Name_____ Period _____ Date _____

Water Rockets

STEM Sims

Lesson 5: How Does the Presence of Air and Wind Affect Rocket Flight?

In science, there are often ideal situations and practical situations. Water rockets would operate differently in a vacuum then they would with air and wind creating drag. Don't let this study be a drag on you; blast off on your investigation!

Doing the Science

1. Start the Water Rockets Simulation by clicking on the "Sim" tab.
2. Make the following selections:
   - Angle: 30°
   - Fluid Volume: 200 mL
   - Pumps: 4
   - Fluid Type: Methanol
   - 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 with all of the options described in column 1 of Table 1. To change the direction of the wind, click the orange arrow in the top right hand corner of the screen.

Table 1.

Air and Wind	Flight Distance (m)
Air: Off Wind: Off	
Air: On Wind: Off	
Air: On Wind: On -10 km/hr	
Air: On Wind: On 10 km/hr	

Do You Understand?

1. What combination of air and wind produced the longest horizontal distance traveled by the rocket?

2. Predict what the flight distance would have been at wind speeds of −20 km/hr? +20 km/hr?

Your predict flight distance wind speed of −20km/hr = _____ m

Your predict flight distance wind speed of +20km/hr = _____ m