

Name:

Period:

Conceptual Physics: Kinematics I

1. You start at position $x = +2$ and walk 3 meters to the right in 3 seconds. You then walk 6 meters to the left in 2 seconds. Assume left is negative and right is positive.
 - a. What total **distance** did you walk?

 - b. What is your **displacement** at the end?

 - c. Sketch a position vs. time graph of your motion in the space below. If this was like our lab, left would be toward the sensor and right would be away from the sensor. Remember, you need to establish scales on the axes *before* graphing the numbers.

Position vs. Time

x (m)

t (s)

- d. **When** (give a range of time) were you moving the **fastest**? How do you know?

e. What was your velocity between $t = 0$ and $t = 3$?

f. What was your velocity between $t = 3$ and $t = 5$?

g. What was your **average** velocity for the whole walk?

2. You are walking with a velocity of $+3$ m/s at the airport when you step onto a moving walkway that has a velocity of $+2$ m/s. You keep walking with the same velocity relative to the walkway.

a. What is your velocity relative to an observer standing on the stationary ground?

b. If you turn around and walk against the walkway, what is your velocity relative to an observer standing on the stationary ground?

c. **BONUS** In the case of part a, how long would it take you to travel 10 meters? In the case of part

b, how long would it take you to travel 10 meters?