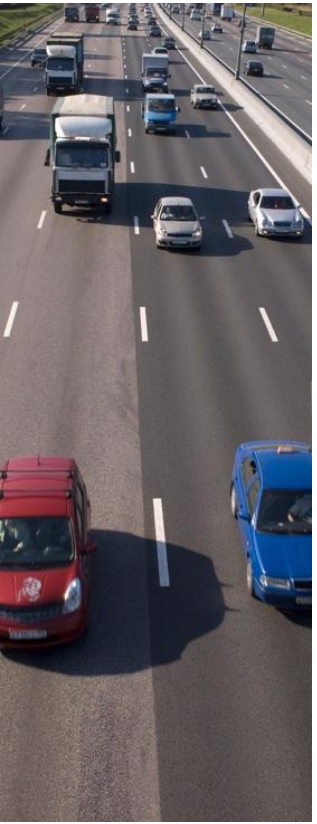
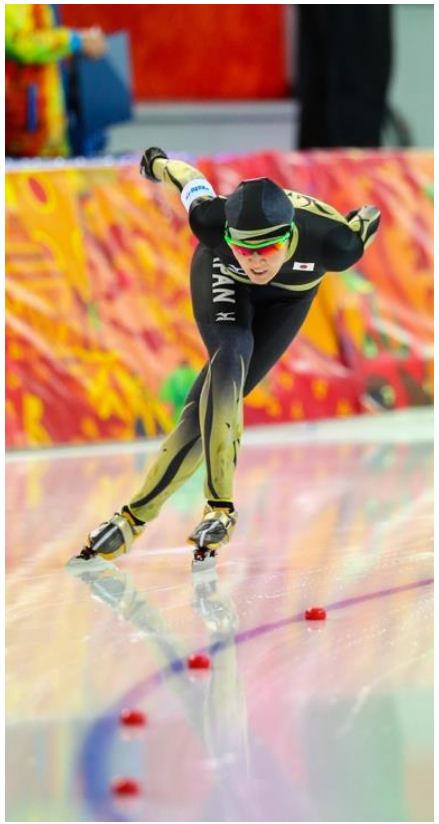
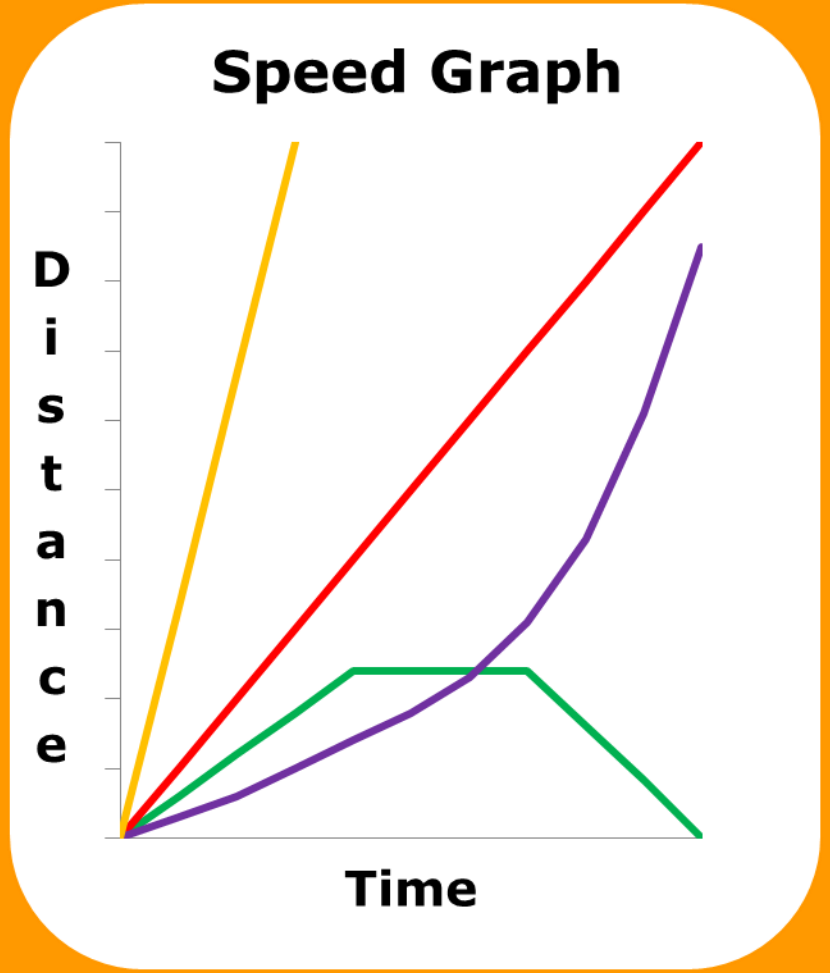




