

# Science Curriculum

## KS2 Knowledge Organisers

Knowledge Organiser

Science Strand: Animals (inc. Humans) - Pre-New Curric Map Year: A Term: Autumn

Learning Objectives - Knowledge	
C3 - Y3/4	Key Driver
To know that animals, including humans, are suited to different diets. Use the terms herbivore, carnivore, and omnivore and consider the questions: Are big animals always carnivores? Are all small animals herbivores? Are animals that live in the forest always herbivores? Identify possible physical features of carnivores and herbivores.	C / NW
To know the correct vocabulary for the main food groups of a human diet and sort common foods into those groups.	H/C
To know and recognise the features of a balanced diet	H
To know how to match foods to their nutrition labels and discuss ways in which foods might be considered healthy or unhealthy.	H
To know how food travels through the digestive system, naming its main parts, and is distributed around the body by the bloodstream.	H
To know and recognise the functions of bones within animals' bodies.	C
To know the main bones of the human skeleton.	C
To know the difference between exoskeletons and endoskeletons and compare the skeletons of different animals.	C
To know that muscles in our bodies work together to help us move.	C
To investigate how exercise affects our bodies - Plan and carry out the investigation.	H/C
To investigate how exercise affects our bodies - compile results and draw conclusions from our investigation.	H/C

Key Vocabulary	
Word	Meaning
Herbivore	An animal that eats plants
Carnivore	An animal that eats only other animals
Omnivore	An animal that eats a mixture of plant and animals
Digestive System	The part of the body that deals with the food you eat
Exoskeleton	A skeleton on the outside of an animal's body
Endoskeleton	A skeleton within an animal's body
Pulse	The rhythmic movement of blood through the veins, which can be felt at the wrist or neck.

Useful Diagrams		
Diagram 1	Diagram 2	Diagram 3

Useful Websites or Resources
<a href="https://www.nhs.uk/live-well/eat-well/the-eatwell-guide/">https://www.nhs.uk/live-well/eat-well/the-eatwell-guide/</a> <a href="https://www.bbc.co.uk/bitesize/topics/z9339j6/articles/zqfdpbk">https://www.bbc.co.uk/bitesize/topics/z9339j6/articles/zqfdpbk</a> <a href="https://www.bbc.co.uk/bitesize/topics/z9339j6/articles/zpbxb82">https://www.bbc.co.uk/bitesize/topics/z9339j6/articles/zpbxb82</a>

Knowledge Organiser

Science Strand: Animals (inc. Humans) - Post New-Curric Map    Year: A    Term: Autumn

Learning Objectives - Knowledge			
C3 - Y2/3		Key Driver	Key Driver
To know the 7 characteristics of Living Things (MRS GREN)		NW / C	To know that animals move in different ways and have different skeletons, including vertebrates and invertebrates.
To know the main organs of the digestive system		NW / C	To know the names of the main bones of the human body and compare these to the skeletons of other vertebrates, making links between them.
To know the roles of the organs of the digestive system.		NW / C	To know the further details of the circulatory system and its role in oxygen transportation.
To know how food is transported to where it is needed, including a brief introduction to the circulatory system.		NW / C	To know that muscles work in conjunction with bones to aid movement of a joint and know the links between the use of muscles and the circulatory system.
To know that animals’ nutrition comes from what they eat and know some examples of different animal diets.		NW / C	To know some main muscles in the human body and which functions they perform.
To know the features of a balanced diet for humans in different cultures around the world and for different life stages and lifestyles.		NW / HL	To know that skeletons change as we grow and investigate growth differences between individuals.

Key Vocabulary	
Word	Meaning
Digestive system	The system in the body that deals with food.
Diet	The food an animal eats
Organ	A part of the body that has a particular job
Nutrition	Food
Nutrients	Parts within food than animals and plants need to survive
Vertebrate	An animal with a backbone and a skeleton inside its body
Invertebrate	An animal without a backbone
Circulatory system	The system in the body that deals with moving blood around.

Useful Diagrams		
Diagram 1	Diagram 2	Diagram 3

Useful Websites or Resources
<a href="https://www.bbc.co.uk/bitesize/topics/z27kng8/articles/z9wk7p3">https://www.bbc.co.uk/bitesize/topics/z27kng8/articles/z9wk7p3</a> <a href="https://www.bbc.co.uk/bitesize/clips/ztfncvw">https://www.bbc.co.uk/bitesize/clips/ztfncvw</a>

Note: This unit has been adapted in 202-21 to focus on Micro-organisms in light of the pandemic.

