Aptitude :-

1) What is 25% of 200?

Ans: $\frac{25}{100} \times 200 = 50$. (B)

2) If 40% of a number is 80, what is the number?

Ans:- $\frac{40}{100} \times x = 80 \Rightarrow x = \frac{80 \times 100}{40} = 200$ (c)

3) 75% of a number is 150. what is the number?

Ans:- $\frac{75}{100} \times x = 150 \Rightarrow x = \frac{150 \times 100}{75} = 200$ // (b)

4) What is 15% of 120?

Ans: $\frac{15}{100} \times 120 = \frac{180}{10} = 18$. (c)

5) If 30% of a number is 90, then the no. is?

Ans:- $\frac{30}{100} \times x = 90 \Rightarrow x = \frac{90 \times 100}{30} = 300$ // (c)

6) The price of a product increases from ₹200 to ₹250. what is the percentage increase?

Ans:- 200 ↓ 250 $\Rightarrow \frac{250-200}{200} \times 100 = \frac{50}{2} = 25$ // (b)

7) A salary increases from £ 40,000 to £ 50,000. What is the percentage increase?

Ans. % increase = $\frac{50,000 - 40,000}{40,000} \times 100$

$= \frac{10,000}{40,000} \times 100 = \frac{1}{\cancel{4}} \times \overset{25}{\cancel{100}} = \underline{25\%}$ (b)

8) The population of a town decreased from 10,000 to 8000. What is the percentage decrease?

Ans. % decrease $= \frac{2000}{10000} \times 100 = 20\%$ (decrease)

(c)

9) A book's price drops from £ 500 to £ 400. What is the percentage decrease?

Ans. % decrease = $\frac{\text{diff}}{\text{old value}} \times 100$

$= \frac{100}{\cancel{500}} \times \overset{20}{\cancel{100}} = 20\%$ (c)

10) If the cost price of an item is £600 and the selling price is £ 450, what is the percentage loss?

Ans. CP = 600

SP = 450

% loss = $\frac{CP - S.P}{CP} \times 100$

$= \frac{600 - 450}{600} \times 100$

$= 50 \frac{150}{\cancel{600}} \times \cancel{100} = \underline{25\%}$

(c)

21) If an article is sold at a profit of 25%, then the selling price is what % of the cost price?

Ans. 100 S.P = 125, C.P = 100 (25% P)

$$\% = \frac{SP}{CP} \times 100 = \frac{125}{100} \times 100 = 125\% \quad (b)$$

22) A shopkeeper allows a discount of 10% on the marked price and still makes a profit of 8%. If the marked price is ₹500, what is the cost price?

Ans ⇒ C.P → S.P; 100 → 108; M.P (−50) → (S.P); 500 (−10%) → 450

SP CP; 108 — 100; 450 — ?

$$\Rightarrow x = \frac{100 \times 450}{108} = \frac{45 \times 1000}{108}$$

$$= 416.67 \simeq 420/-$$

(b)

23) If the profit is 20% of the CP, then what is Profit % on the SP?

Ans $P = \frac{20}{100} CP = 0.2CP$

$SP - CP = 0.2CP \Rightarrow SP = 0.2CP + CP = 1.2CP$

$$\text{Pft. on the SP} = \frac{P}{S.P} \times 100$$

$$= \frac{0.2CP}{1.2CP} \times 100 = \frac{1}{6} \times 100 = 16.67\%$$

(a)

(18). If the population of a city increases by 25% and then decreases by 20%. What is the net (percentage) change?

Ans. $100 \xrightarrow[(+25)]{+25\%\uparrow} 125 \xrightarrow[(-25)]{\downarrow 20\%} 100$.

