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Page No.

Date

# Percentage & Profit & Loss

## Question Bank

- 1) what is 25% of 200 ?  
a) 25 b) 50 c) 75 d) 100

$$\rightarrow \frac{200 \times 25}{100}$$

$$\boxed{\text{Ans} = 50}$$

- 2) If 40% of a number is 80 what is the number.

- a) 100 b) 150 c) 200 d) 250

$$\rightarrow x \times \frac{2}{5} = 80$$

$$x = \frac{80 \times 5}{2}$$

$$x = 40 \times 5$$

$$\boxed{x = 200}$$

- 3) 75% of a number is 150 what is the number

- a) 175 b) 200 c) 225 d) 250

$$x \times \frac{3}{4} = 150$$

$$x = 150 \times \frac{4}{3}$$

$$x = 50 \times 4$$

$$x = 200$$

4) what is 15% of 120?

→

$$120 \times \frac{15}{100}$$

$$= 18$$

$$120 \times 6 \times 3$$

$$\boxed{\text{Ans} \ 18}$$

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

→

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

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

$$\boxed{x = 300}$$

- 6) The price of a product increases from 200 to 250 what is the percentage increase?  
 a) 20%. b) 25%. c) 30%. d) 35%.

→

$$\text{increase} = 250 - 200 \\ = 50$$

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

$$\boxed{\text{Ans} = 25\%}$$

- 7) A salary increases from 40,000 to 50,000, what is the percentage increase?  
 a) 20%. b) 25%. c) 30%. d) 35%.

→

$$\text{increase} = 50,000 - 40,000 \\ = 10,000$$

$$\frac{10,000}{40,000} \times 100$$

$$\frac{1}{4} \times 100$$

$$\boxed{\text{Ans} = 25\%}$$

8) 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%.



$$\text{decrease} = 10,000 - 8,000$$

$$= 2,000$$

$$\frac{2000}{10000} \times 100$$

$$\frac{1}{5} \times 100$$

Ans = 20%

9)

A book's price drops from \$50 to \$40. What is % decrease?

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



$$\text{decrease} = 50 - 40$$

$$= 10$$

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

$$\frac{1}{5} \times 100$$

Ans = 20%.

- 10) If the cost price of an item is 600 and the selling price is 450 what is % loss ?  
 a) 20% b) 22.5% c) 25% d) 30%

$$C.P. = 600$$

$$S.P. = 450$$

$$\text{Gain \%} = \frac{C.P. - S.P.}{C.P.} \times 100$$

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

$$= \frac{150}{600} \times 100$$

$$= \frac{150}{6}$$

$$\boxed{\text{Ans} = 25\%}$$

10)

### 1. ##### Section 3 : Percentage Comparison.

- 117 which 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

$$\frac{30}{100} \times 400 = 120$$

$$\frac{40}{100} \times 300 = 120$$

∴ Ans = Both are equal

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

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

~~$$\frac{x}{100} \times 60 + 8000 = x$$

$$\frac{60}{100}x + 8000 = x$$

$$x - \frac{60}{100}x = 8000$$

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

$$x = 20000$$~~

~~$$100 - 60 = 40$$

$$40 \text{ is } \frac{x}{100}$$

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

$$x = 4000$$~~

~~$$x = 20000$$~~

total income =  $\frac{2000}{8000 \times 10\%}$

Ans = 20,000

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

- a) 20%. b) 16.67%. c) 25%. d) 10%.



$$A : 5 \rightarrow 6$$

$$B : 6 \rightarrow 5$$

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

$$\frac{1}{6} = 16.67\%$$

∴ Ans = 16.67%

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

$$A = B \left( \frac{20}{100} + 1 \right)$$

$$A = B \left( \frac{20}{100} \right)$$

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

$$\begin{array}{c}
 B + \frac{10}{12} X \\
 B = \frac{5}{6} X \\
 B = 0.8
 \end{array}$$

$$\begin{array}{c}
 A \rightarrow 100 \rightarrow 120 \\
 B \rightarrow A \rightarrow 120
 \end{array}$$

$$\begin{array}{c}
 \frac{20}{120} \times 100 = \frac{1}{6} \times 100 \\
 \boxed{\text{Ans} = 16.67\%}
 \end{array}$$

14) If the price of sugar is increased by 25%.  
by how much should the consumption  
be reduced to maintain the same expense?  
a) 20% b) 25% c) 30% d) 15%.

