

Name _____

Period _____

Date _____



Acceleration Lab

Objectives:

1. Solve for velocity and acceleration
2. Understand and recognize the difference between velocity and acceleration

Materials: stopwatch, a meter stick, tape, and some fast moving cars

Procedures:

1. Measure off each distance and place a piece of tape at each interval.
2. Start the stopwatch when the car is released. Measure the total time when the car passes at each distance of 0.5m, 1m, 3m, 5m, and 7m.
3. Calculate the velocity at each distance.
4. Calculate the acceleration during each distance interval.

Calculate the velocity of the toy car at each displacement.

Displacement (m)	Time (sec)	Velocity (m/sec)
0.5		
1		
3		
5		
7		

Calculate the acceleration of the toy car using previous measurements from velocity calculations.

To receive credit you must show individual work. Formula:

$$a_{avg} = \frac{\Delta v}{\Delta t} = \frac{v_f - v_0}{t_f - t_0}$$

Interval:	V_0	V_f	t_0	t_f	Acceleration (in m/s^2)
0m– 0.5m					
0.5m – 1.0m					
1.0m – 3.0m					
3.0m – 5.0m					
5.0m – 7.0m					

Show work and box answers *ON SEPARATE SHEET OF PAPER*. Do not forget units!

Post-Lab Questions: Answer these questions on a separate piece of paper.

1. Define acceleration
2. Compare and contrast distance and displacement.
3. Compare and contrast speed and velocity.
4. You are driving in a car. What three things can you do to cause the car to accelerate?
5. What is the difference between negative acceleration and deceleration?
6. What is the acceleration of a car that travels in a straight line at a constant speed?