$\%$ change $= \frac{100-100}{100} \times 100 = 0\%$ (d)

(19). If a price increases by 40% and then decreases by 30%, the final change is

Ans. $100 \xrightarrow[(+40)]{40\%\uparrow} 140 \xrightarrow[(-42)]{30\%\downarrow} 98$

$(2\%)\downarrow$

$\%$ Net change $= \frac{\text{final} - \text{initial}}{\text{initial}} \times 100 = \frac{98-100}{100} \times 100$

$= (2\%\downarrow)$ decrease

(d)

(20). The salary of a person is first increased by 20% and the decreased by 10%. What is the overall (percentage change)?

Ans. $100 \xrightarrow[(+20)]{20\%\uparrow} 120 \xrightarrow[(-12)]{10\%\downarrow} 108$

$\%$ Net change $= \frac{108-100}{100} \times 100 = (+)8\%\uparrow$

(a)

So, % reduction = $\frac{1-0.8}{1} \times 100$ = 0.2 × 100

= 20% (a)

15) If A's income is 40% more than B's income, then B's income is what percentage less than A's?

Ans:- 100 ↑ (B) 140 ↑ (A)

Or 28.57%

(a)

% less = $\frac{40}{140} \times 100 = \frac{200}{7} \approx 30$

16) The price of an item is increased by 20% and then decreased by 10%. What is the net percentage change?

Ans:- 100 —(+20%)→ 120 —(−10%)→ 108

% change = $\frac{108-100}{100} \times 100$ = (+8%) increase (a)

(17). A number is increased by 30% and then decreased by 20%. What is the final % change?

Ans:- 100 —(+30%)→ 130 —(−20%)→ 104

% change = $\frac{104-100}{100} \times 100$ = ↑4% (increase)

(a)

$\frac{20}{100} \times 130$ = 26

130 − 26 = 104

11) section-3 : percentage comparison

which is greater: 30% of 400 (or) 40% of 300?

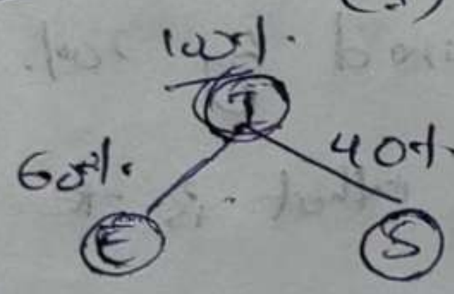
Sol:- $\frac{30}{100} \times 400 = 120$, $\frac{40}{100} \times 300 = 120$

(c) Both are equal.

12) A person spends 60% of his income and saves ₹8000. what is his total income?

Sol:- Total income = Expenditure + Savings (S)

(I) (E)



$\frac{40}{100} \times (I) = 8000$

$\Rightarrow I = \frac{8000 \times 100}{40} = 20000$

(c)

13) If A is 20% more than B, then B is how much less than A?

Sol:- 100 → B, 120 → A

$\frac{20}{120} \times 100 = 16.67\% = 16.67\%$ (b)

14) If the price of sugar is increased by 25%. by how much should the consumption be reduced to maintain the same expense?

Sol:- Initial P: ₹100 → 1kg

Now : ₹125 → 1kg

Sol:- ₹125 → 1kg ⇒ $x = \frac{1 \times 100}{125} = 4/5$

₹100 → 2(x)

$2x = 4/5 = 0.8$ kg

24) A product is marked as ₹1,200 and sold for ₹960. What is the percentage discount given?

Ans. Discount = M.P − S.P = 1200 − 960 = ₹240 //

M.P = 1200, S.P = 960.

(b) % Discount = $\frac{\text{Discount}}{MP} \times 100 = \frac{240}{1200} \times 100 = 20\%$

25) If an article is bought for ₹500 and sold for ₹650, what is the percentage profit?

Ans:- C.P = 500, S.P = 650

% P = $\frac{SP - CP}{CP} \times 100 = \frac{650 - 500}{500} \times 100$

$= \frac{150}{5} = 30\%$

(c)

26) If A's income is 20% more than B's then B's income is what % less than A's?

