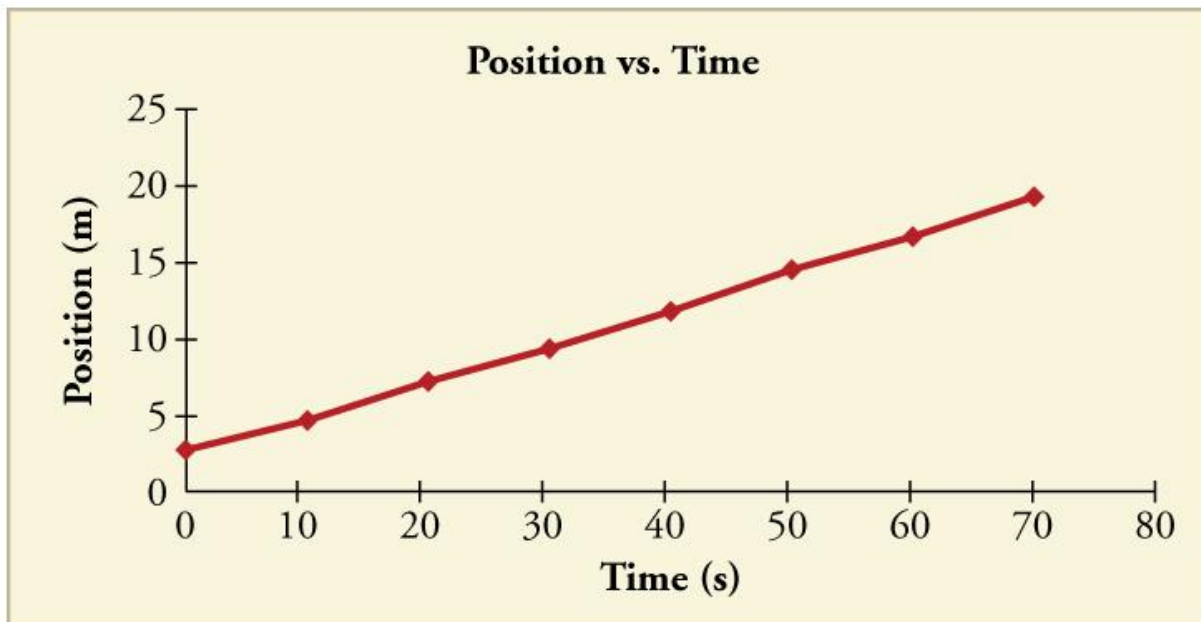


Position vs Time Graphs

Pictures say 1000 words...

Position vs Time Graphs

- Motion can be studied using a position vs. time graph.
 - POSITION (or DISPLACEMENT) on the vertical axis
 - TIME on the horizontal axis.
- The SLOPE of the line indicates the VELOCITY