Motion Graphing

Presented by Kesler Science

Motion Graphing



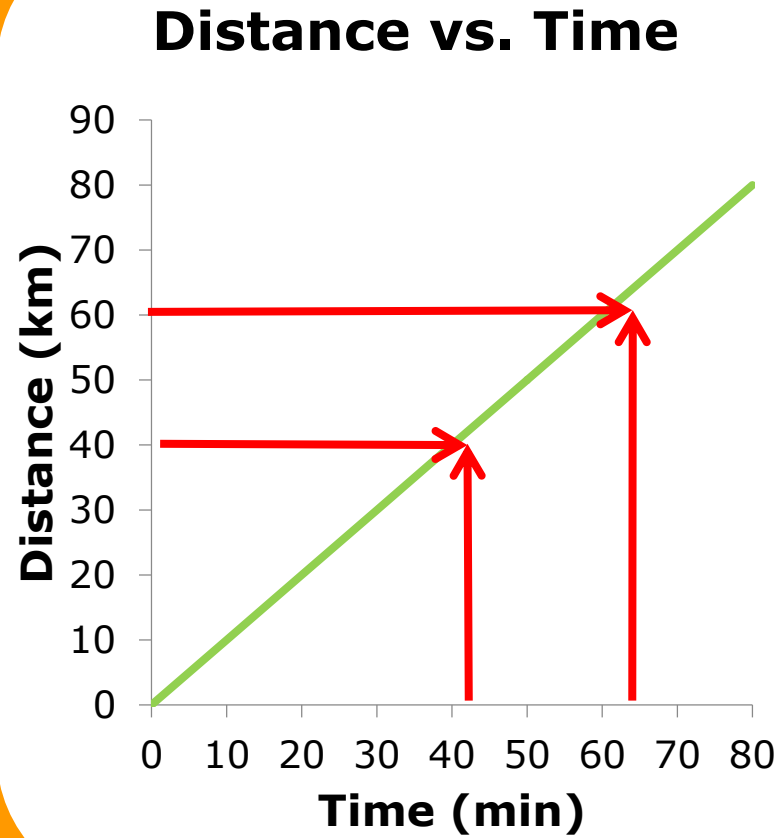
Speed Graphs

- A typical speed graph will have distance or position on the y-axis and time on the x-axis.
- Graphs help make motion easier to picture and understand.
- Lines represent an object in motion or speed.

Motion Graphing

Constant Speed

- When the speed of an object remains the same, it does not increase or decrease.
- d/t (distance/time)
- 60/60 = 1 km/minute
- 40/40 = 1 km/minute



