Lower Key Stage 2
Materials and their Properties

Introduction

This book of Science activities aims to help the busy teacher deliver high quality science lessons with as much manageable practical classroom work as possible.

This book covers all of the National Curriculum Science work on 'Materials and their Properties' at a level suitable for LOWER KS2. Other books in this series cover the same work at a level suitable for Upper KS2 and KS1. Used together, these books can provide differentiated work for children of different age groups and abilities or a spiral curriculum visiting each concept at least three times in a pupil's primary school career.

All the activities are cross-referenced to the QCA Science Curriculum.

Each lesson follows a similar format with the following elements:

1. A simple information sheet with questions that explore the main concept to be studied during the lesson.
2. A classroom based experiment which, on the whole, can be carried out by small groups of children working independently.
3. A simple homework sheet which reinforces the concept discussed and the knowledge gained from the experiment carried out.
4. Detailed teacher notes which list the Learning Objectives, the main points to be talked about, the equipment needed for the investigation, how the investigation should be carried out and the conclusion that can be drawn from it.

The book also contains simple assessment activities that can be used to help indicate the National Curriculum Level each child is working at and whole class record sheets for keeping track of the results.

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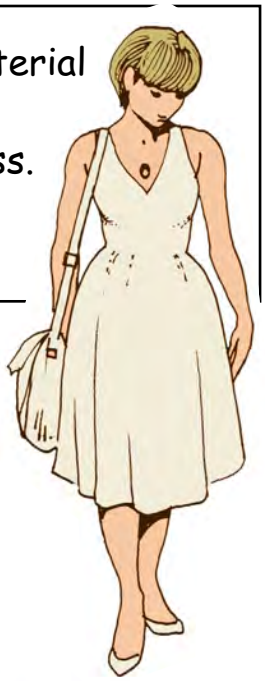
Contents

Materials and Where They Come From

A material is any substance from which something can be made e.g.

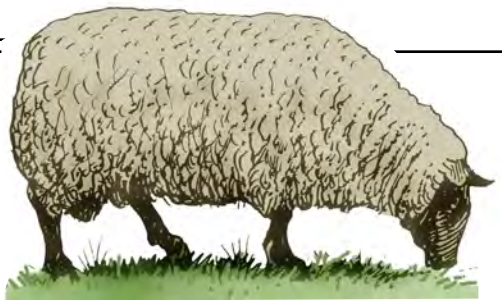
Rock is a material suitable for building a wall.

Cloth is a material suitable for making a dress.



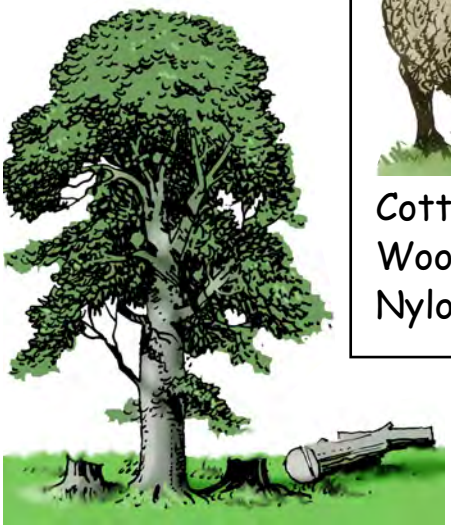
Plastics are made from oil.

Metals such as iron and gold are found in the ground mixed with rock.



Cotton comes from plants.
Wool comes from sheep.
Nylon is made from chemicals.

Rock such as sandstone and marble is dug out of the ground.



Wood comes from trees.

Some materials such as paper are used more than once. This is called recycling.

Task

Answer these questions:

1. What is a material?
2. What material could be used to build a wall?
3. Where does metal come from?
4. What is plastic made from?
5. What material comes from sheep?
6. What material comes from trees?
7. Draw a diagram showing a house being built. Name some of the materials used.

Name: _____

Date: _____

Sticky Liquids

Ask permission and then look in your kitchen cupboard for some sticky liquids. Which sticky liquid travels the slowest down a margarine tub lid slope. Which is the quickest?

I tried these Sticky Liquids

_____

_____

_____

_____

_____

_____

I found _____ was the slowest to run down the slope.

I found _____ was the quickest to run down the slope.

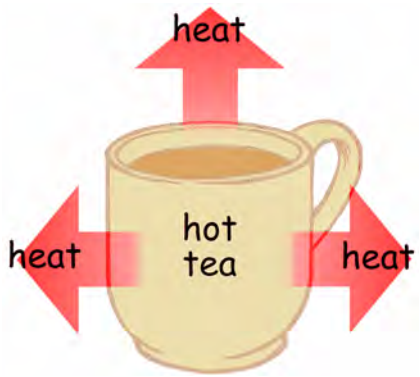
I think this happened because:

_____

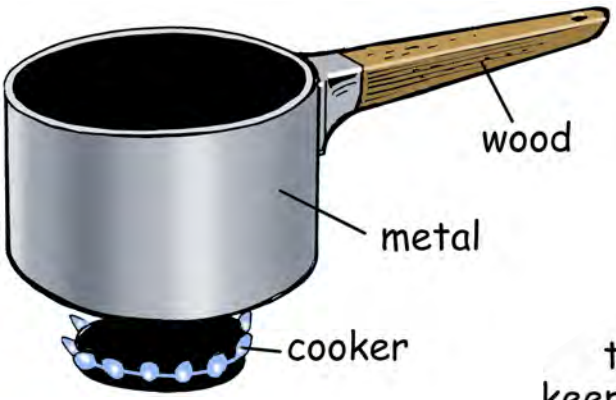
_____

Conductors and Insulators of Heat

Heat likes to travel from hot places to cooler places. It likes to spread itself out!



