Physics – Chapter 2 Worksheet Name: _____

Vocabulary

Provide a short and specific definition in YOUR OWN WORDS. Do not use the definition from the book

Frame of Reference_____

Displacement_____

Average Velocity _____

Instantaneous Velocity _____

Acceleration _____

Free Fall _____

Additional Notes:

Section 2.1

1. A dog is walking down a tree lined street. While walking he spots a bird sitting on the fire hydrant and runs after it. The bird flies away and lands on a car that is 5 meters away. Name 3 different frames of reference for the dog.
    a. _____
    b. _____
    c. _____
2. Person 1 gets into a car and drives from California to Texas while Person 2 flies from California to Texas. Which has a greater displacement? Explain.

3. Person 1 gets into a car and drives from California to Texas (the take detour to North Dakota along the way) while Person 2 flies from California to Texas. Which has a greater displacement? Explain.

4. You leave your house and drive to school while your friend drives from the school to your house. Is there is difference between your displacements? Explain.

5. You run from the South side of the football field to the 50 yard line and back. It takes you 20 seconds to make it to the 50 yd line and 24 seconds to make it back to the starting point.
    a. What is the average velocity for the first half of your run?

    b. What is the average velocity for the second half of your run?

    c. What is the average velocity for your entire run?

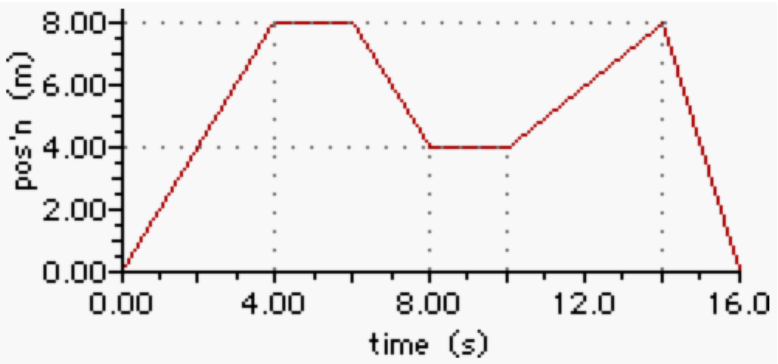
6. Person A and Person B both walk in the same direction along the same straight path, at a constant speed – Person A is moving at 0.9 m/s and Person B is moving at 1.9 m/s
    a. Assuming they start at the same spot and the same time, how much sooner does Person B reach the destination (which is 780 meters away)?

7. If all you know is the distance between you and an object, can you locate the object? Explain.

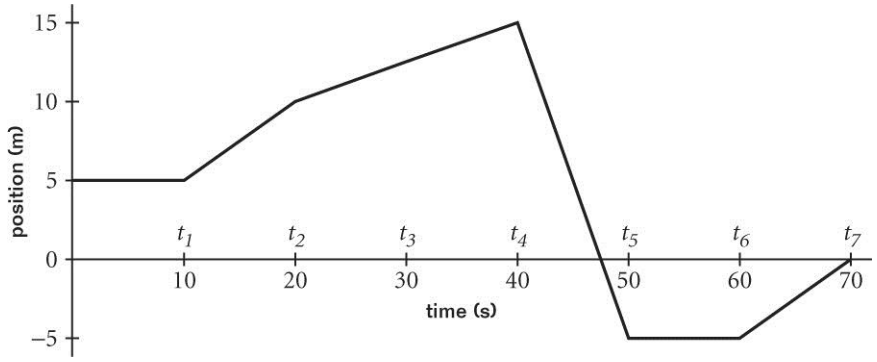
8. You walk with an average speed of 0.98 m/s. If you walk for 34 minutes, how far have you traveled?

9. Joe drives his car for an average velocity of 48 km/h north. How long would it take him to drive 144000 meters?

10. Using the graph below, answer the following questions.
    a. What is the average velocity for the object from 0 seconds to 4 seconds? _____
    b. What is the average velocity for the object from 0 seconds to 8 seconds? _____
    c. What is the average velocity for the object from 5 seconds to 8 seconds? _____
    d. What is the average velocity for the object from 8 seconds to 12 seconds?_____
    e. What is the distance covered from 0 seconds to 4 seconds? _____
    f. What is the distance covered from 0 seconds to 16 seconds? _____
    g. What is the displacement from 0 seconds to 4 seconds? _____
    h. What is the displacement from 0 seconds to 16 seconds? _____



11. A minivan travels along a straight road. It initially starts moving toward the east. Below is the position-time graph of the minivan. Use the information in the graph to answer the questions.



a. Does the minivan move to the east? If so, during which time interval(s)?

b. Does the minivan move to the west? If so, during which time interval(s)?

c. Is the minivan's speed between t_1 and t_2 greater than, less than, or equal to its speed between t_2 and t_3?

d. Is the minivan's speed between t_4 and t_5 greater than, less than, or equal to its speed between t_6 and t_7?

e. Does the minivan ever stop completely? If so, at which time(s)?

f. Does the minivan ever move with a constant velocity? If so, at which time(s)?

g. What is the total displacement of the minivan during the trip?

