

Part I: Direction of Velocity and Acceleration

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

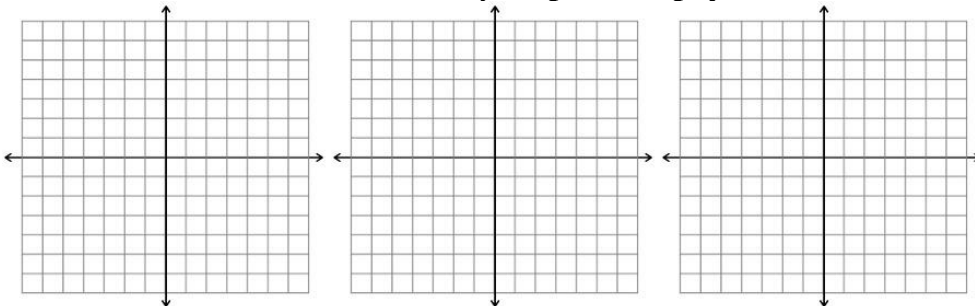
1. What is the “Rule of Thumb” for velocity and acceleration?
2. When an object is speeding up to the right, what direction is the acceleration?
3. When an object is turning a corner, what direction is the acceleration?
4. When an object is moving to the left and slowing down, what direction is the acceleration?
5. Accelerating objects have a changing velocity, either due to a speed change or a directional change. Complete the table by writing the direction of each vector as an arrow. Use a + or – sign to indicate speeding up or slowing down. Use an arrow to indicate left, right, up, down (or east, west, north, south)

| Situation | Velocity (use +/- and an arrow) | Acceleration (use +/- and an arrow) |
|-------------------------|---------------------------------|-------------------------------------|
| Speeding up going east | | |
| Speeding up going west | | |
| Slowing down going east | | |
| Slowing down going west | | |

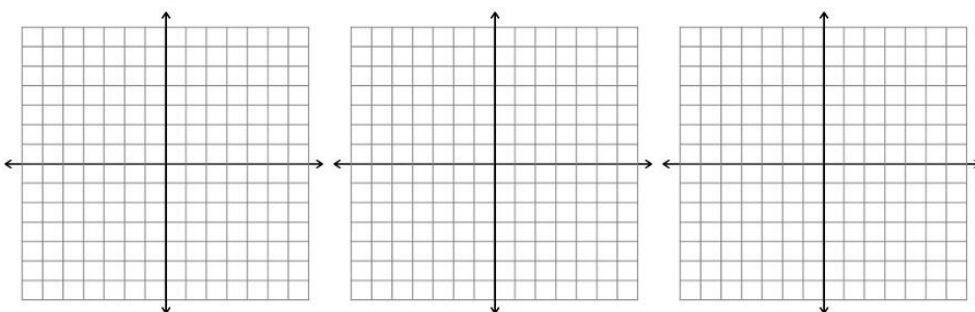
Part II: Constant Velocity versus Acceleration

6. **Sketch** the position, velocity, and acceleration graphs for both of these motions **AND** be sure to label the axes!

View the animation for Constant Velocity: <http://www.physicsclassroom.com/mmedia/kinema/cpv.cfm>



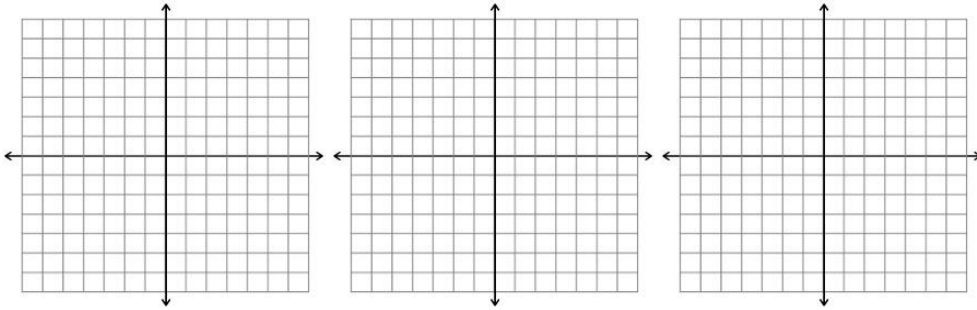
View the animation for Constant Acceleration: <http://www.physicsclassroom.com/mmedia/kinema/pvpa.cfm>



7. What information is obtained by calculating the slope.....
 - a. ...of a position-time graph _____.
 - b. ...of a velocity-time graph _____.

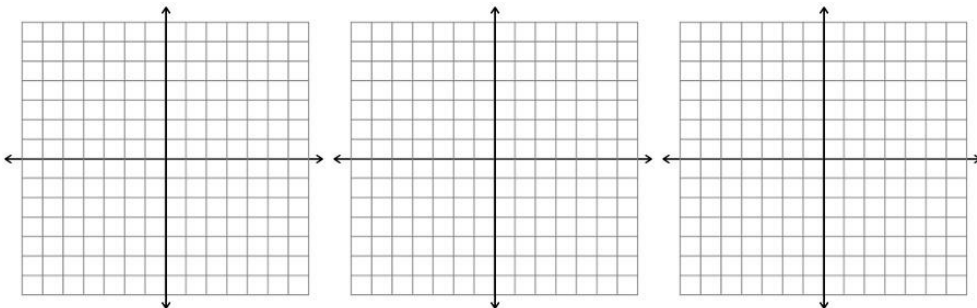
View the animation: <http://www.physicsclassroom.com/mmedia/kinema/nvna.cfm>

8. Is this car speeding up or slowing down? Is this positive or negative acceleration? What is a synonym for negative acceleration?
9. Sketch & Label the three graphs for this objects motion. If 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



View the animation: <http://www.physicsclassroom.com/mmedia/kinema/nvpa.cfm>

10. Is the car speeding up or slowing down? Is this positive or negative acceleration? What is a synonym for negative acceleration?
11. Sketch & Label the three graphs for this object's motion. If 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: Motion Graphs Quiz: complete the quiz found at the following website and record your results below:

- http://dev.physicslab.org/Document.aspx?doctype=5&filename=Kinematics_ConstantVelocityPositionTimeGraphs1.xml