Force & Motion

Name_____

Describing Motion – Speed

Purpose: To practice calculating speed

Background Information: The speed of an object is determined by the amount of time it takes the object to move a particular distance. Another word for the distance an object moves is **displacement.**
Speed can be calculated by using the formula S=D/T. Where D is the distance an object traveled and T is the time it took the object to travel that distance.
Distance and time can also be calculated using variations of this formula.

Distance = Speed x Time

Time = Distance / Speed

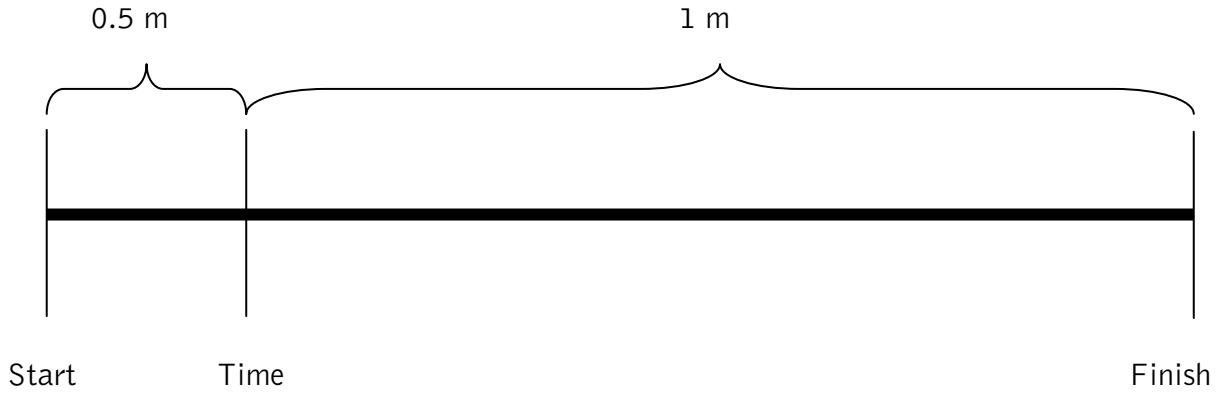
Speed = Distance / Time

Materials:

Sidewalk chalk	Meter stick	Stopwatch
Toy car	Calculator	

Procedure:

1. Use the meter stick and chalk to make a 1.5 m straight track for your car on the ground. Label the starting line, timing line, and finish line as shown below:



2. Put the toy car at the starting line. Start the car.
3. Begin timing when the car crosses the Time Line.
4. Stop timing when the car crosses the Finish Line.
5. Record your data.
6. Repeat for a total of 5 trials.

Data:

Trial	Time in seconds
1	
2	
3	
4	
5	
Average	

Calculate the speed of your car.

Speed = D/T

Speed = 1/average time

_____ 1 / _____

Questions: Answer using complete sentences.

1. Why do you need to repeat your measurements (do more than one trial)?

2. Why did you let the car move for 0.5 m before starting to time?

3. Predict how many seconds it will take your car to move 150 cm. Test your prediction. Record your actual results. _____

4. Predict how many seconds it will take your car to move 75 cm. Test your prediction. Record your actual results. _____

5. Pick a *TIME* in seconds for your car to travel. _____
   a. Predict the DISTANCE your car will travel in that amount of time.
      _____
   b. Test your prediction. Describe what you did to test your prediction:
      _____
      _____
      _____
      _____
      _____
      _____
      _____
      _____
   c. How did your prediction compare with actual distance the car moved?
      _____

6. Practice Problems – show your work

   1. A rifle bullet travels 5000 feet in 4 seconds. What is the speed of the bullet?

   2. The earth travels at 68,000 miles/hour as it moves around the sun. How many miles does the earth travel in one trip around the sun?

3. You drive 150 miles in 3 hours before stopping for 30 minutes for lunch and gas. After lunch you travel 100 miles in an hour and a half. What was your average speed for the trip?

4. An airplane travels 600 miles in 2.5 hours. What is the speed of the plane?

5. A toy car rolls down a ramp covering 4 meters in 6 seconds. What is its speed?

6. A top fuel dragster covers the quarter mile in 4.5 seconds. What is its speed in miles per hour?