Problem solving strategies for 1D kinematics

1) Draw a diagram of what's happening in <u>space</u>.

2) If possible, draw a plot of what you think x vs. t looks like (or v vs. t)

3) choose an initial position x_0, (x at t=0), and a direction for +x. Draw this on your diagram.

4) Decide if v_0 is a known or an unknown.

5) choose a time where you know extra information

    eg: at top of projectile motion, $v_y = 0$

    e.g. Problem tells you that after 5 seconds the ball has gone up 7 meters

6) Solve the 2 kinematic equations at that special time for unknown variables.

$$x^* = x_0 + v_0 t^* + \tfrac{1}{2} a (t^*)^2$$

$$v^* = v_0 + a t^*, \quad \text{where } x^* \& v^* \text{ occur at special time } t^*$$

7) If necessary, repeat steps 5 & 6 until you can find all the unknowns.