Some materials are very good at letting heat pass through them e.g. metal and glass. Pans are made of metal to allow the heat from a cooker to travel quickly to the food being cooked.



Some materials are not good at letting heat pass through them e.g. wood and wool. Panhandles are sometimes made of wood or plastic to slow the heat from the pan burning the cook's hand.

Clothes keep us warm by slowing down the heat from our bodies which is trying to escape to the cold outside air.

Task

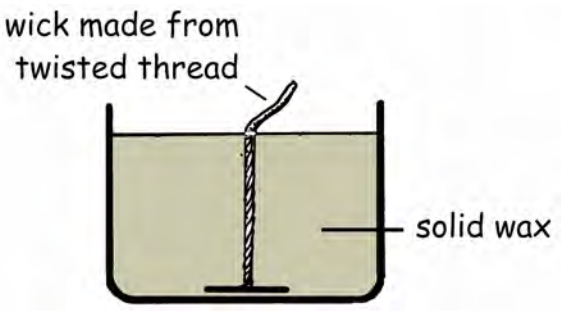
Answer these questions:

1. Where does heat always like to travel?
2. Why are pans made of metal?
3. Could a pan be made from glass?
4. Why are panhandles made of wood?
5. Could a panhandle be made of wool?
4. How do clothes keep us warm?
7. Draw a good set of clothes to keep you warm on a very cold day.

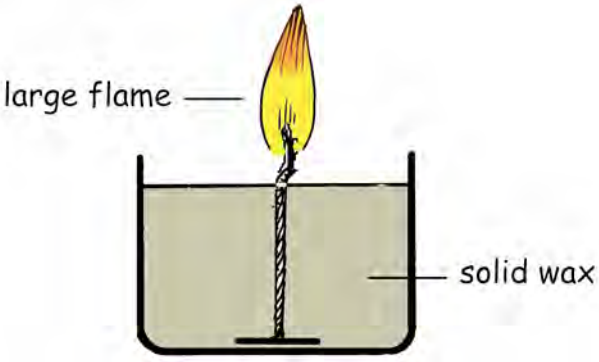
Change Caused by Burning

This is how a candle works.

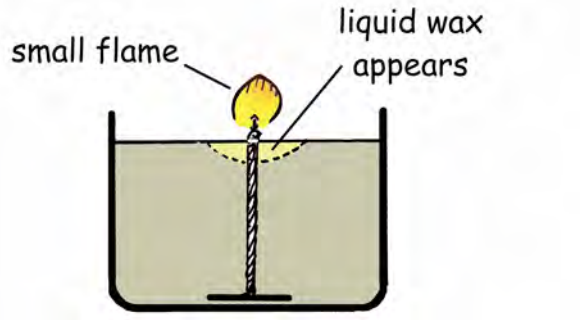
Stage 1
An unlit candle is a mixture of solid wax and a wick made from twisted thread.



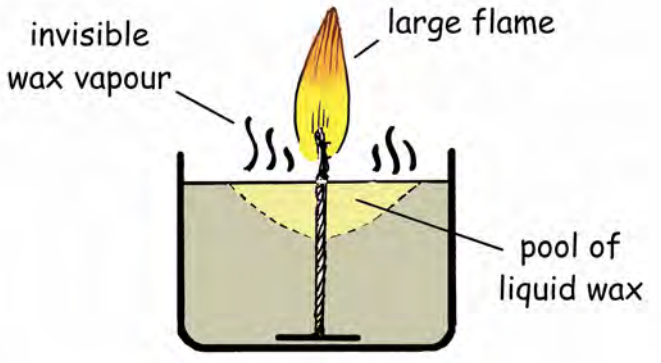
Stage 2
When a new candle is lit a large flame appears due to the wick burning quickly.



Stage 3
The large flame gets smaller and smaller as the wick burns up. Solid wax near the wick begins to turn to liquid wax.



Stage 4
The flame heats the liquid wax and turns it into wax vapour. Wax vapour is a gas that easily burns. The wax vapour becomes the fuel for the flame. A large flame appears again and burns until the fuel runs out.



Task

Answer these questions:

1. What is a candle made from?
2. What happens when a new candle is lit at first?
3. Why does the flame very quickly become smaller?
4. What makes the flame grow larger again?
5. Are the changes that happen to a candle reversible?
6. Draw and colour 3 candles, one unlit, one lit and one just put out. Choose words to describe each candle.