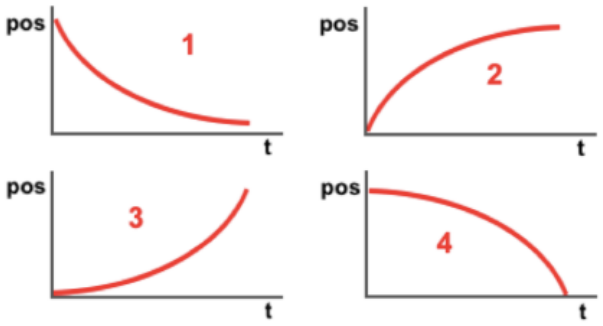
Position-Time Graphs: Calculating Slope

Lesson Notes

On a position-time graph, the slope is equal to the velocity. Accelerating objects are changing their velocity. So the slope of the line on the p-t graph changes for accelerating objects.



Positive Velocity: 2 and 3

Negative Velocity: 1 and 4

Speeding Up: 3 and 4

(the line is becoming steeper)

Slowing Down: 1 and 2

(the line is becoming less steep)

Calculating Slope of a p-t Graph

The slope of a line (**m**) is calculated as the rise/run ratio.

There are three simple steps

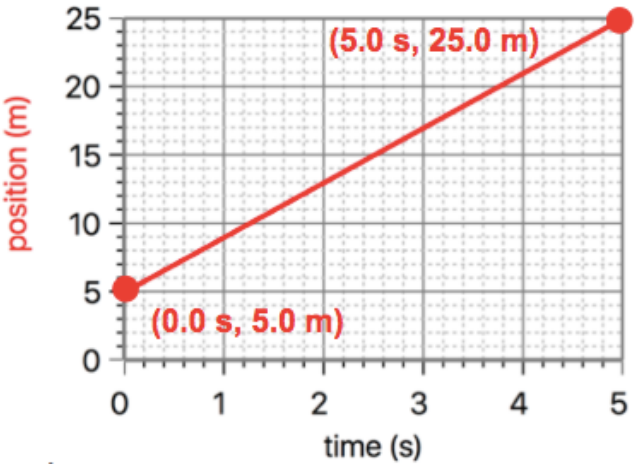
1. Pick 2 points on the line.
2. Find their x, y coordinates.
3. Find the ratio $\Delta y/\Delta x$. (a.k.a. rise/run)

For graph at right …

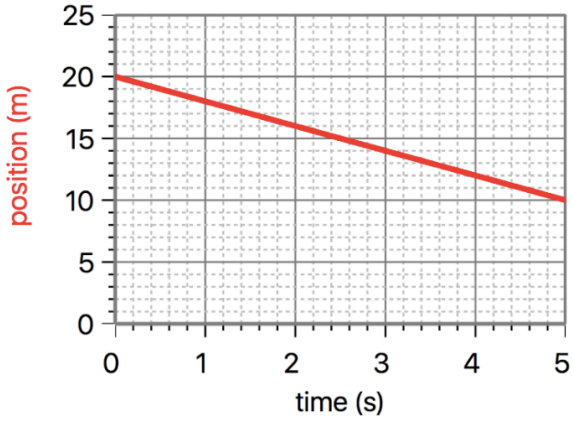
Slope = rise/run = $(y_2 - y_1) / (x_2 - x_1)$

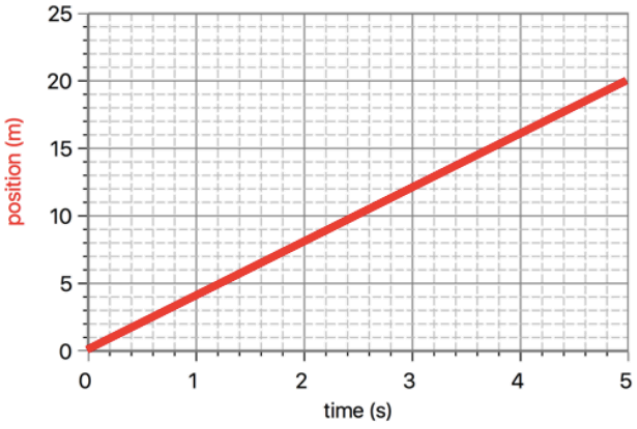
Slope = (25.0 m - 5.0 m) / (5.0 s - 0.0 s)

Slope = **4.0 m/s**



Use the three-step method to calculate the slope of the following two position-time graphs:





Your Turn to Practice

Calculate the velocity of the objects represented by the following two graphs.