

Topic : Percentage & Profit & loss.

Q1. What is 25% of 200?

- a. 25 b. ~~50~~
 - c. 75 d. 100
- ~~25% of 200~~ = $\frac{25}{100} \times 200$
 $= \underline{\underline{50}}$

Q2. If 40% of a number is 80, what is the number?

- a. 100 b. 150
- c. ~~200~~ d. 250

~~40% of 80~~ = $\frac{40}{100} \times 80$
 $= \underline{\underline{32}}$

$\frac{40}{100} \times x = 80$

$0.4x = 80$

$x = \frac{80}{0.4}$ $= \underline{\underline{200}}$

Q3. 75% of number is 150. What is the number?

- a. 175 b. ~~200~~
- c. 225 d. 250

~~75% of 150~~ = $\frac{75}{100} \times x = 150$

$7.5x = 150$

$x = \frac{150}{7.5}$ $= \frac{150}{7.5}$ $\therefore x = \frac{150 \times 100}{75}$

$\boxed{x = 200}$

Q4. What is 15% of 120?

- a. 12 b. 15

c. 18

- d. 20

$$\frac{15}{100} \times 120 = \frac{15 \times 12}{10} = 18$$

Q5. If 30% of a number is 90 then the number is:

- a. 200

- b. 250

- c. 300

- d. 350

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

$$\frac{3}{10} \times x = 90$$

$$x = \frac{90 \times 10}{3}$$

$$x = 300$$

Q6 The price of a product increases from Rs 200 to 250 Rs. What is the percentage increase?

- a. 20%

- b. 25%

- c. 30%

- d. 35%

$$\text{Percentage increase} = \frac{\text{New Price} - \text{Old Price}}{\text{Old Price}} \times 100$$

Old price = 200

New price = 250

$$\begin{aligned}\% \text{ increase} &= \frac{250 - 200}{200} \times 100 \\ &= \frac{50}{200} \times 100 \\ &= \underline{\underline{25\%}}\end{aligned}$$

Q7. A Salary increase from 240,000Rs to 30000Rs
What is the % increase?

- a. 20% b. 25% c. 30% d. 35%

Old Price = 40,000

New Price = 50,000

$$\begin{aligned}\% \text{ increase} &= \frac{50000 - 40000}{40000} \times 100 \\ &= \frac{10,000}{40000} \times 100 \\ &= \underline{\underline{25\%}}\end{aligned}$$

Q8. The population of a town decreased from 10,000 to 8,000. What is the percentage decrease?

- a. 10% b. 15% c. 20% d. 25%

Old price = 10,000

New price = 8,000

$$\begin{aligned}\% \text{ decrease} &= \frac{10000 - 8000}{10000} \times 100 \\ &= \frac{2000}{10000} \times 100 \\ &= \underline{\underline{20\%}}\end{aligned}$$

Q9 A book price drops from 500Rs to 400Rs
what is % decrease

- a. 10% b. 15% c. 20% d. 25%

$$\begin{aligned}\% \text{ decrease} &= \frac{500 - 400}{500} \times 100 \\ &= \frac{100}{500} \times 100 \\ &= \underline{\underline{20\%}}\end{aligned}$$

Q10 If the cost price of an item is 600Rs &
the selling price is 450Rs what is the %
loss?

- a. 10% b. 22.5% c. 25% d. 30%

$$\begin{aligned}\text{Loss \%} &= \frac{C.P - S.P}{C.P} \times 100 \\ &= \frac{600 - 450}{600} \times 100 \\ &= \frac{150}{600} \times 100 \\ &= \underline{\underline{25\%}}\end{aligned}$$

Percentage Comparison.

