CBSE Class 6 Maths Notes Chapter 12: The fundamentals of utilising a ratio to compare two amounts are introduced to students in Chapter 12 of CBSE Class 6 Maths, Ratio and Proportion. The number of times one quantity is larger or smaller than another is displayed by a ratio. It is stated as a fraction or with the colon (:) symbol, for example, 3:5. Conversely, the proportional equation asserts the equality of two ratios.

By breaking down ratios and figuring out if two given ratios add to a proportion, students can answer issues involving ratios and proportions. The chapter also covers real-world applications for enhanced comprehension.

CBSE Class 6 Maths Notes Chapter 12 Overview

The CBSE Class 6 Maths syllabus's Chapter 12, Ratio and Proportion, is crucial because it lays the foundation for comprehending relationships between amounts. The idea of ratio is introduced in this chapter, which is useful for comparing two amounts or numbers. It also discusses proportion, a crucial concept that aids in determining whether two ratios are equal. Understanding these ideas is essential for resolving issues in daily life, such calculating costs, understanding maps, and scaling recipes.

Higher education classes, where ratio and proportion are employed in complex subjects like percentages, speed, time, probability, and geometry, will find this chapter to be very important. This chapter serves as a foundational topic in mathematics by assisting in the development of analytical and problem-solving skills that are useful not just for exams but also for real-world applications in a variety of sectors, including science, engineering, and finance.

CBSE Class 6 Maths Notes Chapter 12 Ratio and Proportion

Below is CBSE Class 6 Maths Notes Chapter 12 Ratio and Proportion -

Ratios are mathematical quantities that are used to compare two objects that are similar to one another in terms of units. There are three methods to write a ratio: x to y, x: y, and

$$\frac{x}{y}$$

but read as the ratio of x to y.

For example:

1. The ratio of 4 to 5 is 4: 5.

2. Ram's weight is 40 kgs and Ali's weight is 80 kgs. To find out the ratio of Ram's weight to Ali's weight we need to divide Ram's weight to Ali's weight. Therefore, the ratio between Ram's and Ali's weight is
$$\frac{40}{80}$$
= 1:2

Ratio is the concept of comparing items that are similar to one another. Additionally, two ratios are said to be in proportion to one another when they are equal. '::' or '=' is the symbol used to symbolise it.

Introduction to Ratio and Proportion

A **ratio** is a comparison between two quantities that shows how many times one quantity is contained in another. It is expressed as:

A:B

A **proportion** is an equation that shows two ratios are equivalent. If two ratios A/B and C/D are equal, then they form a proportion, represented as:

A:B :: C:D

Key Differences between Ratio and Proportion:

- **Ratio** compares two quantities directly.
- **Proportion** states that two ratios are equal.

Golden Ratio

If the ratio of two quantities equals the ratio of their sum to the bigger of the two quantities, then the two quantities are in the golden ratio.

- If two numbers a and b are in golden ratio, then
$$\frac{a+b}{a} = \frac{a}{b}$$
- It is approximately equal to 1.618.

Ratio

A comparison of one quantity with regard to another is called a ratio.
The symbol for it is ":".
Only when two quantities are in the same unit can they be compared.

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

$$\frac{Father'sAge}{Daughter'sAge} = \frac{3}{1} = 3:1$$

Difference between Fractions and Ratios

A fraction's denominator denotes the total number of pieces, and it describes a portion of a whole.
13 is an example of one part out of three.
A ratio is the result of comparing two distinct amounts.
As an illustration, consider a society where 10 members enjoy driving, 20 enjoy swimming, and 30 members in total.
The percentage of people who enjoy driving compared to the entire population is 10:30.
The percentage of respondents who prefer swimming versus those who prefer driving is 20:10.

Same Ratio in Different Situations

- Ratios can remain same in different situations.
- Example:

1. $\frac{WeightofJoe}{WeightofJames} = \frac{50}{100} = 1:2$

2. $\frac{NumberofGirls}{NumberofBoys} = \frac{50}{100} = 1:2$

Here, both the above ratios are equal.

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
  ⇒Working hours of Sheela = 2 hours
  ⇒The ratio of working hours of Joe to Sheela =
  $\frac{8}{2} = 4$
  .

Therefore, Joe works four times more than James.

Equivalent Ratios

The ratios are referred to as equivalent ratios when they are equal.

By multiplying and dividing the numerator and denominator by the same number, equivalent ratios can be calculated.
For instance, the ratios 10:30 (=1:3) and 11:33 (=1:3) are comparable.

Unitary Method

The Unitary Method is a technique where the value of one unit is found first, followed by the value of the necessary number of units.

- **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
  ⇒Cost of 1 shirt =
  $\frac{200}{2} = 100$

  ⇒Cost of 5 shirts =
  $\left(\frac{200}{2} \right) * 5 = 100 * 5$
  = Rs.500

Applications of the Unitary Method:

- **Shopping:** Determining the cost of several items when the cost of one is known.
- **Time and work:** Calculating the time required to complete tasks based on the rate of work.
- **Distance, speed, and time:** Finding distances or times using speed as a factor.
- **Conversions:** Used to convert units (e.g., kilometers to miles, currency conversion).

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.
  $\Rightarrow$ 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.

$\Rightarrow$

$$\frac{80}{2} * \frac{40}{x}$$

$\Rightarrow$ 80x=80

$\Rightarrow$ x=1 hour

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

Benefits of CBSE Class 6 Maths Notes Chapter 12

The Ratio and Proportion chapter in CBSE Class 6 Maths offers several benefits:

Foundation for Advanced Concepts: It builds the groundwork for understanding more complex topics like percentages, algebra, speed, and probability in higher grades.

Real-Life Application: Students can apply ratio and proportion concepts in everyday situations, such as comparing prices, resizing recipes, or understanding maps and scales.

Enhanced Problem-Solving Skills: The chapter fosters logical thinking and analytical skills, enabling students to approach mathematical problems systematically.

Preparation for Competitive Exams: Many competitive exams include questions on ratio and proportion, making mastery of these topics essential for future academic success.

Conceptual Clarity: The chapter reinforces basic arithmetic and number sense, helping students gain confidence in handling numbers.