Motion Graphing

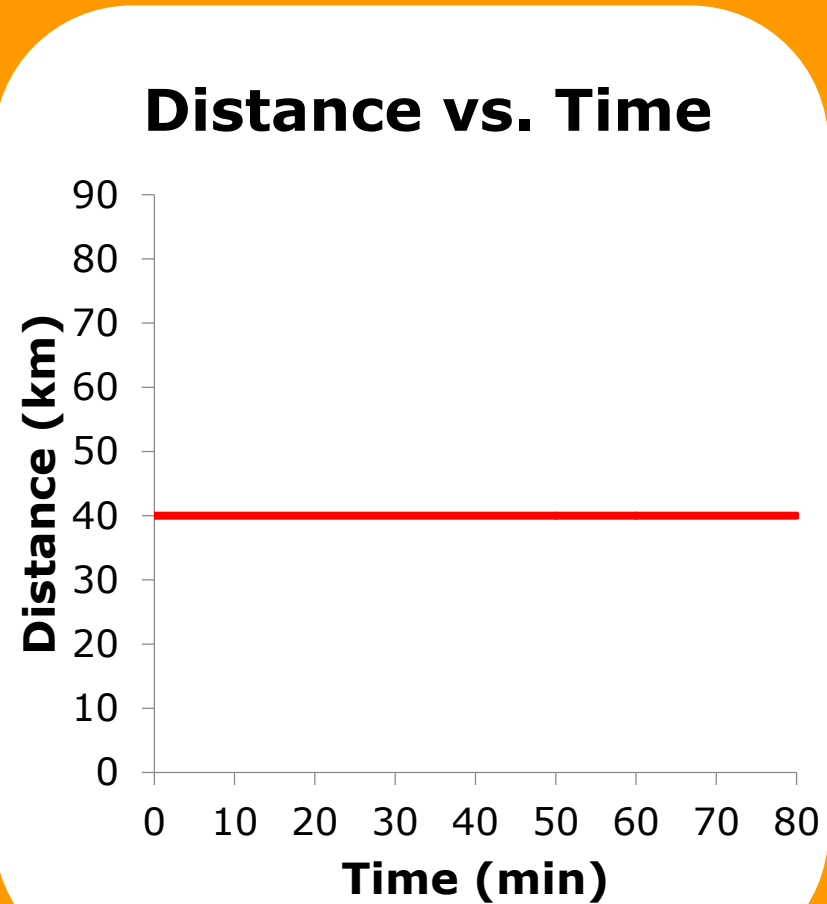
No Speed/Stopped

- An object is at rest.

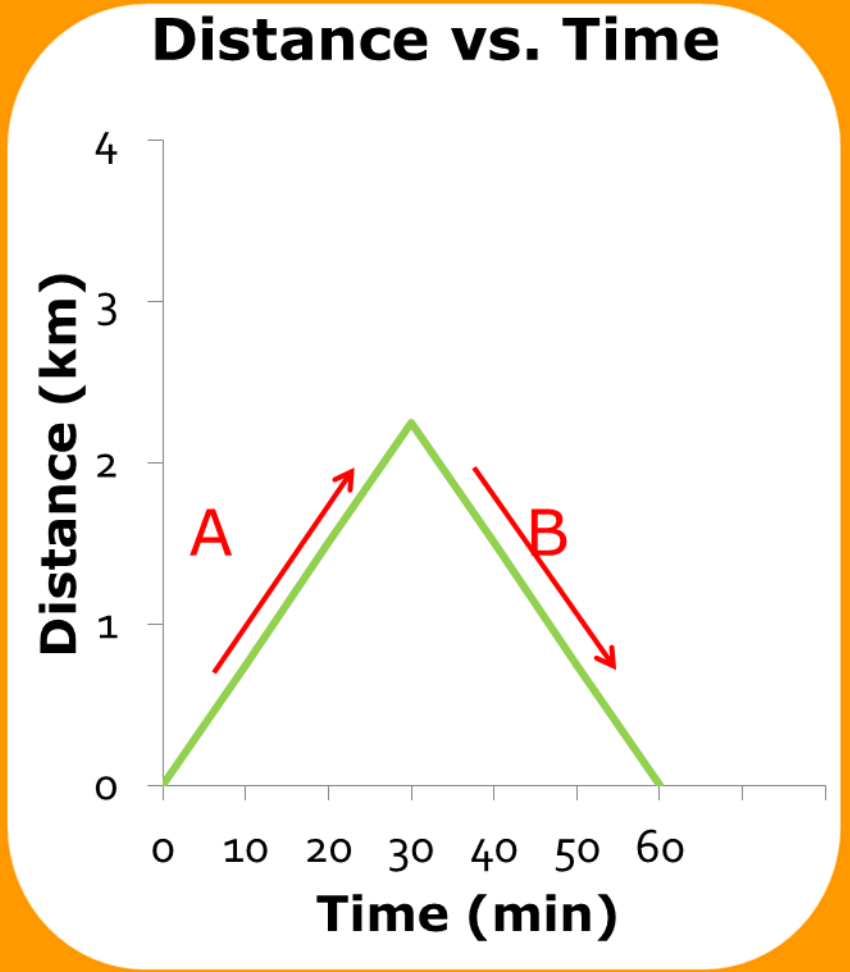
  Ex. - *Stopping at McDonalds for lunch.*

- Time changes but distance stays the same.

