

# Year One



# SEASONAL CHANGES

## KNOWLEDGE ORGANISER

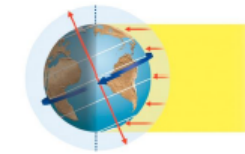


### Overview

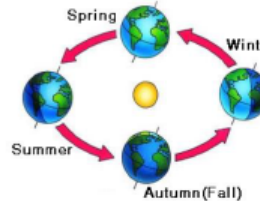


- Seasons are different times in the year when there are weather changes.
- In places like the UK, there are four seasons in a year: spring, summer, autumn and winter.
- The seasons have an effect on landscapes, and plant and animal life.
- The length of days changes as the seasons change.
- The seasons are different in some other parts of the world.

### Causes of the Seasons/ Length of Days



- The seasons are caused because our planet (the Earth) is on a tilt. As the Earth moves around the Sun, different places on Earth face the Sun more.
- When a place is tilted towards to the Sun it is warmer (the summer).
- When a place is tilted away from the Sun it is colder (the winter).
- When it is summer in the northern part of the Earth, it is winter in the southern part. This also affects the length of days.
- When a place is titled towards the Sun (in the summer) the days are longer.
- When a place is tilted more away from the Sun (in the winter) the days are shorter.



### The Four Seasons

Spring	Summer
<p>In spring, the weather starts to get warmer after winter.</p> <ul style="list-style-type: none"> <li>-Lots of baby animals are born and new flowers blossom.</li> <li>-It takes place in <b>March, April and May.</b></li> </ul>	<p>-Summer is the warmest season of the year.</p> <ul style="list-style-type: none"> <li>-Insects such as wasps and bees are around, and plants have lots of leaves.</li> <li>-The summer months are <b>June, July &amp; August.</b></li> </ul>
Autumn	Winter
<p>In autumn, the weather starts to get cooler after summer.</p> <ul style="list-style-type: none"> <li>-Many types of leaves begin to turn brown and fall from trees.</li> <li>-Autumn is <b>September, October &amp; November</b></li> </ul>	<p>-Winter is the coldest season of the year.</p> <ul style="list-style-type: none"> <li>-Many trees have no leaves and many animals are hibernating.</li> <li>-Winter is <b>December, January &amp; February.</b></li> </ul>

### Things to Look For...



Spring: Flowers growing, baby animals, frog spawn, birds building nests, caterpillars.

-Summer: Flowers fully grown, insects, fully-grown frogs, trees with lots of leaves on.



-Autumn: Brown leaves on the ground, squirrels storing nuts, hedgehogs hibernating.

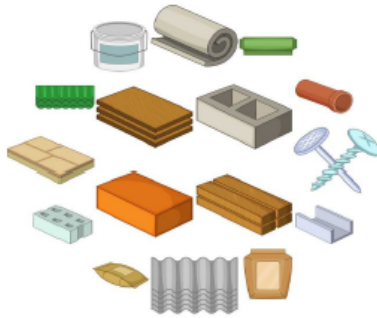
-Winter: Frost/snow, trees with no leaves, evergreen trees.

Winter		Spring			Summer		Autumn		Winter		
January	February	March	April	May	June	July	August	September	October	November	December

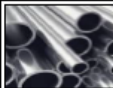
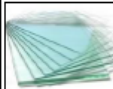



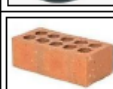


# Year Two

## Use of EVERYDAY MATERIALS KNOWLEDGE ORGANISER

**What you should already know...**




- Materials are the substances that things are made from.
- We use lots of different materials every day, e.g. metal, plastic, wood, and glass.
- Different materials have certain properties, e.g. glass is see-through, metal is strong and often shiny, etc.
- Composites are made from two or more materials together.
- Some materials are used to make many things.