Ans:- (A) 120 (B) 100

$\frac{20}{120} \times 100 = \frac{100}{6} = 16.6\%$

(a)

29) If the ratio of boys to girls in a school is 3:2, what % of the total students are boys?

Ans: $\frac{b}{g} = \frac{3}{2}$, % boys = $\frac{3}{5} \times 100 = 60\%$

= (d)

$100 \xrightarrow{+20\%} 120$ Consumption

price

₹120 ⟹ 1l ⟹ $x = \frac{1 \times 100}{120} = \frac{5}{6}$

₹100 — ?(0.83)

$= 5/6 = 0.83l$

% reduction in consumption $= \frac{\text{diff}}{\text{initial consp}} \times 100$

$= \frac{1 - 0.83}{1} \times 100$

$= \left(1 - \frac{5}{6}\right) \times 100 = \frac{6-5}{6} \times 100$

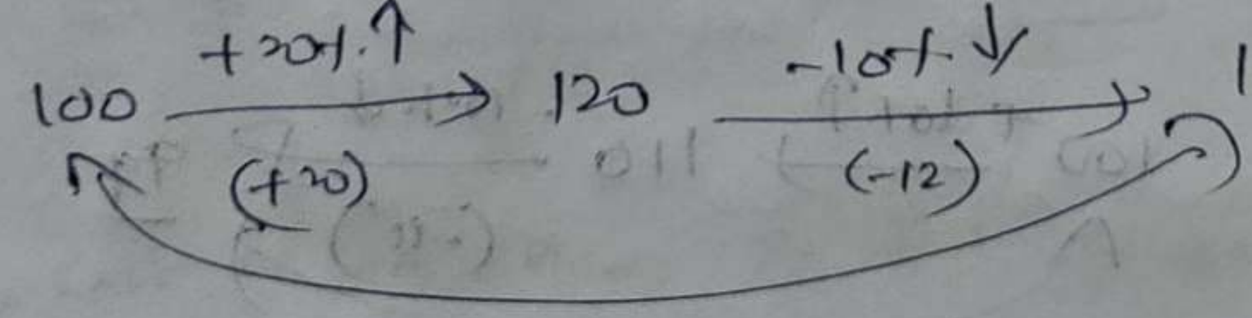
$= \frac{1}{6} \times 100.$

$= 16.67\%.$ (a)

35) The price of a tv was first increased by 20% and then decreased by 10%. what is the overall % change?

a) 8% ↑ b) 10% ↑ c) 10% ↓ d) No change

Ans:



% change $= \frac{108-100}{100} \times 100 = 8\% \uparrow$ (a)

34) A person spends 75% of his income and saves ₹ 5000. what is his total income?

Sol:-

Let Total Income = x

Given, Savings (S) = 5000

He spends (Expenditure E) is 75%. that means

Savings is 100 - 75% => 25%

$\Rightarrow \frac{25}{100} \times x = 5000$

$\Rightarrow$ Total Income $= \frac{5000 \times 100}{25}$

$= 20,000$ (c)

35) If 30% of a no. is 90, what is 60% of the same no.?

a) 120 b) 150 c) 180 d) 200

Sol:- $\frac{30}{100} x = 90$, $\left.\begin{array}{l} \frac{60}{100} \times 300 \Rightarrow ? \\ \Rightarrow 180 \text{ (c)} \end{array}\right\}$

$\Rightarrow x = \frac{90 \times 100}{30}$

$x = 300$,

35) The price of petrol increases by 20%. By what % should Consumption be reduced to maintain the same expense?

a) 16.67% b) 18% c) 20% d) 25%

Sol:-

b) The price of an article is reduced by 30%. By what % must the new price be increased to restore the original price?

a) 30% b) 42.85% c) 50% d) 60%

Ans. 100 → -30% → 70 → ?? → 100

$$+\% = \frac{30}{70} \times 100 = \frac{3000}{70} = 42.85\%$$

$\approx$ 43% (or 42.86%)

(31) If a no. is increased by 50% and then decreased by 50%, what is the net % change?

