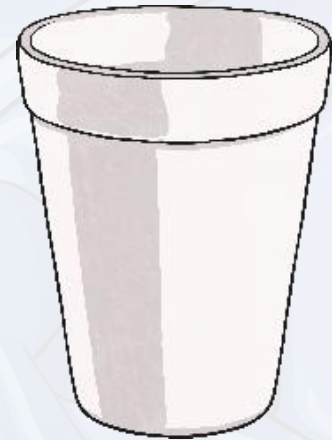
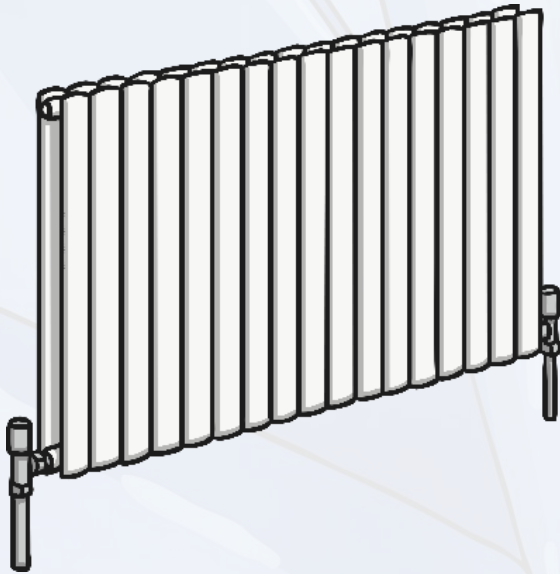


LO: I can investigate thermal conductors and insulators.

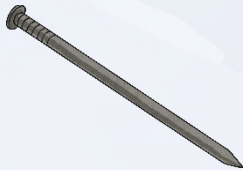
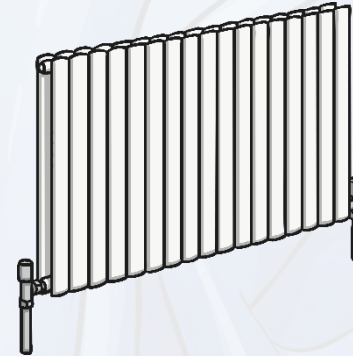
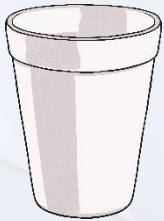
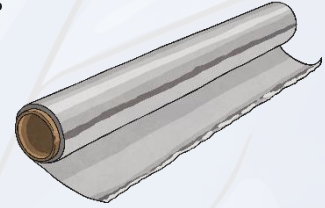
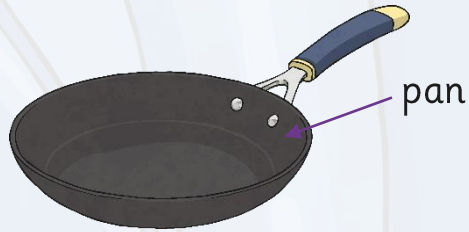
Success Criteria

- I can identify materials that are thermal conductors and insulators.
- I can explain what thermal conductors and insulators are.
- I can plan and carry out an investigation into thermal conductors and insulators.
- I can give reasons for the uses of thermal conductors and insulators.

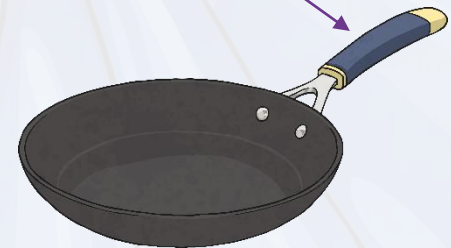
Odd One Out



Sorting Materials



pan handle



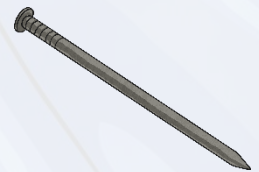
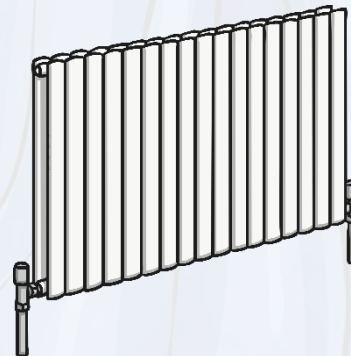
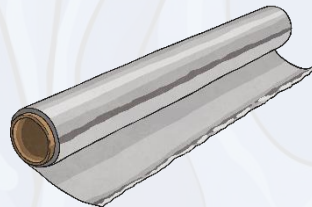
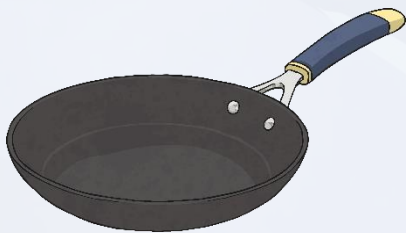
Look at the materials. Can they be sorted into groups?

