

Target Goals:

- “I can.....”

___ **define speed,
velocity, and
acceleration.**

___ **calculate the
average speed.**



Corny Joke of the Day!!

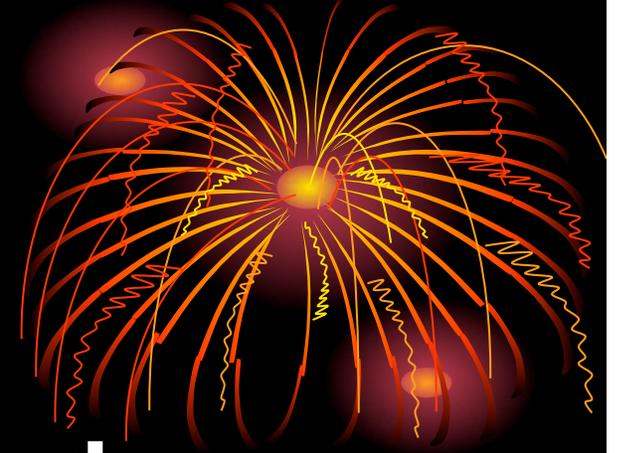


Physics Teacher: "Isaac Newton was sitting under a tree when an apple fell on his head and he discovered gravity. Isn't that wonderful?"

Student: "Yes sir, if he had been sitting in class looking at books like us, he wouldn't have discovered anything."



What is motion?



- **You can look around you and see that there are things in motion:**
- **Ex: (Your teacher walking across the room; your friend writing with a pencil).**
- **Even if you don't see anything moving, motion is still occurring all around you.**
- **(Ex: air particles moving, the Earth circling the sun, blood traveling in your body)**

Motion

- An object is considered to be in motion **if it constantly changes position.**



What is motion?.....



- **When you want to know the motion of an object, you simply watch the object.**
- **But you are actually watching the object in relation to another object that appears to be “staying in place”.**

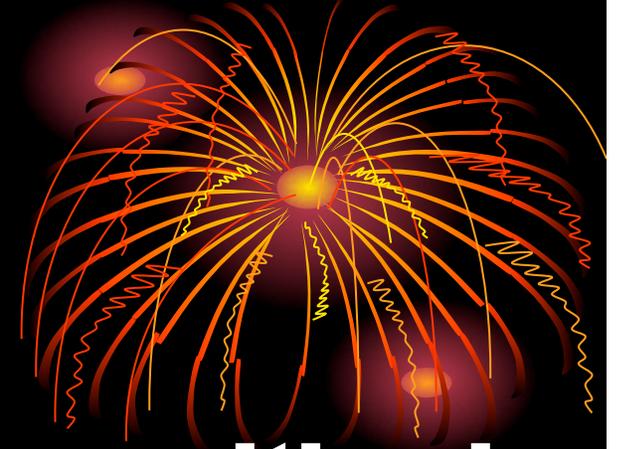
The object staying in place is called the reference point.

Something to think about....



- **Suppose you look out of the window and see a truck parked next to a tree. A few hours later, you look out the window and that the truck is parked further down the street about 200 yards away from the tree. What is your reference point in this scenario?**

Speed Depends on Distance and Time



- When you are moving, your position is changing. How quickly your position **changes** depends on the speed.
- **Speed** is the rate at which an object moves
- Speed depends on 2 things: **distance traveled & the time taken to travel that distance**

Determining Speed...



- The SI unit for speed is **m/s**, or **meters per second**.

Other ways to calculate speed include:

kilometers per hour (km/h)

Feet per second (ft/s)

Miles per hour (mph)

Speed Depends on Distance and Time, *continued*

- **Determining Average Speed-** Average speed equals the total distance divided by the total time.

$$\text{average speed} = \frac{\text{total distance}}{\text{total time}}$$

Hint: “Bottom---out”
“Top-----in”



Sample problems:

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

(Bottom ---out)
(Top ---in)

- a) Kira jogs to a store 72 m away in a time of 36 s. What is Kira's average speed?
- b) If you travel 75 km and walk for 15 hours, what is your average speed?
- c) An airplane traveling from San Francisco to Chicago travels 1,260km in 4 hours. What is the airplane's average speed?

d) What is your average speed if you take 2 hours to walk 16,000 m?

e) If the average speed of a car is 110 km/h, how long will it take the car to travel 770 km?

Got the hang of it???
Try some more.....



- **What is your average speed if you take 5 hours to walk 4,000 miles ?**
- **If the average speed of a car is 110 km/h, how long will it take the car to travel 7,150 km?**

What is your average speed if you take 5 hours to walk 4,000 miles ?

If the average speed of a car is 110 km/h, how long will it take the car to travel 7,150 km?

Assignment:



- **Solve the problems on the “Speed Practice Problems” half-slip.**
- **Show all of your work!! Sorry no calculators!!!!**
- **Paste the half-slip onto page 186.**