Properties of Materials			
Material	Image	Properties	What could it be used for?
<b>Metal</b>		-Metals are often strong, shiny, hard and long-lasting. -Metals can be hammered into different shapes.	-Metals can be made into things like pots and pans. -Metals can be stretched into wires and rods.
<b>Glass</b>		-Glass can be strong, but thin glass shatters. -Glass is transparent and waterproof. It can be made into different shapes.	-Glass is most often used to make windows and glasses. -It is also used in making mirrors, table-tops and windscreens.
<b>Wood</b>		-Wood is hard and strong; -Wood is long-lasting and is a natural product. -Wood is flammable.	-Wood is often used to build furniture, like benches and desks. -Wood can be used to build houses and cabins.
<b>Plastic</b>		-Plastics can be tough or flexible and can be made into any shape. Plastics can be dyed different colours and can be made transparent.	-Plastics can be used to make packaging, bottles and toys. -Plastics can be moulded into plates, knives and forks.
<b>Rubber</b>		-Rubber is extremely tough, but also very flexible. -Rubber is elastic and also waterproof. Rubber doesn't tear easily.	-Not including food and drinks, water is still used in many, many products. For example, it is used in making paints, toothpastes, shampoos and cement.
<b>Brick</b>		-Bricks are very hard and strong. They are difficult to break. Bricks are thick and store heat well.	-Bricks are normally attached together with mortar and are used to make buildings. -They are also used for paving.
<b>Paper</b>		-Paper is often thin and can be made into lots of different shapes. Paper can be torn. It goes soggy when wet.	-Paper is normally used for writing. Paper is used in diaries, notebooks and for printing on. Paper is used for posters/displays.
<b>Cardboard</b>		-Cardboard is often thin but is firmer and tougher than paper. Cardboard is more difficult to tear. It goes soggy when wet.	-Cardboard is often turned into boxes and is then used for packaging items. It can be used for protection, e.g. protecting floors when painting.

**Development of Materials**


**John Dunlop**  
 -John Dunlop is famous for developing the pneumatic (air-filled) tyre.  
 -He did this, at first, to improve the tyres on his son's bicycle!  
 -He used his understanding of rubber to fit it to a wooden disc. He then used an inflated tube of sheet rubber to blow up the tyre.



**Charles Macintosh**  
 -Charles Macintosh is best known for inventing the raincoat.  
 -He discovered a way in which rubber could be placed between two layers of cloth, to make it waterproof.  
 -His name lives on today – a raincoat is often called a Macintosh or Mac.



**John McAdam**  
 -John McAdam was the first person to think of tarmac roads.  
 -Roads used to be made from clay, earth, or chalk, but these materials were messy and not very smooth.  
 -He spread hot tarmac on a road, adding lime chippings & flattening.



**Properties of Materials Vocabulary**

- Hard    Squashy    Smooth    Absorbent    Bumpy    Bouncy    Dull    Flexible    Flammable    Translucent    Waterproof    Firm    Soft

# ROCKS

## KNOWLEDGE ORGANISER

Y3



### Overview







- Rocks are solid objects that are made up of one or more minerals.
- Scientists classify rocks by how they were formed. The different classifications are sedimentary, metamorphic and igneous.
- Soil is made of very fine rock particles that have mixed with water, air and particles from dead animals and plants. There are also three types of soil.
- Fossils are formed when things that have once lived are trapped within rock.

### Soil



- Soil is a combination of a range of materials, including ground up pieces of rock, particles from dead plants and animals, air and soil.
- The amounts of each of the above, in addition to the type of rocks that have been broken down, decide which of the three types of soil it will be:
- Sandy soil is dry soil with lots of air found in it.
- Clay soil is sticky and doesn't have much air in it. Clay soil often contains a lot of water.
- Loam soil is somewhere between the two – it has some water in it, and has a bit of air in it.
- Loam soil is normally the best type of soil for growing plants in. If you dig through soil, you will find that there are different layers with different features.