→

$$\text{Price} \times 25\% = \frac{1}{4} \text{ price} \therefore \text{price} = 4 \therefore 5$$

$$\text{Consumption} = 100 \text{ S} \therefore 40 \text{ S}$$

$$\text{Required A.P.} \therefore \frac{1}{5} \times 100$$

$$\boxed{\text{Ans} = 20\%}$$

- 15) If A's income is 40% more than B's income then B's income is what percentage less than A's ?
- a) 28.57% b) 30% c) 33.33%  
 d) 40%

$$\rightarrow 40\% = \frac{2}{5} \quad A = 2S : 7 \\ B = 7 : 5$$

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

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

$$\boxed{\text{Ans} = 28.57\%}$$

- 16) The price of an item is increased by 20% and then decreased by 10%. What is net % change?
- a) 8% increase b) 8% decrease  
 c) 10% increase d) 10% decrease

+20% - 10%

$$\rightarrow 100 \rightarrow 120 \rightarrow 108$$

∴ Ans = 8% increase

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

- a) 4% increase
- b) 8% increase
- c) 10% increase
- d) 12% increase

+30% - 20%

$$100 \rightarrow 130 \rightarrow 104$$

∴ Ans = 4% increase

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

- a) 0% b) 5% increase c) 10% decrease
- d) 5% decrease

100 → +

+25% - 20%

$$100 \rightarrow 125 \rightarrow 100$$

∴ Ans = 0%

19)

If a price increases by 40% and then decreases by 30%. find the final change is.

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

$$100 \xrightarrow{+40\%} 140 \xrightarrow{-30\%} 98$$

$$\therefore \boxed{\text{Ans} = 2\% \text{ decrease}}$$

2

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

- a) 8% increase
- b) 10% increase
- c) 10% decrease
- d) No change

$$100 \xrightarrow{+20\%} 120 \xrightarrow{-10\%} 108$$

$$\therefore \boxed{\text{Ans} = 8\% \text{ increase}}$$

- 21) If an article is sold at a profit of 25%. then the selling price is what percentage of the cost price?
- a) 100%. b) 125%. c) 150%. d) 175%.

→ let  $CP = 100$ .

$SP = 125$

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

→  $\boxed{Ans = 125\%}$

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

- a) 400 b) 420 c) 450 d) 460

→ let  $MP = 500$   
~~100~~  
 $SP = 90$

$CP = 100$   $SP = 108$

let  $MP = 100$   $(CP + CP \times \frac{8}{100}) = 90$   
 $SP = 90$   $CP \left(1 + \frac{8}{100}\right) = 90$

$$MP = 500 \quad \text{Discount} = 500 \times \frac{10}{100} = 50$$

$$SP = 450$$

~~$$450 = CP + 0.08 CP$$~~

~~$$450 = 1.08 CP$$~~

~~$$CP = \frac{450}{1.08}$$~~

~~$$CP = \frac{50}{1.12}$$~~

$$CP = \frac{5000}{12}$$

$$CP = 416.66$$

$$CP = 420$$

23) If the profit is 20% of C.P. then what is the profit percentage on selling price.

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

Let  $C.P. = 100$  and profit  $\rightarrow$  20%

Profit = 20

$S.P. = 120$

$$\text{Profit \%} = \frac{20}{100} \times 100$$

Profit % on selling of  $\frac{120}{100} \times 100$   $\rightarrow$  20%

∴ Selling price today,  $\rightarrow$  120

$$\rightarrow 1.20 (6) \rightarrow \boxed{\text{Ans} = 16.67 \%}$$

24} A product is marked at  $₹1200$  and sold for  $₹960$ . What is the percentage discount given?

