Name_____ Period _____ Date _____

Water Rockets

STEM Sims

Lesson 1: How Does the Launch Angle Affect Rocket Flight?

The angle at which you launch a rocket plays a role in determining how far the rocket will go. In this study you will investigate whether it is better to launch a rocket parallel to the ground (0 degrees), perpendicular to the ground (90 degrees), or somewhere in between. Protractors ready? Launch!

Doing the Science

1. Start the Water Rockets Simulation by clicking on the "Sim" tab.
2. Make the following selections:
   - Angle: 0°
   - Fluid Volume: 200 mL
   - Pumps: 4
   - Fluid Type: Glycerin
   - Air: Off
   - Wind: Off
3. Click on the "Launch" button.
4. Record the flight distance in meters in Table 1.
5. Click on the "RESET" button.
6. Repeat steps 2-5 increasing *only the angle* by 10° until you have completely filled out Table 1.

Table 1.

Launch Angle	Flight Distance (m)
0°	
10°	
20°	
30°	
40°	
50°	
60°	
70°	
80°	
90°	

Do You Understand?

1. What launch angle produced the longest horizontal distance traveled by the rocket?

2. Look at the two angles in your table that resulted in the longest flights and test the 5° angle in between the two. What distance does that angle produce? Does your answer to #1 change?