Unit 21 – Ratio (1)

➢ Ratios and Equivalent Ratios

- ratio is a numerical relationship between two or more quantities expressed in similar units.
  - to make a consumable drink from the bottled juice, one can mix 2 litres of juice with 3 litres of water.
    We say that the fruit drink is made using juice and water in the ratio 2:3.
    The mixed quantities (in litres) of juice and water are expressed by the ratio 2:3.This is read as 'two-to-three' or 'two-is-to-three'.
    The numbers 2 and 3 are called the **terms of the ratio**.
  - When the terms of a given ratio are multiplied by the same positive whole number, we get an **equivalent ratio**.
    That is, $1 : 3 = 2 : 6 = 3 : 9 = 4 : 12 = 5 : 15$

The sides of a triangle are 8 cm, 6 cm 5 mm and 50 mm. Find the ratio of the lengths of the sides of the triangle and express it in the simplest form.
Let us express the lengths in similar units.
8 cm = 80 mm, 6 cm 5 mm = 65 mm, 50 mm
The ratio of the lengths of the sides = 80 : 65 : 50
The ratio of the lengths of the sides in the simplest form } = 16 : 13 : 10

➢ Dividing a given quantity in a ratio

Cement, sand and granite in a concrete mixture are in the ratio1 : 3 : 4. Find the quantities of cement, sand and granite in 16 cubic metres of concrete.

Ratio of cement to sand to granite	= 1 : 3 : 4
Total number of parts	= 1 + 3 + 4 = 8
Size of 8 parts	= 16 m^3
Size of a single part	= 16÷8 m^3 = 2 m^3
Number of parts of cement	= 1
Quantity of cement	= 1 × 2 m^3 = 2 m^3
Number of parts of sand	= 3
Quantity of sand	= 3 × 2 m^3 = 6 m^3
Number of parts of granite	= 4
Quantity of granite	= 4 × 2 m^3 = 8 m^3