CHAPTER THIRTEEN

PERCENTAGES, COST AND SELLING PRICE, COMMISSION AND VAT

Percentage is the term used when the total number of living or non living things, under consideration is one hundred.

- For examples if one says that 20% of the animals in my farm are goats, then he means that out of every one hundred animals chosen or selected from my farm, 20 of them will be goats.

- Also given that 8% of the students who wrote the exams failed, implies that out of very 100 students who wrote the exams, 8 of them did not pass the exams.

Q1. Find 10% of ¢200.

$$\text{Soln.}$$

10% of $200 = \dfrac{10}{100} \times 200 = ¢20.$

Q2. 30% of $¢800 = \dfrac{30}{100} \times 800 = ¢240.$

Q3. Calculate $10\dfrac{1}{2} \% \; of \; 400$

$$\text{Soln.}$$

$$10\dfrac{1}{2} \% \; of \; 400 = \dfrac{21}{2}\% \; of \; 400 = \dfrac{21 \times 400}{2 \times 100} = 42..$$

Q4. Calculate $20\dfrac{2}{4}\% \; of \; 800$

$$\text{Soln.}$$

$$20\dfrac{2}{4} of 800 = \dfrac{82}{4} \; of \; 800 = \dfrac{82 \times 800}{4 \times 100} = 164.$$

Percentage increase:

- To determine the present number of living or non living things, after a percentages increase, the value of the percentage increase is first determined, and then added to the original number of the living or non living things

Q1. There are 250 students in a school. If this number is increased by 20%, determine the number students who are now in the school.

<center>Soln.</center>

Original number of students = 250.

Value of percentage increase = 20% of $250 = \frac{20}{100} \times 250 = 50$.

Number of students who are now in the school = 250 + 50 = 300 students.

Q2. A girl has an amount of ¢400. If this is increased by 40%, how much does she now have?

<center>Soln.</center>

Initial amount = ¢400 and percentage increase = 40% Value of the percentage

increase = $\frac{40}{100} \times 400 = 160, \therefore increase = ¢160. =>$

Amount she is now having $= ¢400 + ¢160 = ¢560.$

Q3. The cost price of a pen is ¢500. If this is to be increased by

$2\frac{1}{5}\%, determine\ the\ new\ price$.

<center>Soln.</center>

Initial cost of pen = ¢500 and percentage increase = $2\frac{1}{5}\% = \frac{11}{5}\%$

Value of percentage increase = $\frac{11}{5}\%\ of\ 500 = \frac{11 \times 500}{5 \times 100} = 11, =>$

the increase in cost price $= ¢11.$

The cost of the pen presently = ¢500 + ¢11 = ¢511.

Q4. Kofi was given an amount of ¢20 to buy a pen costing ¢15. But when he got to the store, he was made aware that the price of the pen has gone up by 80%. Determine the amount which he added to the ¢20, if he bought the pen.

<center>Soln.</center>

Cost of pen = ¢15 and percentage increase in cost = 80%. Value of percentage increase = $\frac{80}{100} \times 15 = 12, =>$ *the cost of the pen* after the increase = 15 +12 = ¢27. Since Kofi was given ¢20, then he added ¢7, in order to buy the pen.