

AP PHYSICS: TOPIC: VIRTUAL LAB ON PROJECTILE MOTION (LAB #2)

Go to the following site:

<http://phet.colorado.edu/en/simulation/projectile-motion>

1. **Download** or **Run** the Projectile Motion simulation.

The simulation allows you to position a target and launch a projectile and follow the **projectile's trajectory** of flight. The simulation can adjust a variety of parameters that affect the flight of the projectile.

Assignment:

1. Use the simulation to **launch a golf ball** at an upward launch angle of 15 degrees from an elevation of 6.0 meters and hit a target 29.2 meters away at an elevation of 0 meters. Use the simulation to determine the necessary launch speed to hit the target.
2. Draw a diagram of the simulated launch. **Verify** your resultant launch velocity using the kinematic equations. Show your calculations from the kinematic equations. Use only the given information of $\Delta y = 6.0\text{m}$; $\Delta x = 29.2\text{m}$; and the angle of launch is 15 degrees above the horizontal to verify the launch speed of the projectile.
3. Use the simulation and/or the kinematic equations to **determine the range** that the projectile will hit if the elevation of the launcher is increased to 20 meters.

