

Proportion



A proportion is an equation with a ratio on each side. It is a statement that two ratios are equal. When two ratios are equal, then that type of equality of ratios is called proportion and their terms are said to be in proportion.

For Example: If the cost of 5 pens is ₹ 40 and that of 7 pens is ₹ 56, then ratio of pens is 5:7 and the ratio of their costs is ₹ 40 : ₹ 56. Thus, $5 : 7 = 40 : 56$

Therefore, the terms 5, 7, 40 and 56 are in proportion.



Let us understand with an example:

Example: Consider the ratios 21: 49 and 33 : 77, and find if they are in proportion.

Solution:

$$21:49 = \frac{21}{49} = \frac{21 \div 7}{49 \div 7} = \frac{3}{7} = 3 : 7 \quad \dots(i)$$

$$\text{and} \quad 33:77 = \frac{33}{77} = \frac{33 \div 11}{77 \div 11} = \frac{3}{7} \quad \dots(ii)$$

$$21 : 49 = 33 : 77 \quad \text{[From (i) and (ii)]}$$

$$21 : 49 :: 33 : 77$$

Hence, 21, 49, 33 and 77 are in proportion.