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

$$M.P = ₹1200$$

$$S.P = 960$$

$$\begin{array}{r} \text{discount} = \frac{1200 - 960}{1200} \\ \hline 240 \end{array}$$

$$\text{discount \%} = \frac{240}{1200} \times 100$$

$$= \frac{24}{120} \times 100$$

$$= \frac{8}{40} \times 100$$

$$\text{discount} = \frac{2}{10} \times 100$$

$$\text{discount \%} = 20\%$$

- 25) If an article is bought for 500 and sold for 650. what is percentage profit?  
 a) 20% b) 25% c) 30% d) 35%

$$C.P = 500$$

$$\text{S.P} = 650$$

$$\text{Profit} = 650 - 500 = 150$$

$$\text{Profit \%} = \frac{150}{500} \times 100$$

$$= \frac{3}{10} \times 100$$

$$\text{Ans.} = 30\%$$

268. If A's income is 20% more than B's, then B's income is what percentage less than A's.

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



216P. 2. 7/10

$$100 \rightarrow 120$$

$$B = 100$$

$$\frac{1}{3}$$

$$B \rightarrow \frac{1}{3} A$$

$$A = 120$$

$$A : S = 6$$

$$B : 6 S$$

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

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

$$\frac{5}{6} \times 100$$

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

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

$$\therefore \text{Ans} = 16.67\%.$$

Q3.

1. 45% and 1

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

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

→

3 : 2

boys : girls

$$\frac{3}{5} \times 100$$

Ans = 60%

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

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

→

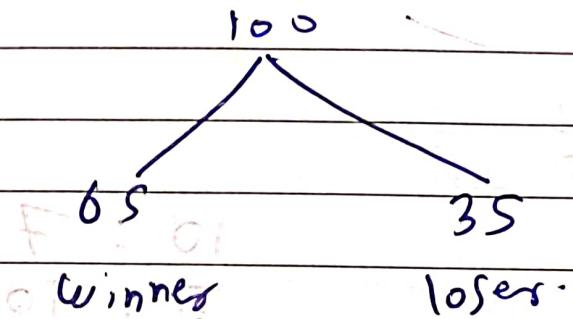
$$\frac{50,000}{2,00,000} \times 100$$

$$\frac{1}{4} \times 100$$

Ans = 25%

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

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



$$65 - 35 = 30$$

Total voters ... win by.

$$\begin{array}{r} 100 \\ - 30 \\ \hline x \end{array}$$

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

$$x = 10,000$$

$$\boxed{\text{Ans} = 10,000}$$

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

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

→

$$r \frac{3}{10}$$

$$10 : 7$$

$$7 : 10.$$

$$r = \frac{3}{7} \times 100$$

$$r = \frac{300}{7}$$

$$\text{Ans} = 42.85\%$$

31) If a number is increased by 50% and then decreased by 50%. what is the net percentage change?

- a) 0%. b) 25% decrease c) 50% decrease  
d) 75% decrease

1) If 100 ₹ is reduced to 72 ₹ then  
 reduction is  $\frac{28}{100} \times 100 = 28\%$   
~~28%~~ ~~28~~ ~~28~~