Learning Objectives - Knowledge	
C4 - Year 4 & 5 ‘Micro-organisms’	Key Driver
To know what a microbe is and to name the 3 types.	C
To know the different microbes and classify them according to the 3 types.	C
To know what a useful microbe is.	C
To know that useful microbes can keep us healthy.	C, HL
To know how useful microbes can be put to good use.	C
To know how to avoid catching or spreading microbes.	C, HL, NW
To know how an infections/virus can be spread through unclean hands.	C, HL
To know how hand washing can prevent infection from spreading.	C, HL
To know which hand washing method is best at removing microbes.	C, HL
To know facts about ‘Coronavirus’.	C
To know how far germs are carried by sneezing & that covering the mouth with a tissue or sleeve can prevent the spread of infection - Investigation	C, HL, NW
To know how to record an investigation.	C

Key Vocabulary	
Word	Meaning
Micro-organisms	Living things which are too small to see with the naked eye.
Microscope	An instrument with one or more lenses used to help a person to see something very small by making it appear larger
Microbe	Germs - such as Virus, Bacteria and Fungi.
Germs	Tiny organisms or living things, that can cause disease.
Disease	A change in a living body (as of a person or plant) that prevents it from functioning normally : sickness.
Bacteria	Are small organisms, or living things which can only be seen with a microscope and are all shapes including: spirals, rods and spheres.
Virus	A type of germ which is very tiny and when they get inside your body they can make you very sick.
Fungi	A group of living organisms e.g mould, yeast and mushrooms.
Contagious	Having a sickness that can be passed to someone else.
Symptom	A noticeable change in the body or its functions that indicates the presence of a disease.
Prevention	The act or practice of keeping something from happening.
Transmission	To transfer, pass, or spread from one person or place to another.

Useful Diagrams		
Diagram 1	Diagram 2	Diagram 3
 <p><b>What are Microbes?</b></p> <ul style="list-style-type: none"> <li>Microbes are living organisms</li> <li>They are so small we need a microscope to see them</li> <li>They come in different shapes and sizes</li> <li>They are found EVERYWHERE!</li> <li>Some microbes are useful or even good for us</li> <li>Some microbes can make us ill</li> </ul> <p><b>There are 3 different types of microbes:</b></p> <p><b>VIRUSES</b></p> <ul style="list-style-type: none"> <li>Influenza</li> <li>Viruses are even smaller than bacteria and can sometimes live INSIDE bacteria!</li> <li>Some viruses make us sick.</li> <li>Diseases like CHICKENPOX and the FLU are caused by viruses.</li> <li>Viruses can spread from one person to another but it depends on the type of virus.</li> </ul> <p><b>BACTERIA</b></p> <ul style="list-style-type: none"> <li>There are three different types of bacteria. They look like:             <ul style="list-style-type: none"> <li><b>Spirals</b> (Cocci/bacteria)</li> <li><b>Rods</b> (Bacilli/bacteria)</li> <li><b>Balls</b> (Spherococci/bacteria)</li> </ul> </li> <li>Fungi are the largest of all microbes.</li> <li>Fungi can be found in the air, on plants and in water.</li> <li>Mould, which grows on bread, is a type of fungus.</li> <li>Some antibiotics are made by fungi!</li> </ul> <p><b>FUNGI</b></p> <ul style="list-style-type: none"> <li>Penicillium</li> <li>Dermatophyte</li> </ul> <p><b>Microbe Size</b></p> <p><b>BACTERIA</b></p>		 <p><b>Tips to Prevent Coronavirus Transmission</b></p> <ol style="list-style-type: none"> <li>Wash your hands frequently</li> <li>Cough and sneeze into the elbow</li> <li>Distance of about 2 metres</li> <li>Avoid contact with others</li> <li>Avoid crowds and public gatherings</li> <li>Avoid touching your face</li> <li>Clean all shared surfaces frequently</li> <li>Avoid all common food market</li> <li>Call ahead before going to a clinic or hospital</li> <li>Wash hands before if possible</li> <li>Only wear a mask if you are sick, never SHARE the mask with others</li> <li>Wash hands before if possible</li> </ol>

