Assignment – 1.

Percentage & Profit & Loss Question Bank.

① What is 25% of 200?

→ $\frac{25}{100} = \frac{1}{4}$

$\therefore \frac{1}{4} \times 200$

Ans = 50%

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

→ $\frac{40}{100} \times x = 80$

$40 \times x = 80 \times 100$

$40x = 8000$

$x = \frac{8000}{40}$

$x = 200$

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

→ suppose no = x.

$\frac{75}{100} \times x = 150$

$75x = 15000$

$x = \frac{15000}{75}$

$x = 200$

④ What is 15% of 120?

→ $\frac{15}{100} \times 120$

$= 18$

⑤ If 30% of a number is 90, then the number is:

→ Suppose number $= a$.

$\frac{30}{100} \times a = 90$

$30 \times a = 9000$

$a = \frac{9000}{30}$

$= 300$

⑥ The Price of Product Increases from ₹200 to ₹250. What is the Percentage increase?

→ $\%\text{change} = \frac{\text{New} - \text{Old}}{\text{Old}} \times 100$

$= \frac{250 - 200}{200} \times 100$

$= \frac{50}{2}$

$= 25\%$

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

→ % change = $\frac{\text{New salary} - \text{old sal}}{\text{old salary}} \times 100$

$= \frac{50,000 - 40000}{40000} \times 100$

$= \frac{10000}{40000} \times 100$

$= 25\%$

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

→ % change = $\frac{\text{old} - \text{New}}{\text{old}} \times 100$

$= \frac{10,000 - 8000}{10,000} \times 100$

$= \frac{2000}{100}$

$= 20\%$

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

→ % change = $\frac{\text{old} - \text{new}}{\text{old}} \times 100$

$= \frac{500 - 400}{500} \times 100$

$= \frac{100}{5}$

$= 20\%$

(10) If the cost price of an item is ₹600 & the selling price is ₹450. What is percentage loss.

→ Percentage loss = $\left(\frac{\text{cost price} - \text{selling price}}{\text{cost price}}\right) \times 100$

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

$= \frac{150}{6}$

$= 25\%$

(11) What is greater: 30% of 400 or 40% of 300

→ $\frac{30}{100} \times 400 = \frac{40}{100} \times 300$

$= 120 = 120$

$=$ Both are equal.

(12) A person spends 60% of his income & saves ₹ 8,000. what is his total income?

→ suppose total income = ~~100~~ x

~~60%~~ 40% of x = 8000

$\frac{40}{100} \times x = 8000$

$40 \times x = 8000 \times 100$

$x = \frac{800000}{40}$

$= 20,000$

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

→ A = B + 20% of B

A = B + 1/5 of B

= 1.2B

$\frac{A-B}{A} \times 100$

$\frac{1.2B - B}{1.2B} \times 100$

$\frac{0.2B}{1.2B} \times 100$

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

= 16.67%

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

→ Suppose Sugar = 100

increase by 25%.

$\therefore 100 + \frac{25}{100} \times 100 = 125.$

~~P X C~~ = ~~125 P X C~~ Expense = Price × Quantity

~~C~~ = $\frac{\cancel{C}}{\cancel{125}}$ $\frac{25}{125} \times 100$

~~C~~ = = 20%.

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

→ A's income − B's income = 40%.

percent. of A to B = A/B × 100%.

Let the income of A = ~~100~~

then, B's income = ~~60~~ 100

A's income − B's income = 40%

= $\frac{\text{Value}}{\text{Base value}} \times 100$

= $\frac{40}{140} \times 100$

= $\frac{2}{7} \times 100$

= $\frac{200}{7} = 28.57$

~~40x~~

~~100x~~

$\frac{2}{5} \times 100$

$\frac{40x}{140x} \times 100$

= $\frac{2}{7} \times 100$

= $\frac{400}{14}$

= 28.57

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

→ Initial price = 100

increased by 20%

$\therefore$ 120

then, decreased by 10%

$\therefore \frac{1}{10} \times 120 = 120 - 12 = 108$

% change $= \frac{\text{New price} - \text{Initial price}}{\text{Initial price}} \times 100$

$= \frac{108 - 100}{100} \times 100$

$=$ 8% increased.

