Analyzing the Motion of a Projectile—KEY

Instructions:

1. Click on the image in Project Share to open the Projectile Motion simulation, or go to the link below.

   http://phet.colorado.edu/sims/projectile-motion/projectile-motion_en.html

2. Take some time to familiarize yourself with the different controls of the simulation before you begin the activity below.
3. Changing one variable at a time, analyze how each variable affects the motion of a projectile.
4. Write statements that describe and explain the motion of a projectile for each variable based on your observations.

Variable	Predicted Effect of Variable on the Motion of a Projectile
Angle of projectile from the horizontal	Does not affect the vertical motion. Does affect the horizontal motion. The closer the angle to 45°, the farther the projectile will travel. A projectile will travel the farthest when launched at a 45° angle.
Initial Speed (m/s)	Does not affect the vertical motion. Does affect the horizontal motion. The higher the initial speed, the farther the projectile travels.
Mass (kg)	Does not affect the motion of the projectile.
Diameter (m)	Does not affect the motion of the projectile.