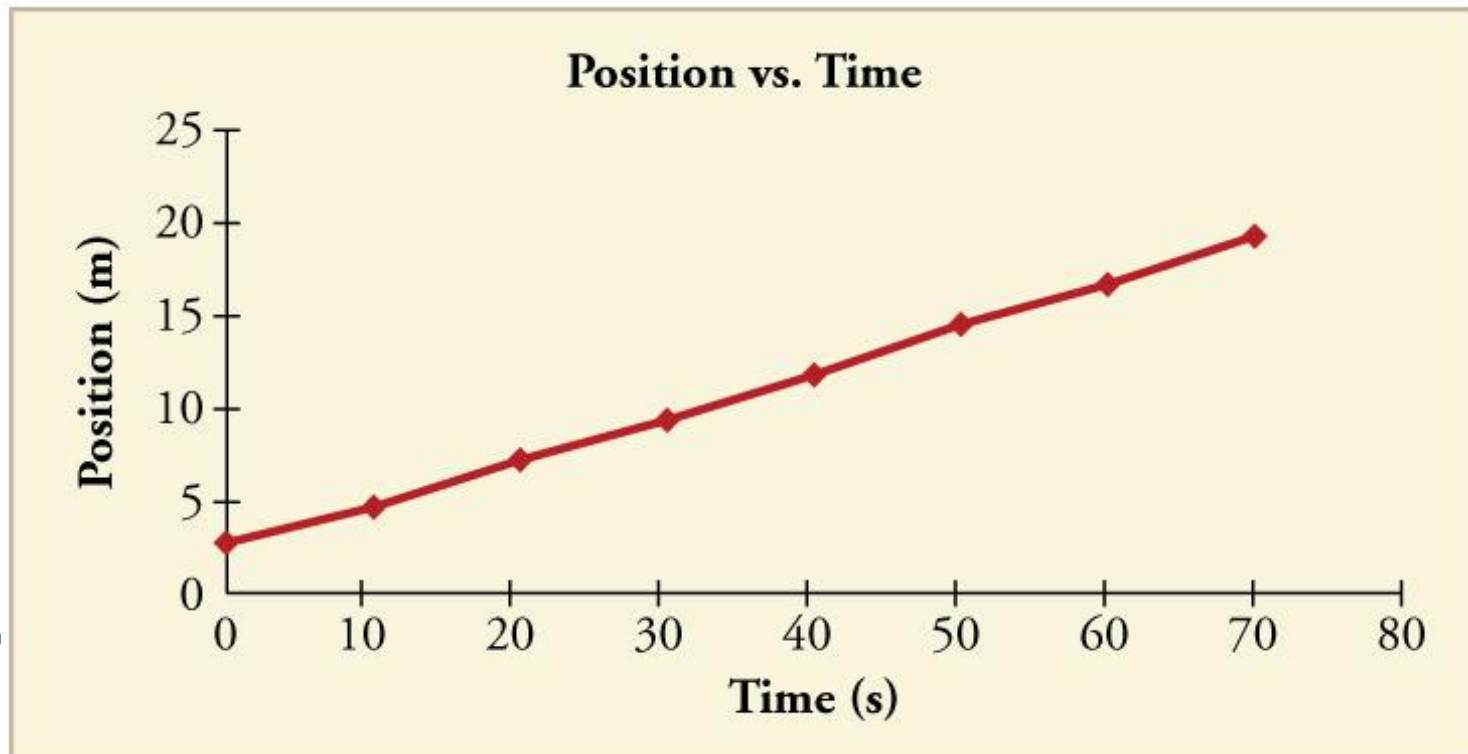


Calculating Slope

- Slope (which is the velocity), can be calculated by finding the change in position over the change in time

