

Class - VIII Chapter - 6 (Percentage)

Percentage:-

By a certain percentage, we mean, 'that many hundredths' we denote x percent by $x\%$. Thus $x\% = x$ out of $100 = \frac{x}{100}$

* To convert a percentage into fraction or Decimal or Ratio we have to divide it by 100.

* To convert a fraction, Decimal or Fraction into percentage we have to multiply it by 100.

Exercise - 6 (A)

$$\begin{aligned} 1) \text{ ii)} \quad & 3\frac{1}{3}\% \\ & = \frac{10}{3}\% \\ & = \frac{10}{3} \times \frac{1}{100} = \frac{1}{30} \end{aligned}$$

$$\begin{aligned} 1) \text{ iv)} \quad & 0.05\% \\ & = \frac{0.05}{100} \\ & = \frac{8^1}{100 \times 100} \\ & = \frac{1}{2000} \end{aligned}$$

$$\begin{aligned} 2) \text{ ii)} \quad & \frac{9}{40} \\ & = \frac{9}{40} \times \frac{5}{100}\% \\ & = \frac{45}{2}\% \\ & = 22\frac{1}{2}\% \end{aligned}$$

$$\begin{aligned} 2) \text{ iv)} \quad & 2\frac{2}{5} \\ & = \frac{12}{5} \times \frac{20}{100}\% \\ & = 240\% \end{aligned}$$

$$\begin{aligned}
 3. \text{ ii)} & (11:18) \\
 & = \left(\frac{11}{18} \times \frac{50}{1} \right) \% \\
 & = \frac{550}{9} \% \\
 & = 61\frac{1}{9} \% \quad \underline{\text{(Ans)}}
 \end{aligned}$$

$$\begin{aligned}
 3. \text{ iv)} & 6\frac{1}{4} : 4\frac{3}{8} \\
 & = \frac{25}{4} : \frac{35}{8} \\
 & = \frac{25^5}{4} \times \frac{8^2}{35^7} \times 100 \% \\
 & = \frac{1000}{7} \% \\
 & = 142\frac{6}{7} \% \quad \underline{\text{(Ans)}}
 \end{aligned}$$

$$\begin{aligned}
 4. \text{ ii)} & 0.06 \\
 & = (0.06 \times 100) \% \\
 & = 6 \% \quad \underline{\text{(Ans)}}
 \end{aligned}$$

$$\begin{aligned}
 4. \text{ iv)} & 2.4 \\
 & = (2.4 \times 100) \% \\
 & = 240 \% \quad \underline{\text{(Ans)}}
 \end{aligned}$$

$$\begin{aligned}
 5. \text{ ii)} & 4 \% \\
 & = \frac{4}{100} = 0.04 \quad \underline{\text{(Ans)}}
 \end{aligned}$$

$$\begin{aligned}
 5. \text{ iv)} & 0.3 \% \\
 & = \frac{0.3}{100} \\
 & = 0.003 \quad \underline{\text{(Ans)}}
 \end{aligned}$$

$$\begin{aligned}
 6. \text{ ii)} & 26\frac{2}{3} \% \\
 & = \frac{80}{3} \% \\
 & = \frac{4 \cancel{80}}{3 \times \cancel{10}} = \frac{4}{15} = (4:15) \quad \underline{\text{(Ans)}}
 \end{aligned}$$

$$\begin{aligned}
 6. \text{ iv)} & 120 \% \\
 & = \frac{6 \times \cancel{20}}{\cancel{100}} \\
 & = \frac{6}{5} = (6:5) \quad \underline{\text{(Ans)}}
 \end{aligned}$$

$$\begin{aligned}
 7. \text{ ii)} & 6\frac{2}{3} \% \text{ of } 3 \text{ m} \\
 & = \frac{20}{3} \% \text{ of } 3 \text{ m} \\
 & = \left(\frac{20}{3 \times \cancel{100}} \times \cancel{300} \right) \text{ cm} \\
 & = 20 \text{ cm} \quad \underline{\text{(Ans)}}
 \end{aligned}$$

$$\begin{aligned}
 7. \text{ iv)} & 3\frac{1}{4} \% \text{ of } 5 \text{ l} \\
 & = \frac{13}{4} \% \text{ of } 5 \text{ l} \\
 & = \frac{13}{4 \times \cancel{100}} \times \cancel{500} \text{ ml} \\
 & = \frac{325}{2} \text{ ml} = 162.5 \text{ ml} \quad \underline{\text{(Ans)}}
 \end{aligned}$$

8. ii) let $x\%$ of 32 m = 80 m

$$\Rightarrow \frac{x}{100} \times 32 = 80$$

$$\Rightarrow x = \frac{80 \times 100}{32} = 250$$

$$\Rightarrow x = 10 \times 25 = 250\%$$

$$\Rightarrow \boxed{x = 250\%} \quad (\text{Ans})$$

9. i) let 8% of $x = 24$

$$\Rightarrow \frac{8}{100} \times x = 24$$

$$\Rightarrow x = \frac{24 \times 100}{8}$$

$$\Rightarrow \boxed{x = 300} \quad (\text{Ans})$$

8. iv) let $x\%$ of 5 l = 400 ml

$$\Rightarrow \frac{x}{100} \times 5000 \text{ ml} = 400 \text{ ml}$$

$$\Rightarrow x = \frac{400 \times 100}{5000} = 8\%$$

$$\Rightarrow \boxed{x = 8\%} \quad (\text{Ans})$$

9. iii) let $6\frac{2}{3}\%$ of $x = 1$

$$\Rightarrow \frac{20}{3}\% \text{ of } x = 1$$

$$\Rightarrow \frac{20}{3 \times 100} \times x = 1$$

$$\Rightarrow x = \frac{3 \times 100}{20}$$

$$\Rightarrow \boxed{x = 15} \quad (\text{Ans})$$

10. i) Required Number

$$= 75 + (24\% \text{ of } 75)$$

$$= 75 + \left(\frac{24}{100} \times 75 \right)$$

$$= (75 + 18) \quad (\text{Ans})$$

$$= 93 \quad (\text{Ans})$$

10. ii) Required Number

$$= 375 - (8\% \text{ of } 375)$$

$$= 375 - \left(\frac{8}{100} \times 375 \right)$$

$$= 375 - 30$$

$$= 345 \quad (\text{Ans})$$

12. let the number be 'x'

