


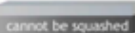
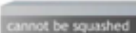
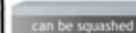


Year 5 Science Knowledge Organiser - Properties of Materials

Knowledge - Particles

solid	liquid	gas
		
● rigid	● not rigid	● not rigid
● fixed shape	● no fixed shape	● no fixed shape
● fixed volume	● fixed volume	● no fixed volume
 cannot be squashed	 cannot be squashed	 can be squashed

Friedrich Mohs - German geologist

FACT FILE:


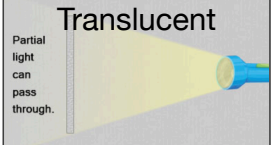
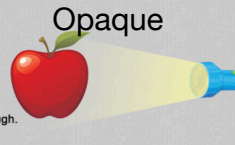
1. Born in Germany 29th January 1773
2. A **Geologist** (the science which deals with the physical structure and substance of the earth)
3. Developed the hardness scale
4. The scale was developed in 1812







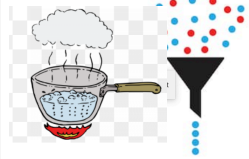



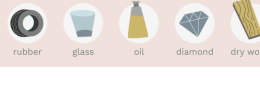
Vocabulary

1. Condensation	Small drops of water which form when water vapour or steam touches a cold surface, such as a window.
2. Conductor	A substance that heat or electricity can pass through or along.
3. Dissolve	When a substance is mixed with a liquid and the substance seems to disappear (it doesn't).
4. Evaporation	To turn from liquid into gas; moves away in the form of vapour.
5. Filter	A device used to remove dirt or other solids from liquids or gases. A filter can be made of paper, charcoal, or other material with tiny holes in it.
6. Flexible	An object or material can be bent easily without breaking.
7. Gas	A form of matter that is neither liquid nor solid. A gas rapidly spreads out when it is warmed and contracts when it is cooled.
8. Insoluble	Impossible to dissolve in a liquid.
9. Insulator	A non-conductor of electricity or heat.
10. Irreversible	Impossible to reverse, turn back, or change.
11. Melting	To change from a solid to a liquid state through heat or pressure.
12. Particles	A tiny amount or small piece.
13. Permeable	Of a substance, being such that gas or liquid can pass through it.
14. Properties	The ways in which an object behaves.
15. Rate	The speed with which something happens.
16. Reversible	Able to turn or change back.
17. Solid	Having a firm shape or form that can be measured in length, width, and height.
18. Soluble	Able to be dissolved.
19. Solution	A mixture that contains two or more substances combined evenly.
20. Transparent	Light is able to pass through the material.
21. Translucent	Some light can pass through the material.
22. Opaque	No light can pass through the material.

Knowledge: How to group materials based on their properties

Measuring Transparency			
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Knowledge: Dissolving and reversible / irreversible change

When the particles of a solid mix with the particles of a liquid , this is called dissolving	The result is a solution	Materials that dissolve are soluble	Materials that do not dissolve are insoluble
 dissolving	 solution	 soluble	 insoluble
Some materials can be separated even after they have been mixed - reversible change	SEPARATION METHODS 1. Magnets 2. Filter (insoluble materials) 3. Sieve - (holes dependent on size) 4. Evaporation		Some materials cannot be separated back in to component parts - irreversible change: e.g. burning
1. Materials which are good thermal conductors allow heat to move through them easily. 2. Thermal conductors are used to make items that require heat to travel through them easily, such as a saucepan which requires heat to travel through to cook food.	 thermal conductor	Electrical conductors: 1. Do allow electricity to flow through them easily	 5 Electrical Conductors
1. Thermal insulators do not let heat travel through them easily. 2. Examples of thermal insulators include woollen clothes and flasks for hot drinks.	 thermal insulator	Electrical insulators: 1. Do NOT allow electricity to flow through them easily	 5 Electrical Insulators