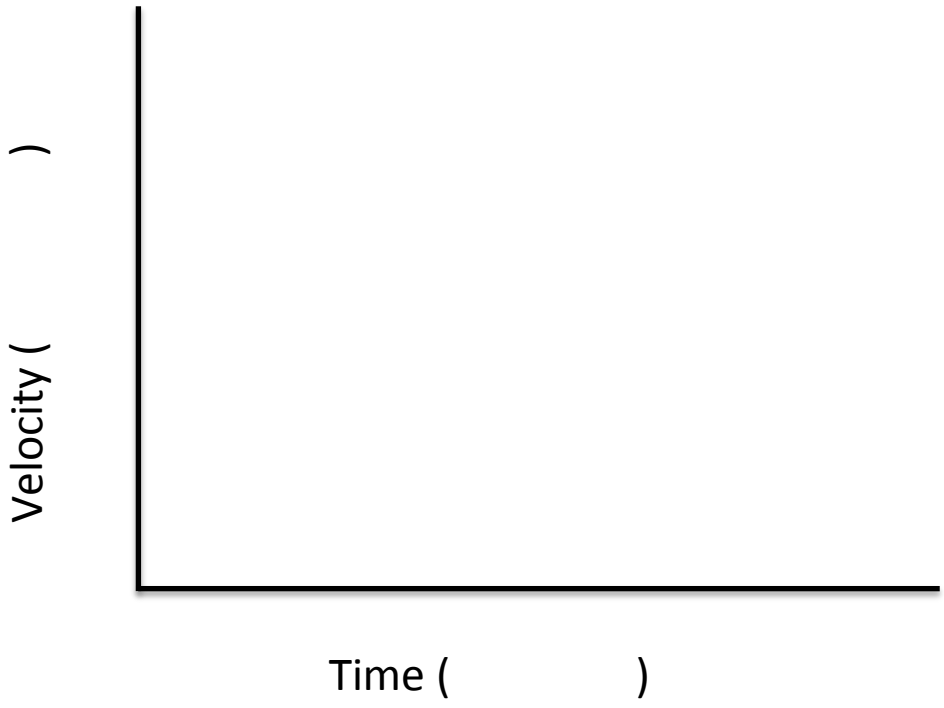
Section 2.2

1. Complete the following table.

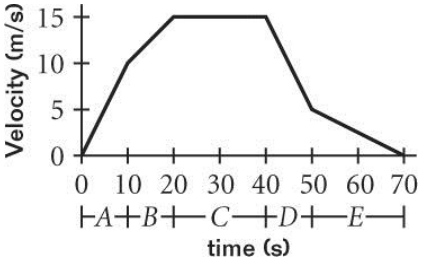
Signs of velocity and acceleration		
v_i	a	Motion
Positive	Positive	Speeding up
Negative		Slowing Down
Positive	0	
Positive	Negative	
0		At Rest

2. Give an example of when acceleration is positive AND another example of when it is negative.

3. Create a velocity-time graph using the following information.
   a. A car speeds up with a constant acceleration for 10 seconds, maintains that velocity for 5 seconds, it then slows downs (NOT with a constant acceleration) until it stops.



4. Below is the velocity-time graph of an object moving along a straight path. Use the information in the graph to fill in the table below.



For each of the lettered intervals below, indicate the motion of the object (whether it is speeding up, slowing down, or at rest), the direction of the velocity (+,–, or 0), and the direction of the acceleration (+, –, or 0).

Time interval	**Motion**	**v**	**a**
A			
B			
C			
D			
E			

5. Make sure to complete ALL the Problem Sets!

Section 2.3

1. Explain how a feather and a brick and fall at the same rate.

2. A pool ball is dropped from 10 meters above the ground. At the same time, another pool ball is dropped from 20 meters above the ground. Which object experiences a larger acceleration? Explain.

3. A coin is tossed vertically upward.
    a. What happens to the velocity of the coin while it is in the air?

    b. Does the acceleration increase, decrease, or stay constant? Explain.

4. You drop a coin into a wishing well. The coin strikes the water in the well 1.5 seconds after you drop it. How deep is the well?

5. Paul and Kate each have a ball. Paul drops his ball while Kate throws her ball at the ground with an initial velocity of 6 m/s downward. What is the acceleration of each ball while it is falling?

6. A ball is thrown vertically upward win an initial velocity of +8 m/s.
    a. What is the velocity of the ball when it returns to its starting point?

    b. How long is the ball airborne?