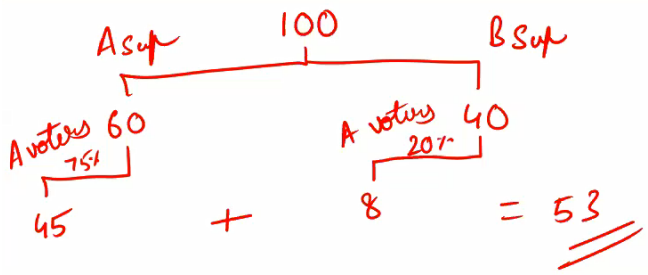
11. In a certain city, 60 percent of the registered voters are Party A supporters and the rest are Party B supporters. In an assembly election, if 75% of the registered Party A supporters and 20% of the registered Party B supporters are expected to vote for Candidate A, what percent of the registered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

$$\text{Change \%} = \frac{\text{Change}}{\text{Old Value}} \times 100$$

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

$$\frac{2 - \frac{1}{2}}{2} \times 100$$

$$= \frac{3/2}{2} \times 100 = 75\%$$

Num = 100

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

Correct = $100 \times 2 = 200$

$$\text{Error \%} = \frac{200 - 50}{200} \times 100 = \frac{150}{200} \times 100$$

$$= 75\%$$

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PROFIT & LOSS

CONCEPT – PROFIT & LOSS

$G \rightarrow SP > CP$

$L \rightarrow SP < CP$

$\text{Change\%} = \frac{NV - OV}{OV} \times 100$

$G/L\% = \frac{SP - CP}{CP} \times 100$

$= \frac{\text{Diff}}{CP} \times 100$

CP → MP —Discount→ SP

+10%

G, CP	L, CP
SP = +	SP = −
G, SP	L, SP
CP = −	CP = +

$G = 10\%$

$SP = \frac{110}{100} \times CP$

$CP = \frac{100}{110} \times SP$

$L = 10\%$

$SP = \frac{90}{100} \times CP$

$CP = \frac{100}{90} \times SP$

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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

$$Gain\% = \frac{5800 - 5500}{5500} \times 100$$

$$= \frac{300}{5500} \times 100^{20} = \frac{60}{11} = 5\frac{5}{11}\%$$

11)60(5
−55
5

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

A) 16% B) 25% C) 30% D) 33.33%

SP = 100

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

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

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

$= 25\%$

$L\% = \frac{L}{CP} \times 100$

SP = x

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

$CP = x + \frac{x}{3} = \frac{4x}{3}$

$$L\% = \frac{x/3}{4x/3} \times 100$$

$= 25\%$

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%

$CP = 100$

$MP = 50\% \uparrow CP = 150$

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

$SP = MP - Dis = 150 - 37.5$

$= 112.5$

$Gr\% = \frac{112.5 - 100}{100} \times 100 = 12.5\%$

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%~~ 80% D) 236%

$CP = 100$

$Gr = 320\% \text{ of } CP = 320$

$SP = 100 + 320 = 420$

$CP_2 = 125$

$Gr\% \text{ w.r.t. } SP = \frac{420 - 125}{420} \times 100 = \frac{295}{420} \times 100$

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

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

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) 75 B) 80 C) 50 D) 70

$SP = 150$

$G_1 = 50\%$ of $SP = 75$

$CP = 150 - 75 = 75$

$CP_2 = 75 - 25 = 50$

$G_1 = 40\%$

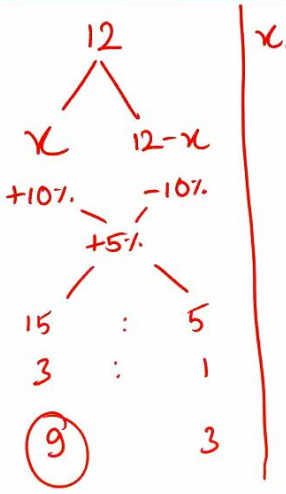
$SP = \frac{140}{100} \times CP = \frac{140}{100} \times 50 = 70$

$G_1 = 40\%$ of $50 = 20$

$SP = CP_2 + G_1 = 50 + 20 = 70$

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



$x \times \frac{110}{100} + (12-x) \times \frac{90}{100} = 12 \times \frac{105}{100}$

$110x + 12 \times 90 - 90x = 12 \times 105$

$20x = 12(105 - 90)$

$x = \frac{12 \times 15}{20} = 9$

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%

CP of 6 art = 5

SP of 5 art = 6

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

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

$G\% = \frac{\frac{6}{5} - \frac{5}{6}}{\frac{5}{6}} \times 100$

$= \frac{\frac{36-25}{30}}{\frac{5}{6}} \times 100$

$= \frac{11}{30} \times \frac{6}{5} \times 100$

$= 44\%$

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

CP of 20 art = SP of x art = P

CP of 1 art = $\frac{P}{20}$

SP of 1 art = $\frac{P}{x}$

G = 25%

$SP = \frac{125}{100} \times CP$

$\frac{P}{x} = \frac{125}{100} \times \frac{P}{20}$

$x = \frac{100 \times 20}{125} = 16$

SIMPLE INTEREST

- KOUSTAV

CONCEPT

Simple Interest (S.I.)