Ans. 100 → (+50) → 150 → (-50) → 75

$$\text{Net } \%\text{change} = \frac{\text{Diff}}{\text{old value}} \times 100$$

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

$= 25\%$ decrease (b)

32) If A is 20% taller than B, then B is shorter than A by

a) 16.67% b) 18% c) 20% d) 25%

Ans. B → 100, A → 120

$$\frac{20}{120} \times 100 = \frac{100}{6} = 16.67\%$$

$\therefore$ B is shorter than A by (a)

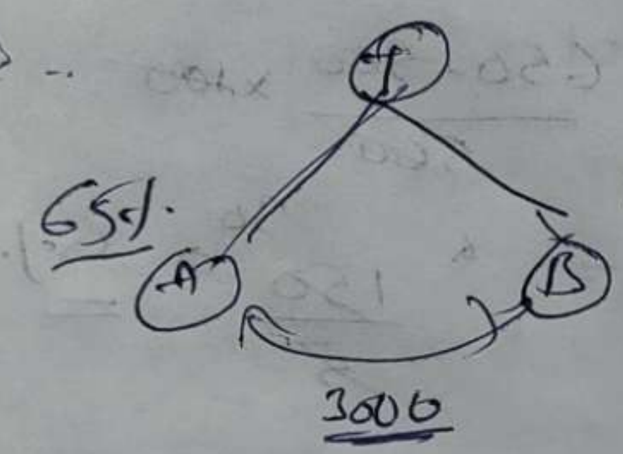
28) A city's population increased from 2,00,000 to 2,50,000 in 2 years. What % increase?

a) 20% b) 25% c) 30% d) 35%

Ans: % increase = $\frac{50,000}{2,00,000} \times 100 = \frac{50}{2} = 25\%$

29) In an election, a candidate gets 65% of the total votes and wins by 3000 votes. How many total votes were cast?

Ans:



A's votes 65%

B's votes 100 − 65 = 35%

win by = 65% of total votes − 35% of total votes
(A) (B)

∴ A wins by 3000 votes (Hence)

i.e., A − B = 3000

$3000 = \frac{65}{100}(x) - \frac{35}{100}(x)$

$3000 = 65x - 35x$

$30x$ of total votes

$\frac{30}{100}(x) = 3000$

$x = \frac{3000 \times 10}{3} = 10000$

46) If CP of an item is ₹200 & SP is ₹250, what is profit %?

Ans CP = 200, SP = 250

$$\text{Profit \%} = \frac{250-200}{200} \times 100 = \frac{50}{200} \times 100 = 25\%$$

47) A man sells an article for ₹720 at a profit of 20%. Find the CP.

Ans. SP = 720 / P = 20%

$$100 \longrightarrow 120 \Rightarrow CP = \frac{100 \times 720}{120} = 600 \quad (a)$$

$$? \longrightarrow 720$$

48) A shopkeeper sells an item at a loss of 15%. If the CP is ₹500, find the SP?

a) 400 b) 425 c) 450 d) 475

Ans. l = 15%, CP = 500

$$100 \xrightarrow{-15\%} 85 \Rightarrow SP = \frac{85 \times 500}{100} = 425 \quad (b)$$

$$500 \longrightarrow ?$$

43) The population of a town increases by 10% every year. If the current population is 10,000, what will it be after 3 years?

