

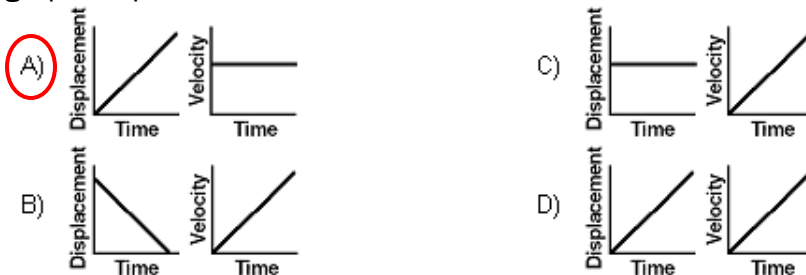


(15 pts)

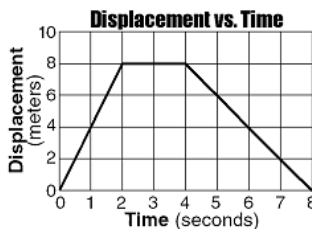
Motion Graphs Practice

Directions: For the following problems, select the best choice that answers the question.

1. Which pair of graphs represents the same motion?



The graph below represents the relationship between the displacement of an object and its time of travel along a straight line.



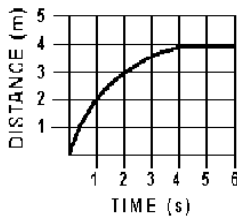
2. What is the magnitude of the object's total displacement after 8.0 seconds?
 A) 16 m B) 8 m C) 2 m **D) 0 m**
3. What is the average speed of the object during the first 4.0 seconds?
A) 2 m/s B) 0 m/s C) 8 m/s D) 4 m/s $v = \frac{\Delta d}{t} = \frac{8 \text{ m}}{4.0 \text{ s}} = 2 \text{ m/s}$

Directions: For the following problems, answer using complete sentences and the GUESS method where appropriate. Show ALL work.

4. The graph below represents the motion of a body moving along a straight line. According to the graph, which quantity related to the motion of the body is constant? Acceleration

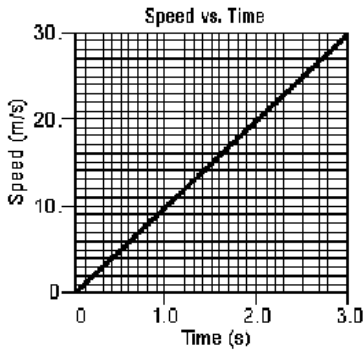


5. The graph below represents the relationship between distance and time for an object. What is the instantaneous speed of the object at t = 5.0 seconds?



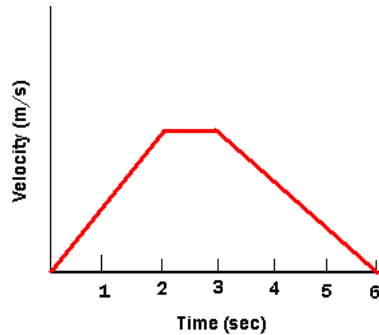
$v = 0 \text{ m/s}$ (slope is zero. Object is not moving)

6. The graph below represents the relationship between speed and time for a car moving in a straight line. What is the magnitude of the car's acceleration?



$$a = \frac{\Delta v}{t} = \frac{30. \text{ m/s}}{3.0 \text{ s}} = 10. \text{ m/s}^2$$

7. On the axis below, draw a graph that represents the relationship between velocity and time for an object which accelerates uniformly for 2 seconds, then moves at a constant velocity for 1 second and finally decelerates for 3 seconds.

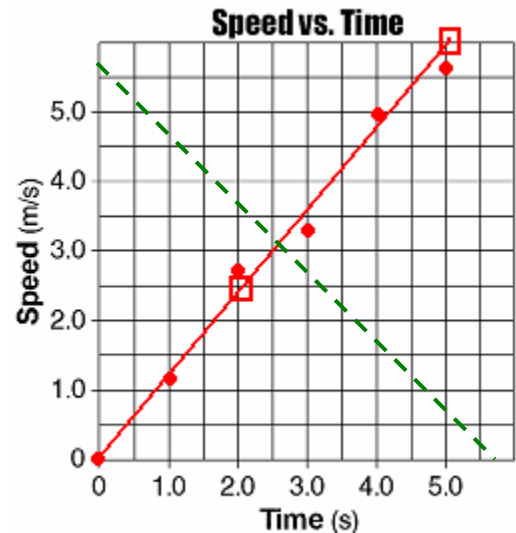


8. The data table below describes the motion of an object moving in a straight line.

DATA TABLE

Time (s)	Speed (m/s)
0.0	0.0
1.0	1.2
2.0	2.7
3.0	3.3
4.0	5.0
5.0	5.6

- Plot the data points on the grid provided.
- Draw the line of best-fit on the graph.
- On the same grid, sketch a line representing an object decelerating uniformly in a straight line.
- Based on your line of best-fit, what is the acceleration of the object?



$$a = \frac{\Delta v}{\Delta t} = \text{slope} = \frac{\Delta y}{\Delta x} = \frac{6.0 \text{ m/s} - 2.5 \text{ m/s}}{5.0 \text{ s} - 2.0 \text{ s}} = +1.2 \text{ m/s}^2$$