GREENLEYS JUNIOR SCHOOL

Properties and Changes of Materials

Science Knowledge Organiser Year 5 Term 2

Scientific enquiry

Experiment- identify changes of state

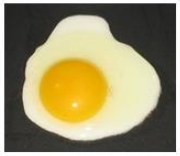
Enquiry- ask questions about solutions

Method- decide the best method to approach their investigation and what they will need to do to complete a fair test

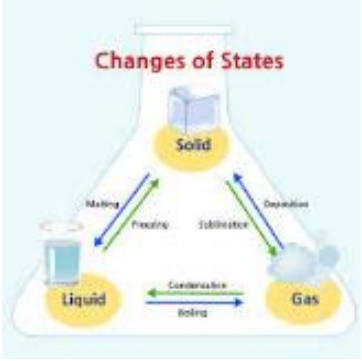
Key People

Ruth Benerito- American scientist known for inventing fabric that didn't crease.

Spencer Silver- Invented glue that did not leave marks when moving from one place to another.



Cooking eggs by frying, boiling, scrambling, poaching etc. is always an **irreversible** change.



Key Facts

What I should already know

Based on work covered in Year 4, children should be able to compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when heated or cooled, and measure and research the temperature at which this happens in degrees Celsius.

What I will know by the end of the unit

- The structure of solids liquids and gases are all different. Particles in a: **gas** are well separated with no regular arrangement. **Liquids** are close together with no regular arrangement. **Solids** are tightly packed, usually in a regular pattern.
- Materials can be sorted into categories basis on their properties. These can include their hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets.
- Materials that are a solute dissolve in water (e.g salt and sugar). When these dissolve in a liquid they create a solution.
- You can separate a solute from a solution through the process of evaporation.
- A mixtures contains a solute or different substances in a solvent. These substances might be separated, through filtering, sieving and evaporating.
- Reversible and irreversible reactions are different. A reversible change is a change that can be undone or reversed. If you can get back the substances you started the reaction with, that's a reversible reaction.
- A change is called irreversible if it cannot be changed back again. In an irreversible change, new materials are always formed. Sometimes these new materials are useful to us

Key Questions

- What is the relationship between solid, liquid and gas?
- What materials dissolve in liquid to form a solution?
- How can I separate a mixture?
- How can I demonstrate reversible and irreversible change?

Useful web links:

https://www.youtube.com/watch?v=TzR9fXL-Obohttps://www.youtube.com/watch?v=TzR9fXL-Obohttps://www.bbc.co.uk/bitesize/topics/zcvv4wx

Key vocabulary

Chemical changes – are irreversible changes - new chemicals are produced following the change
Dissolving – the process of a substance becoming part of a liquid
Gas – one of the three states of matter. Gases move to fill any available space. The particles in a gas are very far apart from each other and move freely
Flexible – able to bend without breaking
Irreversible change – a change that cannot easily be reversed e.g. burning
Liquid – one of the three states of matter. In a liquid the particles are not as close together as in the solid form. Liquids can be poured and take on the shape of the container they are placed in
Magnetic – a material, usually metal, is attracted to a magnet and will move towards it
Mixture - a material made up of two or more different substances which are physically combined.
Opaque - not able to be seen through; not allowing light to pass through.
Rigid- unable to bend or be forced out of shape; not flexible.
Physical changes - are reversible changes – no new substances are produced following the change
Reversible change – a change that can be easily reversed e.g. freezing water to make ice
Solid – one of the three states of matter. Solids keep their shape. The particles of a solid are very close together
Solution - a type of mixture of two or more substances: a **solute** and a **solvent**.
Solvent - a substance that **dissolves** a **solute**, resulting in a **solution**.
Transparent - a material that allows light to pass through so that objects behind can be distinctly seen.
Translucent - allowing some light, but not detailed shapes, to pass through.