**Acceleration Activity Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**I. Accelerometer activity**

*Directions: type your responses to the activity questions in a color other than black (green and blue work famously). Then answer the reflection questions below in the same manner. You guys rock! Remember, your choices are positive acceleration (washer swings toward you = adds velocity each second), negative acceleration (washer swings away from you = removes velocity each second), or zero acceleration (washer remains at center line no change in velocity). You may need to walk more quickly than usual as your “average” speed for this to work well.*

**Procedure:**

1. Hold the accelerometer upright so that the center line (zero) and the hanging washer is pointing directly toward the ground.
2. From a stand-still, take three average paced steps forward, watching the washer on the accelerometer.

**Question1: What happens to the washer? Was this positive (washer swings toward you = adds velocity each second), negative (washer swings away from you = removes velocity each second), or zero acceleration (washer remains at center line no change in velocity)? Thoughts on why?**

1. Next, from a stand-still, take three forcefully paced steps forward, watching the washer.

**Question2: What happens to the washer? Was this positive, negative, or zero acceleration?**

1. Now, start walking at an average AND CONSTANT (no velocity change) pace. After 5-7 steps look at the washer.

**Question3: What happens to the washer? Was this positive, negative, or zero acceleration?**

1. Do the same as in step iv, except this time walk at a fast average, AND CONSTANT pace. Look at the washer after 5-7 steps at this faster pace.

**Question4: What happens to the washer? Was this positive, negative, or zero acceleration?**

1. From a standstill, start walking at an average pace then slow down your walk to a stop using no more than 2 steps to do so.

**Question5: What happens to the washer? Was this positive, negative, or zero acceleration?**

1. Do the same as you did in step vi except this time walk at a very fast pace before you slow down. Remember to do the slow & stop in no more than 2 steps.

**Question6: What happens to the washer? Was this positive, negative, or zero acceleration?**

**II. Reflection:**

1. What is the formula for acceleration?
2. Why do we need to have a v1 and a v2 (or vi and vf) in this formula?
3. Explain why the units of acceleration are m/s2. What does s2 in the denominator of this unit mean? AND how does this relate to the definition of acceleration?
4. What are the alternative words for acceleration and deceleration? (the word acceleration may be present in these alternative terms)
5. In the Rendezvous video Mr. F showed, how were you able to tell acceleration and deceleration was happening? Now that you know a bit more about motion, provide at least 3 pieces of evidence.
6. Describe the motion of the washer and relate it to acceleration and deceleration. Also, provide explanation on why the washer might have gone further from the zero line during your trials.