Calculus 1.4 Key Points

Distance-Velocity-Acceleration:

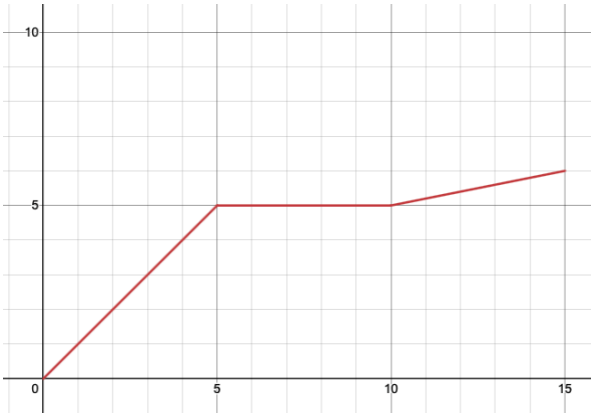
Distance: The total length that an object travels
Displacement: The distance between the final and initial position
Speed: The rate of motion of an object
Velocity: The rate of motion of an object with direction
Acceleration: The rate of change of velocity

Distance and displacement are not the same.
For example, if someone drives 25 miles in one direction and then 10 miles in the reverse direction, their total distance traveled is 35 miles, while their displacement is 15 miles (because their final position is 15 miles from their initial position).

If a ball is thrown to the left with a speed of $40\ ft/sec$, it has a velocity of $-\ 40\ ft/sec$ (moving up or to the right generally means a positive velocity, while moving down or to the left generally means a negative velocity).

An acceleration of zero does not mean that an object is not moving; it only means that an object is not speeding up or slowing down (so it could be moving at a constant velocity of $10\ mph$)

The slope of a distance graph is equal to the velocity of an object.



In the distance graph to the right, since the graph has a greater slope between 0 and 5 than between 10 and 15, we can deduce that the object was traveling faster (or had a higher average velocity between $t = 0$ and $t = 5$ than between $t = 10$ and $t = 15$

Also, since the graph is flat between $t = 5$ and $t = 10$, we know that the object was not moving during that time.

Researched & Developed by: Pi-Rates Add to your knowledge