Useful Websites or Resources
<a href="https://www.bbc.co.uk/bitesize/topics/zfxsbk/resources/1">https://www.bbc.co.uk/bitesize/topics/zfxsbk/resources/1</a> <a href="https://www.e-bug.eu/lang_eng/primary_pack/downloads/itm/Introduction%20to%20Microbes%20Complete%20Pack.pdf">https://www.e-bug.eu/lang_eng/primary_pack/downloads/itm/Introduction%20to%20Microbes%20Complete%20Pack.pdf</a>



Knowledge Organiser

Science Strand: Animals (inc. Humans) Year: A Term: Autumn

Learning Objectives - Knowledge	
C4 - Year 4/5	Key Driver
To know the key features of the skeleton in the human body.	C
To know the key features of muscles in the human body.	C
To know the organs in the human body.	C
To investigate how the digestive system works.	C
To know the simple functions of the basic parts of the digestive system in humans.	C
To know the different types of teeth in humans and identify their functions.	C
To know different ways of keeping teeth healthy.	H
To know how scientific ideas about food and diet were tested in the past and how this has contributed to our knowledge of a balanced diet.	H
To investigate some different food groups and find out why a variety of foods is important for a healthy diet.	H
To know how nutrients and water are transported in the human body	C
To investigate what happens to the heart when we exercise and why	C/H
To know stages in the growth and development of humans through a timeline.	C

Key Vocabulary	
Word	Meaning
bones	Provide support for our bodies and help form our shape.
muscles	A soft tissue found in most animals.
organs	An <b>organ</b> is a group of tissues in a living organism that has a specific form and function. <b>Organs</b> are grouped together into <b>organ</b> systems. <b>Organ</b> systems perform a specific task.
tendon	A <b>tendon</b> , or sinew, is a cord of tissue that attaches the end of a <b>muscle</b> to a bone or other part of the body.
calcium	A mineral that is found in foods, stored in bones and teeth.
digestive system	Is a complex series of <b>organs and</b> glands that processes food.
balanced diet	A diet consisting of a variety of different types of food and providing adequate amounts of the nutrients necessary for good health.
exercise	Activity requiring physical effort, carried out to sustain or improve health and fitness.
nutrients	Substances that provides nourishment essential for the maintenance of life and for growth.
protein	Food which helps your body grow and repair itself, found in meats, poultry, fish, dairy products, eggs and beans.
carbohydrate	Food containing sugar and/or starch which we need for energy.
lifestyle	The way someone lives their life; the choices they make.