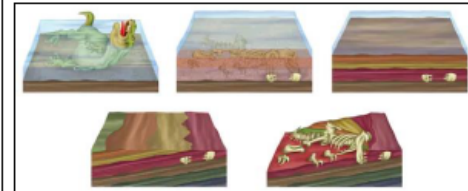
### Classifications of Rocks

 <p><b>Sedimentary</b></p> <ul style="list-style-type: none"> <li>-These rocks are formed when small particles of mineral are washed down rivers or other bodies of water.</li> <li>-They become squashed at the bottom of lakes or and are formed over millions of years as sediment is squashed on top. They are porous (let water through) and can be easily worn down.</li> </ul>	 <p><b>Igneous</b></p> <ul style="list-style-type: none"> <li>-Igneous rocks are formed from magma, a hot underground liquid.</li> <li>-Sometimes, magma cools under the earth's surface and forms rocks. Other times, magma flows out in volcanic eruptions as lava. It mixes with other minerals to form rocks on the surface. Many igneous rocks are non-porous.</li> </ul>
 <p><b>Metamorphic</b></p> <ul style="list-style-type: none"> <li>-These rocks are formed when rock becomes warm enough to bend and mould, but not enough to become a liquid.</li> <li>-Metamorphic rocks can sometimes form interesting shapes, depending upon how they have been moulded. Normally (but not always) metamorphic rocks are non-porous.</li> </ul>	 <p><b>Meteorite (not formed on Earth)</b></p> <ul style="list-style-type: none"> <li>-Meteorites are rocks that have landed on Earth from space.</li> <li>-These rocks were not formed on Earth.</li> <li>-This means that scientists are able to study planets without ever actually going there.</li> </ul>

### Fossils

A fossil is the preserved remains of something that was once living. The process in which fossils are formed is called fossilization. Most living things don't become fossilized – it takes very special conditions!

1. After an animal dies, the soft parts of its body rot away (decompose) leaving just the hard things, like teeth and bones.
2. The remains are buried by sediment.
3. As more layers of sediment build on top, the sediment around the remains begins to harden into rock.
4. Water seeps through, dissolving the bones. Minerals replace them, creating a rock replica of the bone – a fossil!



### Sedimentary Rocks

Sandstone

Chalk

Limestone

Marble

### Metamorphic Rocks

Slate

Gneiss

Phyllite

Basalt

### Igneous Rocks

Granite

Pumice



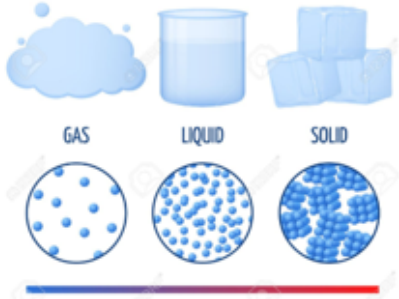


# STATES OF MATTER

## KNOWLEDGE ORGANISER




**Overview**



- Matter makes up our planet and the whole Universe.
- There are three main states of matter – solids, liquids and gases.
- Matter can change state, depending on its temperature.
- Several processes describe the processes of changing states, e.g. melting, evaporation, freezing and condensation.
- The water cycle depends upon some of these processes.

**Changing States of Matter**

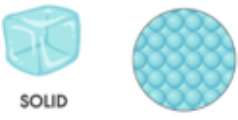
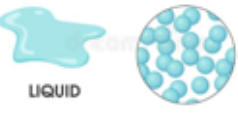



States of matter can change, depending upon the temperature of the matter.


- Melting is the process of changing a solid into a liquid.
- Evaporation is the process of changing a liquid into a gas.
- Condensation is the process of changing a gas into a liquid.
- Freezing is the process of turning a liquid into a solid.

**Solids, Liquids and Gases**

All matter exists in three states: solids, liquids and gases.

<p><b>SOLIDS</b></p> <ul style="list-style-type: none"> <li>-Solids hold their shape</li> <li>-Solids are rigid</li> <li>-Solids have a fixed volume</li> </ul> <p>Examples include ice cubes, rock, glass and most metals.</p>	 <p>SOLID</p>
<p><b>LIQUIDS</b></p> <ul style="list-style-type: none"> <li>-Liquids do not hold their shape</li> <li>-They are not rigid</li> <li>-However, they have a fixed volume.</li> </ul> <p>Examples include water, oil, blood and milk</p>	 <p>LIQUID</p>
<p><b>GASES</b></p> <ul style="list-style-type: none"> <li>-Gases do not hold their shape</li> <li>-They are not rigid</li> <li>-They do not have a fixed volume.</li> </ul> <p>Examples include oxygen, carbon dioxide and helium.</p>	 <p>GAS</p>

**Role in the Water Cycle**



Changing states of matter play an important part in the water cycle:

**EVAPORATION**  
Energy from the sun heats up the surface of the Earth. This causes the temperature in rivers, lakes and oceans to rise, and evaporate into the air.

