3 UNIT #~~4/6~~ - MOTION + Forces

Distance, Position, Displacement, Speed and Velocity

Kinematics

- the study of motion
  - studies motion...ignores the *cause of the motion*

VECTOR	SCALAR
magnitude & direction	magnitude only

| "The brick has been displaced **5m** to **the right**." | "the brick has moved a distance of **5m**." |

magnitude — number
— size

Dynamics

□ The study of the forces that produce motion

– pulling force

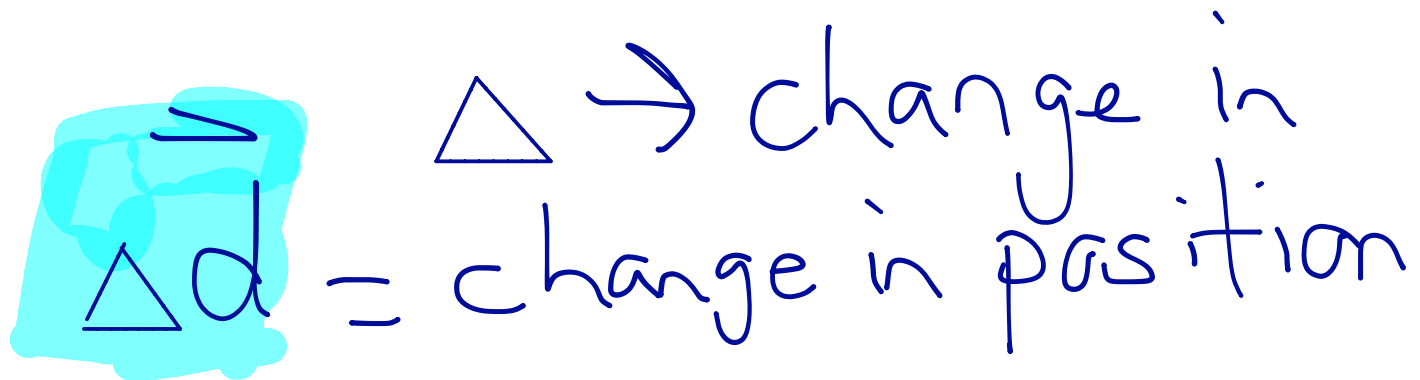Warning
Falling objects

– force of gravity

Distance

- **distance–the total path length travelled by an object**
  - (m)
  - SCALAR
- example: If you walk

  2m from your locker to your biology class

  2m from biology class to the washroom

  7m from the washroom to your physics class

  11m
- You have travelled a **distance** of 11m.

Position

- **position–the distance and direction of an object from a reference point.**
  - VECTOR
  - $\vec{d}$

- example : the brick is 5m to the right of it's starting point.

Displacement

- **displacement**-the change in position of an object
  - VECTOR
  - Δd

- example 1: the brick was displaced 5m to the right

$\triangle \rightarrow$ change in

$\triangle d =$ change in position

Speed

- average speed = $\dfrac{\text{total distance}}{\text{total time}}$ (m/s)

- SCALAR quantity (has ONLY **magnitude**)

- example: speedometer

Pg 10 #1,4,5

Pg 13 #8