SiQuENC: Algebra-based 1-d kinematics

Use lots of space. It's OK if many of the following sections take a page each.

Neatly and graphically represent situation(s)

- Carefully read the problem three times.
- Dashed bubble around system for which motion is being studied
- Label time points of interest (e.g. use Roman numerals).
- Label origin and $+$ direction.
- Translate the words "free-fall," "projectile motion," and "under the influence of Earth's gravitational pull alone" to mean that the system's acceleration is $9.8\ \mathrm{m/s^2}$ downward.
- Identify requested unknowns.

Initial $t_i =$

$x_i =$

$v_{x,i} =$

Between t_i and t_f

$a_x =$

Final $t_f =$

$x_f =$

$v_{x,f} =$

Graphically represent quantities and their relationships

- Arrange dots on page to represent positions at different times.
- Attach arrows to dots to represent corresponding velocities.
- As much as is reasonably possible, draw to scale.

If you can do it legibly, you can overlay these representations of quantities over your representation of situation(s).

- Graph kinematics quantity(ies) as function(s) of time.

Identify relevant allowed starting point (in)equation(s)

- Definitions
- Laws

Analyze

- Perhaps perform algebra.
- Perhaps argue about scaling, e.g. mark a $\times\ 2$ near one variable and mark a resulting $\times\ 4$ near another variable.
- Perhaps circle a variable in one equation and use an arrow to point to the same variable in another equation.
- Did you answer the question?
- Is your result reasonable?

Communicate

- Number logically important features in the preceding steps.
- Convert each numbered item into a sentence (not enough room on this worksheet, use separate page).