

Lesson 6:

Conductors and insulators



Part of Energy Queensland



ENERGY DETECTIVES



Today's task

Today we are going to understand how energy can be wasted in circuits, and the difference between an electrical insulator and an electrical conductor.

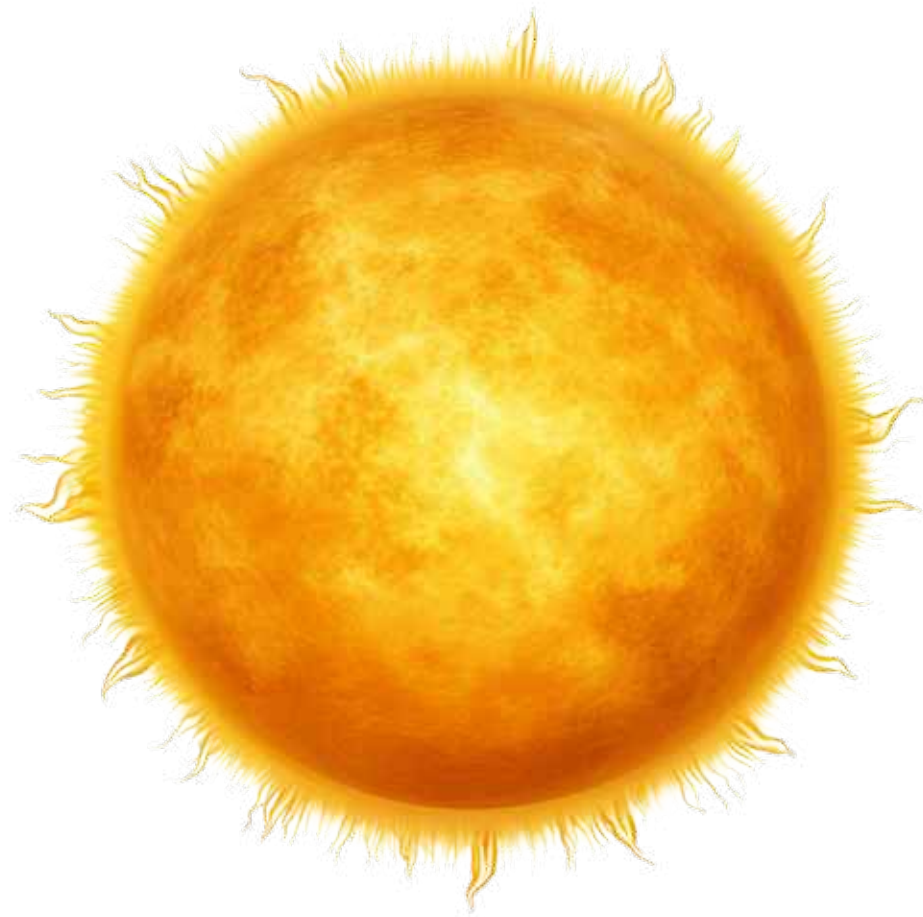


Learning intention

- ✓ Define energy efficiency
- ✓ Identify insulators and conductors
- ✓ Explain how changes in a circuit can improve energy efficiency

What have we done so far?

As a class, recap:



What is energy transfer?



What is energy transformation?



Give an example of energy transfer and transformation in electrical circuits.