If the interest is calculated every year or every time period on the principal or the sum at the beginning of first year, then it is called **simple interest**.

Let Principal = P, Rate = R% per annum (p.a.) and Time = T years.

(i). Simple Interest = $\left(\frac{P \times R \times T}{100}\right)$

(ii). $P = \left(\frac{100 \times S.I.}{R \times T}\right)$; $R = \left(\frac{100 \times S.I.}{P \times T}\right)$ and $T = \left(\frac{100 \times S.I.}{P \times R}\right)$.

1. Joey took a loan from Chandler at the rate of 12% p.a. simple interest. After 3 years he had to pay Rs. 5400 as interest for the period. What was the principal amount borrowed by Joey?

A) 18000 B) 15000 C) 12000 D) 16000

$SI = \frac{PTR}{100}$

$P = \frac{100 \times SI}{T \times R} = \frac{100 \times 5400}{3 \times 12}$

$= 15000$

2. How much time will it take for an amount of Rs. 450 to yield Rs. 81 as interest at the rate of 4.5% p.a. simple interest?

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

$T = \frac{100 \times SI}{P \times R} = \frac{100 \times 81}{450 \times 4.5}$

$= 4$

3. A sum of Rs. 800 amounts to Rs. 920 in 3 years at SI. If the interest rate is increased by 3% it would amount to how much?

A) 992 B) 800 C) 900 D) 920

Increment of Rate = 3% of P

Increment per year = 3% of 800

= 24

Total Inc for 3 yrs = 24 × 3 = 72

New Amt = 920 + 72 = 992

4. A certain sum of money in simple interest amounts to Rs. 1008 in 2 years and to Rs. 1164 in 3 ½ years. Find the sum.

A) 208 B) 900 C) 804 D) 800

$A_2 = P + I_2 = 1008$ — (1)

$A_{3.5} = P + I_{3.5} = 1164$ — (2)

(2) − (1)

$I_{3.5} - I_2 = 1164 - 1008$

$I_{1.5} = 156$

$I_1 = \frac{156}{1.5}$

$I_2 = \frac{156}{1.5} \times 2 = 208$

$P = A_2 - I_2 = 1008 - 208$

$= 800$

5. In how many years will a sum double itself at 12.5% p.a. simple interest?

A) 4 B) 8 C) 10 D) 16

$P = 2x \Rightarrow \uparrow 1x \Rightarrow \uparrow 100\%$

Inc per year = 12.5%.

$T = \frac{100\%}{12.5\%} = 8$

6. A sum becomes 5 times in 20 years at SI. Find rate.

A) 10% B) 25% C) 40% D) 20%

$P = 5x \Rightarrow \uparrow 4x \Rightarrow \uparrow 400\%.$

$T = 20 \text{ yrs}$

Rate per year $= \frac{400\%}{20} = 20\%$

7. Guddu Bhaiya invested 1/3 of his capital at 7%, 1/4 at 8% and the remainder at 10% SI respectively. If his annual income becomes 510, the capital is

A. 6000 B. 5600 C. 5400 D. 6600

Remainder $= 1 - \frac{1}{3} - \frac{1}{4} = \frac{12-4-3}{12} = \frac{5}{12}$

Principal $= P$

Time $= 1$

$$\frac{P}{3} \times 1 \times \frac{7}{100} + \frac{P}{4} \times 1 \times \frac{8}{100} + \frac{5P}{12} \times 1 \times \frac{10}{100} = 510$$

$$\frac{7P}{3} + 2P + \frac{25P}{6} = 51000$$

$$\frac{14P + 12P + 25P}{6} = 51000$$

$$\frac{51P}{6} = 51000 \Rightarrow P = 6000$$

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8. Find the amount on a sum of Rs.20000 after 3 years if the simple interest rate offered for the 1st, 2nd and 3rd year were 15%, 10% and 6% respectively.

A. 23818 B. 23000 C. 26200 D. 26818

Total Rate $= 15\% + 10\% + 6\%$

$= 31\%$

20000

$\downarrow +31\% = 6200$

26200