Looking at a Distance-Time graph, how would you be able to tell if an object is moving at a constant speed or not moving?



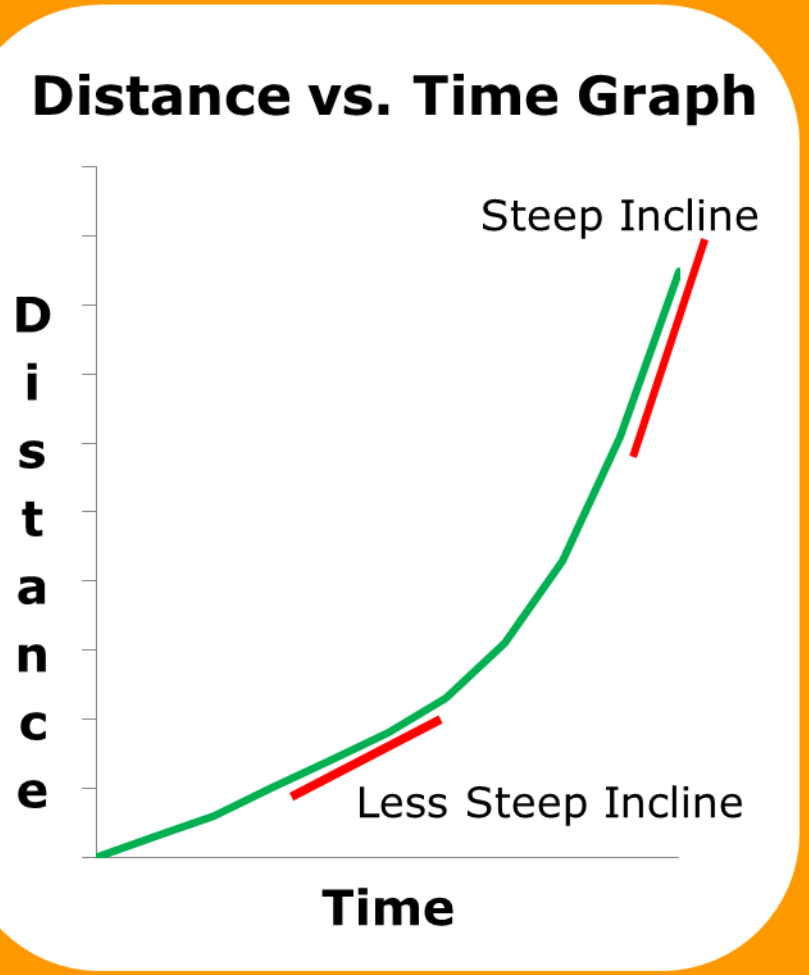
Motion Graphing



Velocity

- Velocity is speed in a given direction.
- Line A is moving away from point 0 (the origin).
- Line B is moving back to point 0 (the origin).

