Name _____ Period: _____ #:_____

Speed of a Toy Car

Background: How long does it take a car to move 150 centimeters? We all have a good idea that if it takes a smaller period of time to move 50centimeters, the car must be moving faster. But how do we measure the speed of a toy car. In your own car, it is easy because engineers have designed a speedometer that automatically tells you how fast your car is moving.

A common unit for speed is miles per hour. From this it is easy to figure out the formula that we have to use to calculate the speed of a toy car.

Miles is a unit to measure distance. Hour is a unit to measure time. The word PER stands for division.

So, if Miles Per Hour = Miles / Hour we can replace miles with distance and hour with time and we get the following formula:

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} \quad \text{or simplified as} \quad s = \frac{d}{t}$$

In this lab, you are going to determine the speed of a toy car.

Materials: Toy Car Ramp Tape Stopwatch Meter Stick

Predict: If you record the time it takes for the car to move 50 centimeters and then record the time it takes to move 150 centimeters, will there be a difference in the speed of the car between the two runs? Explain your prediction:

Procedure:

1. Mark off the following distances on the floor with tape: 0 meters, 50 cm, 100 cm, and 150 cm.
2. Set up your ramp so the bottom is at the 0 meter mark. Place the car at the top of the ramp. Release the car.
3. When the front of the car reaches the 0 meter mark, start your timer. Then, stop the timer when the front of the car reaches the 50-cm mark. Record the time in the table on the back.
4. Repeat this procedure for 2 more trials.
5. Calculate the average time and record it in the table. (Add up time trials for that distance and divide by 3.)
6. Calculate the average speed and record it in the table. (See speed formula above.)
7. Repeat steps 1-6 for the 100-cm mark and 150-cm mark.

Distance traveled (cm)	Time Trial 1 (s)	Time Trial 2 (s)	Time Trial 3 (s)	Average Time (s)	Average Speed (cm/s)
50					
100					
150					

Variables:

Independent:

Dependent:

Controlled:

Questions: Answer in COMPLETE sentences!!

1. Was there a significant difference in the speed of the car while it traveled 50 cm versus 150 cm? Explain why.

2. What happens to the time of travel of the car if the distance that the car moves increases?

3. As the car moves away from the starting point (0 cm) what happens to its speed?

4. What is the reason for doing the experiment with multiple trials? Why not let the car run one time and record the time?