#YGKMUSEUMFROMHOME

POWER OF THE PUMP!

MATERIALS

WHAT YOU'LL NEED

- Tap water
- Water blasters (more than one is ideal)
- Sidewalk chalk or paper
- Measuring tape

LEARNING CORNER

Fluid: A liquid or gas that takes the shape of its container.

Piston: A cylinder that slides in and out of a large cylinder. It is used to compress a fluid.

One-way valve: Allows a fluid to move through in one direction, but not back. (Think of an exit door. Usually you can only leave through that door and not come back in).

Force: A push or pull.

Reservoir: A natural or man-made space where water is stored.

Machines, such as the the pumps in the PumpHouse use fluids to make work easier. Let's explore the properties of water in a fluid system using a water blaster!

BIG QUESTION

How does a water blaster work?

Step by step activity instructions on next page.

BONUS QUESTIONS!

How does the position of the pump affect the water blast? What happens if the pump handle is only pulled out halfway?

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PREPARE THE MATERIALS

1. Use the sidewalk chalk or paper and a measuring tape to create a course for this activity. Include a start line and at least three different targets.

Here, the targets start 150 cm from the start line. The targets are 150 cm apart from each other.

2. Fill the water blaster with water.

EXPERIMENT

3. Stand at the start line. Pull the pump handle out halfway. Push the pump handle in all the way. With chalk mark where the water landed. Return to the start line.

4. Repeat step 3. This time pull the water handle out as far as it can go. Push the handle in all the way. Did the water go further? Why?

BONUS: Do you have more than one water blaster? Compare the performance of each blaster. What is different about their design? How does the design affect how far they blast water?

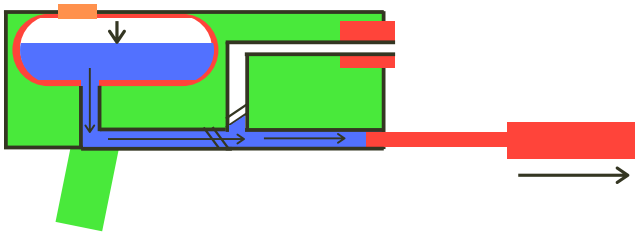
LEARN MORE!

Traditional Water Blaster:

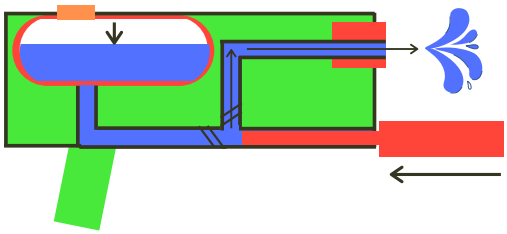
Water blasters work by using **a piston** to move water.

The blaster handle is attached to a piston. When the handle (piston) is pumped out, the water gets pulled down from the **reservoir**. It travels through the **one-way valve** and fills the piston.

The one-way valves mean the water can only travel in one direction. The water can not travel back to the reservoir.



When the handle (piston) is pushed in, the water is pushed through a second one-way valve. It travels along the path and leaves the water blaster.



Extend:
Virtually visit the pumps at the PumpHouse here. Can you find two pistons?

MacLachlan WOODWORKING MUSEUM

PUMPHOUSE HISTORY in MOTION