

Describing Motion with Position-Time Graphs

Read from Lesson 3 of the 1-D Kinematics chapter at The Physics Classroom:

<http://www.physicsclassroom.com/Class/1DKin/U1L3a.html>
<http://www.physicsclassroom.com/Class/1DKin/U1L3b.html>
<http://www.physicsclassroom.com/Class/1DKin/U1L3c.html>

MOP Connection: Kinematic Graphing: sublevels 1-4 (and some of sublevels 9-11)

Motion can be described using words, diagrams, numerical information, equations, and graphs. Describing motion with graphs involves representing how a quantity such as the object's position can change with respect to the time. The key to using position-time graphs is knowing that the slope of a position-time graph reveals information about the object's velocity. By *detecting* the slope, one can infer about an object's velocity. "As the slope goes, so goes the velocity."

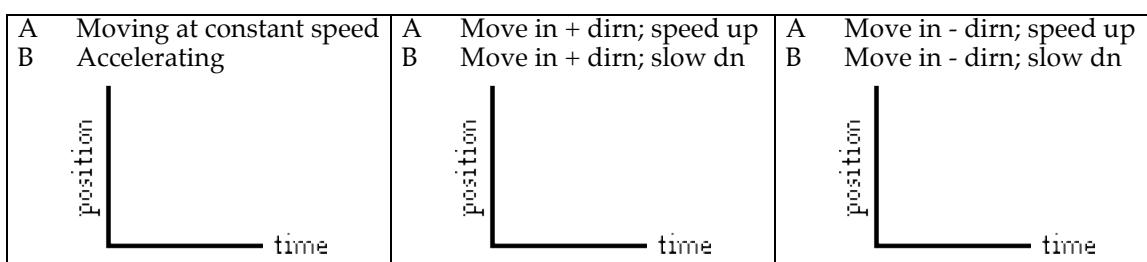
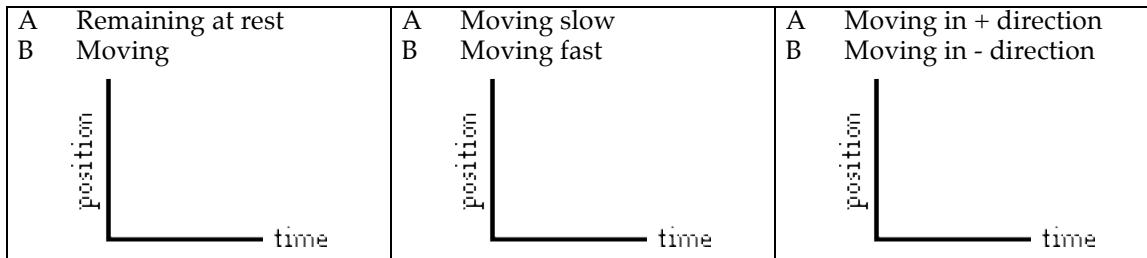
Review:

1. Categorize the following motions as being either examples of + or - acceleration.

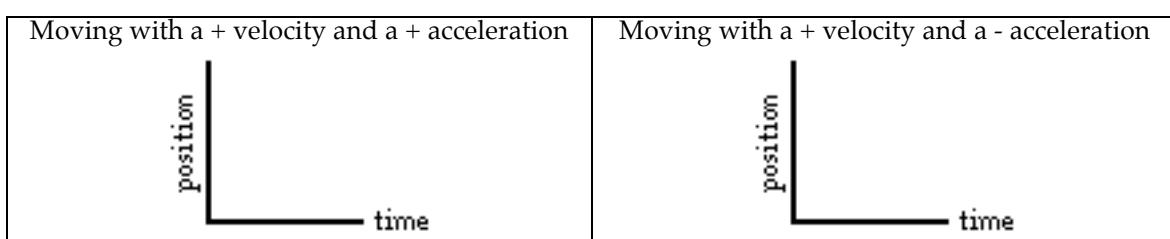
- a. Moving in the + direction and speeding up (getting faster) _____
- b. Moving in the + direction and slowing down (getting slower) _____
- c. Moving in the - direction and speeding up (getting faster) _____
- d. Moving in the - direction and slowing down (getting slower) _____

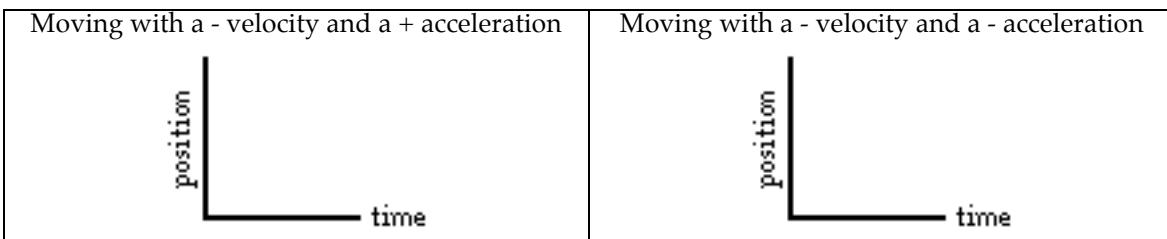
Interpreting Position-Graphs

2. On the graphs below, draw two lines / curves to represent the given verbal descriptions; label the lines / curves as A or B.

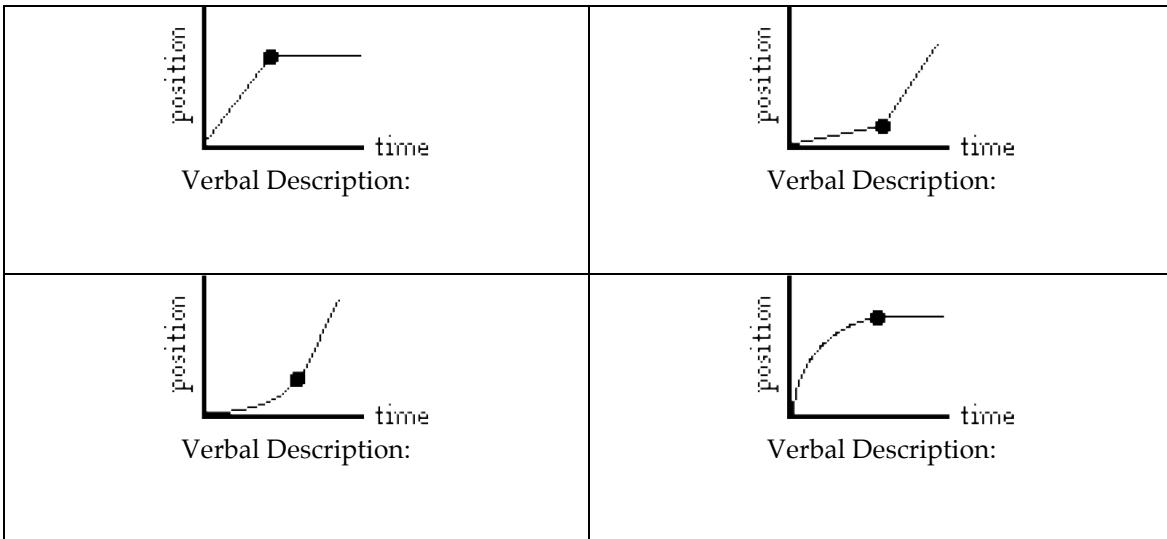


3. For each type of accelerated motion, construct the appropriate shape of a position-time graph.





4. Use your understanding of the meaning of slope and shape of position-time graphs to describe the motion depicted by each of the following graphs.



5. Use the position-time graphs below to determine the velocity. **PSYW**