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

→ Suppose number = 100.

increased by 30%

$100 + \frac{30}{100} \times 100 = 130$

decreased by 20%

$\therefore \frac{1}{5} \times 130 = 130 - 26$

$= 104$

% change $= \frac{104 - 100}{100} \times 100$

$=$ 4% increased

(18) If the population of city increased by 25% & then decreased by 20%, what is the net percentage change?

→ Population of city = 100

increased by 25%

∴ New population = 125.

decreased by 20%.

$\therefore \frac{1}{5} \times 125 = 25.$

$= 125 - 25 = 100$

$\%\ \text{change} = \frac{100 - 100}{100} \times 100$

$= 0\%$

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

→ Initial price = 100

increased by 40%.

New price = 140

decrease by 30%.

$\therefore \frac{30}{100} : \frac{3}{10} \times 140$

$= 140 - 42$

$= 98$

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

$= -2.$ ∴ 2% decreased

(20) The salary of a person is first increased by 20% & then decreased by 10%. What is the overall Percentage change.

→ Suppose Salary = 100

increase 20%.

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

decrease by 10%.

$$\frac{1}{10} \times 120$$

$$= 120 - 12$$

$$= 108$$

$$\%\text{change} = \frac{108 - 100}{100} \times 100$$

$$= 8\% \text{ increase.}$$

(21) If an article is sold at a profit of 25% then the selling price is what Percentage of the Cost price?

→ Profit = 25%

Cost Price = 100

$\therefore$ selling price = 100 + 25 = 125.

$$\text{Profit} = \frac{125 - 100}{100} \times 100$$

$$= 25$$

$$SP = CP \times \left(1 + \frac{25}{100}\right)$$

$$SP = CP \times 1.25$$

$\therefore SP = 125\%$.

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

→ 500

~~500 — 10~~

SP of artical = $500 \times \frac{90}{100}$

= 450

C.P of artical = $450 \times \frac{100}{108}$

= $\frac{45,000}{108}$

= 420

(23) If the profit is 20% of the cost price, then what is the profit percentage on selling price.

→ Profit is 20%.
cost
~~selling~~ price = 100

S.P = 100 + 20 = 120%.

~~SP = CP * (1 + 100/20)~~

~~= CP * 5~~

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

= 16.67 %

(24) A Product is marked at ₹1200 & sold for 960. what is percentage discount given?

→ MP = 1200

SP = 960

Discount ⇒ 1200 - 960

= 240

Discount % = $\left(\frac{\text{marked price - selling}}{\text{marked}}\right)$ x100

= $\left(\frac{240}{1200}\right)$ x100

= 20%

(25) If an artical is bought for ₹ 500 & sold for ₹ 650, what is the percentage profit?

→ Profit = $\frac{650-500}{500}$ x100

= $\frac{150}{5}$

= 30 %

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

→ let B's income = 100

A's income 20%

A's income = 100 + 20 = 120

difference = 120 - 100

= 20 ₹

$$per = \frac{value}{Base\ value} \times 100$$

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

$$= \frac{100}{6}$$

$$= 16.67\%$$

(27) If the ratio of boys to girls in a school is 3:2 what percentage of the total students are boys?