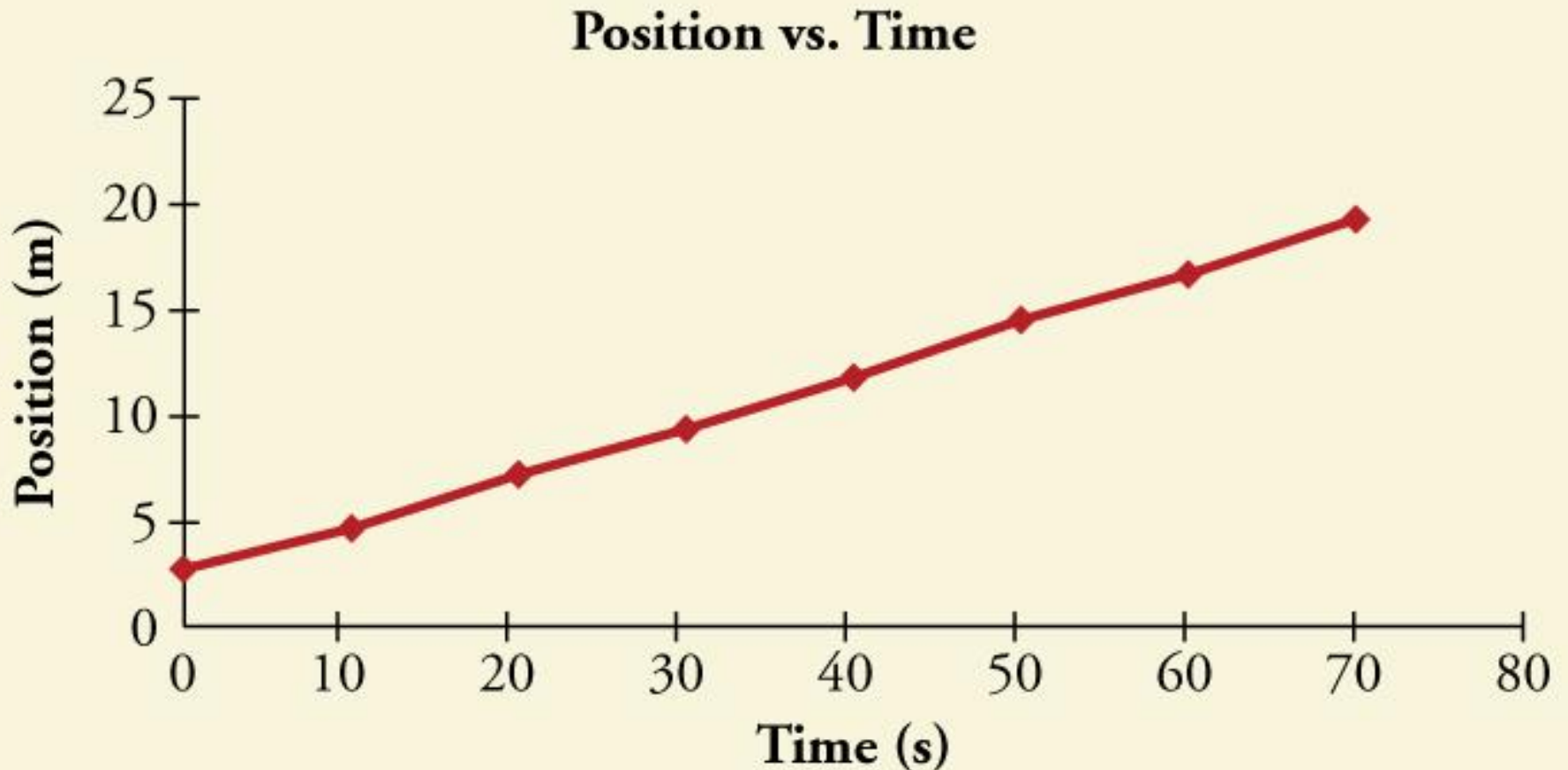
OR

$(y_2 - y_1)$ $(x_2 - x_1)$
RISE over RUN



Calculating Slope

- So let's try it:



Calculating Slope

1) Choose 2 points to start and end at.

$$y_2 = \quad \quad \quad y_1 =$$

$$x_2 = \quad \quad \quad x_1 =$$

2) Calculate the change between the points.

