The Power of Water

Classification

This experiment is suitable for Grades 4 – 6

Aim

This experiment will demonstrate the weight of water, and show how different amounts of water will affect the distance it can travel.

What you will need

1. Cardboard milk carton (1 litre)
2. Litre of water
3. Small nail
4. Sticky tape/masking tape
5. Ruler
6. Scissors
7. Highlighter texta
8. Pen and paper (for note taking)

Safety

1. Please make sure to hold the milk carton over a sink, or outside.
2. When making the holes with the nail, be sure to point the nail away from your hands in case it punches through.
3. Don't forget to get permission from an adult before doing this experiment.

What to do

Step 1. Cut off the top of the milk carton and then, with the ruler, measure from the bottom 2cm. Puncture a hole in the centre of one side of the milk carton using the nail. Next, measure from the bottom 4cm and puncture another hole, in the same line above the first hole. Do this again at both 6cm and 8cm. All holes should be in an even vertical line and the same size.

Step 2. Using one long strand of sticky tape, tape up the four holes.

Step 3. With the holes facing the sink, place the carton on the sink's edge.

Step 4. Using the texta, draw a line around the top of the carton, which is where the water will need to be filled/refilled to.

Step 5. Quickly release the sticky tape and then measure where each water stream spouting from the cartons holes hits in the sink.

Step 6. Let all the water run from the carton. Take notes on what happens as the water level drops – what are the changes and differences between each stream of water?

Step 7. Finally, tape up all holes. Put the carton back on the sink edge. Refill the carton and remove the bottom tape. Measure how far out the stream goes. Retape the hole, and un-tape the next hole up; measure how far away the stream goes. Refill the carton with water. Retape the second hole and un-tape the third hole; measure how far away the stream goes. Refill the carton with water to the same level as

before. Retape the third hole and un-tape the fourth hole; measure how far away the stream goes.

Discoveries

How far away did the streams of water fall from the carton? Was there a difference between the streams from the hole at the bottom than at the top?

The reason why is that water has weight. The closer to the bottom of the carton, the more the water above is applying pressure. The more weight, the more water pressure - the more water pressure, the further away the stream will go, and the faster it will go!

Hydroelectric facilities are built at the base of dams to take advantage of the high pressure of the water at the bottom of a reservoir. The water pressure is funnelled through a tunnel through the dam called a penstock. The water then is turned on the blades of a turbine. Water pressure of the water turns the turbine, and the turbine turns a generator making electricity.