→ ∴ Boys = 3

Girls = 2

3 + 2 = 5

$$\%\ of\ boys = \frac{3}{5} \times 100$$

$$= 3 \times 20$$

$$= 60\%$$

(28) A city's population increased from 2,00000 to 2,50,000 in 2 years. what is the percentage increase

→ Increased population

$= 250,000 - 200000$

$= 50,000$

$= \frac{\text{increase population}}{\text{last year population}} \times 100$

$= \frac{50,000}{200000} \times 100$

$= 25\%$

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

→ Let total vote $= x$

winner $= 65\% \text{ of } x$

Loser's vote

$65\% \text{ of } x$

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

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

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

$0.3x = 3000$

$65 \times \frac{x}{100}$

$53x$

20

$x \times 35 = 3000$

100

$x \times \frac{7}{20} = 3000$

150

$x = \frac{3000}{0.3}$

$x = 10,000$

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

→ Let, Price = 100

Decreased / reduced

30%

Newprice = 100 − 30 = 70%

42.86

∴ 50 ~~30%~~ price be increased to store original price.

(31)

70 + (X% of 70) = 100

$70 + \frac{X}{100} \times 70 = 100$

$\frac{X}{100} \times 70 = 30$

$X = \frac{30 \times 100}{70}$

$= 42.86\%$

(31) If a number increased by 50% & then decreased by 50% what is net percent change?

→ number = ~~x~~ 100

increased 50%.

∴ 100 + 50 = 150

decreased by 50%.

$\frac{50}{100} = \frac{5}{10} \times 150$

$= 75$

150 − 75

$= 75$

$$\% \text{ change} = \frac{\text{old} - \text{New}}{\text{old}} \times 100$$

$$= \frac{\cancel{75} \; 100 - 75}{100} \times 100$$

$= 25\%$ decrease.

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

→ Let B is hight = 100

A is 20% taller

$100 + 20 = 120$

$$\therefore \frac{\text{value}}{\text{Base value}} \times 100$$

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

$$= \frac{100}{6}$$

$$= 16.67\%.$$

(33) If 30% of a number is 90, what is 60% of the same number.

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

$$30x = 900$$

$$x = \frac{900}{30}$$

$$\boxed{x = 300}$$

$$\therefore \frac{60}{100} \times 300$$

$\therefore 180$

~~$x = 300 \times 0.6$~~

$\frac{90}{30}$

60% of the number

$390/30 * 60$

180.

or

300×0.6

$= 180$

(84) A person spends 75% of his income & save 5000, what is his total income.

→ 35% of $x = 5000$

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

$25x = 5000 \times 100$

$25x = 500000$ 50

$x = \frac{5000000}{35}$

x

$25x = 5000 \times 100$

$x = \frac{5,00,000}{25}$

$= 20,000$

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

→ % less = $\frac{a}{100+a} \times 100$

$= \frac{20}{100+20} \times 100$

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

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

$= 16.67\%$

(36) The price of TV was first increased by 20% & then decrease by 10%. What is the overall % change.

→ Let price of TV = 100

increase 20% =

$= 100 + 20 = 120$

Decreased by 10%.

$= \frac{1}{10} \times 120$

$= 20$

$120 - 20 = 100$

% change = $\frac{\text{New} - \text{old}}{\text{old}} \times 100$

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

$= \frac{0}{}$

∴ Ans: No change.

(37) A shopkeeper marks an item 25% above the cost price & gives a 20% discount. what is his Profit / loss percentage?

→ let CP = 100

100 - 20 = 80

~~S.P = 80~~

~~C.P = 125~~

~~L %~~ = ~~S.P - C.P~~ $\frac{CP - SP}{CP} \times 100$

$= \frac{125 - 80}{125} \times 100$

= let CP = 100

= MP = 125

Discount = 20% = 25₹

$\frac{20}{100} \times 125$

selling price = 100

= 0%

(38) If the cost price of an article is ₹ 500 & it sold at a loss of 20%. what is selling price?

→ CP = 500

Loss = 20%

$\frac{20}{100} \times 500 = 100$

SP = 500 - 100

= 400

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

→ Let, Salary = 100

increased by 10%

$\frac{10}{100} \times 100 = 100 + 10$

$= 110$

decreased by 10%.

$\frac{10}{100} \times 110$

$= 11$

$\therefore 110 - 11 = 99$

$\therefore$ change $= \frac{\text{new} - \text{old}}{\text{old}} \times 100$

$= \frac{99 - 100}{100} \times 100$

$= -1$

$\therefore$ 1% decreased.

