

Unit 1: Quiz 10

Manipulation of Algebraic Expressions & Equations

1. Solve for the unknown variable (
- listed under the word FIND*
-):

Problem #1	
$v_x = v_{x_0} + a_x t$	v_x : Velocity of the object at time t ($\frac{m}{s}$) v_{x_0} : Initial velocity of the object ($\frac{m}{s}$) a_x : Acceleration of the object ($\frac{m}{s^2}$) t : time interval in which motion occurs (s)
Given $v_{x_0} = 5 \frac{m}{s}$ $a_x = 2 \frac{m}{s^2}$ $t = 7 s$	Find $v_x = ?$
Solution	
Problem #2	
$x = x_0 + v_{x_0} t + \frac{1}{2} a_x t^2$	x : Position of the object at time t (m) x_0 : Initial position of the object (m) v_{x_0} : Initial velocity of the object ($\frac{m}{s}$) a_x : Acceleration of the object ($\frac{m}{s^2}$) t : time interval in which motion occurs (s)
Given $x_0 = 5 m$ $v_{x_0} = 3 \frac{m}{s}$ $a_x = 2 \frac{m}{s^2}$ $t = 7 s$	Find $x = ?$
Solution	

2. For each of the following equations, solve for the variable in **bold** print. Be sure to show each step you take to solve the equation for the **bold** variable.

a. $v = \mathbf{at}$ [Solve for **a**]

b. $P = \frac{F}{\mathbf{A}}$ [Solve for **A**]

c. $F(\mathbf{\Delta t}) = m\Delta v$ [Solve for **Δt**]

d. $U = \frac{G\mathbf{m_1m_2}}{r}$ [Solve for **m₁**]

e. $C = \frac{5}{9}(\mathbf{F} - 32)$ [Solve for **F**]

f. $F = \frac{1}{4\pi\epsilon_0} \cdot \frac{Kq_1q_2}{\mathbf{r^2}}$ [Solve for **r**]