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POWERING THE FUTURE

Heat 1

Heat Transfer Investigation

GLASGOW SCIENCE CENTRE

Teacher Instructions

Resources per group:

- 5 ice cubes
- 5 small bowls
- Sticky tape
- Scissors
- Cooking foil, roughly A4
- Water
- Tea towel/other fabric
- Plastic carrier bag/bubble wrap

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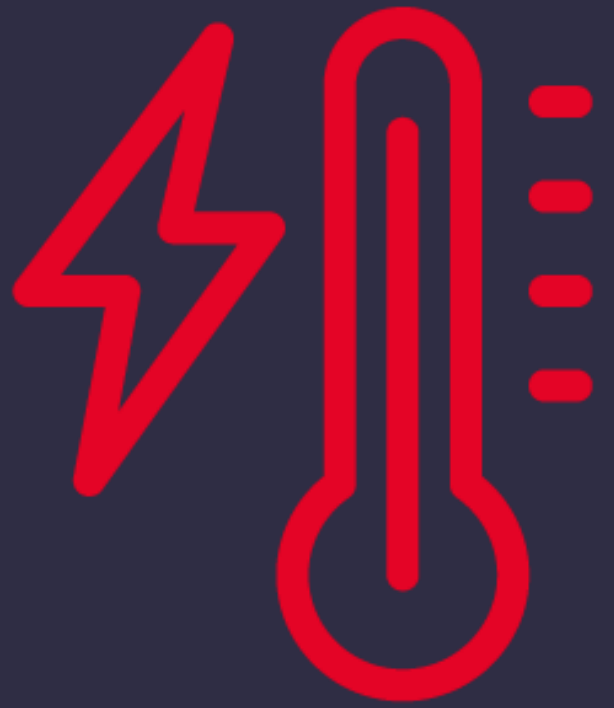
Teacher Instructions

Hand out equipment to each group.

Keep ice in freezer or cool box until pupils have set up their stations and are ready to begin.



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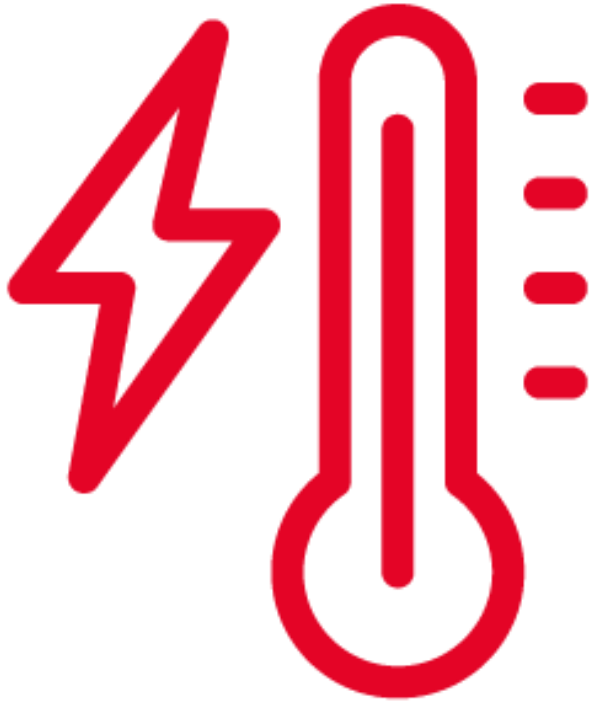
Pupil Instructions

You will investigate which materials are best at keeping ice cubes cold.

You will test 4 different materials, checking how much the ice cubes have melted every 10 minutes.



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Pupil Instructions

At your station, set out 4 bowls.

Fold the kitchen foil once and lay on bowl 1.

Pour enough water into bowl 2 to cover an ice cube.

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Pupil Instructions

Fold the tea towel or fabric, and lay on bowl 3.

Fold the plastic carrier bag or bubble wrap, and place on bowl 4.

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Pupil Instructions

Use bowl 5 to collect 5 ice cubes.

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Pupil Instructions

Wrap 1 ice cube in each of the different materials.

Use the tape and scissors if you need to secure any of the materials, such as the plastic carrier bag/bubble wrap.

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Pupil Instructions

Place 1 ice cube in the bowl of water.

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Pupil Instructions

Leave 1 ice cube in bowl 5, not wrapped in anything.

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Pupil Instructions

After 10 minutes, check each of the ice cubes.

How much have they melted?

Is the material they are wrapped in wet?

Make notes to describe the ice cubes using **Worksheet 1 – Heat Transfer Investigation.**

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Pupil Instructions

After checking, wrap the ice cubes up again.

Keep checking every 10 minutes, using the worksheet to take notes on how much the ice cubes have melted.

End the investigation when the ice cubes have melted or you run out of time.

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Materials

Materials that don't allow heat to travel easily from one thing to another are called **insulators**.

The materials that stopped the ice cubes from melting acted as an **insulator**.

Materials that **do** allow heat to travel easily from one thing to another are called **conductors**.

Materials

Pipes made of materials that are good insulators are used in heating systems to move heated water from one place to another (e.g. from a boiler to a hot tap).

Materials

In a heat pump system, a chemical called a **refrigerant** is used to move heat from outdoors to indoors.

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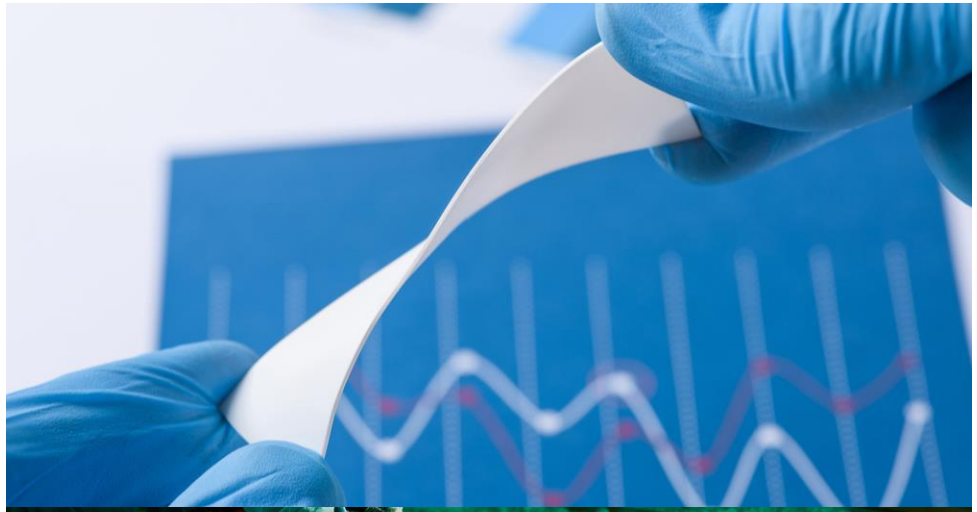
Materials

Material Scientists understand how different materials behave, including heating systems in homes.



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