SiQuENC: Algebra-based 2-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, $+x$ direction, and $+y$ 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.

Horizontal	**Vertical**
Initial $t_i =$	
$x_i =$	$y_i =$
$v_{x,i} =$	$v_{y,i} =$
Between t_i and t_f	
$a_x =$	$a_y =$
Final $t_f =$	
$x_f =$	$y_f =$
$v_{x,f} =$	$v_{y,f} =$

Graphically represent quantities and their relationships

- Arrange dots on page to represent positions at different times.
- Attach arrows to dots to represent corresponding velocities and velocity vector components.
- 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)

- Clearly distinguish horizontal and vertical kinematic quantities.
  - Sort first principles into a table.
  - Use x and y in subscripts, e.g. $v_{x,f} = v_{x,i} + a_{x,\mathrm{AVG}}\,\Delta t$
- Definitions
- Theorems

Horizontal	**Vertical**

Use numbered steps to show REASoNing

Communicate