11. What is greater : 30% of 400 or 40% of 300?

- a. 30% of 400
- b. 40% of 300.
- c. Both are equal
- d. Cannot be determined

$$\frac{30}{100} \times 400 = 120 \quad \frac{40}{100} \times 300 = 120$$

12. A person spends 60% of his income & saves Rs 8000. What is his total income

- a. 15,000
- b. 18,000
- c. 20,000
- d. 25,000

$$\text{Savings} = 100\% - 60\% = 40\% \text{ of income}$$

$$40\% \text{ of } X = 8,000$$

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

$$X = \frac{2000}{8000} \times 100$$

$$X = 20,000$$

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

- a. 20%
- b. 16.67%
- c. 23%
- d. 14%

$$A = B + 20\% \text{ of } B$$

$$= 100 + 20 = 120$$

$$\% \text{ decrease} = \left(\frac{A - B}{A} \right) \times 100$$

$$= \left(\frac{120 - 100}{120} \right) \times 100$$

$$= 16.67\%$$

Q14. If the price of sugar is increased by 25% by how much should the consumption be reduced to maintain the same expen-

- a. 20% b. 25% c. 30% d. 15%

$$\text{New Con.} = \frac{OP}{NP} \times O.C$$

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

$$= \frac{1000}{125} \times 80$$

Reduction

$$100 - 80 = 20$$

$$\left(\frac{20}{100}\right) \times 100$$

$$\underline{\underline{20\%}}$$

Q15. If A's income is 40% more than B's income then B's income is what % less than A's?

- a. 28.57% b. 30% c. 33.33% d. 40%

Let B = 100

$$\begin{aligned} A'S &= 100 + 40 \text{ of } 100 \\ &= 140 \end{aligned}$$

$$\% \text{ decrease} = \frac{140 - 100}{140} \times 100$$

$$= \frac{40}{140} \times 100 = 28.57\%$$

Q16. The price of an item is increased by 20% and then decreased by 10%. What is the % change?

a. 8% inc b. 8% dec c. 10% inc d. 10% dec

$$\frac{a+b+\frac{ab}{100}}{100}$$

$$a = 20 \text{ inc}$$

$$b = -10 \text{ dec}$$

$$\begin{aligned} &= 20 + (-10) + \frac{(20 \times -10)}{100} \\ &= 20 - 10 - 2 \\ &= \underline{\underline{8\% \text{ increase}}} \end{aligned}$$

Q17. A Number is increased by 30% and then decreased by 20%. What is the final % change?

a. 4% inc b. 8% inc c. 10% inc d. 12% dec

$$\begin{aligned} a &= 30 \text{ inc} \\ b &= -20 \text{ dec} \end{aligned}$$

$$\frac{a+b+\frac{ab}{100}}{100}$$

$$\begin{aligned} &= 30 + (-20) + \frac{(30 \times -20)}{100} \\ &= 30 - 20 - 6 \\ &= \underline{\underline{4\% \text{ increase}}} \end{aligned}$$

Q18 If the population of a city increase by 25% & then decrease by 20%, what is the net % change?

a. 0% b. 5% decrease c. 10% decrease
d. 5% increased

$$a = 25 \text{ (increase)}$$

$$b = -20 \text{ (decrease)}$$

$$\frac{a+b+ab}{100}$$

$$25 + (-20) + \frac{(25 \times -20)}{100}$$

$$= 25 - 20 - 5$$

$$= \underline{\underline{-5\%}}$$

Q19. If a price increase by 40% & then decreases by 30% the final change is

- a. 2% increase
- b. 10% increase
- c. 10% decrease
- d. 2% decrease

$$a = 40 \text{ inc}$$

$$b = -30 \text{ dec}$$

$$= 40 - 30 + \frac{(40 \times -30)}{100}$$

$$= 40 - 30 - 12$$

$$= -2\% \text{ dec}$$

Q20. The salary of a person is first increased by 20% & then decreased by 10%. What is the overall % change?

$$a = \underline{\underline{20\% \text{ inc}}}$$

$$b = 10\% \text{ inc}$$

$$c = 10\% \text{ dec}$$

$$d = \text{No change}$$

$$a = 20 \text{ inc}$$

$$b = -10 \text{ dec}$$

$$= 20 - 10 + \frac{(20 \times -10)}{100}$$

$$= 20 - 10 - 2$$

$$= \underline{\underline{-2\%}}$$

Q21. If an article is sold at a profit of 25%, then the selling price is what % of the cost price?

- a. 100% b. 125% c. 150% d. 175%

$$SP = CP + 25\% \text{ of } CP$$

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

$$= CP \times 1.25$$

$$= 125\% \text{ of } CP$$

Q22 A shopkeeper allows a discount of 10% on the marked price and still makes a profit of 8%. If the marked price is Rs 500, what is the cost price?

