

Warm Up: Graphical Analysis of Kinematics

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1 Memory Bank

1. $v = \frac{\Delta x}{\Delta t}$... Average velocity.
2. $x(t) = vt + x_i$... Position versus time with constant velocity.
3. $a = \frac{\Delta v}{\Delta t}$... Acceleration is the change in velocity.

2 Chapter 2 - Graphical Analysis of Kinematics

1. Consider the motion of the system depicted in Fig. 1 (Left). What is the speed of the system? Suppose the system is moving in the positive y-direction. What is the expression of the velocity?
2. Write an equation for the position of the system in Fig. 1 (Left) versus time. Where will the system be at 18 seconds?
3. Consider the motion of the system in Fig. 1 (Right). Find the change in velocity between points P and Q. Calculate the acceleration. *Hint: pay attention to units.*

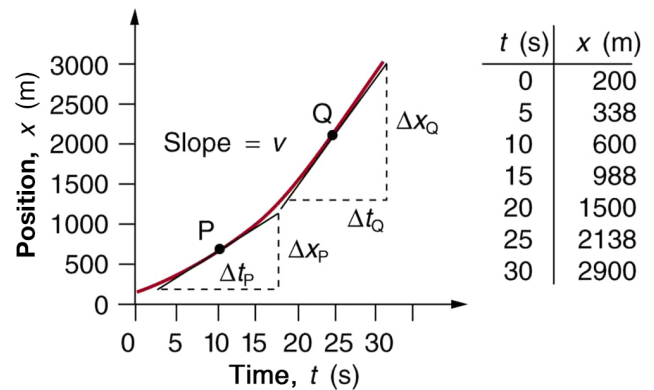
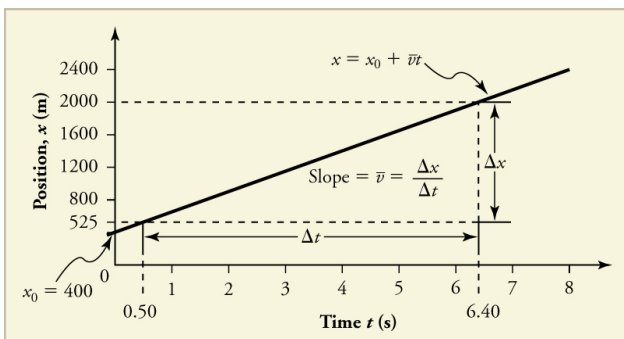


Figure 1: (Left) A system moves with constant velocity. Velocity is the slope on this plot. (Right) A system moves with non-constant velocity.