Ans. 100 —10%→ 110 —→

$\Rightarrow 10000 \times \frac{110}{100} \times \frac{110}{100} \times \frac{110}{100}$

$\Rightarrow 11 \times 11 \times 110 \Rightarrow 13310$

44) If 15% of A is equal to 20% B, then A:B is

a) 3:4 b) 4:3 c) 3:5 d) 5:3

Ans: $\frac{15}{100} \times A = \frac{20}{100} \times B$ $\left\{ \frac{A}{B} = ? \right.$

$\frac{A}{B} = \frac{20}{100} \times \frac{100}{15} = \frac{4}{3} \Rightarrow 4:3$ (b)

45) If the cp of an item is ₹800 & profit made is 25%, what is s.p?

a) ₹900 b) ₹1000 c) ₹1050 d) ₹1100

Ans: CP = 800 | P% = 25%

100 → 125

800 → ? $\Rightarrow x = \frac{125 \times 800}{100}$

$= 125 \times 8 = ₹1000$ (b)

Ans) $P = \frac{220}{100}(200+20)$

$\Rightarrow \frac{40}{100}(T) = 220 \Rightarrow$ Total marks $\Rightarrow \frac{220 \times 100}{40} = 550$ (b)

(or)

220 → 40%

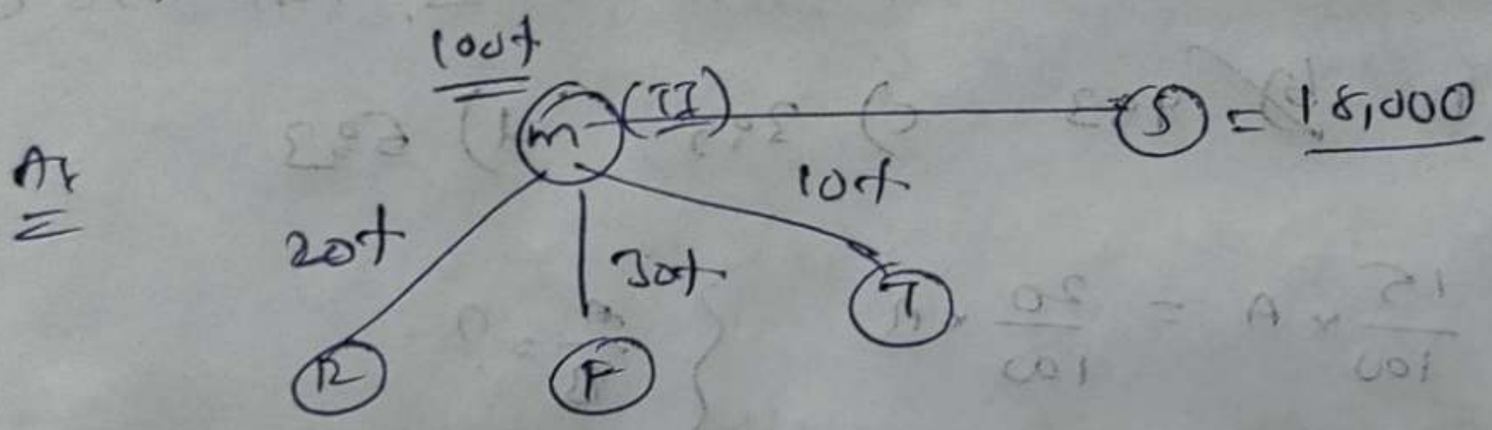
? → 100%

$\Rightarrow x = \frac{100 \times 220}{40}$

41) A man spends 20% of his salary on rent, 20% on food, and 10% on transport. If he saves ₹18000, what is his salary?

a) 40,000 b) 45,000 c) 50,000 d) 55,000

Ans)