- a. Rs 400 b. Rs 420 c. 450 Rs d. 460 Rs

$$SP = 500 - (10\% \text{ of } 500)$$

$$= 500 - 50$$

$$= 450$$

$$SP = CP + 8\% \text{ of } CP$$

$$450 = CP + \left(1 + \frac{8}{100}\right)$$

$$450 = CP \times 1.08$$

$$CP = \frac{450}{1.08} = 416.67 \approx 420$$

Q23. If the profit is 20% of the CP, then what is the profit % on the SP?

- a. 16.67% b. 18% c. 20% d. 22%

$$CP = 100 \quad P = 20\% \text{ of } 100 = 20 \text{ Rs}$$

$$SP = CP + P = 100 + 20 = 120 \text{ Rs}$$

$$\% SP = \left(\frac{P}{SP} \right) \times 100$$

$$= \left(\frac{20}{120} \right) \times 100$$

$$= 16.67\%$$

Q24. A product is marked at Rs 1,200 & sold for 2Rs 960 - what is the % discount given?

- a. 15% b. 20% c. 25% d. 30%

$$\text{Marked P} = 1200 \quad SP = 960$$

$$\text{Discount \%} = \frac{MP - SP}{MP} \times 100$$

$$= \frac{1200 - 960}{1200} \times 100$$

$$= \left(\frac{240}{1200} \right) \times 100 = 20\%$$

Q23. If the profit is 20% of the CP, then what is the profit % on the SP?

- a. 16.67% b. 18% c. 20% d. 22%

25. If an article is bought for 500Rs & sold for 650Rs what is the % profit?

- a. 20% b. 25% c. 30% d. 35%

$$CP = 500 \quad SP = 650$$

$$\text{Profit \%} = \frac{SP - CP}{CP} \times 100$$

$$= \frac{650 - 500}{500} \times 100$$

$$= \frac{150}{500} \times 100 = 30\%$$

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

- a. 16.67% b. 18% c. 20% d. 25%

$$B's \text{ income} = 100$$

$$A's \text{ income} = 100 + 20\% \text{ of } 100 = 120 \text{ Rs}$$

$$\text{Dec \%} = \frac{A - B}{A} \times 100$$

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

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

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

- a. 30% b. 40% c. 50% d. 60%

$$\text{Total parts} = 3+2 = 5 \quad \% \text{ of boys} = \frac{3}{5} \times 100 = 60\%$$

28. A city's population increased from 200,000 to 2,50,000 in 2 years. What is the % increase?

- a. 20% b. 25% c. 30% d. 35%

$$\text{Increased \%} = \frac{(N - O)}{O} \times 100$$

$$= \frac{(250000 - 200000)}{200000} \times 100$$

$$= \frac{(50000)}{200000} \times 100$$

$$= 25\%$$

29. In a election a candidate get 65% of the total votes and wins by 3000 Votes. How many total votes were cast?

- a. 5000 b. 6000 c. 8000 d. 9000

Opponent 35% total vote

$$\text{vote diff} = 65\% - 35\%$$

$$= 30\%$$

$$\text{Total voters} = \frac{3000}{30} \times 100$$

$$= 10,000$$

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

- a. 30% b. 42% c. 50% d. 60%

Let $OP = 100$

After 30% dec $= NP = 100 - 30$
 $\Rightarrow 70$

$70 + x\% \text{ of } 70 = 100$

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

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

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

$= 42.85\%$

31. If a number is inc by 50% the dec by 50%, what is the net % change?

- a. 0% b. ~~25% dec~~ c. 50% dec d. 75% dec

O.V = Rs 100

After 50% inc.

$100 + 50\% \text{ of } 100 = 100 + 50$
 $= 150$

After 50% dec

$150 - 50\% \text{ of } 150 = 150 - 75$
 $= 75$

final value = 75

$\left(\frac{100 - 75}{100} \right) \times 100 = 25\% \text{ dec.}$

Q32. If A is 20% taller than B, then B is shorter than A by

- a. 16.67% b. 18% c. 20% d. 25%

B height = 100 unit

$$\begin{aligned} \text{B height} &= 100 + 20\% \text{ of } 100 \\ &= 120 \end{aligned}$$

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

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

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

$$\underline{= 16.67\%}$$

5

Q35

Q33. If 30% of a number is 90, what is 60% of the same number?

