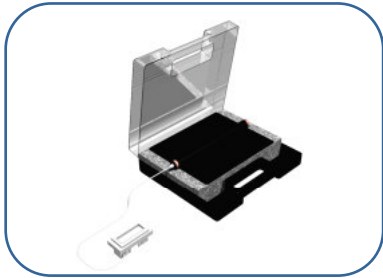
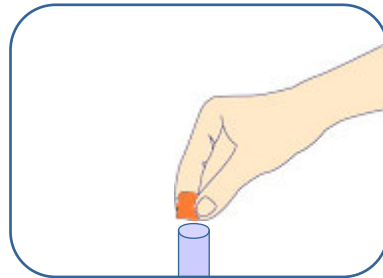


Solar Water Heater Kit

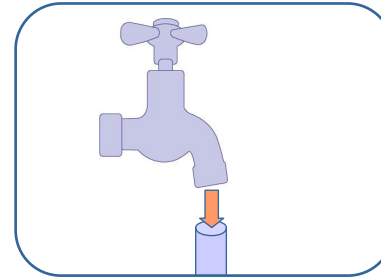
Activity 1 - How hot does water get in the solar water heater?



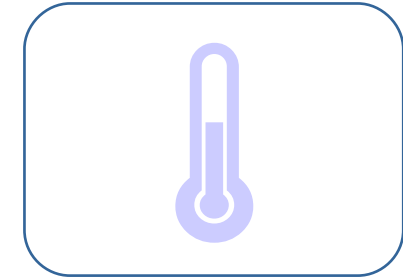
The solar water heater uses energy from the Sun to heat water. Your task is to find out how hot the water gets in 5 minutes.



1. Take the rubber stopper out of the metal tube.



2. Carefully fill the tube to the top with cold water. Put the stopper back in the metal tube. Put the tube and metal fin back into the insulated case.



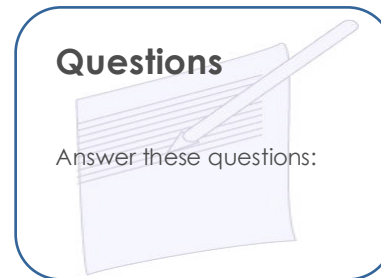
3. Make sure the lead for the digital thermometer is in the groove provided for it before closing the case. Write down the temperature of the cold water.



4. Put the solar water heater in direct sunlight, pointing towards the Sun. After 5 minutes, write down the temperature of the water again.



Safety: when the water reaches 50°C, it is hot enough to be a hazard. Open the case and allow the water heater to cool until the temperature has decreased. The water is then safe to handle - but it will still be hot!



- Questions**
- Answer these questions:
- (i)** Describe the sunlight during the experiment, e.g. 'the Sun was mostly behind thin clouds'.
 - (ii)** What temperature did the water start at?
 - (iii)** What temperature was the water after 5 minutes?
 - (iv)** How much had it changed in 5 minutes?



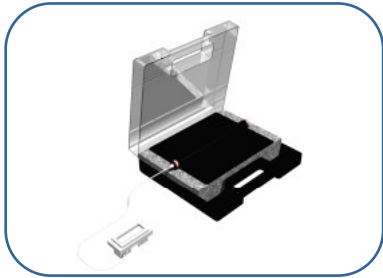
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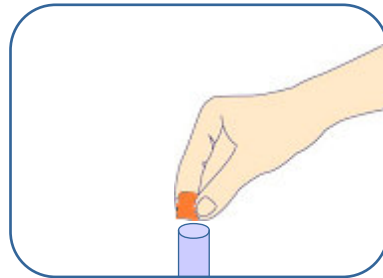
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Solar Water Heater Kit

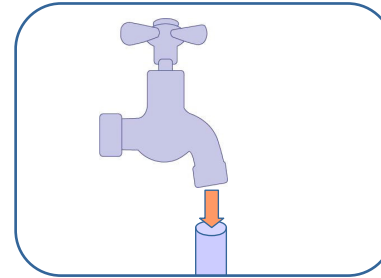
Activity 2 - How hot does water get in the solar water heater?



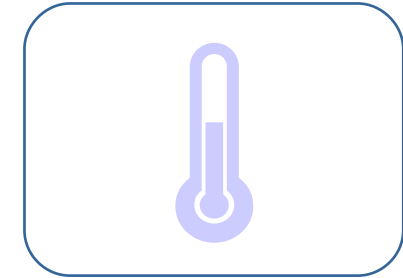
The solar water heater uses energy from the Sun to heat water. Your task is to find out how hot the water gets in 10 minutes.



1. Take the rubber stopper out of the metal tube.



2. Carefully fill the tube to the top with cold water. Put the stopper back in the metal tube. Put the tube and metal fin back into the insulated case.



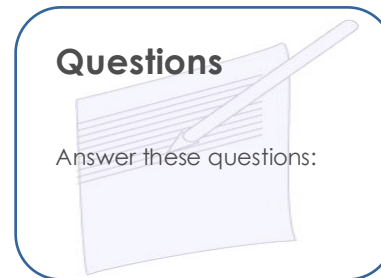
3. Make sure the lead for the digital thermometer is in the groove provided for it before closing the case. Write down the temperature of the cold water.



4. Put the solar water heater in direct sunlight, pointing towards the Sun and start the clock. At the end of each minute, record the water temperature. If the digital thermometer reaches 50°C then stop the experiment.



Safety: when the water reaches 50°C, it is hot enough to be a hazard. Open the case and allow the water heater to cool until the temperature has decreased. The water is then safe to handle - but it will still be hot!



- Questions**
Answer these questions:
- (i)** Describe the sunlight during the experiment, e.g. 'the Sun was mostly behind thin clouds'.
 - (ii)** Draw a graph showing the temperature change.
 - (iii)** Use your graph to decide whether the temperature rose steadily or not during your experiment. Try to explain why this happened, thinking about the sunlight during the 10 minutes.



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Solar Water Heater Kit

Operating Instructions - Digital Thermometer

°C/°F Function

Press the °C/°F button (on the back of the instrument) and then release the switch from °C to °F or °F to °C

Max/Min Memory Function

Press the MAX/MIN button to display the maximum reading (MAX symbol displayed). Press the MAX/MIN button again to display the minimum reading (MIN symbol displayed). Press MAX/MIN button again to return to normal readings. Hold MAX/MIN for three seconds to reset minimum and maximum temperature memory.

Temperature Alarm Setting for Remote Probe (in copper heating tube)

To operate the audible alarm, press and hold the alarm set button to adjust the high or low alarm reading, the alarm settings will then flash on the display.

To set the high alarm, press and hold the °C/°F function button at the rear of the unit.

To set the low alarm, press the alarm set button and press and hold the °C/°F function button at the rear of the unit.

The audible alarm will sound intermittently when the temperature setting has been exceeded and will cease once the temperatures have returned to within the boundaries set.

EMC/RFI

Instrument readings may be affected if the unit is operated within a radio frequency electromagnetic field strength of approximately 3 volts per metre. If you experience any problems with the unit, press the reset button at the rear of the instrument.



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