Motion Graphing



Acceleration

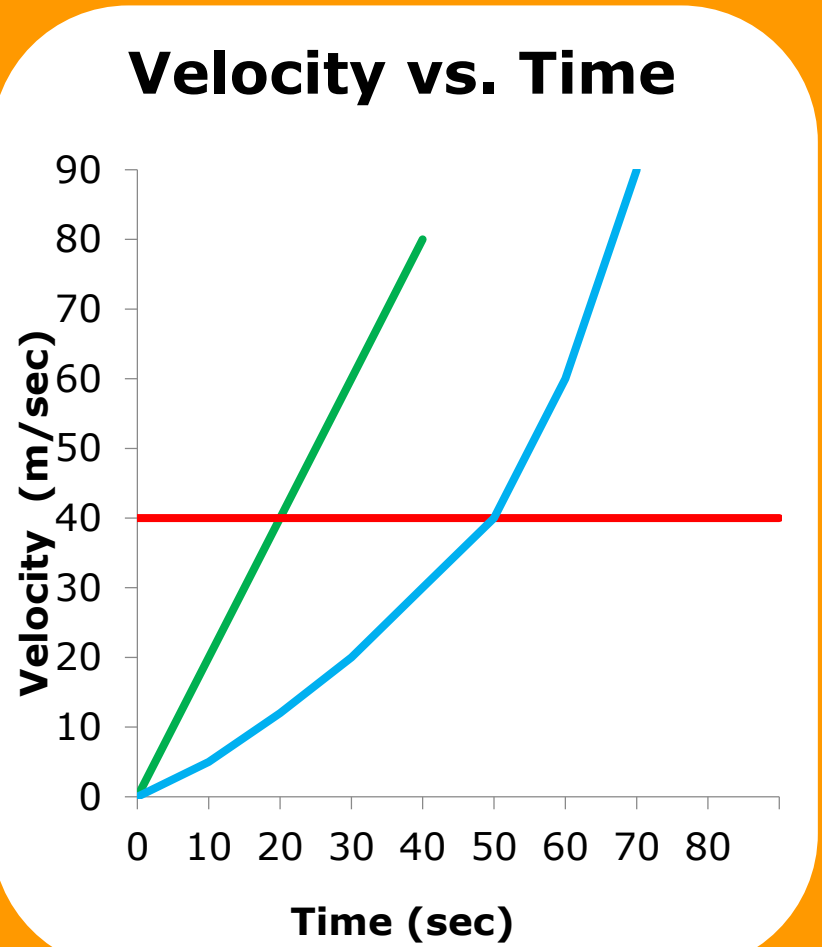
- Change in speed or velocity over a specific amount of time.
- A curved line.
- The steeper the incline the faster the acceleration.

Motion Graphing

Acceleration Graphs

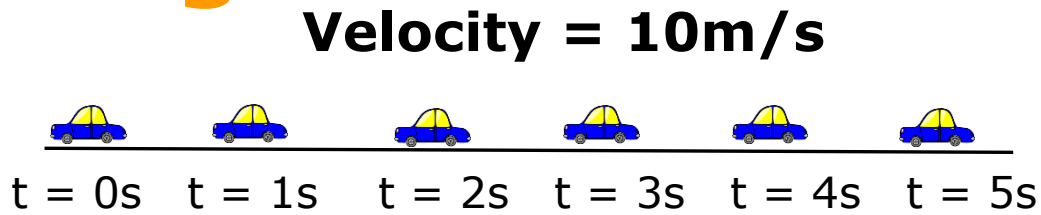
- A typical acceleration graph will have speed or velocity on the y-axis and time on the x-axis.
- Lines represent an object's acceleration or velocity.

What is the unit for velocity? What is the unit for time?

