

# Cool It

- You need**
- |   |   |   |
|---|---|---|
| <input checked="" type="checkbox"/> a stopwatch or a watch        | <input checked="" type="checkbox"/> 7 test tubes                | <input checked="" type="checkbox"/> tinfoil   |
| <input checked="" type="checkbox"/> a test tube holder            | <input checked="" type="checkbox"/> scissors                    | <input checked="" type="checkbox"/> newspaper |
| <input checked="" type="checkbox"/> 6 toothpaste boxes            | <input checked="" type="checkbox"/> a jug                       |   |
| <input checked="" type="checkbox"/> 6 spirit thermometers         | <input checked="" type="checkbox"/> classmates (a group of six) |   |
| <input checked="" type="checkbox"/> polystyrene pieces or bubbles |   |   |

## Investigation

Houses are insulated in the floor, ceiling, and outside walls. This helps prevent heat loss in winter and keeps the house cool in summer.

- To see how insulation can affect heat loss, try this investigation with a group of your classmates.

Each person is responsible for one of the test tubes.

- Open the top of a toothpaste box so that a test tube can be put in it.

- Set up six test tubes like this with these insulations.

- Fill a jug with hot water from the tap.

Find its temperature before you pour 40 millilitres of it into each test tube.

- Each person checks the temperature of their test tube of water every  $2\frac{1}{2}$  minutes. Leave the thermometer in the water for 30 seconds each time to find the correct temperature.

Between checks, place the thermometer in an empty test tube in the holder.

- Record the measurements.

- Discuss with the group:

- Which test tube of water cools most quickly?
- Which test tube of water cools most slowly?
- Why do you think this happens?

none



scrunched-up newspaper



tightly wrapped newspaper



scrunched-up foil



tightly wrapped foil



polystyrene pieces or bubbles

