Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**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