



Introduction to Vectors

Vectors represent quantities that have both **magnitude and direction**, making them essential in fields like physics and engineering. Understanding vectors helps simplify complex problems and enhances spatial reasoning skills.

Introduction to Vectors

Understanding vectors: magnitude and direction in mathematics



Definition

A vector is a quantity



Notation

Represented as v or $\square v$ in 2D



Geometric Representation

Illustrated with arrows on a grid



Magnitude

Calculated using the Pythagorean theorem

Notation of Vectors

Understanding vector representation in two-dimensional space



Vector Symbols

Represented as v or $\square v$



Two-Dimensional Format

Notation $v = \langle vx, vy \rangle$



Example

$v = \langle 3, 4 \rangle$ in code box



Geometric Interpretation

Visualize vectors on a coordinate plane

Geometric Representation

Understanding vectors through graphical visualization and formulae

✓ **Start Point**

Origin at (0, 0)

✓ **End Point**

Arrow to (3, 4)

✓ **Magnitude**

Calculated as $\sqrt{3^2 + 4^2}$

✓ **Result**

Magnitude equals 5

Module 1.1: Vectors

Understanding the basics of vector mathematics and notation

Definition

A vector has **magnitude** and **direction**.

Notation

Denoted by **v** or $\square v$ in 2D.

Representation

Geometrically represented as an **arrow**.

Magnitude

Calculated using the **Pythagorean theorem**.