

Chapter 2-One-Dimensional Motion

displacement (position) **d**

change in displacement (position) $\Delta d = d_f - d_i$

a vector-has direction; can use + or - to indicate direction; usually up and right are +, down and left are -

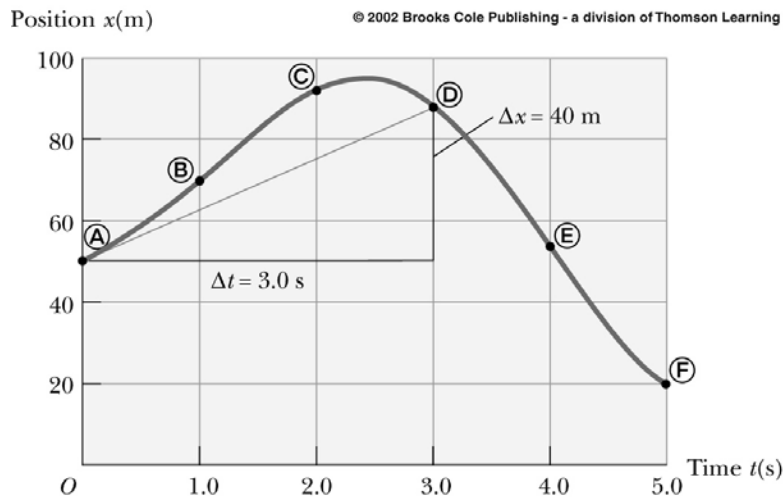
distance is length of total path, not the same as displacement by definition

velocity (speed with direction) $v = d/t$

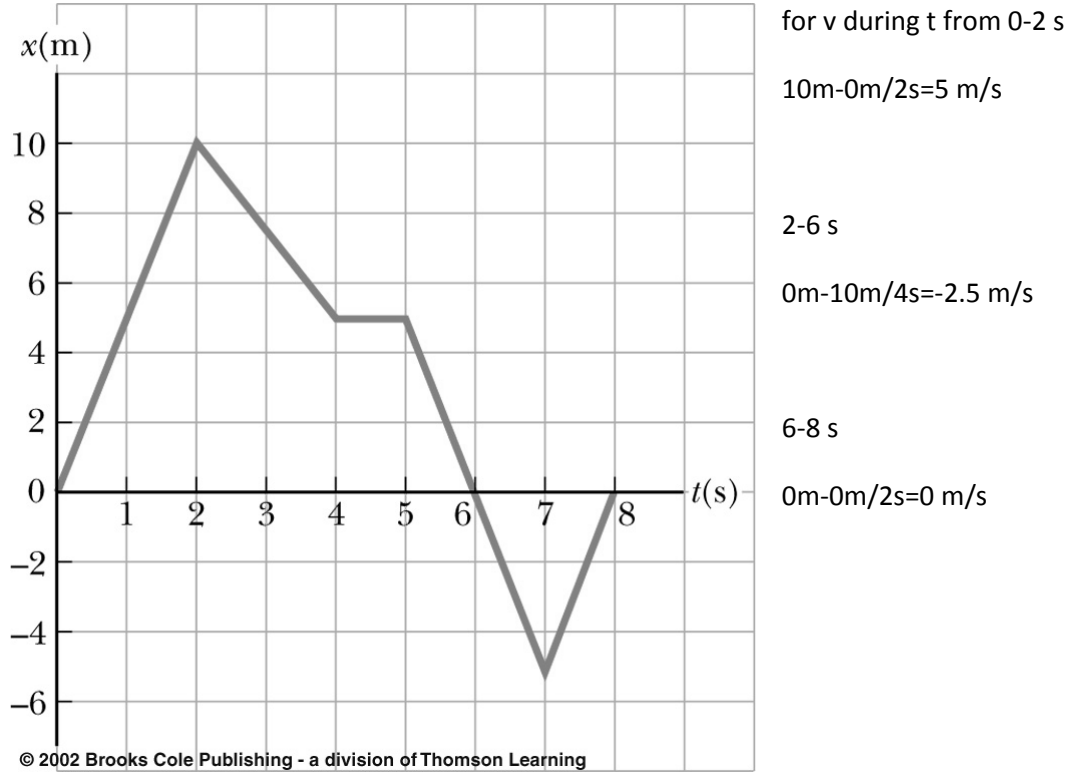
average velocity (velocity over a time period), instantaneous velocity (velocity at an instant of time)

acceleration (rate of change of velocity) $a = v/t$

Graphical Analysis of Instantaneous Velocity-make a triangle from origin to point at the instant and find slope of it. Slope of position (displacement) versus time graph is velocity



Graphical analysis of Average Velocity-use $(d_f - d_i) / \Delta t$ for the interval in question.



Formulas:

$$v_f = v_i + at$$

$$d = v_i t + \frac{1}{2} at^2$$

$$d = 0.5(v_i + v_f)t$$

$$v_f^2 = v_i^2 + 2ad$$