Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour:\_\_\_\_\_

***What’s Your Speed?***

**Purpose:** To learn how to apply knowledge of what speed is to determine rates of motion.

**Materials:** stopwatch, yard stick, open space

**Procedure:**

Working with the formula; rate (speed) = distance divided by time, determine your walking and jogging speed in miles per hour. **Follow these steps.**

 1. Get a yard stick.

 2. Measure off a distance to be walked and jogged in the space available.

 -mark with masking tape or some type of marker.

 Record distance here in feet. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 3. Obtain a stopwatch time yourself walking, at a normal pace, in the measured

 distance. Record here in seconds.

1. walking \_\_\_\_\_\_\_\_\_\_ seconds
2. jogging \_\_\_\_\_\_\_\_\_\_\_seconds

 4.Use the formula r = d/t to find your speed in ft/second.

 a. walking r=\_\_\_\_\_\_\_

 b. jogging r=\_\_\_\_\_\_\_

 5. Need to convert ft/s into mph.

1. walking

 \_\_\_\_\_\_ft X 3600 s = \_\_\_\_\_\_\_ft X 1 mile = \_\_\_\_\_\_\_\_miles = \_\_\_\_\_\_\_mph

 S 1 hr hr 5280 ft 5280 hr

 b. jogging

 \_\_\_\_\_\_ft X 3600 s = \_\_\_\_\_\_ft X 1 mile = \_\_\_\_\_\_miles = \_\_\_\_\_\_\_\_ mph

 s 1 hr hr 5280 ft 5280 hr

**Ramp Lab**

**Purpose:** To introduce students to physics concepts of speed, acceleration and gravity using observations and graphing.

**Materials:** Meter stick , molding (for a ramp), marble, golf ball, stopwatch, plastic cup

**Problem: What will roll down the ramp faster?**

**Hypothesis: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Procedure:**

1. On the side with the grooves, mark off 40 cm, 80 cm, 120 cm, 160 cm, and 200 cm.

 -for the ramps with a pointed end, mark off from the straight end.

2. Incline the ramp by putting one end up on something, no higher then 2 feet.

 -make sure to put the end you marked from on the floor!!

3. Put the cup over the end of the ramp. It will stop the marble and golf ball and provide a sound for you to stop the stopwatch.

4. Starting at the 40 cm mark, one partner releases marble and another time it’s trip. Record the results on the table provided.

5. Repeat step 4 for each of the other marks.

6. Repeat for Golf ball

Distance in cm Time in seconds marble Time in seconds for Golf Ball

40 \_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

80 \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

120 \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

160 \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

200 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_

**Graphing**

6. Make a line graph on graph paper according to the following directions.

 -put time in seconds on the x axis, use increments of 1/10 second

 -put distance in cm on the y axis, plot the five points on the graph

**Questions:**

1. Describe the lines produced in your graph, what kind of motion they show.

 2. Using the formula, speed(or rate) = distance divided by time r=d/t

 find the speed in cm per second (cm/s) for the marble and golf ball at….

 at 40 cm mark at 160 cm mark

 marble

 golf ball

 3. What has happened to the speed as the distance was increased? What force is

 causing the speed to change?

 4. Did mass impact the speed? What would a bowling ball do?

 5. Conclusion: Which sphere went faster and was your hypothesis correct?

 6. What is the dependent variable?\_\_\_\_\_\_\_\_\_\_\_\_ Independent Variable?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_