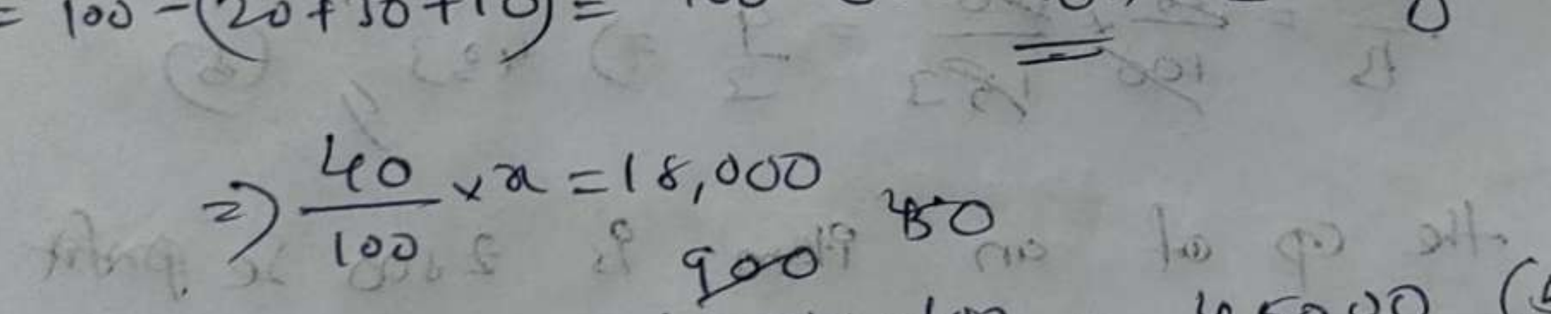
$\therefore S = 100 - (20+30+10) = 100 - 60 = 40\%$ is savings of total

$\Rightarrow \frac{40}{100} \times x = 18,000$

$\Rightarrow x = \frac{18,000 \times 100}{40} = 45000$ (b)

42) The cost of an item is first increased by 30% and then decreased by 30%. what is the overall % change?

Ans)



% change $= \frac{100-91}{100} \times 100 = 9\%$ (↓) decreased

37) A shopkeeper marks an item 25% above the cp. and gives a 20% discount. What is his profit / loss %?

a) 0% b) 2% profit c) 5% profit d) 10% loss

Ans. $100 \xrightarrow{(+25\%)} 125 \xrightarrow[(-25)]{(-20\%)} 100$

0% change (No profit / loss)

38) If the cp of an article is ₹500 and it is sold at a loss of 20%, what is the SP?

Ans: $CP = 500 \xrightarrow[(100)]{-20\%} 400$

39) If a salary is increased by 10% and then decreased by 10%, what is the final % change?

(a) 0% b) 1% ↓ c) 11% ↑ d) 2% ↓

Ans. $100 \xrightarrow{+10\% \uparrow} 110 \xrightarrow[(-11)]{-10\% \downarrow} 99$

$(+1\% \downarrow)$

40) A student needs 40% marks to pass. He gets 200 marks and fails by 20 marks. What are the total marks?

a) 500 b) 550 c) 600 d) 650

49) A man purchased a cycle for ₹1500 & sold it at a loss of 10%. what was the SP?

Sol. $CP = 1500$, $l = 10\%$. $SP = ?$

$100 \xrightarrow{-10\%} 90$

$1500 \longrightarrow ?$

$\Rightarrow SP = \frac{90 \times 1500}{100}$

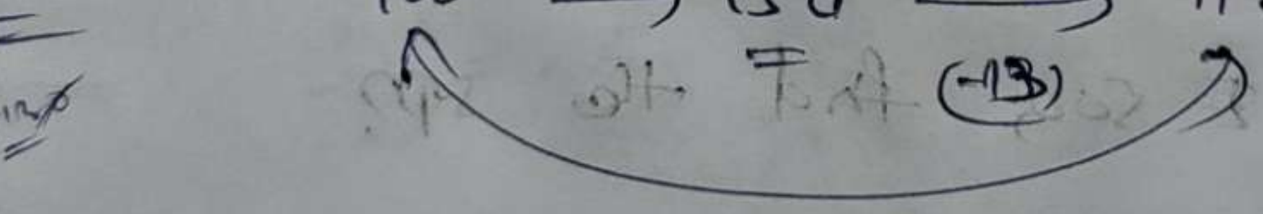
$= 90 \times 15$

$= 1350$

50) A trader marks his goods at 30% above the CP and allows a discount of 10%. what is his gain %?

a) 17% b) 18% c) 19% d) 20%

Sol.



17% ↑ (+)