- a. 120 b. 150 c. 180 d. 200

$$30\% \text{ of } x = 90$$

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

$$x = 90 \times \frac{100}{30} = 300$$

$$60\% \text{ of } x = \frac{60}{100} \times 300$$

$$= 180$$

Q36

Q34. A person spends 75% of his income & saves Rs 5000. What is his total income?

- a. 15,000 Rs b. 18,000 Rs c. 20,000 d. 25,000

A

Saving = 25%

25% of $X = 5000$

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

$$X = \frac{5000 \times 100}{25} = 20000$$

Q35. The price of petrol inc by 20% by what % should consumption be reduced to maintain the same expense?

- a. 16.67% b. 18% c. 20% d. 25%

$$OP = 100$$

$$20\% \text{ inc} = NP = 100 + 20 = 120 \text{ Rs}$$

$$100 \times 100 = 120 \times x$$

$$x = \frac{100 \times 100}{120} = 83.33$$

Reduction

$$100 - 83.33 = 16.67\%$$

Q36. The price of P.TV was first inc by 20% & then dec by 10%. What is the overall % change?

- a. 8% inc b. 10% inc c. 10% dec d. No change

$$OP = 100$$

$$20\% \text{ inc} = 100 + 20 = 120$$

$$10\% \text{ dec} = 120 - (10\% \text{ of } 120) = 120 - 12 \\ = 108$$

$$\% = \frac{(108 - 100) \times 100}{100}$$

$$= 8\% \text{ inc}$$

37. A shopkeeper marks up item 25% above the cost price & gives a 20% discount. What is this profit/loss %?

- a. 0% b. 2% profit c. 5% loss d. 10% loss

$$CP = 100$$

MP = 25% more than CP

$$MP = 100 + 25 = 125$$

$$SP = 125 - (20\% \text{ of } 125)$$

$$= 125 - 25$$

$$= 100$$

$$SP = CR$$

38. If the cost price of an article is 500Rs & it is sold at a loss of 20% what is SP?

- a. 350 Rs b. 375 Rs c. 400 Rs d. 450 Rs

$$SP = \frac{80}{100} \times 500$$

$$SP = 400$$

39. If a salary is inc by 10% and then dec by 10% what is the final % change?

- a. 0% b. 1% dec c. 1% inc d. 2% dec

$$OS = 100 \text{ Rs}$$

$$10\% \text{ inc} = 100 + (10\% \text{ of } 100)$$

$$= 100 + 10 = 110$$

$$10\% \text{ dec} = 110 - (10\% \text{ of } 110)$$

$$= 110 - 11 = 99$$

$$\% = \frac{(99+100)}{100} \times 100 \\ = +1\%$$

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

- a. 500 b. 550 c. 600 d. 650

~~$$Q.S = 100$$~~

~~$$10\% \text{ inc} = 100 + (10\% \text{ of } 100) \\ = 100 + 10 \\ = 110$$~~

~~$$10\% \text{ dec} = 110 - (10\% \text{ of } 110) \\ = 110 - 11 \\ = 99$$~~

~~$$\% = \frac{99+100}{100} \times 100$$~~

$$200 + 20 = 220 \text{ Passim Marks}$$

$$48\% \text{ of total marks} = 220$$

$$\frac{48}{100} \times \text{total } 40\% \text{ of } = 220$$

$$40\% \text{ TM} = \frac{220 \times 100}{40}$$

$$= 550$$

41 A man spends 20% of his salary on rent 30% on food and 10% on transport. If he save £1800 what is his salary?

- a. 40,000 b. 45,000 c. 50,000 d. 35,000

$$\text{Rent} = 20\% \text{ of } x \rightarrow 0.2x$$

$$\text{Food} = 30\% \text{ of } x \rightarrow 0.3x$$

$$\text{Transport} = 10\% \text{ of } x \rightarrow 0.1x$$

$$\text{Savings} = 40\% \text{ of } x \rightarrow 0.4x$$

$$= 18,000$$

$$x = \frac{18,000}{0.4}$$

42 An item's price is increased by 30% and then decreased by 30%. find the overall % change

- a. 0% b. 9% dec c. 9% inc d. 15% dec

