



Vocabulary: Distance-Time and Velocity-Time Graphs



Vocabulary

- Displacement – overall change in position.
 - Horizontal displacement can be written as Δx , which is short for “change in x .”
 - When displacement is along a horizontal line, displacement to the right is positive, and displacement to the left is negative.
 - For example, if a person walks 100 yards to the right, and then walks 30 yards to the left, the resulting displacement is 70 yards: $\Delta x = 70$ yards.
 - Displacement is a *vector* quantity because it includes a number and a direction.
- Distance traveled – the total distance connecting all the points on a path.
 - For example, if a person walks 100 yards to the right, and then walks 30 yards to the left, the distance traveled is 130 yards.
 - Distance traveled is a *scalar* quantity because it does not specify direction.
- Slope – a measure of the steepness of a line.
 - The slope tells you how the value on the vertical axis changes.
 - A *positive slope* (↗) shows that the value increases from left to right.
 - A *negative slope* (↘) shows that the value decreases from left to right.
 - A *zero slope* (→) shows that the value does not change.
 - You can calculate the slope between two points by dividing the vertical *rise* by the horizontal *run*.
- Speed – the rate at which an object is changing its position.
 - More informally, speed is a measure of how fast something moves.
 - Average speed is calculated by dividing the distance traveled by the elapsed time: $speed = d / t$.
 - For example, the average speed of a runner who travels 56 yards in 8 seconds is $56 \text{ y} \div 8 \text{ s} = 7 \text{ y/s}$.
 - Speed is a scalar quantity; it tells you nothing about direction.
 - Speed is never negative.
- Velocity – a vector quantity describing speed and direction of a moving object.
 - *Average velocity* is equal to displacement divided by elapsed time. For horizontal motion, this would mean: $v = \Delta x / t$.
 - Velocity is positive when motion is to the right or upward.
 - Velocity is negative when motion is to the left or downward.

