

SPEED & ACCELERATION PRACTICE PROBLEMS

Answer the following questions in your science notebook. Show all of your work including the equation you use. Box your answer.

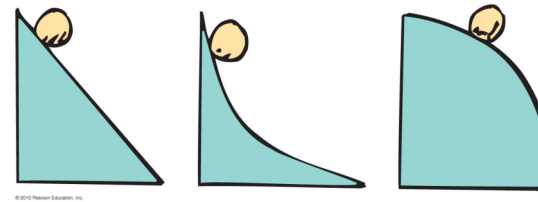
Speed and Average Speed

1. A bicyclist travels 60.0 kilometers in 3.5 hours. What is the cyclist's average speed?
2. How much time would it take for the sound of thunder to travel 1,500 meters if sound travels at a speed of 330 m/s?
3. How much time would it take for an airplane to reach its destination if it traveled at an average speed of 790 kilometers/hour for a distance of 4,700 kilometers? What is the airplane's speed in miles/ hour?
4. How far can a person run in 15 minutes if he or she runs at an average speed of 16 km/hr?
(HINT: Remember to convert minutes to hours.)
5. A snail can move approximately 0.30 meters per minute. How many meters can the snail cover in 15 minutes?
6. Calculate the average speed (in km/h) of a car stuck in traffic that drives 12 kilometers in 2 hours.
7. How long would it take you to swim across a lake that is 900 meters across if you swim at 1.5 m/s?
 - a. What is the answer in seconds?
 - b. What is the answer in minutes?

Acceleration

8. From a stopped position, a wooden ball rolls down a ramp with a constant acceleration of 3 m/s^2 (3 m/s per second).
 - a. After 4 seconds have passed, how far has the wooden ball traveled?
 - b. What is the velocity of the wooden ball at exactly 4 seconds?
 - c. What is the average speed of the wooden ball between 0 and 4 seconds?

9. If it takes 8 seconds for an apple to fall from the top of a tree, how tall is the tree? Neglect air resistance.
10. If the same apple from question #9 falls from the top of the tree (neglecting air resistance), is its velocity increasing, decreasing, or staying the same? Explain. Is the apple's acceleration increasing, decreasing, or staying the same? Explain.
11. On which of these hills does the ball roll down with increasing speed and decreasing acceleration along the path?



12. You shoot an arrow straight up at 50 m/s. (It's sometimes helpful to draw a picture...)
 - a. When will it run out of speed?
 - b. What will be the arrow's speed 5 seconds after you shoot it?
 - c. What will be the arrow's speed 6 seconds after you shoot it?
 - d. What will be the arrow's speed 7 seconds after you shoot it?
 - e. How *high* is the arrow you shoot up at 50 m/s when it runs out of speed?
 - f. How *high* will the arrow be 7 seconds after being shot up at 50 m/s?