B. 60

C. 75

✓ D. 53



12. Hulk mistakenly divided a number by 2 instead of multiplying it by 2. Find the percentage of error.

A) 35%

B) 45%

C) 65%

✓ D) 75%

$$\text{Error \%} = \frac{\text{Error}}{\text{Correct}} \times 100$$

$$N = 100$$

$$\text{Correct} = 200$$

$$\text{Wrong} = 50$$

$$\text{Error} = 150$$

$$\begin{aligned}\text{Error \%} &= \frac{150}{200} \times 100 \\ &= 75\% \\ &= \underline{\underline{75\%}}\end{aligned}$$

PROFIT & LOSS



CONCEPT – PROFIT & LOSS

13. Alfred buys an old scooter for Rs.4700 and spends Rs.800 on its repairs. If he sells the scooter for Rs.5800, his gain percent is:

A) $4\frac{4}{7}\%$

✓ B) $5\frac{5}{11}\%$

C) 10%

D) 12%

$$CP = 4700 + 800 = 5500$$

$$SP = 5800$$

$$G\% = \frac{300}{5500} \times 100 = \frac{60}{11} = 5\frac{5}{11}\%$$

$$G\% \Rightarrow OV \longrightarrow NV$$

$$G/L\% \rightarrow CP \longrightarrow SP$$

14. If loss is 1/3rd of SP, the loss percentage is _____?

A) 16%

✓ B) 25%

C) 30%

~~D) 33.33%~~

$$SP = 100$$

$$L = \frac{100}{3}$$

$$CP = 100 + \frac{100}{3}$$
$$= \frac{400}{3}$$

$$L\% = \frac{\cancel{100}/3}{\cancel{400}/3} \times 100 = \underline{\underline{25\%}}$$

$$L = 100$$

$$L = \frac{1}{3} SP$$

$$SP = 3 \times L = 300$$

$$CP = 100 + 300 = 400$$

$$L\% = \frac{100}{400} \times 100$$
$$= \underline{\underline{25\%}}$$

15. A shopkeeper marks all his goods at 50% above the cost price and offers a discount of 25% on the marked price. What is his actual profit?

A) 27%

✓ B) 12.50%

C) 20%

D) 15%

$$CP = 100$$

$$MP = 150$$

$$Dis = 25\% \text{ of } 150 = 37.5$$

$$SP = 150 - 37.5 = \underline{112.5}$$

16. In a certain store, the profit is 320% of the cost. If the cost increases by 25% but the selling price remains constant, approximately what percentage of the selling price is the profit?

A) 30%

✓ B) 70%

C) 100%

D) 236%

$$CP = 100$$

$$G_1 = 320$$

$$SP = 100 + 320 = 420$$

$$CP_2 = 125$$

$$G_2 = 420 - 125 = 295$$

$$G\% \text{ w.r.t } SP$$

$$= \frac{295}{420} \times 100$$

$$\simeq \frac{300}{400} \times 100 = 75\%$$

$$\text{Ans} = \underline{\underline{70\%}}$$

17. An object is sold for Rs.150 making a profit of 50% on the selling price. If the article is bought for Rs.25 less, what price must be marked so as to gain 40% by selling the object at marked price?

A) 90

B) 80

C) 50

D) 70

18. Joey has 12 eggs with him. He sells x at a profit of 10% and remaining at a loss of 10%. He gains 5% on the whole. What is the value of x ?

A) 7

B) 9

C) 8

D) 10

19. Some articles were bought at 6 articles for Rs.5 and sold at 5 articles for Rs.6. Gain percent is:

A) 30%

B) $33\frac{1}{3}\%$

C) 35%

✓ D) 44%

$$\text{CP of 6 art} = 5$$

$$\text{SP of 5 art} = 6$$

$$\text{CP of 1 art} = \frac{5}{6}$$

$$\text{SP of 1 art} = \frac{6}{5}$$

$$\begin{aligned} \text{G}\% &= \frac{\frac{6}{5} - \frac{5}{6}}{\frac{5}{6}} \times 100 \\ &= \frac{\frac{36 - 25}{30}}{\frac{5}{6}} \times 100 \\ &= \frac{11}{30} \times \frac{6}{5} \times 100 = 44\% \end{aligned}$$

20. The cost price of 20 articles is the same as the selling price of x articles. If the profit is 25%, then x is:

A) 15

B) 16

C) 18

D) 25

EXTRA QUESTIONS:

21. In an election between two candidates, 10% of votes were declared invalid. First candidate got 60% of the valid votes and a lead of 1800 votes. The total number of votes enrolled in that election was:

- A) 3000 votes B) 5400 votes C) 10000 votes D) 6667 votes

22. By selling 33 meters of cloth, one gains the selling price of 11 meters. Find the gain percent.

- A) 50% B) 60% C) 75% D) 66%

23. The difference between a discount of 35% and 2 successive discounts of 20% on a certain bill was Rs.22. Find the amount of the bill.

- A) Rs.1000 B) Rs.440 C) Rs.1100 D) Rs.2200

24. A vendor bought toffees at 6 for a rupee. How many for a rupee must he sell to gain 20%?

- A) 3 B) 4 C) 5 D) 6

25. Scrooge purchases 50 dozen eggs at Rs. 4 per dozen. Of these, 40 eggs were found broken. At what price should he sell the remaining eggs in order to make a profit of 5% on the whole?

- A) Rs.5/dozen B) Rs.4.5/dozen C) Rs.6/dozen D) Rs.4.25/dozen

ANSWER KEY – PERCENTAGE, PROFIT & LOSS

QUESTION	ANSWER	QUESTION	ANSWER	QUESTION	ANSWER
1	D	11	D	21	C
2	C	12	D	22	A
3	C	13	B	23	D
4	B	14	B	24	C
5	A	15	B	25	B
6	C	16	B		
7	B	17	D		
8	B	18	B		
9	D	19	D		
10	C	20	B		