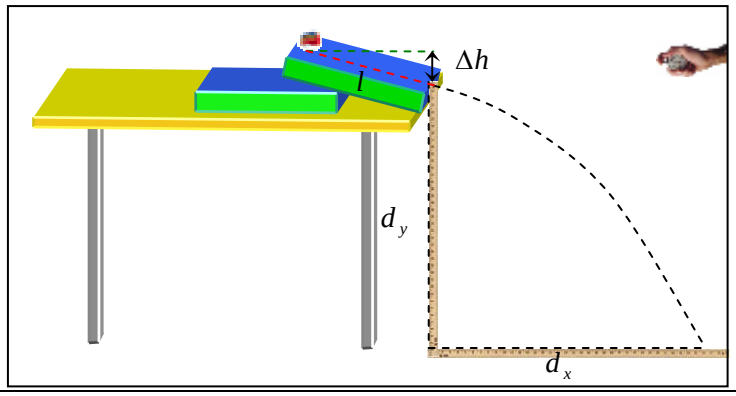
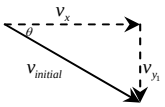
The Investigation

1. We are going to investigate projectile motion using a **downward** launched projectile.
2. Observe the set up.



3. You will perform **10** trials for this particular investigation. Note, if you have bad data you may, and should, perform additional trials.
4. Record your d_x, d_y, Δh and your t for each trial
5. Determine the average d_x, d_y, Δh and t all trials
6. You are going to determine your $v_{initial}$ using your **average experimental** results. Do this you will need to determine v_{y_1} and v_x

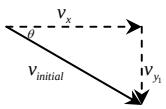
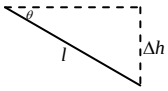


7. Compare your **experimental value** for the $v_{initial}$ to the **theoretical value,** which can be found using this formula;

   $v = \sqrt{\frac{10}{7} g\Delta h}$, where $g = +9.8 m/s^2$ and Δh is the height change in metres (m)

   to find the **percent error** use this formula $P.E = \frac{m.v - a.v}{a.v} \times 100$, where $P.E$ represent ***percent error***, $m.v.$ represents your ***measured value*** and $a.v.$ represents your ***accepted value***

8. Compare your **experimental value** for θ compared to the **accepted value.** Find the percent error as well.

Use this to determine the experimental value of θ	Use this to determine the accepted value of θ
	

Questions

1. What is the vertical component of the initial launch velocity?
2. What is the horizontal component of the initial launch velocity?
3. How did your **experimental value** for the ***initial velocity*** compare to the **theoretical value** for the ***initial velocity***? Was it close?
4. Find the standard deviation in your observations for
   - *time*
   - d_x
5. Determine the average **impact velocity** of the projectile.