**Review #8: Motion**

Part 1: Vocabulary

*For each vocab word, indicate a “trigger” word from that term’s definition that helps you to remember that definition.*

Distance \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Velocity \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Displacement \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Frame of reference\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Relative motion \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ vector \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Speed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ instantaneous speed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Average speed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ velocity \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Acceleration \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ net force \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Balanced force \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ free fall \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Constant acceleration \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Part 2: Intro to Motion

*Answer the following questions using your notes.*

1. True or false: Distance and Displacement are the same. Explain your answer. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What does it mean when an object is traveling at a constant speed? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What is instantaneous speed? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. When something is speeding up or slowing down, what is happening to its instantaneous speed? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. When something is moving at a constant speed, what is happening to its instantaneous speed? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. If a car is moving around a circular track at a constant speed, is its velocity changing? Explain. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. If the acceleration is in the same direction as the velocity, is the acceleration positive or negative?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. If the acceleration is in the opposite direction as the velocity, is the acceleration positive or negative? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What can you conclude about the acceleration of the object based upon the graph below? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



1. What can you conclude about the speed of the object based upon the graph below? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



Part 3: Distance vs. Displacement

*Answer the following questions using your knowledge of distance and displacement.*

1. A person walks 50 m North and then turns around and walks 35 m south. Then realizes they forgot their purse so walks another 60 m North. What is the person’s displacement? What is the person’s distance?
2. If a person jogs down the street for 70 m and then gets tired and turns around and jogs another 70 m home. What is the person’s displacement? What is the person’s distance?

Part 4: Speed & Velocity

*In the box below, write the equation for calculating velocity/speed. Then label the parts of the equation and what each variable is measured in.*

v=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ measured in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ measured in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

t= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ measured in\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Complete the following problems. Make sure you are showing all work and putting your answer with correct units.*

1. An ant travels 75 cm in 6 s. What was the ant’s speed?
2. You are in a car traveling an average speed of 60 km/h. The total trip is 240 km. How long does the trip take?
3. A car is traveling at a constant speed of 30 m/s. If the car is moving for 25 s, how far did the car go?

Part 5: Acceleration

*In the box below, write the equation for calculating acceleration. Then label the parts of the equation and what each variable is measured in.*

a= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ measured in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

vf = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ measured in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

vi= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ measured in\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

t = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ measured in\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Complete the following problems make sure that you are using the correct equation, showing all work and writing your answer with correct units.*

1. An object moves from rest to 9 m/s in 3 s. What is the acceleration of the object?
2. A car slows from 16 m/s to 2 m/s in 3.5 s. What is the car’s acceleration?
3. A ball is dropped from a cliff and has an acceleration of 9.8 m/s2. How long will it take the ball to reach a speed of 24.5 m/s?
4. A sprinter leaves the starting blocks with an acceleration of 4.5 m/s2. Calculate the sprinter’s speed 2 s later.