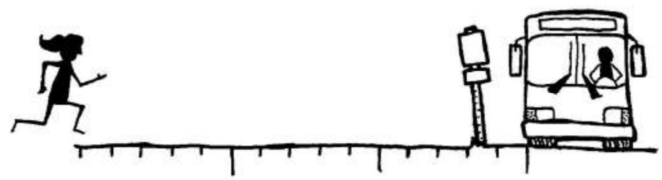
NAME ______________________ DATE ______________

## Scenario

*Angela is running at* 3 m/s *toward the bus* 15 m *away.*

## Using Representations

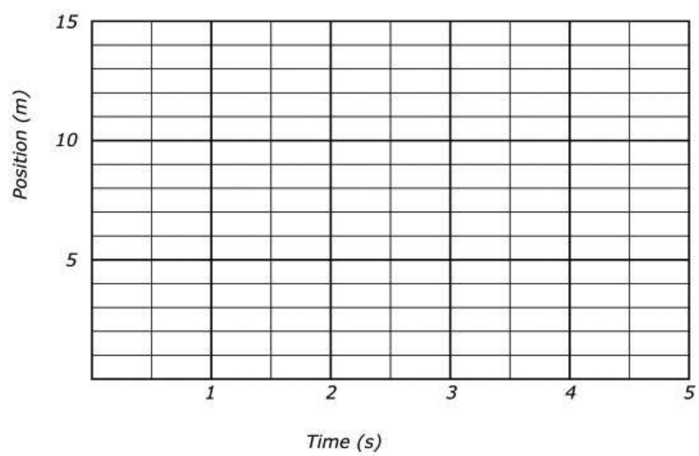
**PART A:** Below is a table of Angela's position at each second. Complete the table. Then, on the diagram of Angela and the bus, create a ***motion map*** of Angela's position at every second. Do this by marking with a dot where Angela is at every second.



| X | Time (s) | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|
| Y | Position (m) | 0 | 3 | 6 | | | |

**PART B:** Another way to represent Angela's motion is by creating a ***position vs. time graph.*** Finish filling out the data table above and then mark Angela's position at every second on the graph. (Plot the data points with solid filled-in dots.)

Sketch a best-fit line through the data points by drawing a single continuous straight line through the points. (Sketch the best-fit line as close as possible to all points and as many points above the line as below.)




## Quantitative Analysis

**PART C:** Calculate the slope of the line you drew in Part B by choosing two points ***on the line*** and filling in the equation below. (Choose two locations on the line that will be used to calculate the slope. Circle these two places on the line—remember DO NOT use data points from the table.)

$$slope = \frac{rise}{run} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{(\quad)\ \text{m} - (\quad)\ \text{m}}{(\quad)\ \text{s} - (\quad)\ \text{s}} = \frac{\quad\ \text{m}}{\text{s}} = (\quad)$$

The slope of a position vs. time graph represents the ______________ (physical quantity). (Hint: Check units!)

Using the equation for a line ($y = mx + b$), write an equation (including units) for the position vs. time line given above. (Remember that $m$ is the slope and $b$ is the vertical intercept.)

______ = ______ ______ + ______
letter number letter number

Write a more general equation for Angela's motion using standard physics symbols ($x$, $v$, $t$).

______ = ______ ______
letter letter letter