8 Interactive Science

Chapter 7

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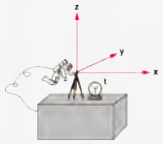
Chapter 7 Section 1

Motion

An object is in motion if its position changes relative to another object.

Reference Point



- A reference point is a place or object used for comparison to determine if something is in motion.

STANDARD UNITS

- What is a standard unit?
- Why do we use them?

IN SCIENCE, SI

- In science, we use SI, the International Standards of Units.
- There is an international organization that oversees the use of these "SI" measurements.
- It's French. The "***S**ystème **I**nternational d'unités" is where SI comes from*.

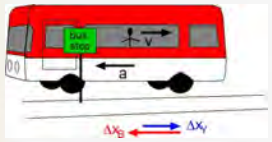
YOU NEED FOUR:

- Meter
- Gram
- Second
- Kelvin
- PLUS A quasi-SI unit:
- Liter

7 UNITS OF SI:

Meter	Distance
Gram	Mass
Second	Time
Ampere	Electric Current
Kelvin	Temperature
Mole	Amount of Substance
Candela	Luminosity

Relativity



- Motion is always relative
- Copernicus
- Sun
- Earth

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Chapter 7 Section 2

speed

- How would you define speed?
- Well, its a derived function. What two things do you have to know to calculate a speed?
- Miles--Feet--Kilometers--
- Hour--Year--Minute--Second
- Average Speed = total distance / total time

Instantaneous Speed

- The speed at which an object is moving at a given instant in time.

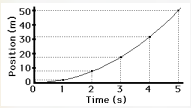
Average Speed

- Total distance / Total Time

Velocity

- 40 miles per hour means every hour you go 40 miles
- How is a velocity different from a speed?
- 40 mph is a speed
- 40 mph North is a velocity
- 40 feet per second up is a velocity
- Speed in a direction

Slope



- Rise / Run
- Tells how fast one variable changes in relation to the other variable in the graph
- You can show motion of an object on a line graph in which you plot distance versus time

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Chapter 7 Section 3

Acceleration

- 40 mph W is a velocity
- How is that different than an acceleration?
- It's getting faster by 4 mph W per second.
- So, after 1 second, it's traveling 44 mph W.
- The rate of change of velocity —definition of acceleration
- m/s/s
- (Final Velocity - Initial Velocity) / Time

Acceleration

- On an airplane, you feel:
- a. speed
- b. velocity
- c. acceleration