

Year 5 Autumn Term 2020

Knowledge Organisers

Materials

KEEPING

Thermal Insulators – Do not let heat travel through easily such as fabrics, wood and plastics. Can keep heat in or out.



Thermal Conductors – Lets heat travel easily through such as metals.



When things get hot, atoms start to vibrate. Heat produces energy. This could cause them to change state!

Separating Materials

SIEVING – A way to separate two solids of different sizes (e.g. flour and raisins).

FILTRATION – A mixture of liquids and solids which haven't dissolved can be filtered using paper with tiny holes (e.g. sand and water).

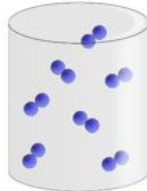
EVAPORATION – A solid dissolved in a liquid (solution) can be heated. Liquid evaporates and leaves behind the solid (e.g.

Three states of matter

GAS: particles far apart and randomly arranged / move around

LIQUID: particles close but randomly arranged / move around

SOLID: particles very close together / vibrate around a fixed position



Gas



Liquid



Solid

Examples

Steam (water vapour)
Hydrogen
Carbon Dioxide
Oxygen

Examples

Water
Milk
Washing up liquid
Juice

Examples

Ice
Wood
Glass
Diamond

Three states of matter:

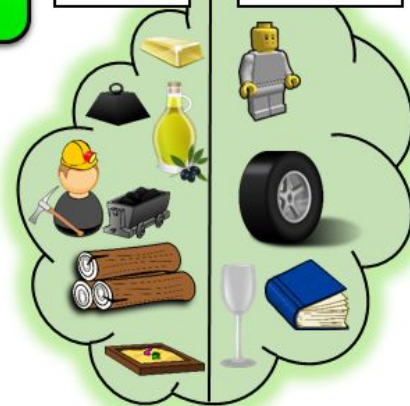
SOLID: particles close together / vibrate around a fixed position

LIQUID: particles close but randomly arranged / move around

GAS: particles far apart and randomly arranged / move around

NATURAL

MAN-MADE



DISSOLVING

Dissolving is when the particles of solids mix with particles of liquids, often appearing like it has disappeared but it has dissolved in the liquid to make a transparent solution (e.g. mixing sugar into water). It does not always need heat to occur. If a material does not dissolve it is insoluble. If it does, it is soluble.

MELTING

Involves only solids which change into a liquid due to heat. They stay as the same material (e.g. ice to water).



Forces

Gravity

Gravity is a force that holds things to Earth's surface and prevents things from floating off into the atmosphere. It ensures that unsupported objects to fall back down to Earth.



It is said that the famous scientist Isaac Newton was sitting under a tree when an apple fell on his head. He identified it was a force pulling the object down. We now measure gravity in Newtons (N) because of this.



There is gravity on the moon but it is much less than on Earth, so during the moon landings of 1969, astronauts could jump higher for longer due to the weaker pull of gravity.

Air Resistance



Air resistance (sometimes referred to as drag) acts against gravity on falling or moving objects. It's what you feel on your hair when riding fast on a bike or it's what fills a parachute to help slow you down when falling from the sky. Object such as aeroplanes reduce air resistance because of their streamlined shape.

Friction

When objects are pushed or pulled, an opposing force can be felt. This opposite force is called 'friction'. Friction causes things to slow down or stop. The grip on our shoes stops us slipping. Therefore, friction is great. An ice-skate on an ice-rink will move for a long time because there is very little friction. The rougher the surfaces, the greater the friction. This rubbing of two surfaces can release energy, causing heat. (Try rubbing your hands together!)



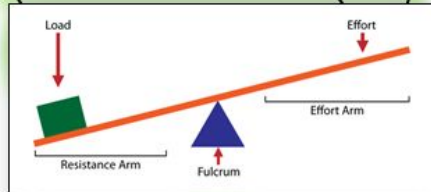
Water Resistance

Water resistance is a type of *friction* which can slow things down in the water. Water acts upon objects making them harder to pass through. A fish has a *streamlined* body shape to help it swim through water more easily. *Upthrust* is the name of the force which keeps things afloat in water. When gravity is greater than upthrust, the object sinks. When the two are the same, the object floats.



LEVERS

A way to lift heavy weights using the least amount of effort. The longer the lever, the easier it is to lift. The fulcrum is where the lever pivots in order to lift the heavy load.