$$\frac{b}{100} = \frac{28}{100} \times 100$$

$$100 \rightarrow 150 \rightarrow 75$$

$$- 75$$

$$\boxed{\text{Ans} = 25\% \text{ decrease}}$$

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

- a) 16.67 b) 18.1 c) 20.1 d) 25.1

$$\rightarrow 20\% = \frac{1}{5}$$

Ans =  $\frac{1}{5} \times 100 = 20\%$

Ans =  $\frac{1}{5} \times 100 = 20\%$

Ans =  $\frac{1}{5} \times 100 = 20\%$

$$\frac{1}{5} \times 100$$

$$\boxed{\text{Ans} = 16.67\%}$$

$$100 \rightarrow 120$$

$$\frac{120}{100} - 1$$

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

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



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

$$x = \frac{90 \times 10}{30}$$

3,

$$x = \cancel{300}$$

$$x = 300$$

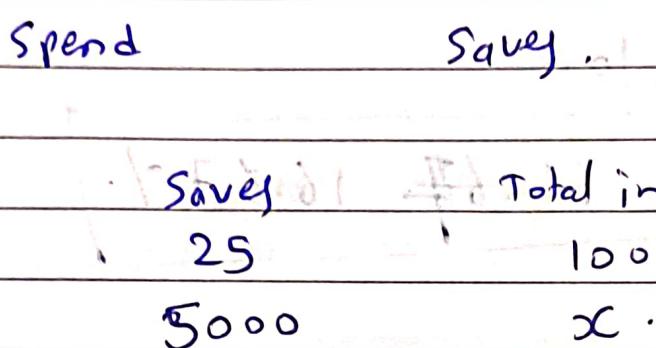
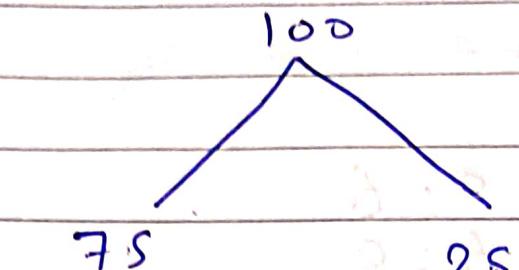
$$30\% \times \frac{60}{100}$$

$$Ans = 180$$

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

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





$$\frac{5000 \times 100}{25} = \boxed{\text{Ans} = 20000}$$

- 35) The price of petrol increased by 20%. By what percentage should consumption be reduced to maintain the same expense.
- a) 16.67   b) 18   c) 20   d) 25.



$$20\% = \frac{1}{5}$$

$$S: 6 \\ 6: S.$$

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

$$\therefore \boxed{\text{Ans} = 16.67\%}$$

36) The price of TV was first increased by 20% and then decreased by 10%. What is the overall percentage change?

- ~~→~~  $\rightarrow$
- a) 8% increase
  - b) 10% increase
  - c) 10% decrease
  - d) No change

$$100 \xrightarrow{+20\%} 120 \xrightarrow{-10\%} 108$$

$$\therefore \boxed{\text{Ans} = 8\% \text{ increase}}$$

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

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

→ ~~MP~~ CP = 100

MP = 125

Discount =  $125 \times \frac{1}{5}$

Discount = 25

SP = 125 - 25

Profit of 25% on cost price

Profit of 25% on cost price

Profit of 25% on cost price

∴ Ans = 0%

38) If the cost price of an article is 500 and it is sold at a loss of 20%. What is the selling price?

- a) 350 b) 375 c) 400 d) 450

→ CP = 500

Loss =  $500 \times \frac{1}{5} = 100$

SP = 500 - 100 = 400

∴ Ans = 400

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

- a) 0% b) 1% decrease c) 1% increase
- d) 2% decrease

→

$$\begin{array}{ccccccc}
 & +10\% & & -10\% & & & \\
 100 & \longrightarrow & 110 & \longrightarrow & 99 & & \\
 & & -11 & & & & 
 \end{array}$$

∴ Ans = 1% decrease

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

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

→

$$\text{let total} = 100$$

$$\text{pass} = 40\% \quad \text{passmark} = 220$$

Pass mark.