Useful Diagrams

Diagram 1

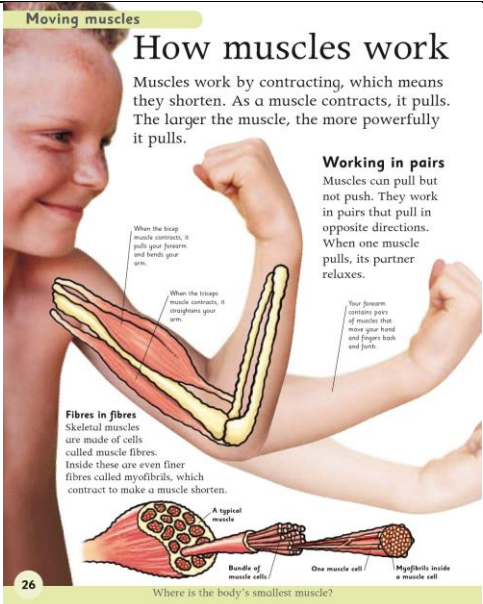


Diagram 2

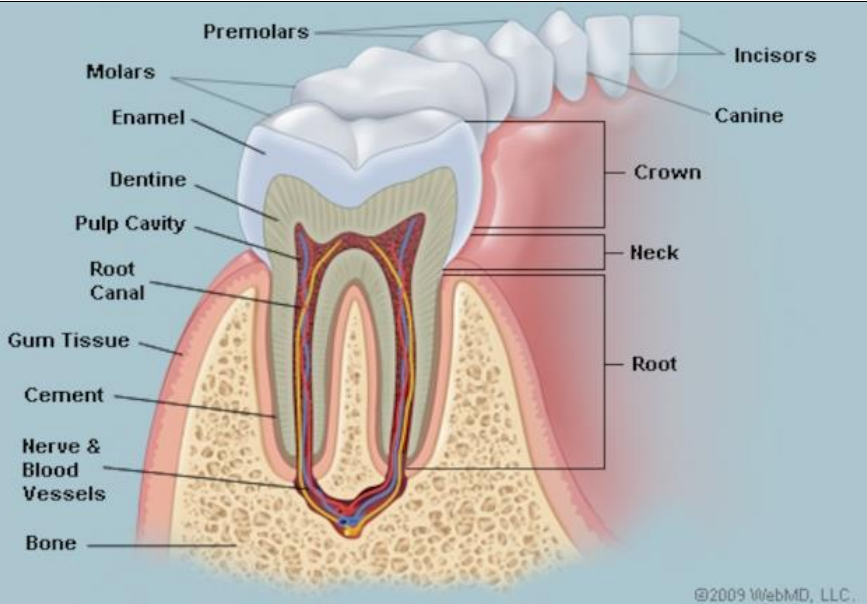


Diagram 3



Useful Websites or Resources

<https://www.youtube.com/watch?v=3haTJCOkyxA>

<https://www.bbc.co.uk/bitesize/topics/z27kng8/articles/zsp76yc>

<https://www.topmarks.co.uk/Search.aspx?q=teeth>

<https://www.educationquizzes.com/ks2/personal-social-and-health-education/healthy-food-and-exercise/>

<https://www.bbc.co.uk/bitesize/topics/zrffr82>

<https://www.bbc.co.uk/bitesize/topics/z27kng8>

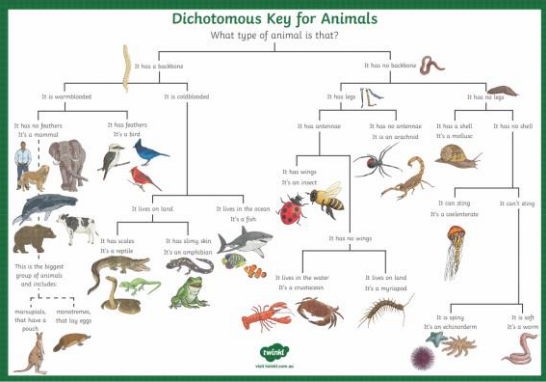
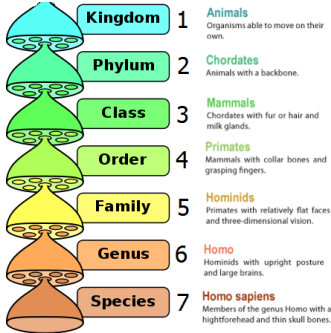
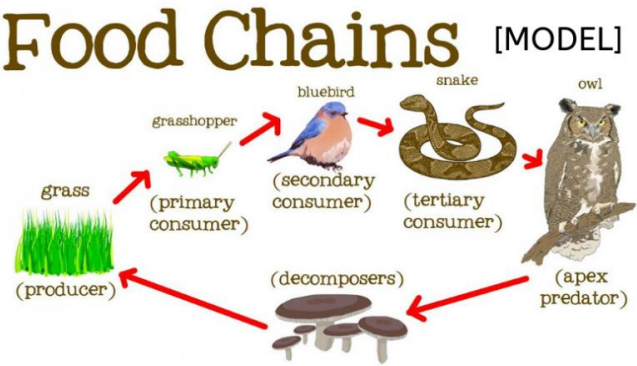
Knowledge Organiser

Science Strand: Animals (inc. Humans) Year: A Term: Autumn

Note: This unit has been adapted in 202-21 to focus on Micro-organisms in light of the pandemic.