Difference in Position (y) =

Difference in Time (x) =

3) Calculate

Slope = Position / Time

$$(y_2 - y_1) / (x_2 - x_1)$$

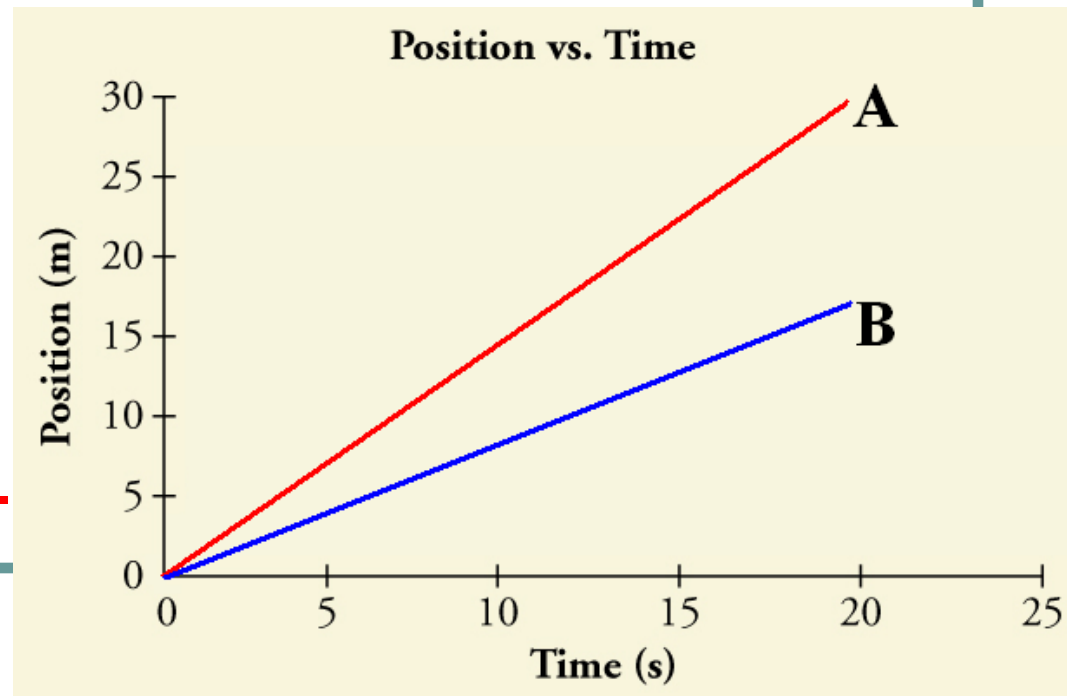
AND REMEMBER, **SLOPE = VELOCITY**

Different Slopes mean...

- POSITIVE slope indicates a POSITIVE velocity
 - Positive velocity means it is moving forward
- The greater the slope, the greater the velocity
 - The less the slope, the smaller the velocity

Which has a greater velocity?

A – It has a greater slope and is steeper.