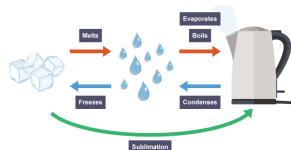
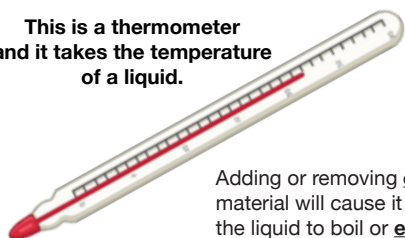
Year 5 Science Skills Knowledge Organiser - Properties of Material

Key Concepts and what they mean

1. Physics	Physics is the study of energy and matter in space and time and how they are related to each other.
2. Chemistry	Chemistry deals with the properties of substances, the transformations they undergo, and the energy that is released or absorbed during these processes. For example, when plants use sunlight to produce energy (or food for itself).
3. Data Collection	Data collection is the process of gathering and measuring information to answer a question. For example, recording living and non living things to investigate whether numbers change depending on the weather.
4. Cause and effect	Cause and effect is the relationship between events or things, where one is the result of the other or others. For example, the weather gets colder and there is less food around, so animals hibernate.
5. Environmental	Environmental relates to the environment around us at Old Fletton.

Taking Temperatures

This is a thermometer and it takes the temperature of a liquid.



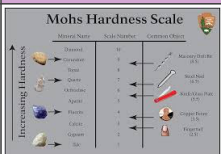
Adding or removing **energy** from a material can change its state. Heating a solid material will cause it to **melt** from a solid to a liquid. Continued heating will cause the liquid to boil or **evaporate** to form a gas.

Steps to Success - Using a thermometer

- 1) Do not touch or hold the reservoir or the bobble end of the thermometer - it will be effected by your body or hand temperature
- 2) Place the reservoir end in the liquid
- 3) Don't touch and count to 20
- 4) Take out and quickly look at the number next to the coloured liquid
- 5) It will move up or down as the air either heats or cools it. The first number seen is correct



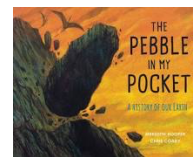
Mohs Test



1. Find a clean surface on the specimen to be tested.
2. Try to scratch this surface with the point of an object of known hardness
3. Examine the sample. Is there an etched line?
4. If the sample is scratched, then it is softer than or equal in hardness to your test material. If the unknown was not scratched, it is harder than your tester.

Literacy links to this topic

Stories that relate to the topic of 'Properties of Material' are:



Kensuke's Kingdom by Michael Morpurgo
Itch by Simon Mayo
The Pebble in my Pocket by Meredith Hooper

These stories help you to gain a greater understanding of properties of material and may spark some questions that you might want to ask in your next science lesson!

Experiment Steps to Success - Method

This part means what you did and how you did it. What were the steps that you took to complete your experiment? What did you do with the materials that you used? Think of this section as a step-by-step guide for your experiment.

Equipment list tells the reader exactly what they need to conduct the experiment.

- 1) You must include all the equipment needed including spoons, measuring equipment, paper towels
- 2) You must show quantities and details

For example:

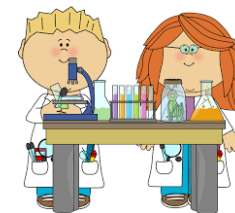
Some water **100ml of cold water**
Beaker **500ml glass beaker**

The method is a list of step-by-step instructions to tell the reader exactly what to do.

Use imperative verbs:
place, put, make, stop, pour, insert

Use time connective words:
next, before, after, whilst, first, second, afterwards

Use time connective phrases:
Before pouring, after taking, before heating, first measure



Comparing Data - Average

The mean is the average of the numbers. We do the test 3 times in science and work out the average or mean to make sure the results are reliable.

What is an anomaly?

This is a result that does not fit with the pattern of the other results. It could be caused by error in taking or recording the results.

mean

The mean is the average or norm.

- Add up all of the values to find a total.
- Divide the total by the number of values you added together.

$2 + 2 + 3 + 5 + 5 + 7 + 8 = 32$

There are 7 values

$32 \div 7 = 4.57$

Divide the total by 7

The mean is 4.57