

## *Velocity and Position Lab*

**Purpose:** The purpose of this lab is to have students analyze and describe their own motion using velocity/time graphs, along with position/time graphs. Through this lab, they can identify how position greatly affects the graphs.

**Materials:** meter sticks  
Students  
Open space  
Stop watches  
Graph paper

**Procedure:**

1. Have students measure out a space of 10-20 meters.
2. Have each student create a data table showing their motion, time, and position.
3. Each student needs to walk, run, and sprint the determined distance (from the origin).
4. They then need to walk to the end, turning around, stopping half way to the origin.
5. Using that same walking motion, go to the end and come all the way back to the origin, showing zero position.

**Data:** The students need to calculate their velocities for each motion. Once they obtain their velocity, they need to create both a velocity/time graph and position/time graph for each type of motion.

**Variations:** You may also want to have your students add acceleration and deceleration to the types of motion/graphs. Let them choose another type of motion they would like to use in this lab, such as skipping, shuffling, crab walk, etc.

### **Questions:**

1. Explain how the position/time graph differs from the velocity/time graph of each type of motion.
2. Explain what happens to position/time graph as you go back to your origin.
3. What difference do you notice between the slopes of the walking verses running graphs?
4. What would you expect the graph of someone walking away from the origin, stopping briefly, running, stopping, and then turning around to walk back to the origin to look like?