Name_____

Concepts: In this section define the following concepts in your own words and complete sentences

1.) Constant Velocity -

2.) Average Acceleration -

3.) Instantaneous Acceleration -

4.) Free Fall -

5.) Acceleration due to Gravity -

6.) Air Resistance -

Conceptual Understanding:

7.) What is the acceleration of a truck going in a straight line and at a constant speed?

8.) If an object is turning; does it have a constant speed? Does it have a constant velocity? Does it have acceleration?

9.) What three ways can you accelerate a car?

10.) If a rocket is accelerating at 25 m/s/s, what does that mean is happening to its speed?

11.) If all objects accelerate downward on earth (near earth) at 9.8 m/s/s, why do some objects reach the ground before other objects?

Playing with the numbers (plug and chug): In this section the numbers are given clearly and you need only plug them into the equations to reach an answer.

Average acceleration: $\bar{\mathbf{a}} = \Delta v / \Delta t$ or $\bar{\mathbf{a}} = \frac{v_f - v_i}{t_f - t_i}$ Where v_f is the final velocity
v_i is the initial position
t_f is the final time
t_i is the initial time

12.) Find the average acceleration.
If $v_i = 0$ m/s, $v_f = 15$ m/s, $t_i = 0$ sec and $t_f = 10$ sec

13.) Find the average acceleration.
If $v_i = 3$ m/s, $v_f = 17$ m/s, $t_i = 0$ sec and $t_f = 4$ sec

14.) Find the average acceleration.
If $x_i = 3$ m/s, $x_f = 37$ m/s, $t_i = 3$ sec and $t_f = 7.9$ sec

12.) Find the final speed.
If $v_i = 35$ m/s, a = 3m/s/s, $t_i = 0$ sec and $t_f = 10$ sec

13.) Find the time interval.
If $v_i = 20$ m/s, $v_f = 110$ m/s, and a = 5 m/s/s

Deeper Understanding: These problems more closely represent how you might relate the concept of speed to real life and are in the form of story problems.

14.) If a falling object were equipped with a speedometer and accelerometer, What would its acceleration be during the first 6 seconds? What would its speed be for each of the first six seconds? (create a chart and show work)

15.) If you were going from 6 m/s to 14 m/s in 8 seconds, how quickly are you accelerating?

16.) If I throw a ball downward at 5 m/s/s what will its speed be just before it hits the ground if it takes 11 seconds to hit the ground?