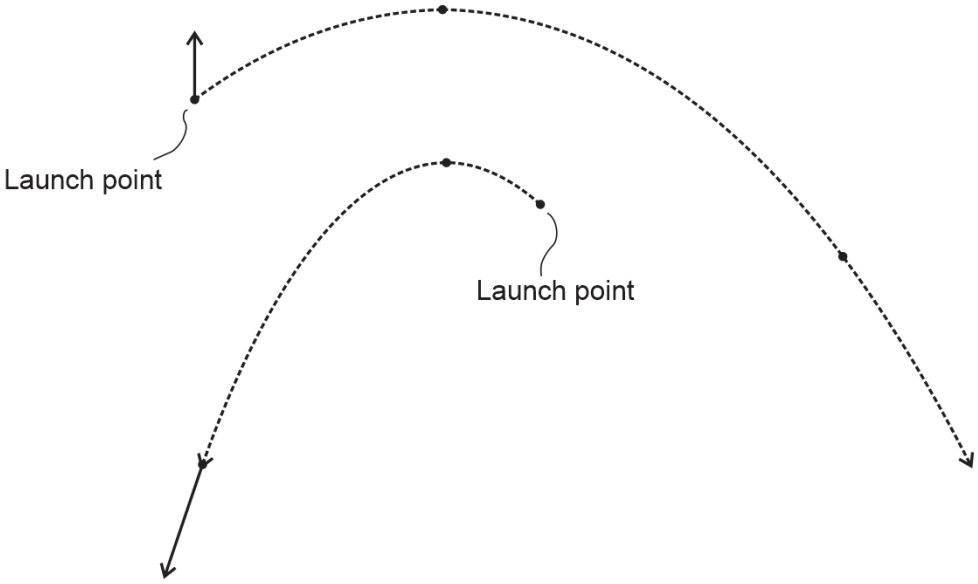
Physics 200 (Stapleton) Name: _____

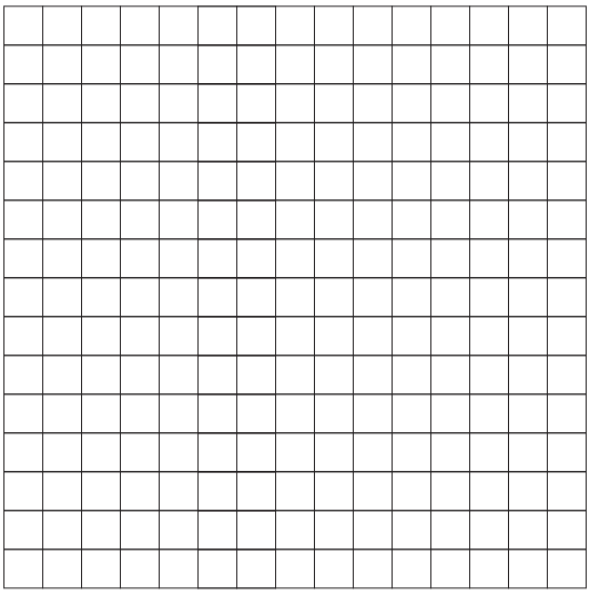
Test: 26-27 Projectile Motion Practice Test

1. Drawing velocity vectors: For each projectile path, one velocity vector is given for one of the points (circular dots)…
   - Correctly label the given vector with its name.
   - Draw and label the other velocity vectors for that point.
   - Draw and label all velocity vectors at the rest of the points indicated by circular dots.
   - For every circular dot, include the net velocity vector (v), as well as any other component vector (e.g. $v_x$ and/or $v_y$ that exists at that point.
   - For every vector drawn along the same projectile path, make sure that the vector directions are correct and that their lengths are in correct proportion to one another.




2. Force vector A has an x-component of -7N and a y-component of 4N. Force vector B has a magnitude of 8N and a direction 10° rightward of the positive y axis.

   a. In the box on the right, use the head-to-tail method to create an approximate scaled sketch showing the two vectors A and B and their vector sum when added together. Let the length of each square = 1N.



   b. Find the x and y components of force vector B.

      $B_x$ = _____ $B_y$ = _____

   c. When force vectors A and B are both applied to an object (and no other forces are applied), what are the magnitude and direction of the net force experienced by the object?

      Magnitude of Net Force = _____

      Direction of Net Force = _____

3. A skier leaves a jump in a direction 25° above positive X and travels a horizontal distance of 20m before landing at the same height at which she left the jump. Find all of the following for the interval during which the skier was in flight.

| y Dimension | x Dimension | 2 Dimensions |
|---|---|---|
| (3) $V_{oy} =$ | (2) $V_{ox} =$ | (1) $V_o =$ |
| (5) $V_y =$ | $V_x =$ | $\theta_o =$ |
| (6) $\bar{V}_y =$ | $\bar{V}_x =$ | (9) $V =$ |
| (7) $\Delta V_y =$ | $\Delta V_x =$ | (10) $\theta =$ |
| $a_y =$ | $a_x =$ | |
| (8) $\Delta y =$ | $\Delta x =$ | |
| (4) $\Delta t =$ | (4) $\Delta t =$ | |

4. You launch a projectile horizontally, in the positive X direction, from a table top. The projectile flies 3m horizontally before it hits the floor. The launch point is 0.94m above the floor. Find all of the following for the interval during which the projectile was in flight.

| y Dimension | x Dimension | 2 Dimensions |
|---|---|---|
| $V_{oy} =$ | $V_{ox} =$ | (6) $V_o =$ |
| (2) $V_y =$ | $V_x =$ | $\theta_o =$ |
| (3) $\bar{V}_y =$ | (5) $\bar{V}_x =$ | (8) $V =$ |
| (4) $\Delta V_y =$ | $\Delta V_x =$ | (7) $\theta =$ |
| $a_y =$ | $a_x =$ | |
| $\Delta y =$ | $\Delta x =$ | |
| (1) $\Delta t =$ | (1) $\Delta t =$ | |

5. A projectile is launched in a direction 56° above positive x. The projectile's initial x velocity is 30m/s, and its final y velocity at the moment of impact is -20m/s. Find all of the following for the interval during which the projectile was in flight.

| | y Dimension | x Dimension | 2 Dimensions |
|---|---|---|---|
| (1) | $V_{oy} =$ | $V_{ox} =$ | (7) $V_o =$ |
| | $V_y =$ | $V_x =$ | $\theta_o =$ |
| (3) | $\bar{V}_y =$ | $\bar{V}_x =$ | $V =$ |
| (4) | $\Delta V_y =$ | $\Delta V_x =$ | $\theta =$ |
| | $a_y =$ | $a_x =$ | |
| (5) | $\Delta y =$ | (6) $\Delta x =$ | |
| (2) | $\Delta t =$ | (2) $\Delta t =$ | |