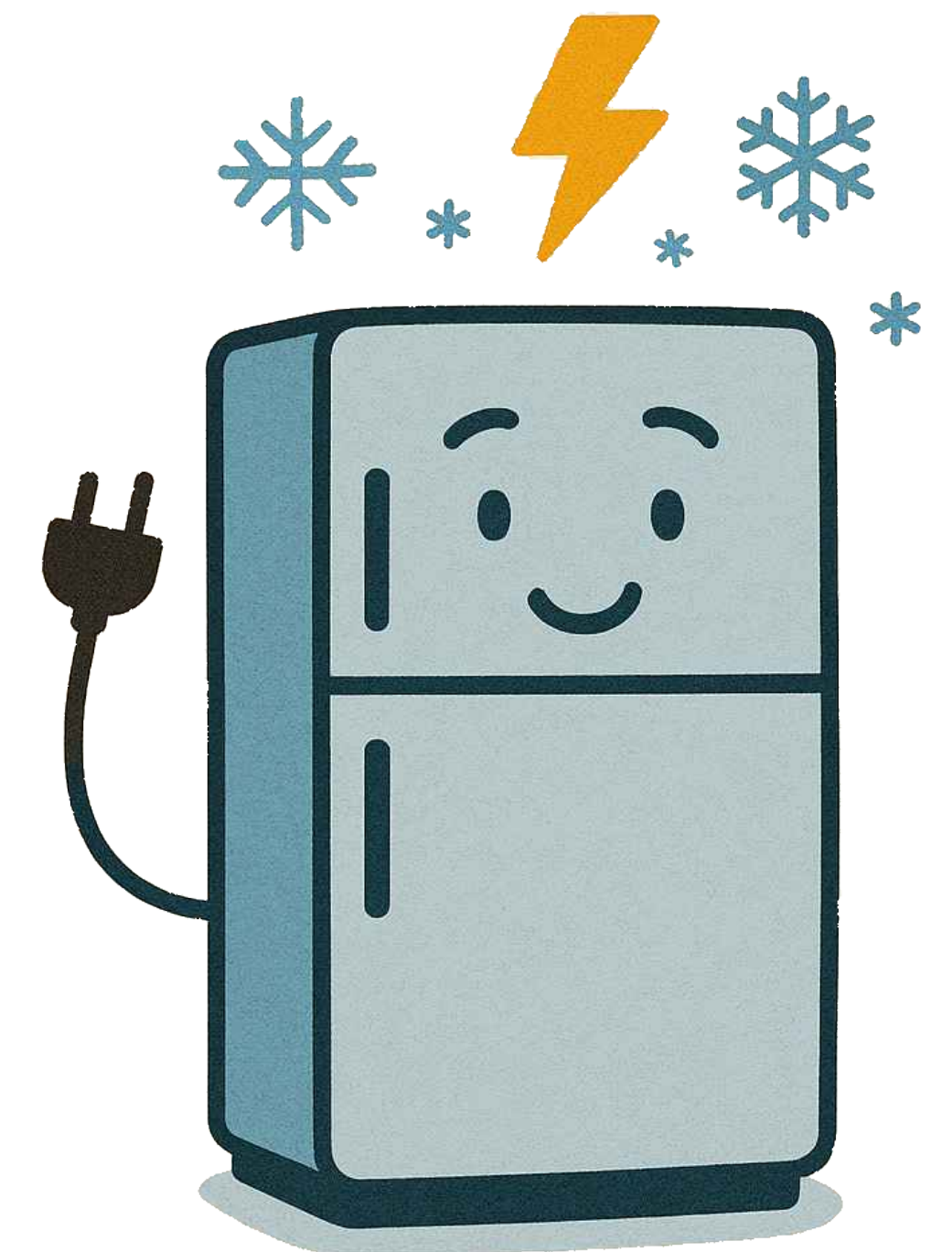
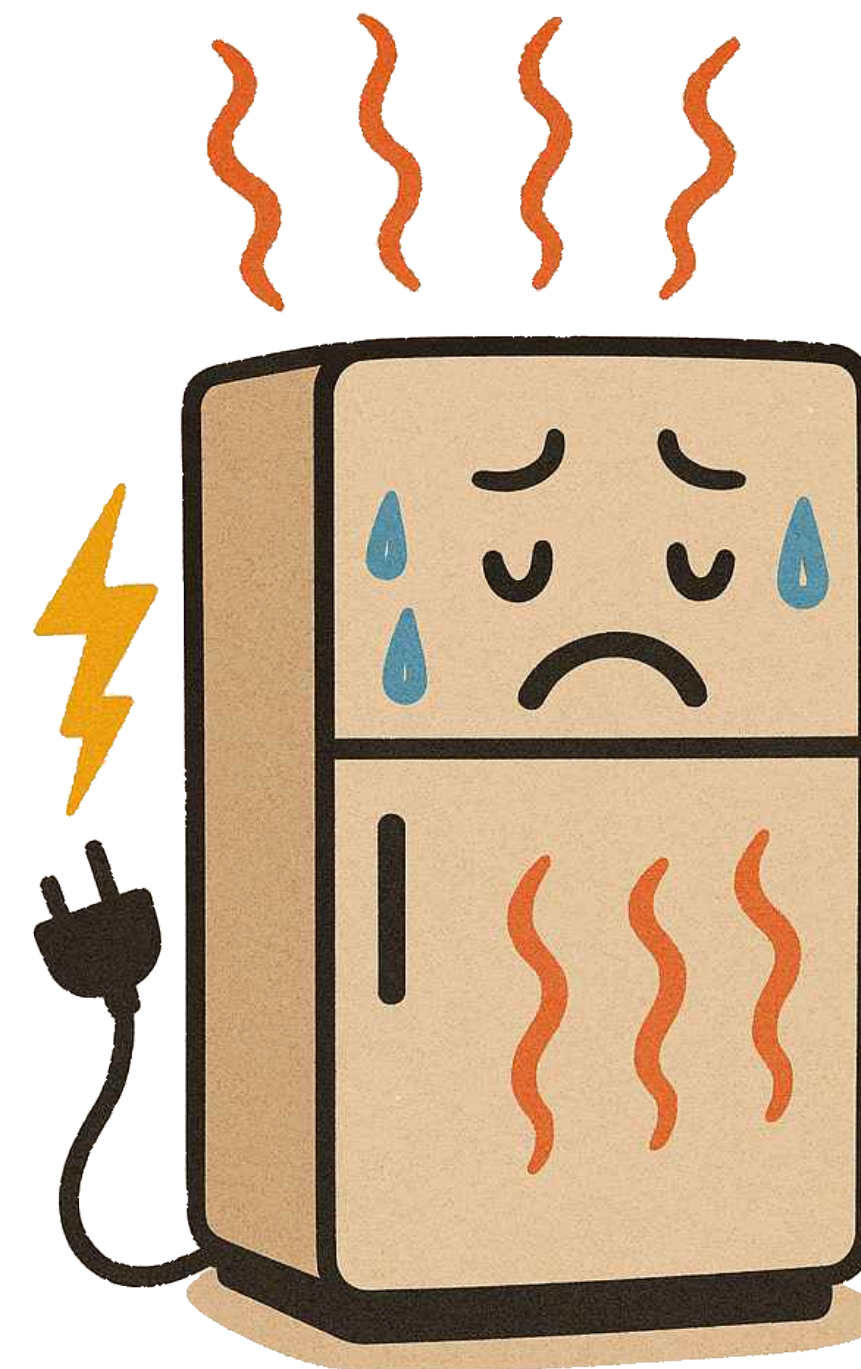
What is energy efficiency?