(40) A student needs 40% marks to pass. He gets 200 marks & fails by 20 marks. what are total marks?

→ Student get 200 marks & failed by 20 marks

$\Rightarrow$ Passing marks $= 200 + 20 = 220$

100% → 220 | 40 × 100 =

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

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

$= x \times 40 = 220 \times 100$

$x40 = 22000$

$x = \frac{22000}{40}$

$x = 550$

(41) A man spends 20% of his salary on rent, 30% on food & 10% on transport If he saves ₹ 18,000 what is his salary?

→ 20 + 30 + 10 = 60%

if his salary = 100 = x

So, first 40% = ₹ 18000

$\frac{40}{100} \times x = 18000$

$40x = \frac{1800000}{40}$

$x = 45,000$

(42) The cost of an items is first increased by 30% & then decreased by 30%. what is overall percentage change?

→ cost of an item = 100

increased by 30% = $\frac{30}{100} \times 100 = 30$

∴ 100 + 30 = 130

decrease by 30%

$\frac{30}{100} \times 130 = 39$

130 - 39 = 91

% change = $\frac{\text{new - old value}}{\text{old}} \times 100$

$= \frac{91 - 100}{100} \times 100$

$= -9$

∴ 9% decreased.

(43) The population of a town increased by 10% ever year, if the current population is 10,000 what will it be after 3 years?

→ total population = x

increased by 10%.

$x \times \frac{110}{100} = 10,000$

$$x \times \frac{110}{100} \times \frac{110}{100} \times \frac{110}{100} = 10{,}000$$

$$\frac{11}{10} \times \frac{11}{10} \times \frac{11}{10} = 10{,}000$$

$$x = 10{,}000 \times \frac{10}{11} \times \frac{10}{11} \times \frac{10}{11}$$

$P = 10{,}000 \quad r = 10\% \quad n = 3$

$$A = P\left[\left(1 + \frac{r}{100}\right)^n\right]$$

$$A = 10{,}000\left[\left(1 + \frac{10}{100}\right)^3\right]$$

$$A = 10{,}000 + 1.331$$

$$= 13{,}310$$

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

$$\longrightarrow \frac{15}{100} \times A = \frac{20}{100} \times B$$

$$\frac{15A}{100} = \frac{20B}{100}$$

$$15A = 20B$$

$$A/B = \frac{15}{20} \quad \frac{20}{15} \quad \frac{15}{20}$$

$$= 3/4 \qquad 3:4$$

$\therefore A:B = 4:3$ (or) $3:4$

(45) If the cost Price of an item is ₹800 & the profit made is 25%, what is selling price?

→ CP = 800

Profit = 25%

$= \frac{25}{100} \times 800 =$

$= 200$

SP = CP + P

$= 800 + 200$

$= 1000$

(46) If the cost price of an item is ₹20 & selling Price is ₹250, what is Profit %.

→ C.P = 200

SP = 250

$\%\text{Profit} = \frac{\text{selling Price} - \text{cost Price}}{\text{cost Price}}$

$= \frac{250 - 200}{200} \times 100$

$= \frac{50}{2}$

$= 25\%$

(47) A man sells an article for ₹720 at profit of 20%. find cost price.

$\Rightarrow$ S.P = 720

profit = 20%. Cost Price = x

$= \frac{20}{100} \times 700 = 100+20$

$= 120$

~~cost price = 720 - 144~~

$=$

selling price = cost price x [Profit) + 100)/100]

$720 = x \times \left(\frac{120}{100}\right)^{6}_{5}$

$720 = \frac{6x}{5}$

$x = \frac{720 \times 5}{6}$

$= 600$

(48) A shopkeeper sells an item at a loss of 15%. If the cost price is ₹500, find the selling price?

$\rightarrow$ C.P = 500

Selling price = cost Price $-$ (loss % x cost price)/100