

Motion Formulas

By: *Your Name*

Block: ____

Speed

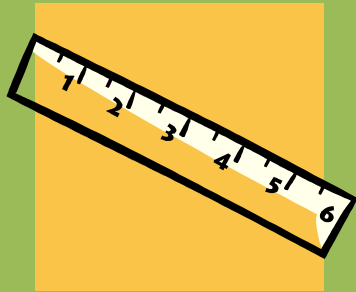
Velocity

Average Speed

Graphing Speed 1

Graphing Speed 2

Speed - the distance an object travels per unit of time.



$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$



- Distance = measure of length
- Example of distance: meter (m), mile (mi), kilometer (km), feet (ft)
- Time = example of time: hour (hr), minute (min), second (s)

Velocity – speed in a given direction

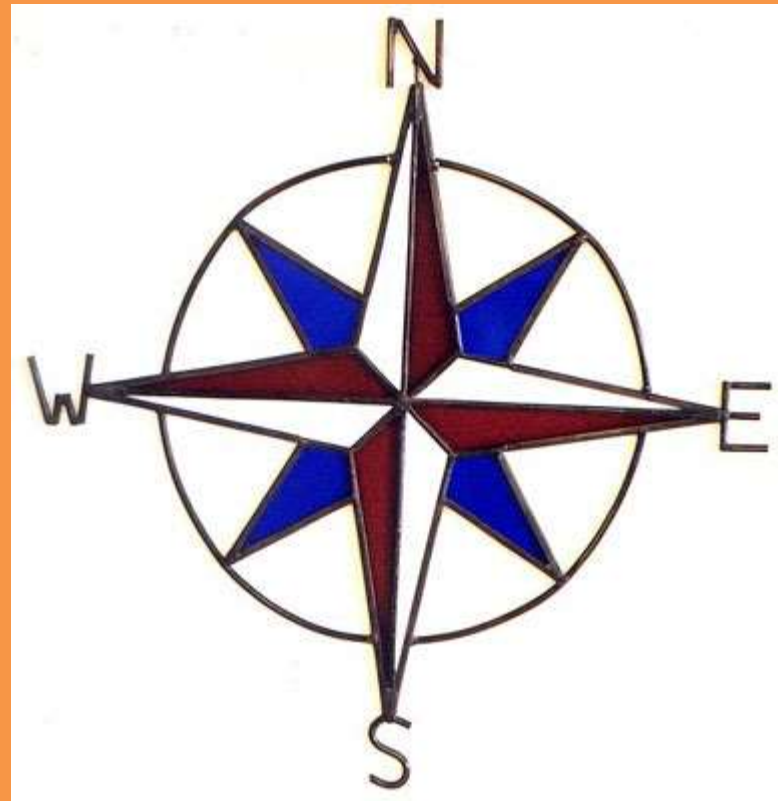
Velocity = speed + direction

Velocity = $\frac{\text{distance}}{\text{time}}$ + direction

Direction = North, East,
South, West, Left, Right

Examples:

- 22 km/hr northwest
- 2 m/s west



Average Speed – the overall rate of speed of an object

$$\text{Average Speed} = \frac{\text{Total Distance}}{\text{Total Time}}$$

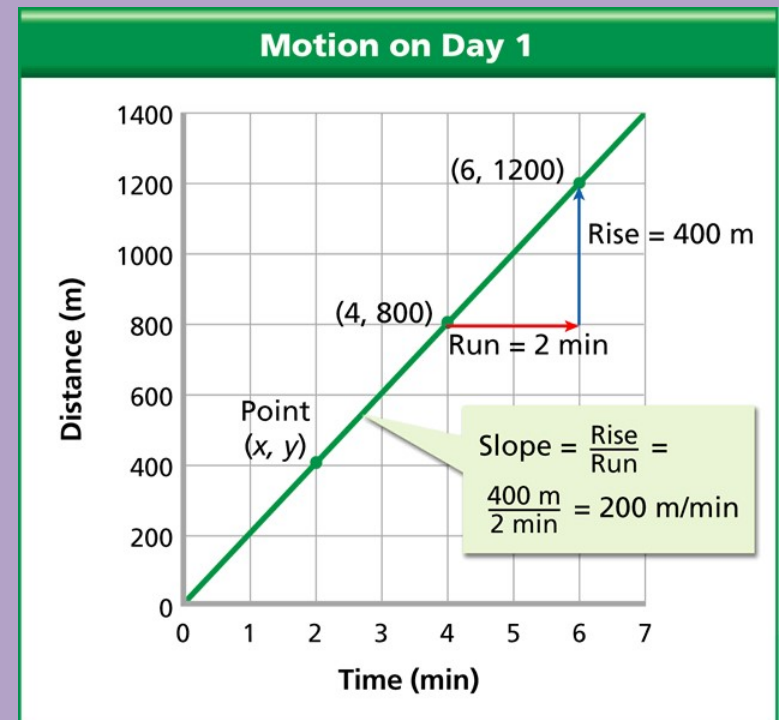
Example: $\frac{(\text{distance 1} + \text{distance 2} + \text{distance 3})}{(\text{time 1} + \text{time 2} + \text{time 3})}$

NOTE: you must add the distances and times separately to get a **TOTAL** for each before you divide.



Graphing Speed 1

- You can graph the SPEED of an object on a **distance vs. time** graph.
 - Distance is always the Y-axis (vertical)
 - Time is always the X-axis (horizontal)
- Slope = $\frac{\text{Rise}}{\text{Run}}$



Graphing Speed 2

- The steeper the slope, the faster the object's speed.
- When the slope is constant, the speed is constant.
- When the slope changes, the speed of the object is changing.
- A horizontal line means the object is NOT moving.
- There will **never** be a negative slope.

