



CLASS-13

Percentage (Part 1)

PERCENTAGE

Per

Centage

↓
Every↓
100

Fraction → Percentage [Multiply by 100]

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

$$\frac{2}{3} = \frac{2}{3} \times 100 = \frac{200}{3} \% = 66 \frac{2}{3} \%$$

$$3 \overline{) 200} \\ \underline{18} \\ 20 \\ \underline{18} \\ 2$$

Percentage → Fraction [Divide by 100]

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

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

Exercise

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

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

$$2) 15 \frac{5}{8} \% = \frac{125}{8} \% = \frac{125}{8 \times 100} = \frac{5}{32}$$

Basics

1. 30% of 600

usual Method

$$= \frac{30}{100} \times 600$$

$$= 180$$

Shortcut

$$100\% = 600$$

$$10\% = 60 \xrightarrow{\times 3} 30\% = 180$$

$$1\% = 6$$

$$0.1\% = 0.6$$

2. 53% of 2000 $\rightarrow$ 50% = 1000

$$50\% = 1000$$

$$3\% = \frac{60}{100}$$

$$53\% = \frac{1060}{100}$$

$$1\% = 20$$

$$2000$$

$$10\% = 200 \times 2$$

$$1\% = 20 \times 0.2$$

$$0.1\% = 2 \times 0.002$$

3. 40kg is what % of 160kg?

$$40 = x\% \times 160$$

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

$$25 = \frac{x}{100} \times 160$$

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

4. 180 is what % of 125?

$$180 = x\% \times 125$$

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

$$4 = \frac{x}{100} \times 125$$

$$\frac{36}{125} \times \frac{4}{5} = x$$

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

5) 99 is what % less than 135?

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

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

$$\frac{x}{100} \times 135 = 36$$

$$x = \frac{36}{135} \times \frac{100}{1} = \frac{80}{3} \% = 26 \frac{2}{3} \%$$

$$\begin{array}{r} 3 \overline{) 80} \\ \underline{6} \\ 20 \\ \underline{18} \\ 2 \end{array}$$

6) 24 is what % more than 20?

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

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

$$4 \times 5 = x$$

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

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

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

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

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

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

$$\frac{4}{5} \times \frac{100}{1} = \frac{B}{A}$$

$$80\% = \frac{B}{A}$$

$$\begin{array}{l} 100 - 80 \\ = 20\% \end{array}$$



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

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

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

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

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

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

$$\frac{85}{100} \% = \frac{B}{A} -$$

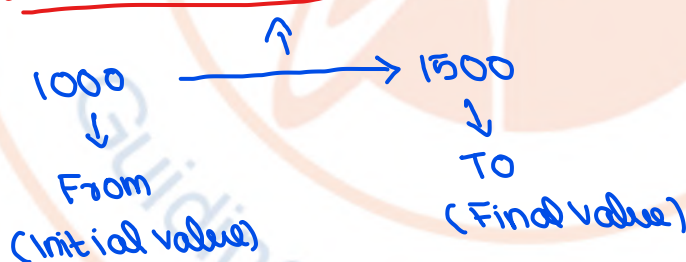
$$\frac{2000}{17} - 100$$

$$= \frac{2000 - 1700}{17}$$

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

$$= 17 \frac{11}{17} \%$$

Per centage Increase / Decrease:



$$\% = \frac{1500 - 1000}{1000} \times 100$$

$$= \frac{500}{10} \%$$

$$= 50\% \uparrow$$

$$1250 \xrightarrow{\downarrow} 1000$$

$$\% = \frac{1250 - 1000}{1250} \times 100$$

$$= \frac{250}{125} \times 10 = 20\% \downarrow$$

Successive percentage



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

+ → Increase

- → Decrease

10% ↑
x

20% ↓
y

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

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

$$= -12\% \text{ (12\% decrease)}$$

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