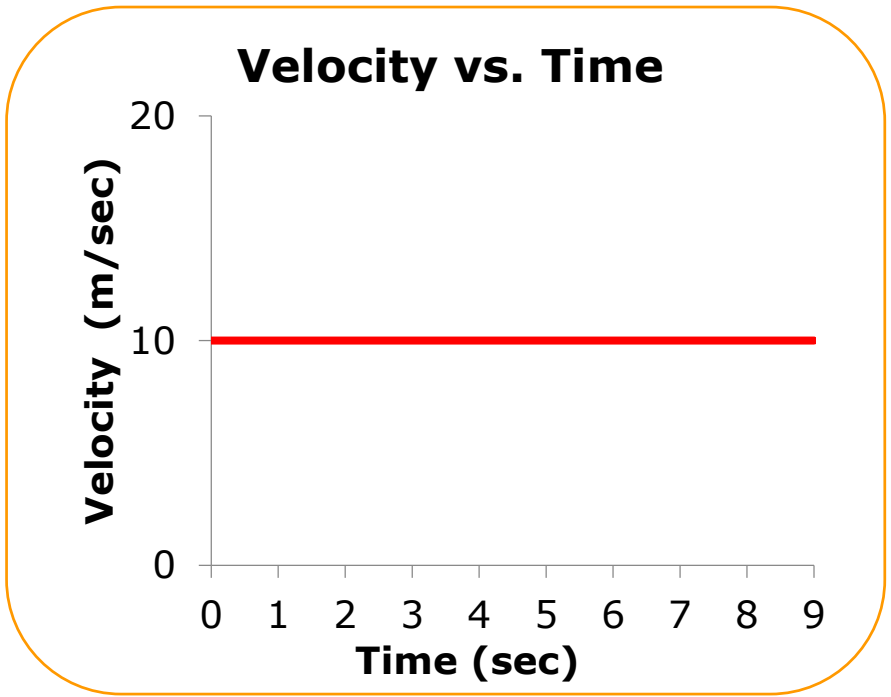


Motion Graphing

Constant Velocity



- When the velocity of an object remains the same, its rate of change does not increase or decrease.
- 10m/s at time 1sec.
- 10m/s at time 2 sec.

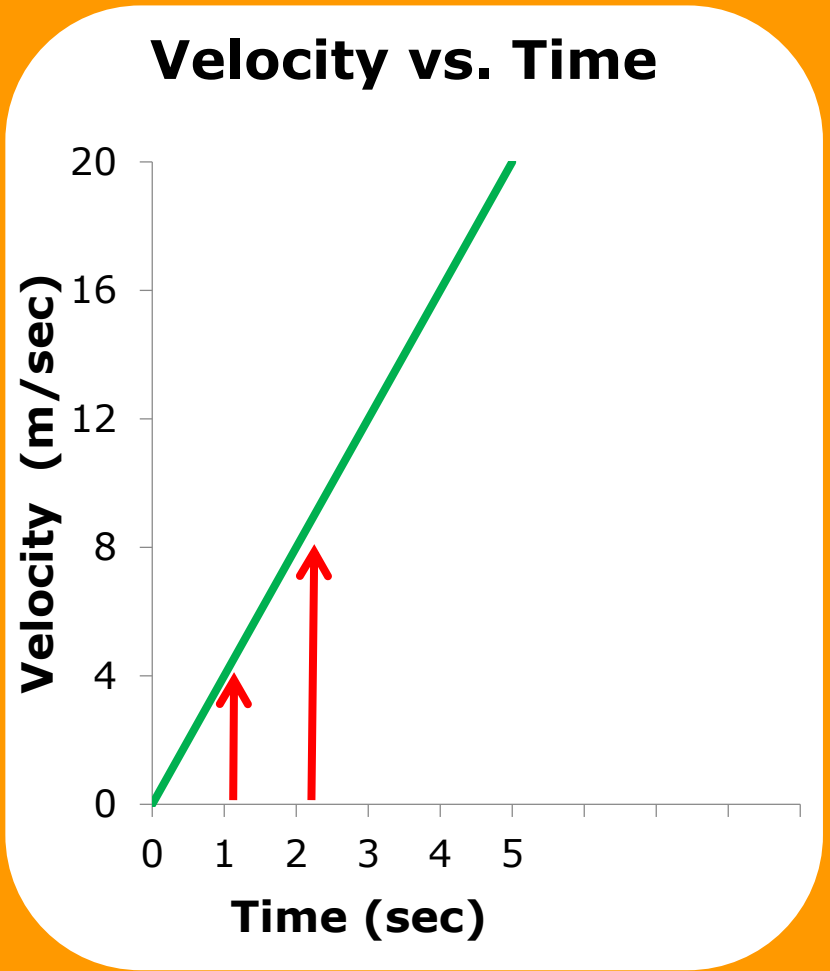


Motion Graphing

Constant Acceleration

- Acceleration is constant at any point on the line.
  - $4 m/s^2$ at 1sec.
  - $4 m/s^2$ at 2 sec.

- The steeper the slope, the greater the acceleration.



Motion Graphing

Increasing Acceleration

- Curved line indicates the acceleration is **not** constant**.**

  EX. - *A car starts moving slowly and gradually increases its speed.*

- The steeper the line, the greater the rate of acceleration.