Learning Objectives - Knowledge			
C5 - Year 5/6		Key Driver	Key Driver
To know the seven characteristics of living things (MRS GREN) in detail		C,N	To know the life cycles of a mammal, an amphibian, an insect and a bird and be able to identify similarities and differences
To know ways that living things can be classified according to Linnaeus (esp kingdom, phylum, class		C,N	To know that all living things produce offspring and how they vary from/ are similar to the parent
To know how to use classification keys		C,N	To know how to read and create a food chain diagram to represent feeding habits in a range of habitats
To know how to create classification keys		C,N	To know the role of, and to be able to identify, predator and prey in a number of habitats
To know the three types of microorganisms and their characteristics		C	To know how animals have evolved over the millennia
To know how microorganisms feed, grow and reproduce		C	To know what a fossil is, how fossils are made and what they can tell us about living things many millennia ago
To know ways of preventing the spread of harmful microorganisms		C, HL	

Key Vocabulary			
Word	Meaning	Word	Meaning
characteristic	a feature typically belonging to a person, place or thing	mammal	a warm-blooded vertebrate with hair or fur that gives birth to live young
classification	arranging plants and animals in groups according to observable characteristics	amphibian	a cold-blooded vertebrate animal which lives in and out of water
kingdom	a division into which natural things are classified (e.g. animal)	insect	a small arthropod animal that has six legs and generally one or two pairs of wing
phylum	a classification category that ranks above class and below kingdom (e.g. vertebrates)	offspring	an animal's young
class	a classification category, ranking below phylum and above order (e.g. mammal)	predator	an animal that naturally preys on others
order	a classification category, ranking below class (e.g. primates)	prey	an animal that is hunted and killed by another for food
species	a classification category, ranking below order (e.g. mountain gorilla gorilla)	evolution	the process by which different kinds of living organism are have developed from earlier forms
microorganism	an organism too small to be seen with the naked eye	fossil	the remains or impression of a prehistoric plant or animal embedded in rock and preserved in petrified form.
reproduce	produce offspring		

Useful Diagrams		
Diagram 1	Diagram 2	Diagram 3
		

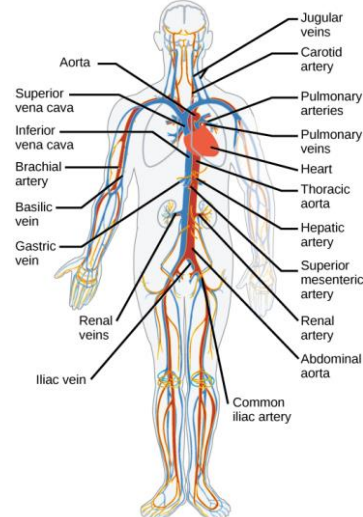
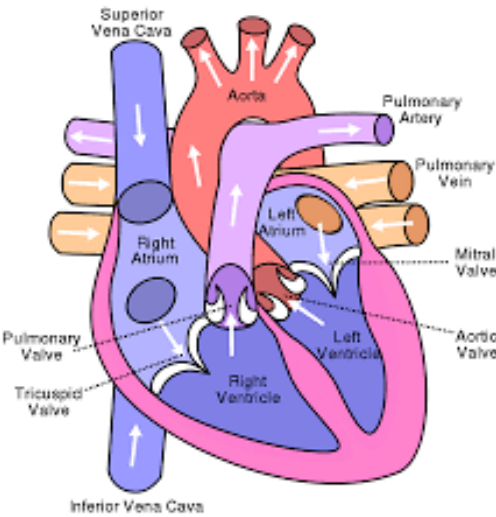
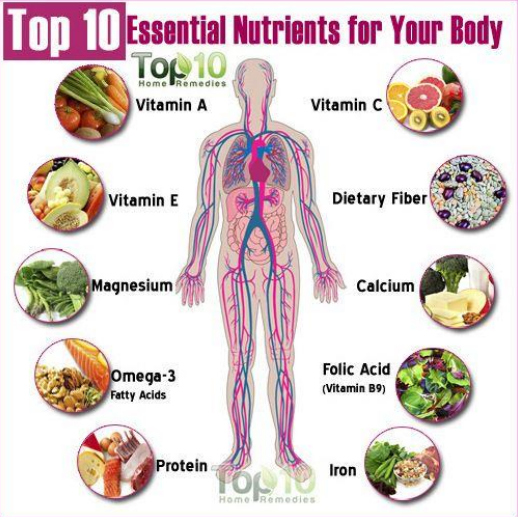
Useful Websites or Resources
<a href="https://www.bbc.co.uk/teach/class-clips-video/science-ks2--ks3-classification-of-organisms/zh7g92p">https://www.bbc.co.uk/teach/class-clips-video/science-ks2--ks3-classification-of-organisms/zh7g92p</a> (classification)
<a href="https://e-bug.eu/junior_pack.aspx?cc=eng&amp;ss=2&amp;t=e-Bug%20Lesson%20Pack">https://e-bug.eu/junior_pack.aspx?cc=eng&amp;ss=2&amp;t=e-Bug%20Lesson%20Pack</a> (micro-organisms)
<a href="https://www.bbc.co.uk/bitesize/topics/zbnnb9q">https://www.bbc.co.uk/bitesize/topics/zbnnb9q</a> (food chains)

