Basic Concepts of Fraction

FOR CLASS 7 & 9

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What are Fractions?

- **Definition 1:** A fraction represents a numerical value, which defines the parts of a whole.
- **Definition 2:** A fraction is a number that represents a part of a whole.

Generally, the fraction can be a portion of any quantity out of the whole thing and the whole can be any specific things or value.

The basics of fractions explain the top and bottom numbers of a fraction. The top number represents the number of selected or shaded parts of a whole whereas the bottom number represents the total number of parts.

Suppose a number has to be divided into four parts, then it is represented as x/4. So the fraction here, x/4, defines 1/4th of the number x. Hence, 1/4 is the fraction here. It means one in four equal parts. It can be read as one-fourth or 1/4. This is known as fraction.

Parts of Fractions

- The fractions include two parts, numerator and denominator.

Numerator: It is the upper part of the fraction, that represents the sections of the fraction

Denominator: It is the lower or bottom part that represents the total parts in which the fraction is divided.

Example: If 3/4 is a fraction, then 3 is the numerator and 4 is the denominator.

Properties of Fractions

Similar to real numbers and whole numbers, a fractional number also holds some of the important properties. They are:

- Commutative and associative properties hold true for fractional addition and multiplication
- The identity element of fractional addition is 0, and fractional multiplication is 1
- The multiplicative inverse of a/b is b/a, where a and b should be non zero elements
- Fractional numbers obey the distributive property of multiplication over addition

Types of Fractions

- Based on the properties of numerator and denominator, fractions are sub-divided into different types. They are:

  Proper fractions

  Improper fractions

  Mixed fractions

  Like fractions

  Unlike fractions

  Equivalent fractions

Proper Fractions

- The proper fractions are those where the numerator is less than the denominator. For example, 8/9 will be a proper fraction since "numerator < denominator".

Improper Fractions

- The improper fraction is a fraction where the numerator happens to be greater than the denominator. For example, 9/8 will be an improper fraction since "numerator > denominator".

Mixed Fractions

A mixed fraction is a combination of the integer part and a proper fraction. These are also called mixed numbers or mixed numerals. For example:

$$3\frac{2}{3} = \frac{[(3\ x\ 3) + 2]}{3} = \frac{11}{3}$$

Like Fractions

Like fractions are those fractions, as the name suggests, that are alike or same.

For example, take ½ and 2/4; they are alike since if you simplify it mathematically, you will get the same fraction.

Unlike Fractions

Unlike fractions, are those that are dissimilar.

For example, ½ and 1/3 are unlike fractions.

- **Equivalent Fractions**

  Two fractions are equivalent to each other if after simplification either of two fractions is equal to the other one.

  For example, ⅔ and 4/6 are equivalent fractions.

  Since, 4/6 = (2×2)/(2×3) = 2/3

- **Unit Fractions**

  A fraction is known as a unit fraction when the numerator is equal to 1.

  One half of whole = ½

  One-third of whole = 1/3

  One-fourth of whole = ¼

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