<u>**Topic 8:**</u> **Percentage**

Notes:

Concept of Percentage:

1. The concept of percent is based on being out of 100 or 100 parts. 'Per' means 'out of' and 'cent' means 100. Thus, a **percentage** is a fraction with the denominator of 100. Percentage allows a good comparison of different quantities. We use the symbol % to represent '**percent**'.

2. In general, x percent is defined as x parts out of a hundred parts, ie: $x\% = \frac{x}{100}$

Converting a Decimal or Fraction into a Percentage:

3. To convert a fraction into a percentage, multiply it with 100%. In case of a mixed number, change it to an improper fraction first before multiplying it with 100%.

4. To convert a decimal into a percentage, multiply it with 100% or shift the decimal point two places to the right to obtain the answer.

Expressing One Quantity as a Percentage of Another:

5. To express one quantity a, as a percentage of another quantity b, ensure a and b are in the same unit first then perform the following steps:

   a) Write a as a fraction of b.

b) Multiply the fraction $\frac{a}{b}$ by 100%, converting it to percentage

Percentage Change of a Quantity and Reverse Percentage:

6. The change in the value of a quantity can be either expressed as a percentage increase or decrease in the original value.
   For example:

   % Increase/Decrease = $\frac{Increase/Decrease}{Original\ Value}$ x 100%
   or Increase/Decrease = % increase/decrease x original value

7. Reverse percentage problems involve using comparison of proportions to solve.

Profit and Loss, Discount, GST, and Commission:

8. **Profit** = Selling Price – Cost Price
9. **Loss** = Cost Price – Selling Price

10.   The profit or loss can be expressed as a percentage of the cost price.

   For example:

   % Profit/Loss = $\frac{Profit/Loss}{Cost\ Price}$ x 100%

11.   **Discount** = marked price (original selling price) – sale price (cheaper price) It can be expressed as a percentage.
   For example:

   % Discount = $\frac{Discount}{Marked\ Price}$ x 100%

12.   **Goods and Services Tax (GST)** is a tax on consumption. The tax is applicable to purchases on goods or services, including imports.
% GST inclusive = 109% x Pay.
*9% GST may subject to change in future.

13.   A **commission** is the amount of payment an agent receives for selling or providing a service on the behalf of another party.
% Commission = Payment% x Selling Price