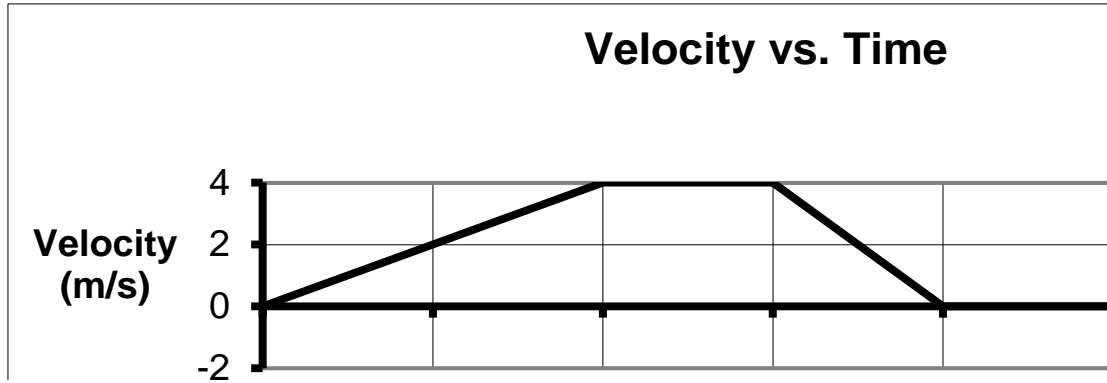


Unit 3: Linear Motion Worksheet VI – Review of Motion in One Dimension

1. The following graph shows the velocity of a moving object as monitored over a time period of 8 s. Use the graph to answer the questions that follow: (10pts)



- (a) Determine the distance traveled by the object between $t = 0$ s and $t = 8$ s. _____
- (b) Determine the displacement of the object between $t = 0$ s and $t = 8$ s. _____
- (c) What was change in the object's velocity between $t = 2$ s and $t = 6$ s? _____
- (d) Find the average acceleration of the object between $t = 3$ s and $t = 8$ s. _____
- (e) Calculate the average acceleration of the object over the entire 8 s interval. _____
2. The VW Beetle goes from 0 to 60 mph with an acceleration of 2.35 m/s^2 .
- (a) Using the fact that there are 1.6 km/mile, convert the final velocity to m/s. (5pts)
- (b) Starting from rest, how many seconds should it take the VW Beetle to reach this final velocity? (5pts)
- (c) A dragster can go from 0 to 60 mph in a mere 0.600 s. What is the acceleration rate (in m/s^2) of the dragster? (5pts)

3. A golf ball is dropped from rest into a river from a bridge 55 m above the water. A short time later, a second ball is thrown downward with a speed of 11.9 m/s, and happens to strike the water at the same moment as the first ball.
- (a) How long did it take the first ball to reach the water?

 - (b) How long was the first ball falling before the second was thrown?

 - (c) With what velocity did the first ball strike the water?

 - (d) With what velocity did the second ball strike the water?
4. A woman on a bridge 100 m high sees a raft floating at a constant speed on the river below. She drops a stone from rest and is successful in hitting the raft. The stone is released when the raft has 6 m more to travel before passing under the bridge.
- (a) How long does it take the stone to reach the water?

 - (b) At what constant speed is the raft traveling?

Answers: (1) 14 m, 6 m, -6 m/s , -0.8 m/s^2 , 0, (2) 26.7 m/s, 11.4 s, 44.5 m/s^2 , (3) 3.35 s, 1.00 s, -32.8 m/s , -34.9 m/s , (4) 4.52 s, 1.33