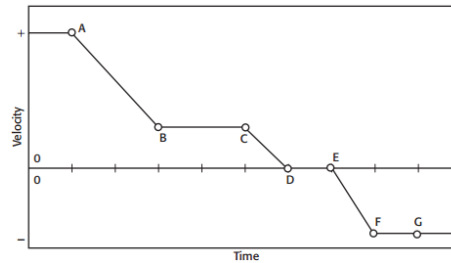


Name: _____

One Dimensional Packet

1. If an object has a negative initial velocity and a positive acceleration, what happens to the object?
2. Average acceleration can be found by determining the slope of what type of graph?
3. An object in free fall experiences a constant acceleration of _____.

The graphic below begins as a runner running away from home.



4. During which interval is the magnitude of the jogger's acceleration constant?
5. During which of the following intervals is the jogger's motion toward home?
6. Rank in decreasing order the change in time of objects having the following pairs of average velocity and displacement.
I. $v_{\text{avg}} = 4.0 \text{ m/s}$, $\Delta x = 4.0 \text{ s}$ II. $v_{\text{avg}} = 6.0 \text{ m/s}$, $\Delta x = 4.0 \text{ s}$ III. $v_{\text{avg}} = 4.0 \text{ m/s}$, $\Delta x = 6.0 \text{ s}$

Complete the following problems on separate paper.

7. A cheetah runs at a steady velocity of 60 km/h. Over a period of 5.0 s, the cheetah increases its pace to 26.4 m/s. What is the average acceleration of the cheetah over this period?

Choose 2:

8. With an average deceleration of 1.5 m/s^2 , how long will it take a driver stop after traveling at 25 m/s?
9. An elevator accelerates uniformly from rest to a speed of 2.5 m/s in 12 s. What is the distance the elevator travels during this time?
10. A cat walking at 0.25 m/s sees a mouse and accelerates uniformly at 0.40 m/s^2 for 3.0 s. What is the cat's displacement during this time?

Choose 1:

11. An archer fires an arrow directly upward, then quickly runs from the launching spot to avoid being struck by the returning arrow. If the arrow's initial velocity is 85.1 m/s upward how long does the archer have to run away before the arrow lands (hint: it takes twice as long as it takes to reach the maximum height)?
12. A penny is dropped off the top of a business building falling 300 meters. Ignoring air resistance, how long would it take the piece of glass to hit the ground? What will the velocity of the piece of glass be when it strikes the ground?

Extra Credit:

A popular scene in recent action films shows a character in free-fall speed up to catch a freely falling parachute. Suppose a packed parachute is dropped from rest from an airplane and that a daredevil is launched straight down from the plane 3.00 s later. Neglecting air resistance, the daredevil catches up to the parachute 4.00 s after the daredevil leaves the plane. What are the daredevil's initial and final velocities?