$$\text{After 30% inc} = 100 + (30\% \text{ of } 100)$$

$$= 100 + 30$$

$$= 130 \text{ Rs.}$$

$$\text{After 30% dec} = 130 - (30\% \text{ of } 130) =$$

$$= 130 - 39$$

$$= 91 \text{ Rs.}$$

$$100 - 91 = 9\% \text{ dec}$$

43 A town's population inc by 10% every year. If the current population is 10,000 what will it be after 3 years?

- a. 13,310 b. 13,500 c. 14,000 d. 14,200

41 A man spends 20% of his salary on rent 30% on food and 10% on transport. If he save ₹ 1800 what is his salary?

- a. 40,000 b. 45,000 c. 50,000 d. 35,000

$$\text{Rent} = 20\% \text{ of } X \rightarrow 0.2X$$

$$\text{Food} = 30\% \text{ of } X \rightarrow 0.3X$$

$$\text{Transport} = 10\% \text{ of } X \rightarrow 0.1X$$

$$\text{Savings} = 10\% \text{ of } X \rightarrow 0.4X$$

$$= 18,000$$

$$X = \frac{18,000}{0.4}$$

42 An item's price is increased by 30% and then decreased by 30%. find the overall % change

- a. 0% b. 9% dec c. 9% inc d. 15% dec

$$\begin{aligned} \text{After 30% inc} &= 100 + (30\% \text{ of } 100) \\ &= 100 + 30 \\ &= 130 \text{ Rs.} \end{aligned}$$

$$\begin{aligned} \text{After 30% dec} &= 130 - (30\% \text{ of } 130) \\ &= 130 - 39 \\ &= 91 \text{ Rs.} \end{aligned}$$

$$100 - 91 = 9\% \text{ dec}$$

43 A town's population inc by 10% every year. If the current population is 10,000 what will it be after 3 years?

- a. 13,310 b. 13,500 c. 14,000 d. 14,200

$$P = P_0 \times \left(1 + \frac{r}{100}\right)^t$$

$$P_0 = 10000, r = 10, t = 3$$

$$\begin{aligned} P &= 10000 \times (1.1)^3 \\ &= 10000 \times 1.331 \\ &= 13310 \end{aligned}$$

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

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

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

$$\frac{15}{100} A \div \frac{20}{100} B = 1$$

$$\frac{15}{20} = \frac{3}{4}$$

45. If the cost price of an item is ₹800 and the profit made is 25% what is the selling price?

- a. 900 b. 1000 c. 1050 d. 1100

$$SP = 800 + \left(\frac{25 \times 800}{100}\right)$$

$$= 800 + 200$$

$$\Rightarrow 1000 \text{ Rs}$$

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

- a. 10% b. 25% c. 30% d. 40%

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

$$= \frac{50}{200} \times 100$$

$$= 25\%$$

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

- a. 600 b. 620 c. 650 d. 700

$$SP = 720 \quad \& \text{Profit} = 20\%$$

$$\frac{720 \times 100}{120} = \frac{72000}{120} = 600$$

48. CP = 500 loss = 15% SP ?

- a. 400Rs b. 425Rs c. 450Rs d. 475Rs

$$SP = 500 - \left(\frac{15 \times 500}{100} \right)$$

$$= 500 - 75$$

$$= 425$$

Ques. CP = 1500 Loss = 10% SP = ?

a. 1200

b. 1300

c. 1350

d. 1400

$$SP = 1500 - \left(\frac{10 \times 1500}{100} \right)$$

$$= 1500 - 150$$

$$= \underline{\underline{1350}}$$

So. A trader marks his goods at 30% above the CP & allows a discount of 10%. What is his gain %?

a. 17%

b. 18%

c. 19%

d. 20%

$$MP = 100 + 30\% \text{ of } 100 = 130$$

$$SP = MP - 10\% \text{ dis}$$

$$SP = 130 - (10\% \text{ of } 130)$$

$$= 130 - 13$$

$$= 117$$

Profit %.

$$= \frac{117 - 100}{100} \times 100$$

$$= 17\%$$