Unit 6- Introduction to Vector

Scalar   vs   Vector

Scalar
- Quantity that describes magnitude or size only (with or without units)

- Does not include direction

- Ex : Man's mass of 88kg, person skiing at a speed of 25km/h

Vector
- Quantity that has both magnitude and direction

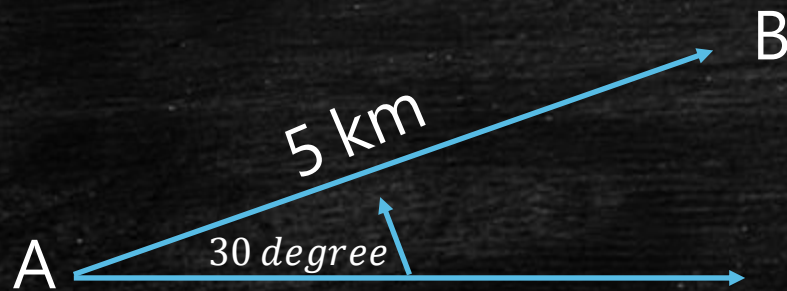- Ex : car traveling at 50 km/h to the east

Vectors can be represented in several ways

1) words

- 5 km at an angle of 30 degree to the horizontal

2) In a diagram- as a geometric vector

- A representation using an arrow diagram, or directed line segment that shows magnitude and direction

B

A

5 km

$30 \ degree$

Magnitude or size of a vector:
$$\left|\overrightarrow{AB}\right| \ or \ \overrightarrow{V}$$

Types of Vectors

- Parallel Vectors- same or opposite direction, not necessarily the same magnitude

- Equivalent vectors- have the same magnitude and the same direction. The location of the vectors does not matter

- Coincident vectors- same

- Opposite vectors- same magnitude but opposite direction. The location of vector does not matter.

Ex: $\overrightarrow{AB} = -\overrightarrow{BA}$ or $\overrightarrow{AB}$ and $\overrightarrow{BA}$

Ex:

A   D

B   C

Equivalent Vectors

$$\overrightarrow{AB} = \overrightarrow{DC}$$

$$\overrightarrow{AD} = \overrightarrow{BC}$$

Opposite Vectors

$$\overrightarrow{AB} \ and \ \overrightarrow{CD}$$ $$\overrightarrow{AB} = -\overrightarrow{CD}$$

$$\overrightarrow{AB} \ and \ \overrightarrow{CB}$$ $$\overrightarrow{AD} = -\overrightarrow{CB}$$