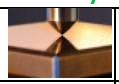
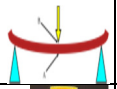
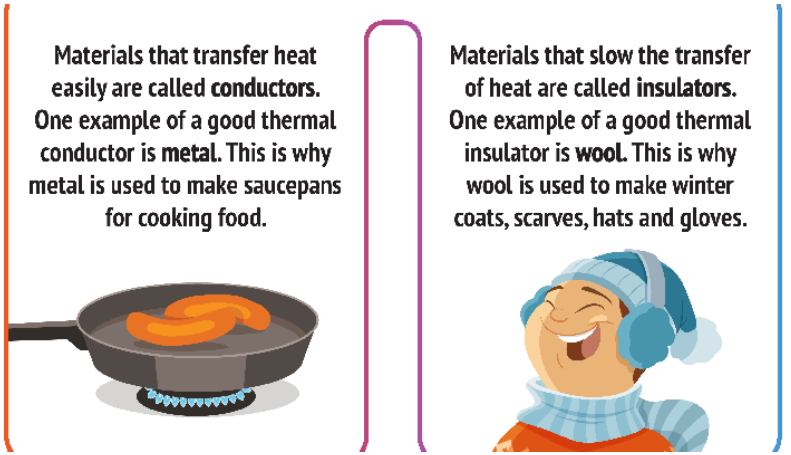
Upper Key Stage 2: Materials and their properties

Key Vocabulary

hardness 	Resistance to scratching and pressure. Hardwood does not mark as easily as softwood.
strength 	The amount of force needed to break a material usually by pushing or pulling down.
toughness	A material's resistance to breaking by cracking, opposite to 'brittle'.
stiffness 	The amount of force needed to change the shape of a material, opposite to flexible.
absorbency 	The ability of a material to soak up a liquid, to absorb and retain the moisture within its structure.
waterproof 	Resistance to liquids, it repels water.
thermal conductor 	Thermal conductivity is the property of a material that measures how well it can conduct heat.
thermal insulator 	The best thermal insulators have the lowest thermal conductivity.
soundproofing 	Soundproofing is any means of reducing the sound pressure with respect to a specified sound source and receptor. ... Soundproofing can suppress unwanted indirect sound waves such as reflections that cause echoes and resonances that cause reverberation.
opaque 	Not able to be seen through; not transparent.
translucent 	Allowing light, but not detailed shapes, to pass through; semi-transparent.
transparent 	Allowing light to pass through so that objects behind can be distinctly seen.

Conductors and insulators



Ruth Benerito

Ruth Benerito was an American chemist. She is best known for developing wrinkle-free cotton fabric. At the beginning in the late 1950s, Benerito led a team at the Agriculture Department's Southern Regional Research Centre in New Orleans that would change the nature of mass-market cotton. She devised a chemical treatment that "cross-linked," or reinforced, the bonds of cellulose molecules in cotton fibres, making the fabric less likely to wrinkle. "You have to take these long chains and cross-link them, connecting the two chains in a specific arrangement." Benerito said.

So you have Ruth Benerito to thank for your wrinkle free school uniforms!

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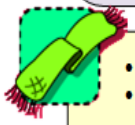
Properties of materials

Metal

- Found in the ground, sometimes mixed in with rocks.
- Strong, hard, shiny, malleable (they can be hammered into a different shape without breaking and they can be stretched out into wires).
- **Iron** and **steel** are magnetic. Other metals are not magnetic.

Some metals are good electrical and thermal (heat) conductors.

Fabric



- Made of fibres woven together.
- Some fabrics are natural (the fibre comes from living things), e.g. wool, silk, cotton.
- Natural fabrics are quite expensive.
- Of natural fabrics, wool gives warmth and cotton is cool and absorbent (it soaks up liquids).
- Some fabrics are man-made, e.g. polyester, nylons.
- Man-made fabrics are usually easy to wash and dry and are hard-wearing.

Rock

- The raw material of the Earth. They are underground, on beaches, in soil.
- Some rocks are hard, e.g. granite.
- Some rocks are soft, e.g. chalk.
- Some rocks are impermeable to water (they do not allow water to go through), e.g. slate.

Some rocks are permeable to water (they allow water to go through), e.g. sandstone.

Plastic

- Made from oil.
- Strong, can be made into any shape.
- Not magnetic.
- Good electrical and thermal insulators.
- Can be coloured.

Can be transparent, translucent or opaque.

Pottery

- Made from clay which is first shaped and then heated.
- Strong, but glazed pottery can shatter.
- Usually opaque.

Can be made into objects that have different shapes.

Wood

- Comes from trees.
- Strong, flexible and long lasting.
- An electrical and thermal insulator.

Used to make paper.

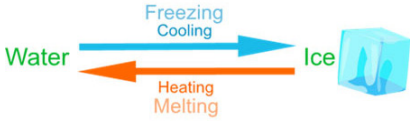
Glass

- Made from heating sand and chemicals together.
- Strong, but can shatter.
- Usually transparent.

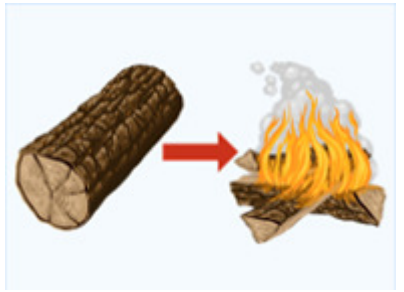
Can be made into objects with different shapes.

Reversible and non-reversible changes

Reversible changes are changes that are not permanent. Dissolving, mixing, melting, freezing are reversible changes. e.g. water turning to ice or steam.



Non-reversible changes are changes that are permanent and cannot be undone. They result in the making of a new material. e.g. burning wood, baking a cake.



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