ATQ $x - 8\%$ of $x = 345$

$$\Rightarrow x - \frac{8x}{100} = 345$$

$$\Rightarrow \frac{92x}{100} = 345$$

$$\Rightarrow x = \frac{345 \times 100}{92}$$

$$\Rightarrow \boxed{x = 375} \quad (\text{Ans})$$

Ex-6(B)

1) Let the total strength of the school be 'x'

$$\text{Girls} = 36\%$$

$$\therefore \text{Boys} = (100 - 36)\% = 64\%$$

ATQ 64% of x = 1440

$$\Rightarrow \frac{64}{100} \times x = 1440$$

$$\Rightarrow x = \frac{1440 \times 100}{64}$$

$$\Rightarrow \boxed{x = 2250}$$

\therefore Total Strength = 2250 Students. (Ans)

3) Passing Percentage = 40%

Marks secured by Rahul = 178.

Rahul failed by = 32 marks.

$$\therefore \text{Passing marks} = (178 + 32) = 210$$

Let the total marks be 'x'

ATQ 40% of x = 210

$$\Rightarrow \frac{40}{100} \times x = 210$$

$$\Rightarrow x = \frac{210 \times 100}{40}$$

$$\Rightarrow x = 105 \times 5 = 525$$

\therefore Total marks = 525. (Ans)

5) Let the original price be ₹ x

ATQ $x + (14\% \text{ of } x) = 1995$

$$\Rightarrow x + \frac{14x}{100} = 1995$$

$$\Rightarrow \frac{100x + 14x}{100} = 1995$$

$$\Rightarrow \frac{114x}{100} = 1995$$

$$\Rightarrow x = \frac{1995 \times 100}{114}$$

~~665~~ 35 50
114
57
19

$$\Rightarrow x = 35 \times 50 = 1750$$

\therefore Original price = ₹ 1750 (Ans)

8) Winning Candidate got = 58% votes

\therefore The looser or the other candidate got = $(100 - 58)\% = 42\%$ votes

$$\therefore \text{Margin} = (58 - 42)\% = 16\%$$

Let total votes polled be ' x '

ATQ $16\% \text{ of } x = 2560$

$$\Rightarrow \frac{16x}{100} = 2560$$

$$\Rightarrow x = \frac{2560 \times 100}{16}$$

$$\Rightarrow x = 160 \times 100 = 16000$$

10) Let the original value of the article be ₹x

$$\text{After increasing 25\% new value} = 125\% \text{ of } x = \frac{125x}{100}$$

To restore the former value value should be

$$\text{decreased} = \frac{125x}{100} - x = \frac{25x}{100}$$

$$\text{Required percentage} = \frac{\text{Decrease}}{\text{value from which decreased}} \times 100\%$$

$$= \frac{\frac{25x}{100}}{\frac{125x}{100}} \times 100\%$$

$$= \frac{25x}{100} \times \frac{100}{125x} \times 100\% = 20\% \quad (\text{Ans})$$

14) Let the population at the beginning be 'x'

$$\text{People killed in earth quake} = 5\% \text{ of } x = \frac{5x}{100}$$

$$\text{Remainder} = x - \frac{5x}{100} = \frac{95x}{100}$$

$$\text{People left the town} = 8\% \text{ of } \frac{95x}{100} = \frac{8}{100} \times \frac{95x}{100} = \frac{38x}{500}$$

$$\therefore \text{Remaining people} = \frac{95x}{100} - \frac{38x}{500}$$

$$= \frac{475x - 38x}{500} = \frac{437x}{500}$$

$$\text{ATQ} \quad \frac{437x}{500} = 43700$$

$$\Rightarrow x = \frac{43700 \times 500}{437} = 50000$$

\therefore Population at the beginning = 50000 (Ans)

17) Present value of the car = ₹ 650000
Rate of depreciation = 10%

∴ Value of the car after 2 years

$$\begin{aligned} &= P \left(1 - \frac{R}{100}\right)^n \quad \left[\begin{array}{l} \text{using compound interest} \\ \text{Law for depreciation} \end{array} \right] \\ &= 650000 \left(1 - \frac{10}{100}\right)^2 \\ &= 650000 \times \frac{9}{10} \times \frac{9}{10} = ₹ 5,26,500 \quad \underline{\text{(Ans)}} \end{aligned}$$

19) let the number be 'x'

$$\text{Actual product} = \frac{5}{3} \times x = \frac{5x}{3}$$

$$\text{Product by mistake} = \frac{3}{5} \times x = \frac{3x}{5}$$

$$\therefore \text{Error} = \left(\frac{5x}{3} - \frac{3x}{5} \right) = \frac{25x - 9x}{15} = \frac{16x}{15}$$

$$\therefore \text{Error Percentage} = \frac{\text{Error}}{\text{Actual product}} \times 100\%$$

$$= \frac{\frac{16x}{15}}{\frac{5x}{3}} \times 100\%$$

$$= \frac{16x}{15} \times \frac{3}{5x} \times 100\%$$

$$= 16 \times 4\% = 64\% \quad \underline{\text{(Ans)}}$$