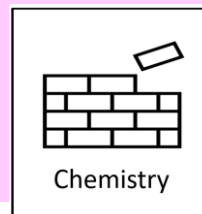


Properties and changes of materials

Year 5 Autumn



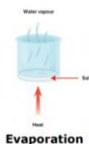
Review:

What should I already know?

- Properties of materials make them useful for different purposes. (Y2)
- Properties can include hardness, whether it conducts electricity, and whether it is magnetic or waterproof. (Y2/Y3/Y4)
- There are three main states of matter – solid, liquid and gas. (Y4)
- I know that states of matter is an important part of the water cycle (Y4)

Essential knowledge

- Materials can be compared and grouped based on their properties.
- Certain materials are chosen for their jobs because of their **properties**.
- If a material is soluble, it will dissolve in liquid to form a **solution**.
- You can recover a substance from a **solution** through **evaporation**.
- Your knowledge of solids, liquids and gases to decide how mixtures can be separated, including through **filtering, sieving** and **evaporating**.



- How chemists, such as Spencer Silver, Stephanie Kwolek and Ruth Benerito, create new materials.

Vocabulary

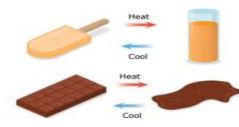
| | |
|------------------------|--|
| Chemistry .. | Chemistry is all about materials and how they change |
| Working Scientifically | Is all about working like a scientist to answer scientific questions. |
| Solution | A mixture where one substance is dissolved into another. |
| Soluble | A substance that is able to be dissolved, especially in water. |
| Insoluble | A substance that is not able to be dissolved. |
| Dissolve | When something solid mixes with a liquid and becomes part of the liquid. |
| Reversible | Can be undone. |
| Irreversible | Cannot be undone. |

Etymology

| | |
|----------|---|
| Solution | comes from the Latin word "solutio," which means "a loosening" or "a dissolving". |
|----------|---|

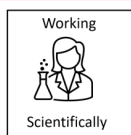
Reversible Change

Changes that can be easily reversed or undone. This may be through changing states, filtering or sieving.



Irreversible Change

When some materials are mixed, this can form new materials and this kind of change is not usually reversible.



Our enquiry focus:

| | | | | |
|-----------------------------|-----------------|-------------------------------------|--------------|----------|
| Observing Changes Over Time | Pattern Seeking | Identifying, Grouping & Classifying | Fair Testing | Research |
|-----------------------------|-----------------|-------------------------------------|--------------|----------|

Skills I will need:

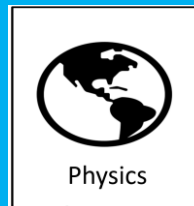
- I will plan a fair test enquiry and recognise the different variables
- I will identify, group and classify based upon my observations.
- I will record and present my findings clearly to draw conclusions.
- I will record data and results of increasing complexity.
- I will use my results to suggest further fair tests.



Forces

Year 5

Autumn



Review:

What should I already know?

- Thing move differently on different surfaces. (Year 3)
- Some forces need contact between two objects but some forces (magnets) can act at a distance. (Year 3)

Essential knowledge

- The effects of different forces, such as: gravity, air resistance, water resistance and friction.
- Unsupported objects fall towards the Earth because of the force of **gravity** — this was discovered by Sir Isaac Newton.
- Friction occurs when objects move through water or air. Friction works in the opposite direction that the object is trying to move - friction always slows something down.
- **Air resistance** and **water resistance** are forces against motion caused by objects having to move air and water out of their way.
- Pulleys, levers and gears change the force required and can make it easier to move objects.

Etymology

| | |
|---------|---|
| Gravity | Comes from the Latin word "gravitas," which means "weight" or "heaviness" |
|---------|---|

Significant Scientist

Isaac Newton was an English physicist. He is well known for many discoveries. He discovered gravity over 350 years ago and first described it as a 'pulling force'



Vocabulary

| | |
|------------------------|--|
| Physics | Is all about earth and space and how it works. |
| Working Scientifically | Is all about working like a scientist to answer scientific questions. |
| Force | Forces make things move and stop moving (they can be a push or pull). |
| Gravity | The force that attracts a body towards the centre of the earth, similar to a magnet. |
| Friction | The resistance that one object encounters when moving over another. |
| Air Resistance | A force that is caused by air going in the opposite direction to another object |
| Water Resistance | A force that is caused by water going in the opposite direction to another object. |
| Pulley | A wheel with a grooved rim that changes the speed of a mechanism. |
| Lever | A rigid bar on a pivot that is used to move heavy things. |
| Gear | A toothed wheel that works to alter the speed of a mechanism |

Working



Scientifically

Skills I will need:

- I will plan a fair test enquiry and recognise the different variables.
- I will use standard measures including fractions and decimals to 1 place.
- I will read scales with increased accuracy.
- I will record my findings clearly in tables for repeat readings and validity.
- I will use my results to suggest further fair tests.

Our enquiry focus:

| | | | | |
|-----------------------------|-----------------|-------------------------------------|--------------|----------|
| Observing Changes Over Time | Pattern Seeking | Identifying, Grouping & Classifying | Fair Testing | Research |
|-----------------------------|-----------------|-------------------------------------|--------------|----------|

