

Velocity and Acceleration Webquest

Part I: Direction of Velocity and Acceleration

Watch the Hot Wheels Car Animation:

<http://www.physicsclassroom.com/mmedia/kinema/avd.cfm>

1. What is the RULE OF THUMB for velocity and acceleration?
2. When an object is speeding up to the right, what direction is the acceleration?
3. When an object is turning a corner, what direction is the acceleration?
4. When an object is moving to the left and slowing down, what direction is the acceleration?
5. Accelerating objects have a changing velocity - either due to a speed change or a direction change. Considering east as a positive direction and west as negative direction, complete the table below by writing the direction of each variable as an arrow.

Situation	Velocity	Acceleration
Speeding up going east		
Speeding up going west		
Slowing down going east		
Slowing down going west		

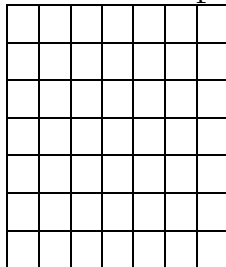
Part II: Constant Velocity versus Acceleration.

Watch the animations:

Constant Velocity: <http://www.physicsclassroom.com/mmedia/kinema/cpv.cfm>

Constant Acceleration: <http://www.physicsclassroom.com/mmedia/kinema/pvpa.cfm>

6. Sketch the position, velocity, and acceleration graphs for each of these motions.



7. What is obtained by calculating the slope of a:

a. position-time graph?

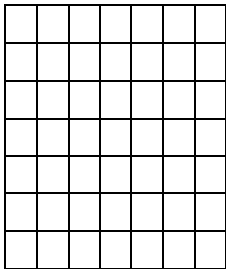
b. velocity-time graph?

Now watch another acceleration animation:

<http://www.physicsclassroom.com/mmedia/kinema/nvna.cfm>

8. Is this car speeding up or slowing down?

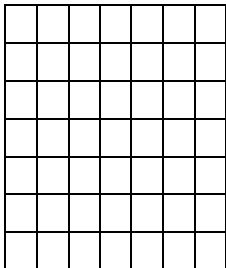
9. Sketch the velocity-time graph for this object's motion. Just because a velocity graph is sloped downward, does that necessarily mean that the object is slowing down? If not, how can you tell if an object's speed is decreasing?



One more acceleration animation: <http://www.physicsclassroom.com/mmedia/kinema/nvpa.cfm>

10. Is this car speeding up or slowing down?

11. Sketch the velocity-time graph for this object's motion. Just because a velocity graph is sloped upward, does that necessarily mean that the object is speeding up? If not, how can you tell if an object's speed is increasing?



Part III: Matching Graphs

Visit:

http://www.stmary.ws/highschool/physics/home/marys_java/kinematics/motion_plots_match_d_t.htm

Quiz yourself and write the answers on the blanks below with your score.

1. Object at rest: _____
2. Constant positive velocity: _____
3. Increasing velocity: _____
4. Decreasing velocity: _____
5. Constant negative velocity: _____

Score: _____ Correct