



Water Rockets

STEM Sims

Lesson 3: How Does the Number of Pumps Affect a Rocket’s Flight?

Pumps are the mechanism by which the water rocket propulsion occurs. In this investigation you will find out the relationship between the number of pumps and the horizontal distance traveled by a rocket. Get pumped up and begin!

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: 2
 - 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 the number of pumps by 2 until you have completely filled out Table 1.

Table 1.

| Number of Pumps | Flight Distance (m) |
|-----------------|---------------------|
| 2 | |
| 4 | |
| 6 | |
| 8 | |
| 10 | |

Do You Understand?

1. What number of pumps produced the longest horizontal distance traveled by the rocket?

2. Why do you think the results came out as they did? Make a prediction for what the flight distance would have been if there were 12 pumps.

Your predicted flight distance for 12 pumps = _____ m