**CONDENSATION**  
As the water vapour rises, it cools in the higher air and turns back into liquid – condensation. This creates clouds.

**PRECIPITATION**  
When too much water has condensed, the clouds become too big for air to hold them. Precipitation occurs.

Solids			Liquids			Gases		
Wood	Ice Cube	Glass	Coffee	Water	Shower Gel	Carbon Dioxide	Air	Oxygen

# Year Five



## ANIMALS including Humans KNOWLEDGE ORGANISER



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### What you should already know...



- Food chains are used to show how living things get their food.
- Food chains are made up of producers (who produce their own food) and consumers (animals who eat producers and other consumers).
- Humans have incisor, canine, pre-molar and molar teeth, each with different jobs. Animals have different make-ups of teeth depending on their food.
- The digestive system has several functions, including ingestion, absorption and excretion. It is made up of different parts, e.g. the stomach.

### Ageing to Old Age



- Muscle mass decreases and muscles lose strength.
- Wrinkles develop on the skin, and it loses its elasticity.
- Hair begins to turn grey/ white. Many people begin to lose the hair on their heads (mainly men).
- Fertility decreases (more quickly for women).
- People begin to shrink in height as bones and cartilage become worn down.
- Organs begin to lose their effectiveness, and the senses (e.g. sight, hearing, etc.) become weaker.

### Puberty

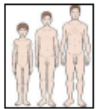
#### What is puberty?



-Puberty is when a child's body begins to grow, change and develop as they become an adult.

-In humans, puberty normally begins around age 11-12, however it can take place anytime from age 8-14. Puberty happens when the pituitary glands begin to release hormones.

#### Males








- Boys grow taller. They develop more muscle mass, and their chest and shoulders broaden.
- Boys' voices become deeper. Their skin becomes oilier, meaning they may get spots.
- Hair begins to grow on their faces and bodies, including armpit and pubic hair.
- Penis and testicles grow larger. The testicles begin to make millions of sperm.

#### Females

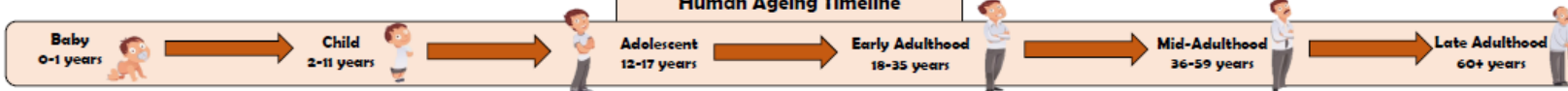


- Girls grow taller. They develop breasts, and their hip bones widen. The body becomes curvier.
- Girls' voices become deeper. Their skin becomes oilier, meaning they may get spots.
- Hair begins to grow on their bodies, including armpit and pubic hair.
- Menstruation begins. Girls begin to have periods, and their uterus (womb) begins to grow.

### Growth and Development of Animals

Humans	House Mice	African Elephants	Saltwater Crocodiles	Blue Whales
Gestation Period: 9 months	Gestation Period: 20 days	Gestation Period: 22 months	Gestation Period: 2-3 months	Gestation Period: 10-12 months
Sexual Maturity: 11-17 years	Sexual Maturity: 4-6 weeks	Sexual Maturity: 10-12 years	Sexual Maturity: 10-12 years	Sexual Maturity: 10 years
Life Expectancy: 80 years	Life Expectancy: 1 year	Life Expectancy: 60 years	Life Expectancy: 70 years	Life Expectancy: 90 years
				

### Human Ageing Timeline



## **Year Six**

**Year Six will be focussing on the skills of working scientifically this term rather than a set topic in science.**

**The skills they are focussing on can be found in the Working Scientifically document.**