# Whole number and decimals

## Key Concepts:

- A whole number is a number without fractions or decimals.

**Example:** 0, 1, 2, 3, ...

- A decimal number has a whole number part and a fractional part separated by a decimal point.

**Example:** 4.5, 0.75, 12.03

- Decimal numbers are another way to represent fractions, especially with denominators like 10, 100, 1000, etc.

## Converting Whole Numbers to Decimals

Any whole number can be written as a decimal by adding .0 at the end.

**Example:**

5 = 5.0,

12 = 12.0

## Place Value in Decimals

| Place Value (Right of Decimal) | Name | Example in 4.237 |
|---|---|---|
| 1st digit | Tenths | 2 (0.2) |
| 2nd digit | Hundredths | 3 (0.03) |
| 3rd digit | Thousandths | 7 (0.007) |

**Example 1:**

Write the decimal form of: $3 + \frac{4}{10}$

**Solution:**

$\frac{4}{10} = 0.4$

So, 3 + 0.4 = 3.4

**Example 2:**

Convert $\frac{7}{100}$ into decimal.

**Solution:**

7 ÷ 100 = 0.07

## Properties of Whole Numbers and Decimals:

1. Whole numbers are a subset of decimal numbers (they can be written as 3.0, 4.0, etc.).
2. Decimals are based on powers of 10: $\frac{1}{10} = 0.1$, $\frac{1}{100} = 0.01$, $\frac{1}{1000} = 0.001$

3. Addition and subtraction of decimals follow place value rules—line up decimal points.
4. Multiplying a decimal by 10, 100, 1000 shifts the decimal to the right.

   **Example:** 3.5 × 10 = 35
5. Dividing a decimal by 10, 100, 1000 shifts the decimal to the left.

   **Example:** 3.5 ÷ 10 = 0.35