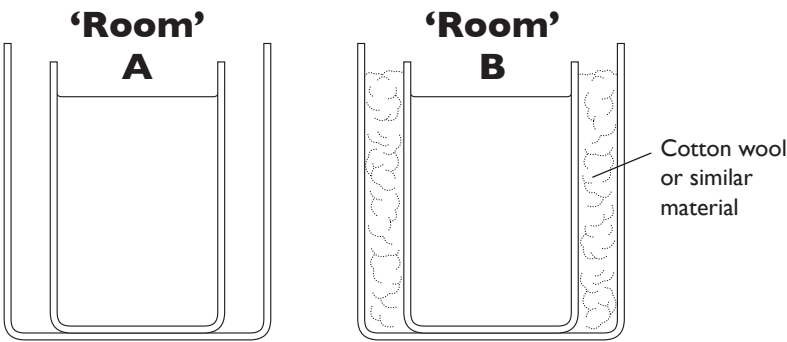


Saving energy at home

What is an insulating material and how good is it?

Set up four containers to make your two ‘rooms’, ‘Room’ A and ‘Room’ B – as shown in the diagram.

Pour the same amount of very warm water into the middle container inside each ‘room’.



Take the temperature of the water in each ‘room’ and fill in the first line of the table.

Time B (mins)	Temperature in ‘Room’ A °C	Temperature in ‘Room’ °C
0		
5		
10		
15		
20		
25		
30		

Every five minutes, take the temperature of the water in each container and record it in the table.

Make a graph or chart of your results.

What do your results show?

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Answers

This will vary with the apparatus used.

The results show that the insulating materials stop heat from leaving a warm room. As a result, they show that the use of insulation materials saves energy.

You could extend this by asking students to find out about any insulation material they might have at home.

Notes

For this activity it would be helpful to have a number of different materials available, such as some metal sheets (aluminium foil) which make poor insulators, and also good insulation materials that you can get from a home improvement centre such as a sheet of polystyrene foam, fibreglass insulation and shredded paper insulation. You can also use cotton wool, pieces of knitting and other materials that students might think are good at insulating.

To make model rooms to test these materials you will need four beakers per group of students, two small and two large. The tests of a control (no insulation) against an insulation material will be a fair test.

You will also need two thermometers per group of students.

The small beakers are filled with warm water (not boiling, to prevent risk of scalding). Hot water from a tap might be a suitable source.

Make sure that students can recognise that they are testing these materials on a model, and that the small beaker represents the warm room and the large beaker the outside of the house. The space between them is the wall and its cavity.

To continue with a fair test, the temperature of the water in each experiment must be the same. Students may need reminding that the temperature must only be read when the liquid in the thermometer has steadied.