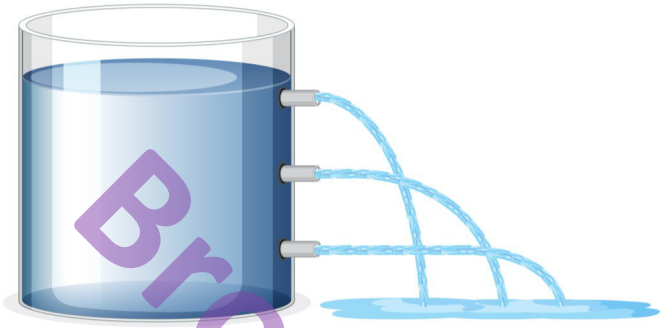
Brontosaurus Learning

Making science fun!



An Experiment about

Liquids

Water Pressure

What you will need:

- Empty plastic bottle
- A pair of compasses
- Water

What you will do:

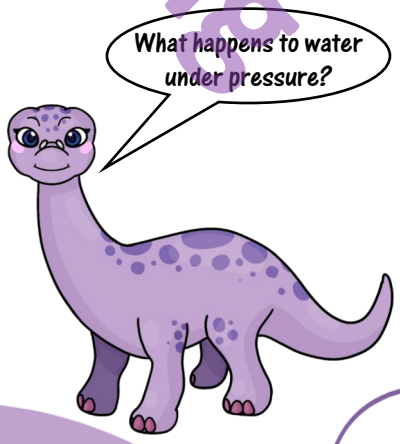
1 Use the compass to push a hole in the side of the bottle close to the bottom. ***Be very careful – it's sharp!***
2 Now push another hole about halfway up the bottle, in line with the first hole.
3 Finally push another hole in line with the first 2 but close to the top.
4 Outside, fill the bottle right to the top then put it down on the ground.
5 Observe how the water leaks out of the bottle. ***What do you notice about the different holes?***

What is going on?

Air pressure pushes down on the surface of the water all the time, so water is always under a certain amount of pressure. However water itself is also heavy, so water at the top of the bottle pushes down on water at the bottom of the bottle, increasing the pressure.

Challenges:

- Use spare bottles to have a competition – who can make their bottle spurt water the furthest? What can variables can you change to make the water go further?
- Next time you are swimming, try picking up a Frisbee or other flat object from the bottom of the shallow end of the pool. Now try it at the deep end – how is it different?
- Can you design a machine that uses water pressure to run?
- Research the adaptations fish living in the deep parts of the ocean have made to cope with the water pressure there.



Teaching Notes:

Brontosaurus Learning Experiment: Liquids LQ12

Topic: Liquids

Suitable for Ages: 6 -12+

Key Concepts:

- The effect of water pressure

Resources:

- Investigation Record IR01– one copy per student
- Experiment Description Liquids LQ12– one copy per student
- Empty plastic bottle, pair of compasses, water

Lesson Notes:

This experiment must be done outside – it makes a mess!

For younger students I usually put the holes in the bottles myself. For all other students safety is key – show students how to hold, carry and use the pair of compasses safely before giving any students access to them.

As a class discuss the experiment prior to undertaking it and students should complete the sections of their Investigation Report IR01 from "Title to "Hypothesis".

What should happen in this experiment, and why?

The water flowing from the lowest hole should spurt the furthest as it is under the most pressure. The highest hole should show the least pressure. As the water level in the bottle decreases, so should the flow rate from each of the holes, but the proportions should remain the same.

Follow up discussion questions:

- If you were using water pressure to run water to your house, where would you think the best place to put the water tank would be?
- Where should the hose attach to the tank?

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Investigation Record

Experiment Title:

Scientist (that's you!):

Materials: What will I need?

Investigation—what am I going to do in this experiment?

Diagrams are a great idea!

Hypothesis: What I think will happen:

Observation: What I SAW happen:

Diagrams are a great idea!

From my investigation I learnt:

Great work scientist!