CBSE Class 6 Maths Notes Chapter 6: Students are introduced to integers, a collection of numbers that includes positive, negative, and zero, in Chapter 6 of CBSE Class 6 Maths. The idea of the number line—which represents integers as positive numbers to the right of zero and negative numbers to the left—is explained in this chapter. It includes guidelines for handling signs and covers operations like adding and subtracting integers.

Students acquire practical experience applying these procedures to real-world scenarios, like calculating gains and losses or temperature changes. Understanding absolute values and opposing numbers is also emphasised in this chapter.

CBSE Class 6 Maths Notes Chapter 6 Overview

CBSE Class 6 Maths Notes Chapter 6 Integers, is significant for students since it introduces them to a new set of numbers that goes beyond merely positive numbers, including negative numbers and zero. This chapter clarifies the idea of the number line, which shows how integers are positioned, and numbers are ordered in both rising and decreasing order.

Students acquire the fundamental skills necessary to solve issues pertaining to real-world scenarios, such as computing profits and losses or adjusting for temperature variations. These skills include the addition and subtraction of numbers. Students who understand negative numbers are better prepared for higher-level maths subjects like coordinate geometry and algebra. The chapter also teaches rules for handling positive and negative numbers in an organised and unambiguous manner, which enhances logical thinking and problem-solving abilities.

CBSE Class 6 Maths Notes Chapter 6 Integers

Below is CBSE Class 6 Maths Notes Chapter 6 Integers -

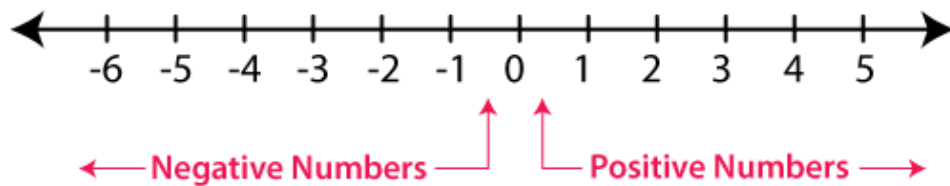## Introduction

Whole Numbers

Whole numbers are a set of numbers that include all **natural numbers** (starting from 0) and do not include any fractions, decimals, or negative numbers. In simple terms, whole numbers are **non-negative integers**. The set of whole numbers is represented as {0, 1, 2, 3, 4, ...}, extending infinitely in the positive direction.

- Whole numbers include zero and all natural numbers, i.e., 0, 1, 2, 3, 4, and so on.
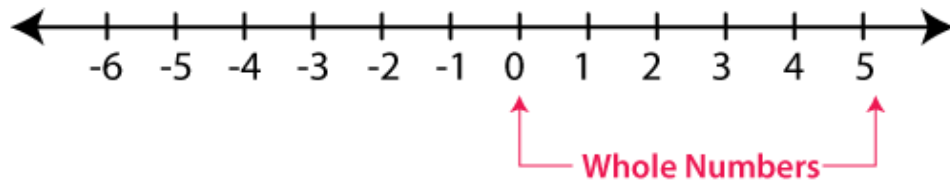
Negative Numbers

Negative numbers are those that have a negative sign and are located on the number line to the left of zero.

Introduction to Zero

Originally created by ancient mathematicians, zero is a special and significant number in mathematics. It is represented by the number "0" and indicates the lack of any amount or value. Zero is the smallest number in the set of whole numbers and acts as the number line's separator between positive and negative numbers.

The Number Zero

- The number zero means an absence of value.

The Number Line

A number line is a graphic representation of numbers that is horizontal and straight, with each point denoting a distinct number. It is employed to illustrate the relationship between all numbers, including zero, negative, and positive numbers.

Integers

- Collection of all positive and negative numbers including zero are called integers. ⇒ Numbers …, – 4, – 3, – 2, – 1, 0, 1, 2, 3, 4, … are integers.
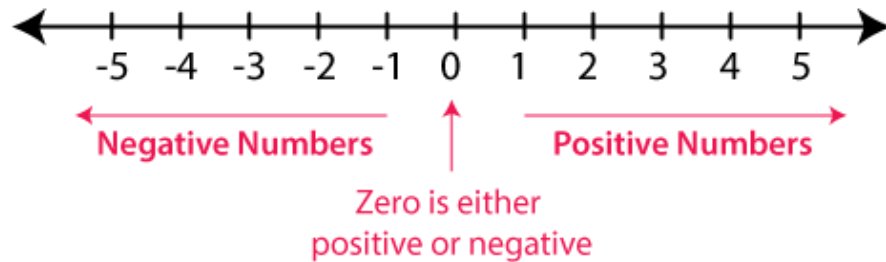
- Draw a line and mark a point as 0 on it
- Points marked to the **left** (-1, -2, -3, -4, -5, -6) are called **negative** integers.
- Points marked to the **right** (1, 2, 3, 4, 5, 6) or (+1, +2, +3, +4, +5, +6) are called **positive** integers.