PULLEYS

Used like levers to lift loads with less effort but for longer distances. Rope is passed through a pulley which is attached to an anchor point and returned back to the ground to be pulled.



GEARS

Used to transmit power from one part of a machine to another. Connected gears can increase speed, increase force or cause a change in direction. When joined (in mesh) the direction of rotation of the driven gear is the opposite of the drive gear.



What should I already know?

- Features of rural and urban areas in the United Kingdom.
- The chronology of British history.
- Characteristics of London.
- The location of Germany in the continent of Europe.

What caused WWII?

- After the loss of WWI in 1918, Germany's economy had suffered. In 1934, the people voted for Hitler, the leader of the Nazi Party to lead them after he had offered them hope.
- Even though he spoke of peace, Hitler and the Nazi Party invaded Austria and Czechoslovakia.
- Two days after the invasion of Poland, Britain declared war on Nazi Germany.

What was the Battle of Britain and the Blitz?

- The Battle of Britain and the Blitz were military campaigns of the Second World War, in which the Royal Air Force (RAF) defended the United Kingdom (UK) against large-scale attacks by Nazi Germany's air force, the Luftwaffe.
1. Hitler sent his Luftwaffe bombers to attack British ports and RAF airfields.
 2. During the Blitz – From September 7th the city of London was heavily bombed.
 3. Night Bombing – With the failure of daylight bombing raids Hitler began a series of nightly bombing raids on London and other important industrial cities.
- People kept safe by using air raid sirens, shelters and blackout curtains.



What was the impact of WW2 and the Blitz on Britain?

Evacuation:

- Many children living in urban areas were moved temporarily from their homes to places considered safer, usually out in rural areas of Britain
- The British evacuation began on Friday 1 September 1939. It was called 'Operation Pied Piper'.
- When the war was over, Government began to make travel arrangements to return the evacuees to their homes



Rationing:

- As part of their campaign, Nazi Germans tried to cut off supplies of food and other goods coming to Britain by attacking many of the ships that brought food to Britain.
- This meant that there was less food for the people - whatever food was grown, produced or managed to enter Britain was rationed - people used the Ration Book during this time.



Jobs:

- Many men fought in the war and so women were tasked to carry out much of the war work. However, some jobs were protected - men who held these jobs were not called up to join the army (e.g. doctors, miners)
- Jobs undertaken by women during the war included mechanics, ambulance drivers and air raid wardens.



How did the Battle of Britain change World War 2? How could Hitler have convinced a nation like Germany to follow him?

Vocabulary

air raid	an attack by military aircraft in which bombs are dropped
Blitz	The heavy bombing of British cities by German aircraft in 1940 and 1941 is referred to as the Blitz
campaign	a planned set of activities that people carry out over a period of time
Chamberlain (Neville)	Prime Minister of the United Kingdom from 1937 to 1940
Churchill (Winston)	Prime Minister of the United Kingdom from 1940 to 1945
defend	take action in order to protect something
economy	A country's economy is the wealth that it gets from business and industry
evacuate	To evacuate someone means to send them to a place of safety
Hitler (Adolf)	Leader of the Nazi Party from 1934 to 1945
industrial	An industrial city or country is one in which industry is important
industry	the work and processes involved in collecting raw materials, and making them into products in factories
invasion	to try and take over a place by force
Luftwaffe	the German Air Force
military	relating to or belonging to the army
Nazi	a member of the far-right political party in Germany
Prime Minister	The leader of the government in some countries
rationing	the system of limiting the amount of food, water, petrol, or other substances when there is not enough of them
rural	places that are far away from large towns or cities
surrenders	stop fighting or resisting someone
urban	belonging to, or relating to, a town or city
warden	a person who is responsible for a particular place or thing

Timeline

1st September 1939: Hitler invades Poland. In preparation for war, evacuation begins.

May 1940: Neville Chamberlain resigns and Winston Churchill becomes Prime Minister

September 1940: The Blitz begins.

30th April 1945: Hitler dies.

8th May 1945: VE Day

1954: Rationing officially ends.

3rd September 1939: Britain (Neville Chamberlain) declares war on Nazi Germany.

January 1940: Rationing begins

July 1940: The Battle of Britain begins.

October 1940: The Battle of Britain ends

4th May 1945: Nazi Germany surrenders.

March 1946: Evacuation officially ends.