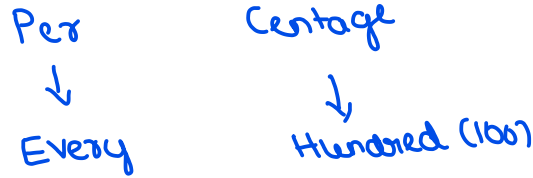




# PERCENTAGE (%)



Fraction → Percentage [Multiply by 100]

$$\frac{1}{2} = \frac{1}{2} \times 100 = 50\%$$

$$\frac{2}{3} = \frac{2}{3} \times 100 = 66\frac{2}{3}\%$$

convert to %

$$0.1 = \frac{1}{10} \times 100 = 10\%$$

convert to % → Fraction

$$15\frac{5}{8}\% \rightarrow \text{Fraction} = \frac{125}{8} \times \frac{1}{100} = \frac{125}{800} = \frac{5}{32}$$

Percentage → Fraction [Divided by 100]

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

$$75\% = \frac{75}{100} = \frac{3}{4}$$

## BASICS:

1. 30% of 600 =  $\frac{30}{100} \times 600 = 180$

$$35\% = \frac{180}{30} = 210$$

Shortcut:

$$600 \rightarrow 100\%$$

$$60 \rightarrow 10\% \times 3 = 180$$

$$6 \rightarrow 1\%$$

$$0.6 \rightarrow 0.1\%$$

2. 53% of 2000 → 1% = 20

$$50\% = 1000$$

$$3\% = \frac{60}{1060}$$



3. 40kg is what % of 160kg?

$$\hookrightarrow 40 = x\% \text{ of } 160$$

$$\frac{40}{100} = \frac{x}{100} \times \frac{160}{1}$$

$$\boxed{25\% = x}$$

4. 180 is what % of 125?

$$180 = x\% \text{ of } 125$$

$$\frac{36}{180} = \frac{x}{100} \times \frac{125}{1}$$

$$36 \times 4 = x$$

$$\boxed{144\% = x}$$

5. 99 is what % less than 135? 6. 24 is what % more than 20?

$$99 = 135 - x\% \text{ of } 135$$

$$\frac{x}{100} \times \frac{135}{1} = 135 - 99$$

$$x = \frac{4}{36} \times \frac{20}{27} \times \frac{3}{3}$$

$$= \frac{80}{3} = 26 \frac{2}{3} \%$$

than 20?

$$24 = 20 + x\% \text{ of } 20$$

$$24 - 20 = \frac{x}{100} \times \frac{20}{1}$$

$$4 \times 5 = x$$

$$\boxed{20\% = x}$$

7. A's income is 25% more than B. B's income is how much % less than A?

$$A = 125\% \text{ of } B$$

$$80\% \cdot A = B$$

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

$$100 - 80 = 20\% \downarrow$$

$$\frac{4}{5} = \frac{B}{A}$$

$$\frac{4}{5} \times 100 = \frac{B}{A}$$

8. A's Income is 15% less than B's Income. By what % is B's Income more than A's Income?

$$A = (100 - 15)\% \text{ of } B$$

$$A = 85\% \text{ of } B$$

$$A = \frac{85}{100} \times B$$

$$\frac{20}{17} A = B$$

$$\frac{20}{17} \times 100 A = B \rightarrow \frac{2000}{17} \% A = B$$

$$\frac{300}{17} \%$$

$$\frac{2000}{17} - 100 = \frac{300}{17} \%$$

SUCCESSIVE PERCENTAGE:

Land:  $\rightarrow 10\% \uparrow \quad 20\% \downarrow \quad [10+20] = 30\% \times$

$$\% = \left( \frac{\pm x \pm y \pm \frac{xy}{100}}{100} \right) \%$$

+  $\rightarrow$  Increase

-  $\rightarrow$  Decrease

$$= \left( \frac{10 - 20 - \frac{10 \times 20}{100}}{100} \right) \%$$

$$= (-10 - 2) \%$$

$$= -12\% \rightarrow 12\% \text{ decrease}$$