Class : 8
Subject : Mathematics
Topic : Percentage

The word *percent* means 'per hundred' or 'out of hundred', which is denoted by %.
Suppose 75% means 75 out of hundred = 75/100
Similarly 30.5% means 30.5 out of hundred = 30.5/100

Percentage is the numerator of a fraction with denominator 100
- *X% of a given quantity = (X/100) x given quantity*
- *To express x as a percentage of y= (x/y) X100*
- *If x% of a quantity is y, then quantity = (y/x) X 100*
- *Percentage increase = [increase in quantity/original quantity X100]%*
- *Percentage decrease =[decrease in quantity/original quantity X100]%*

Question 1.1:

i)   Convert 2X(1/12)% into fraction
ii) Convert 1X(11/16)% into percentage
iii) Convert 21 : 80 into percentage
iv) Convert 2X(7/8)% as a decimal

Solution :

i)   2X(1/12)% = 25/12 X 1/100 = 1/48

ii) 1X(1/16)= (27/16) = {27/16 X 100}%= {(27X24)/4}%= (675/4)%= 168.75%
iii) 21 : 80 = 21/80 = { 21/80 X 100}%= (105/4)%=26.25%
iv) 2X(7/8)%= 2.875%= 0.02875

Question 1.2 :

i) If 9.5% of a number is 76, find the number
ii) Increase the number 240 by 15%
iii) Decrease the number 275 by 8%

Solution :

i) Let the required number by x.
According to the given Condition, 9.5% of $x = 76$

$$\Rightarrow \quad \frac{9.5}{100} \times x = 76$$

$$\Rightarrow \quad \frac{95}{1000} \times x = 76$$

$$\Rightarrow \quad x = \frac{\overset{2}{\cancel{76}} \times \overset{200}{\cancel{1000}}}{\cancel{95}} = 800$$

Hence, the required number is 800. (Ans)

ii) New number $= \left[1 + \frac{15}{100}\right] \times 240$ $\left[\because \left[1 + \frac{x}{100}\right] \text{ of original}\right]$

$$= \frac{\overset{23}{\cancel{115}}}{\underset{20}{\cancel{100}}} \times \overset{12}{\cancel{240}} = 23 \times 12 = 276 \text{ (Ans.)}$$

iii) New number $= \left[1 - \frac{8}{100}\right] \times 275$ $\left[\because \left(1 - \frac{x}{100}\right) \text{ of original}\right]$

$$= \frac{\overset{23}{\cancel{92}}}{\underset{25}{\cancel{100}}} \times 275 = \frac{23}{25} \times 275 = 253. \text{ (Ans.)}$$

Question 1.3 :

1. On a rainy day, only 36 students out of 45 came to a class. What percent were absent?
2. In an election, there were only two candidates. The winner polled 53% votes and won by 9600 votes. Find the total number of votes polled?
3. On increasing the price of a cycle by 14%, it becomes ₹ 1425. What was its original price?
4. Mr. Hamid saves 12% of his salary. If he receives ₹ 7350 per month as salary, find his monthly expenditure.
5. In an examination, 96% of the candidates passed and 50 failed. How many candidates appeared?

Solution :

1. Total number of Students = 45
   Number of students absent = 45 − 36 = 9
   ∴ Percentage of absent students = $\left(\frac{9}{45} \times 100\right) \%$
   $= 20\%$ (Ans.)

2. There are only two candidates.
   Since the winner got 53% votes, therefore, the loser got
   $(100 - 53)\%$ votes = 47% votes
   ∴ the difference in % of votes = $(53 - 47)\% = 6\%$
   As the winner won by 9600 votes, so difference in votes = 9600.
   A.T.P,
   6% of total votes polled = 9600
   ∴ Total votes polled = $\frac{100}{6} \times 9600 = 160000$
   Hence, the total number of votes polled was 160000 (Ans)

   Let the original price of the cycle be ₹ x

   Since the price has been increased by 14%, we get.
   New price = $\left[1 + \frac{14}{100}\right]$ of original price
   $\Rightarrow 1425 = \left[1 + \frac{14}{100}\right] \times x$
   $\Rightarrow 1425 = \frac{114}{100} \times x$
   $\Rightarrow x = \frac{1425 \times 100}{114} = 1250$
   Hence, the original price of the cycle is ₹ 1250. (Ans.)

4. By the question, Mr. Hamid receives ₹ 7350 per month as salary.
   He saves 12% of his salary
   ∴ His saving will be 12% of ₹7350
   $= \frac{6 + 12}{5} \times 7350$
   $= 6 \times 147 = ₹882$
   So, his expenditure will be = ₹ 7350 − ₹ 882
   $= ₹ 6468.$
   ∴ Monthly expenditure of Mr. Hamid is ₹ 6468. (Ans).

5. In an examination, 96% of the candidates passed and 50 failed.
   ∴ Percentage of the candidates failed = $(100 - 96)\% = 4\%$.

   A.T. P,
   4% of the total candidate = 50
   ∴ The total number of candidate = $\frac{50 \times 100}{4} = 1250$
   ∴ Number of candidates appeared = 1250. (Ans)