Energy efficiency means:

The measure of how much energy from a source is turned into useful work, rather than being wasted.

In circuits, lots of energy is lost as heat!

For example, if two fridges keep your food cold, but one uses less electricity, that fridge is more energy efficient. It helps save power and is better for the environment!



Conductors vs. insulators

Different materials can either conduct or not conduct electricity.

Conductor

Materials that allow electricity to flow easily.

Role: Carry electricity in a circuit



Insulator

Materials that block or slow electricity flow.

Role: Protect us and stop energy from escaping.



Extend your thinking...

How might coating copper wires in plastic help improve energy efficiency?

Testing conductors and insulators

In your 'Energy Detective Booklet: Conductors and Insulators', complete the investigation to decide which materials are conductors and which are insulators.

Read through the instructions with your teacher!



Post-investigation debrief

So how to conductors and insulators help improve energy efficiency?



Good conductors
reduce wasted
energy
(less heat loss)



Poor conductors
cause energy loss,
making circuits
less efficient



Insulators prevent
short circuits and
protect users



Choosing the right
materials improves
circuit safety and
efficiency

Mission report!



Two Stars

Two things you learned today about energy transfer, transformation, or conductors and insulators



One Wish

One question you still have or something you'd like to learn more about next lesson

Your next mission!

Good work today Energy Savers! Let's recap what you learnt today.

Energy efficiency is key in how circuits work

Conductors carry electricity; insulators block it

Both are essential for safe, efficient electrical circuits

Next lesson: Electrical safety in the community

