



LITTERA PUBLIC SCHOOL

CLASS VI

CHAPTER 10

MATHS

Introduction to Ratio and Proportion

Golden ratio

Two quantities are in the golden ratio if their ratio is the same as the ratio of their sum to larger of the two quantities.

- - If two numbers a and b are in golden ratio, then
$$a+ba=ab$$
 - It is approximately equal to 1.618.

Ratio

- The ratio is the comparison of a quantity with respect to another quantity.
- It is denoted by “:”.
- Two quantities can be compared only if they are in the same unit.

Example: Father’s age is 75 years and the daughter’s age is 25 years.

⇒The ratio of father’s age to daughter’s age

⇒

Father'sAgeDaughter'sAge=31=3:1

Difference between fractions and ratios

- A fraction describes a part of a whole and its denominator represents the total number of parts.
Example: $\frac{1}{3}$ means one part out of 3 parts.
- A ratio is a comparison of two different quantities.
- **Example:** In a society, 10 people like driving, 20 people like swimming and the total number of people in society is 30.
- The ratio of the number of people liking driving to the total number of people = 10:30.
- The ratio of the number of people liking swimming to the number of people liking driving is 20:10.

Same ratio in different situations

- Ratios can remain same in different situations.
- **Example:**
 1. $\frac{\text{Weight of Joe}}{\text{Weight of James}} = \frac{50}{100} = 1:2$
 - 2.

Comparing quantities using ratios

- Quantities can be compared using ratios.
- **Example:** Joe worked for 8 hours and James worked for 2 hours. How many times Joe's working hours is of James' working hours?
Solution: Working hours of Joe = 8 hours
 \Rightarrow Working hours of Sheela = 2 hours
 \Rightarrow The ratio of working hours of Joe to Sheela =

 $8:2=4$

Therefore, Joe works four times more than James.

To know more about Comparison of Ratios.

Equivalent Ratios

When the given ratios are equal, then these ratios are called as equivalent ratios.

- Equivalent ratios can be obtained by multiplying and dividing the numerator and denominator with the same number.
- Example: Ratios $10:30 (=1:3)$ and $11:33 (=1:3)$ are equivalent ratios.

Unitary Method

The method in which first we find the value of one unit and then the value of required number of units is known as Unitary Method.

- **Example:** Cost of two shirts in a shop is Rs.200. What will be the cost of 5 shirts in the shop?
Solution : Cost of 2 shirts = Rs.200
 \Rightarrow Cost of 1 shirt =

 $200 \div 2 = 100$

⇒ Cost of 5 shirts =

$$(2002) * 5 = 100 * 5$$

= Rs.500

To know more about Unitary Method.

Proportions

If two ratios are equal, then they are said to be in proportion.

- Symbol “::” or “=” is used to equate the two ratios.
- **Example:** Ratios 2:3 and 6:9 are proportional.
⇒ 2:3 :: 6:9 or 2:3 = 6:9

Uses of ratios and proportions

- **Example:** Suppose a man travelled 80 km in 2 hours, how much time will he take to travel 40 km?

Solution: If x is the required time, then the proportion is

$$80:2::40:x.$$

⇒

$$80 \cdot 2 = 40x$$

$$\Rightarrow 80x = 80$$

$$\Rightarrow x = 1 \text{ hour}$$

So, the man takes one hour to complete 40 km.

What is the ‘Golden ratio’?

Two numbers are in the golden ratio if the ratio of the sum of the numbers (a b) divided by the larger number (a) is equal to the ratio of the larger number divided by the smaller number (a/b).

What is known as the ‘Unitary method’?

The unitary method is a process of finding the value of a single unit. Based on this value, the value of the required number of units are found

What is meant ‘Fraction’?

A fraction represents a part of a whole or, more generally, any number of equal parts.

