



Credit: Getty Images

Hot rocks

This activity demonstrates that there is a way of storing energy from the Sun – and releasing it slowly – that has been around a lot longer than we have.

You will need

- Weighing scales
- Two 2-litre plastic water bottles
- Rocks about the size of small coins
- Larger rocks about 8 cm in diameter
- Two thermometers
- Hot water from a tap
- Pencil
- Paper
- Clock or watch
- Scissors

Steps

1

Using a pair of scissors, cut the tops off two 2-litre plastic water bottles. They should be cut near the top, just at the point where the bottles start to become rounded.

2

Gather some rocks. One of the rocks should be just large enough to fit inside a 2-litre lemonade bottle. The other rocks should be about the size of small coins. Using the weighing scales, find out how much the large rock weighs and then remove it from the scales.

3

Pile up smaller rocks on the weighing scales until the same weight is reached. (The rock mass will then be held **CONSTANT** while the size of the rocks is the **VARIABLE**.)

4

Place all the rocks on a table for an hour or two until you can be sure they are all at room temperature. Do not put them in direct sunlight.

5

Fill each bottle half full of hot water from a tap. Using a thermometer to help, make sure that the water in each bottle is at the same temperature. Place the large rock in one 2-litre plastic bottle and the smaller rocks into the other bottle.

6

Keep a thermometer in each bottle. After a few minutes, record the temperature on each thermometer. Every three minutes, read and record the temperature on the two thermometers. Make up a table to record your data. Continue to record temperatures until the water in both bottles reaches room temperature.

Analysis/ discussion

Does one large rock or an equal-mass grouping of smaller rocks lead to the fastest transference of energy? (In solar heating for a home, it would be preferable to have energy released slowly to keep a house warm all through the night until the Sun came up again to put energy back into the system.)