

Task: Water

Explore the process of water filtration.



Tip: You can learn more about water using Britannica School. Find information on water in the Britannica School "Water Filtration" resource pack.

Practical Activity

Explore the process of water filtration.

PART 1:

Demonstrate permeable vs impermeable surfaces.

Materials:

- Plain Paper
- Plain Paper with Holes
- Water
- Container

Steps:

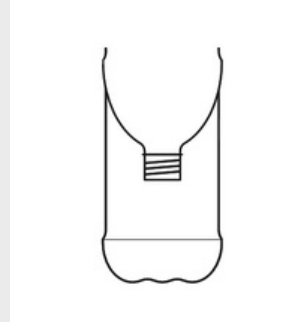
1. Break into pairs; Prepare a plain piece of paper to represent the impermeable surface and a piece of paper with holes punched into it to represent the permeable surface.
2. Hold each piece of paper over a container.
3. Pour water over the paper and observe how much water gathers in the container below. More water should gather in the container when poured over the paper with holes (permeable surface).

PART 2:

Using a homemade rain gauge, calculate how much rainwater a garden can filter.

Materials:

- Plastic Soft Drink Bottle
- Ruler
- Scissors
- Permanent Marker
- Tape

**Steps:**

1. Cut a plastic soft drink bottle in half.
2. Take the bottom half of the bottle; using a ruler and permanent marker, create a mark for each centimetre along the side of the bottle. (Tip: Measure from the base of the bottle, up to 10cm.)
3. Using the top half of the bottle, turn it upside down and tape it inside the bottom half to create a funnel.
4. Place the rain gauge in an open area. (Tip: you may need to secure the gauge against a stake in the ground). Position each group's gauge in a different location to get a more accurate overall reading.
5. Take a weekly rain gauge measurement for each gauge.
6. Using the total measure of rainwater collected and the surface area of the garden, calculate the amount of water that the garden has filtered during this period. (According to the UN Food and Agricultural Organisation, 1 mm of rain falling per square metre will yield 1L of water.)

$$\text{Volume of water filtered (L)} \\ = \text{Rainfall per square metre (mm)} \times \text{Size of the garden (m}^2\text{)}$$

Questions:

- What happens to water when it rains?
- What does permeable and impermeable mean?
- How do gardens work as a water filter?
- How do gardens affect pollution in our waterways?
- How do gardens affect the amount of water they may filter into a watershed?
- How do you think this affects gardens across our country?