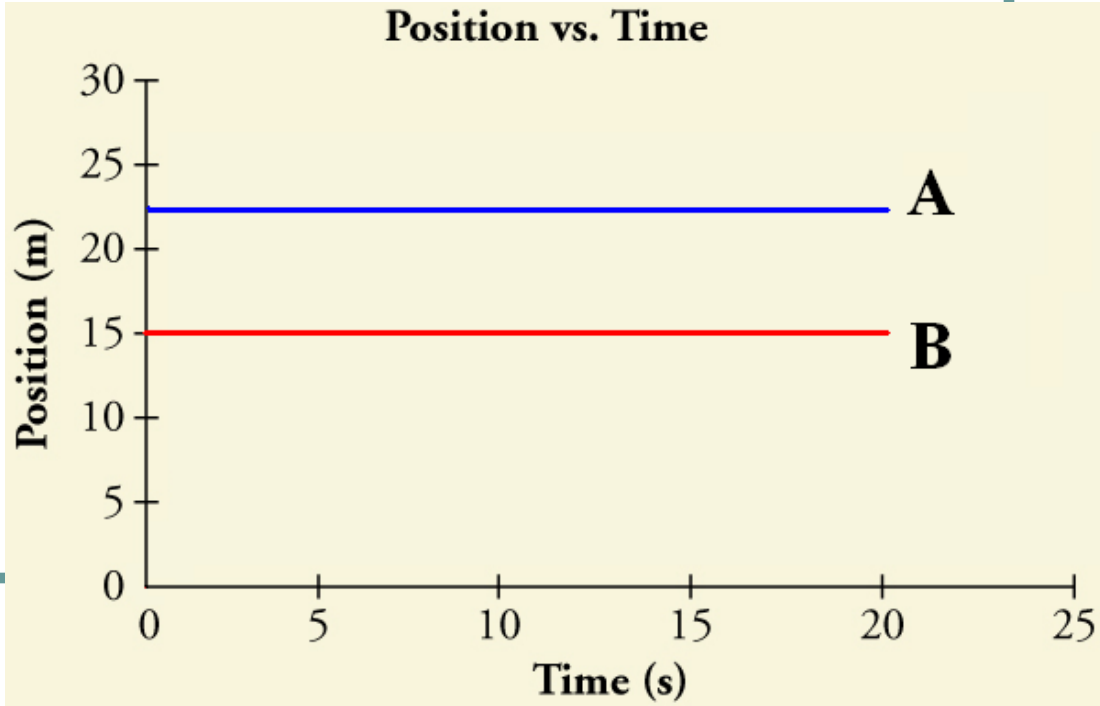


Different Slopes mean...

- ZERO slope indicates a ZERO velocity
 - Zero slope means that the line is horizontal

Which has a greater velocity?

They are both the same. Neither is moving.

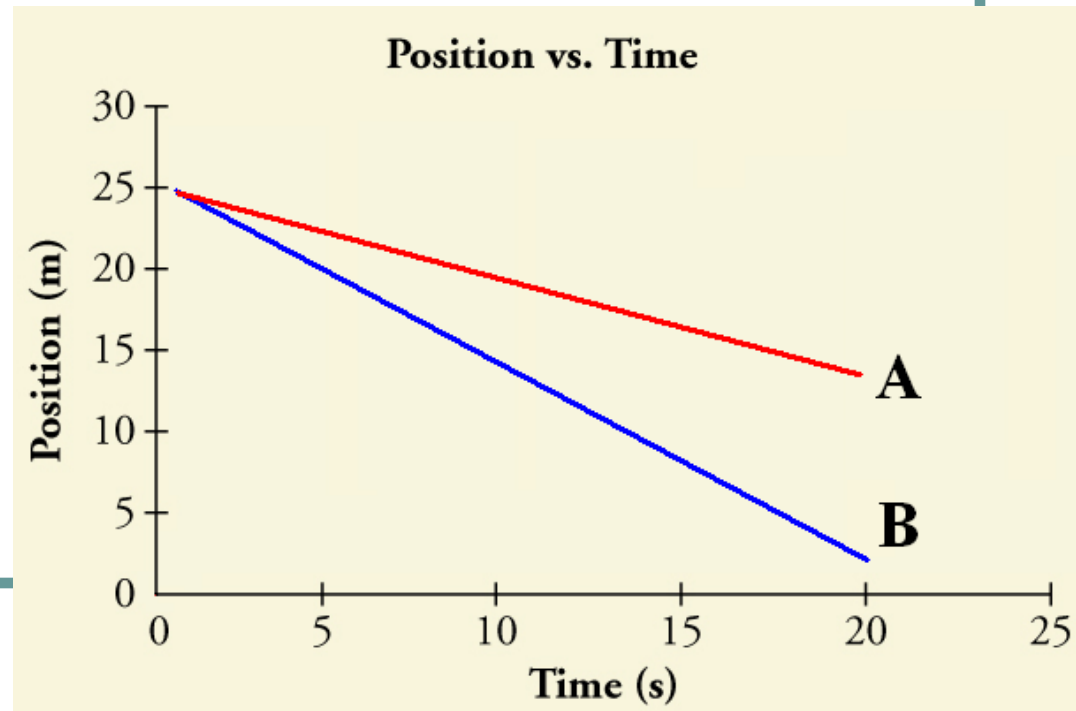


Different Slopes mean...

- **NEGATIVE** slope indicates a **NEGATIVE** velocity
 - Negative velocity means that the object is traveling in the negative direction.

Which has a greater negative velocity?

B – It has a greater slope, therefore a greater neg velocity



Put it all together...

So what is happening at each of these positions?

- A) Moving forward
- B) Stopped
- C) Moving in negative direction
- D) Moving forward

Could you calculate the velocity for each portion?

YES!

Rise over Run