Thermal Conductors

Heat can travel easily through thermal conductors.

Metals are good thermal conductors, as they allow heat to move through them.

Thermal conductors are used to make items that need heat to travel through them, like a pan or a radiator.

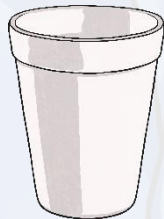


Thermal Insulators

Thermal insulators do not let heat travel through them easily.

Some fabrics, wood and plastics are good thermal insulators.

Thermal insulators can keep heat out or in. For example, a vacuum flask stops heat from the air travelling through to the food or drink inside, keeping it cool. A coat stops the heat from your body travelling through to the air outside, keeping you warm.

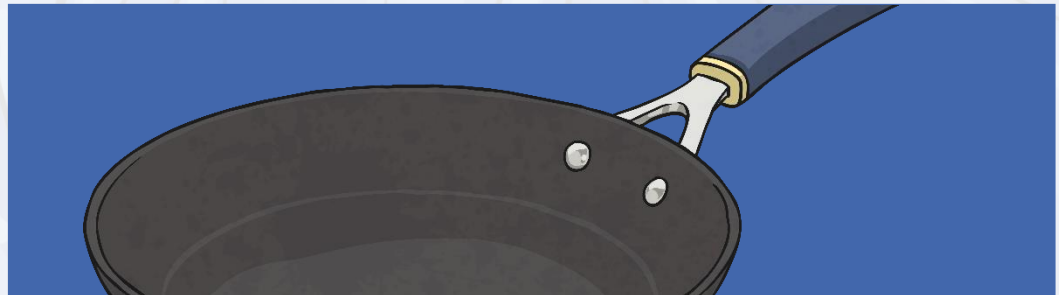
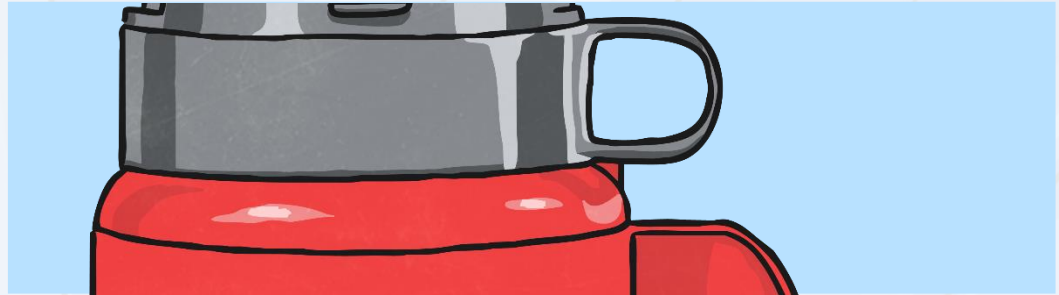


Thermal Conductors and Insulators

Try this quiz to test your understanding of thermal conductors and insulators.



Click the play button to begin!



Design a New Lunch Box

The Brilliant Bags Company want to make a new lunch box for children to bring their hot packed lunches to school in.

Food will be stored in the lunch box for a few hours during a morning and need to keep their heat.

They want to make sure the lunch box keeps the children's lunches hot and fresh, so they need to think about the best material to use to make the inner lining of the lunch box.



Design a New Lunch Box



The company want you to help them choose the best material for the inner lining of the lunch box.

The lining will need to stop heat getting lost through the material.

Will the lining need to be a good thermal conductor or a good thermal insulator?

You will need to find the best thermal insulator for the inner lining of the lunch box. Thermal conductors will let heat through and make the food warm up quickly.

The materials are:

Foil

Wool

Paper

Plastic

Thermal insulators will stop the heat getting through and keep the food cool for longer. How could you set up a comparative investigation to test the different materials to see if they conduct heat or insulate from it?

Watch the video below to find out which material is best thermal insulator!



https://www.youtube.com/watch?v=Yg8kXf_HKtU

Which material was the best thermal insulator? Why do you think that is?

Temperature changes:

wool
-11.7°F

paper
-10.6°F

plastic
-7.2°F

foil
-6.4°F



Aluminum foil held the most heat,
and the sock held the least.

Are these results surprising?

1:41 / 1:57

Are these results surprising?

Main Task

Design a packed lunch box which has a good thermal insulator as a lining to keep the heat in.

LO: I can investigate thermal conductors and insulators

Using the results of your thermal insulator investigation, design and label a packed lunch box which is made of an effective insulator.

Material	Wool	Paper	Plastic	Foil
Temperature				



I chose the material _____ because

I chose the material foil because it is the most effective thermal insulator. In the experiment the foil lost the least amount of heat (6°F). Therefore this is the best material to use for the lining of packed lunch box.