40

220

Total

100

20

$$x = 100 \times 220$$

55

→ ~~and~~ ~~40~~ ~~40~~ ~~40~~

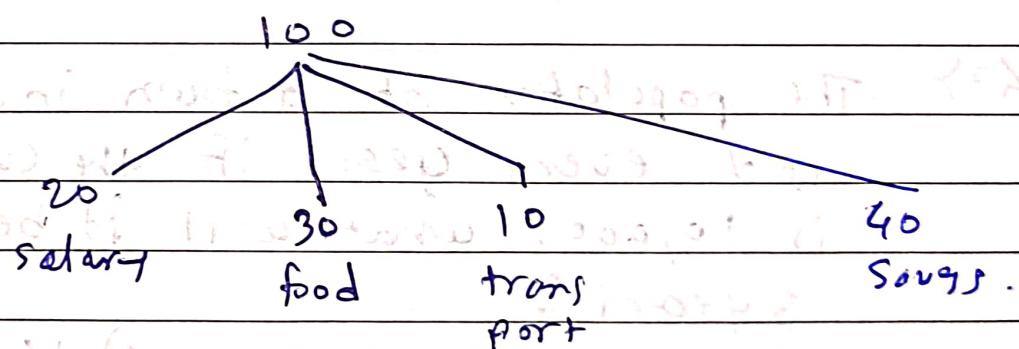
$$x = 550$$

$$\boxed{\text{Ans} = 550}$$

41) A man spends 20% of his salary on rent, 30% on food, and 10% on transport if he saves 18,000 what is ~~is~~ his salary?

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

→ ~~18000~~ ~~18000~~



Save

40

Salary

100

18000000

45°

$$x = 100 \times 18000$$

40

$$\boxed{\text{Ans} = 45,000}$$

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

- a) 0 % . b) 9 % . decrease c) 9 % . increase  
d) 15 % . decrease

$$100 \xrightarrow{+30\%} 130 \xrightarrow{-30\%} 91 - 39.$$

$$\therefore \text{Ans} = 9 - 1. \text{ decrease}$$

43) The population of a town increased 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

$$\text{Ans} = 13,310$$

Q4) 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

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

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

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

$$\frac{A}{B} = \frac{4}{3}$$

$$A:B = 4:3$$

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

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

→ ~~Cost + Profit = Selling Price~~

$$C.P = 800$$

$$\text{Profit \%} = 25\%$$

$$\frac{25}{100} \times 800 = \frac{1}{4} \times 800$$

$$S.P = \frac{125}{100} \times 800$$

$$S.P = 125 \times 8$$

$$\boxed{S.P = 1000}$$

46) If the cost price of an item is 200 and the selling price is 250 what is the profit percentage?

- a) 20% b) 25% c) 30% d) 40%

→

$$C.P = 200$$

$$S.P = 250$$

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

$$\text{Profit \%} = \frac{50}{2} = 25\%$$

$$\boxed{\text{Profit \%} = 25\%}$$

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

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



$$SP = 720$$

$$\text{Profit } 20\% = 720 - 600 = 120$$

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

$$720 = CP \times \frac{120}{100}$$

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

$$\boxed{CP = 600}$$

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

$$120 \times 5\% = 6$$

$$\boxed{600 + 6 = 606}$$

- 48) A shopkeeper sells an item at a loss of 15%. If the cost price is 500, Find the selling price  
 a) 400 b) 425 c) 450 d) 475

→

$$C.P = 500$$

$$Loss = 15\%$$

$$S.P = 500 \times \frac{85}{100}$$

$$S.P = 85 \times 5$$

$$S.P = 425$$

- 49) A man purchased a cycle for 1500 and sold it at a loss of 10%. what was the selling price?  
 a) 1200 b) 1300 c) 1350 d) 1400

→

$$C.P = 1500$$

$$Loss = 10\%$$

$$S.P = 1500 \times \frac{90}{100}$$

$$S.P = 15 \times 90$$

$$S.P = 1350$$

50) A trader marks his goods at 30% above the cost price and allows a discount of 10%. What is his gain percent?

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



$$\text{let } CP = 100$$

$$\begin{array}{r} MP = 130 \\ - 13 \\ \hline SP = 117 \end{array}$$

$$\text{gain \%} = \frac{17}{100} \times 100$$

$$\text{gain \%} = 17\%$$