Absolute Value of an Integer

An integer's absolute value is its numerical value without taking its sign into account.
For example, the absolute values of -7 and +7 are both 7.

Ordering Integers

When we move leftward on a number line, the number goes down and ascends in the opposite direction.
As a result, the integer order is expressed as..., 5, 4, 3, 2, 0, 1, 2, 3, 4, 5...
Consequently, 0 < 1, 1 < 2, 2 < 3, – 3 < – 2, – 2 < – 1, – 1 < 0.

Addition of Integers

Combining two or more integers—which might be positive or negative—is the process of adding integers. Simple principles for adding numbers can be used to solve problems involving changes, losses, and gains.

Positive integer + Negative integer

- Example: (+5) + (-2) Subtract: 5 – 2 = 3 Sign of bigger integer (5): + Answer: +3
- Example: (-5) + (2) Subtract: 5-2 = 3 Sign of the bigger integer (-5): – Answer: -3

Positive integer + Positive integer

- Example: (+5) + (+2) = +7
- Add the 2 integers and add the positive sign.

Negative integer + Negative integer

- Example: (-5) + (-2) = -7
- Add the two integers and add the negative sign.

Properties of Addition and Subtraction of Integers

Operations on Integers

Operations that can be performed on integers:

- Addition
- Subtraction
- Multiplication
- Division.

Subtraction of Integers

- The subtraction of an integer from another integer is same as the addition of the integer and its additive inverse.
- Example: 56 – (–73) = 56 + 73 = 129 and 14 – (8) = 14 – 8 = 6

Properties of Addition and Subtraction of Integers

Closure under Addition

- a + b and a – b are integers, where a and b are any integers.

Commutativity Property

- a + b = b + a for all integers a and b.

Associativity of Addition

- (a + b) + c = a + (b + c) for all integers a, b and c.

Additive Identity

- Additive Identity is 0, because adding 0 to a number leaves it unchanged.
- a + 0 = 0 + a = a for every integer a.

Multiplication of Integers

Combining two integers—which might be positive or negative—is the process of multiplying them. The signs of the numbers being multiplied determine the rules for doing so.

- Product of a negative integer and a positive integer is always a negative integer. 10×−2=−20
- Product of two negative integers is a positive integer. −10×−2=20
- Product of even number of negative integers is positive. (−2)×(−5)=10
- Product of an odd number of negative integers is negative. (−2)×(−5)×(6)=−60

Properties of Multiplication of Integers

Closure under Multiplication

- Integer * Integer = Integer

Commutativity of Multiplication

- For any two integers a and b, a × b = b × a.

Associativity of Multiplication

- For any three integers a, b and c, (a × b) × c = a × (b × c).

Distributive Property of Integers

- Under addition and multiplication, integers show the distributive property.
- For any integers a, b and c, a × (b + c) = a × b + a × c.

Multiplication by Zero

- For any integer a, a × 0 = 0 × a = 0.

Multiplicative Identity

- 1 is the multiplicative identity for integers.
- a × 1 = 1 × a = a

Division of Integers

When dividing an integer by another, there are rules that vary based on which numbers' signs are involved. These indicators indicate whether the quotient is positive or negative.

- (positive integer/negative integer)or(negative integer/positive integer)
  ⇒ The quotient obtained is a negative integer.
- (positive integer/positive integer)or(negative integer/negative integer)
  ⇒ The quotient obtained is a positive integer.

Properties of Division of Integers

For any integer a,

- a/0 is not defined
- a/1=a

Integers are not closed under division.

Example: (–9)÷(–3)=3 result is an integer but (−3)÷(−9)=−3−9=13=0.33 which is not an integer.

Benefits of CBSE Class 6 Maths Notes Chapter 6

The benefits of learning CBSE Class 6 Maths Chapter 6 Integers are significant for students' mathematical development:

Understanding Negative Numbers: Students are introduced to negative numbers, broadening their number sense beyond positive whole numbers.

Real-Life Applications: Integers are used in daily scenarios like tracking temperature changes, financial transactions (profit/loss), and elevations above or below sea level.

Improved Problem-Solving: Learning to add and subtract integers strengthens students' logical thinking and problem-solving abilities.

Foundation for Advanced Math: This chapter prepares students for advanced topics like algebra, where positive and negative numbers play a key role.

Critical Thinking: Understanding rules related to integer operations enhances analytical skills, helping students tackle complex math problems in higher grades.