## Knowledge Organiser

**Science Strand:** Animals (inc. Humans) **Year:** A **Term:** Autumn

Learning Objectives - Knowledge			
C5 - Year 5/6		Key Driver	Key Driver
To know the function of the skeleton in the body.		C	To know the impact of diet on the functions of the body.
To know the function of the muscles in the body.		C	To know the impact of exercise on the functions of the body.
To know the main parts of the human circulatory system.		C	To know the impact of drugs and lifestyle on the functions of the body.
To know functions of the heart, blood vessels and blood.		C	To know the changes that take place as humans develop from birth to old age (including a timeline)
To know how nutrients and water are transported within animals, including humans.		C	To know that normally the offspring of a living thing will not be identical to its parents.
To know scientific terms to describe the key features of a healthy diet, including main food groups.		H	

Key Vocabulary			
Word	Meaning	Word	Meaning
Joint	The area where two bones are attached so the body can move	Blood cells	Tiny particles in your blood which do an important job
Calcium	A mineral that is found in foods, stored in bones and teeth	Platelets	Tiny blood cells that help your body form clots to stop bleeding
Bone marrow	A thick, spongy kind of jelly inside your bones which makes blood cells	Nutrients	Substances that provides nourishment essential for the maintenance of life and for growth
Tendon	A strong band of tissue that joins a muscle to a bone	Protein	Food which helps your body grow and repair itself, found in meats, poultry, fish, dairy products, eggs and beans
Circulatory system	A group of organs and vessels which transports blood around the body	Carbohydrate	Food containing sugar and/or starch which we need for energy
Vein	A blood vessel that usually carries blood low in oxygen	Pulse rate	How fast your heart beats, measured in beats per minute
Artery	A blood vessel that carries blood away from the heart to other parts of the body.	Lifestyle	The way someone lives their life; the choices they make
Capillary	The smallest of blood vessels which allow exchange of gases, water, nutrients and waste	Genes	They carry information that determine what characteristics are inherited from an organism's parents

Useful Diagrams		
Diagram 1	Diagram 2	Diagram 3
		

Useful Websites or Resources
<a href="https://www.bbc.co.uk/bitesize/topics/zcyycdm">https://www.bbc.co.uk/bitesize/topics/zcyycdm</a> (BBC bitesize) <a href="https://35058.stem.org.uk/humanbody/index.html">https://35058.stem.org.uk/humanbody/index.html</a> (Inside the human body simulation) <a href="https://www.hamilton-trust.org.uk/science/year-6-science/art-being-human/">https://www.hamilton-trust.org.uk/science/year-6-science/art-being-human/</a> (links between art and science - teacher use)

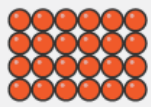


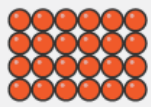


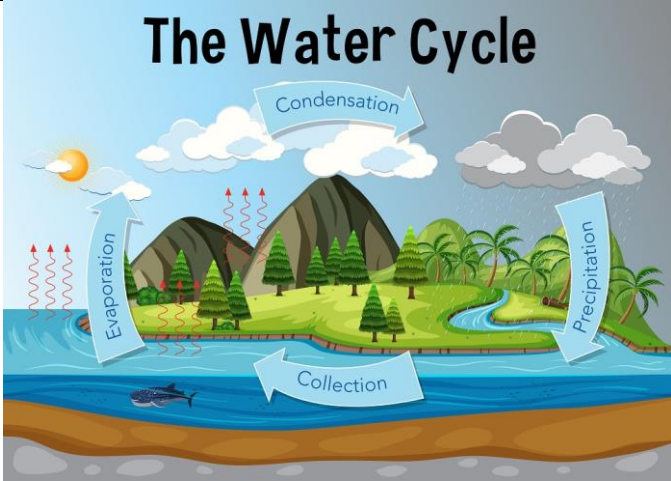
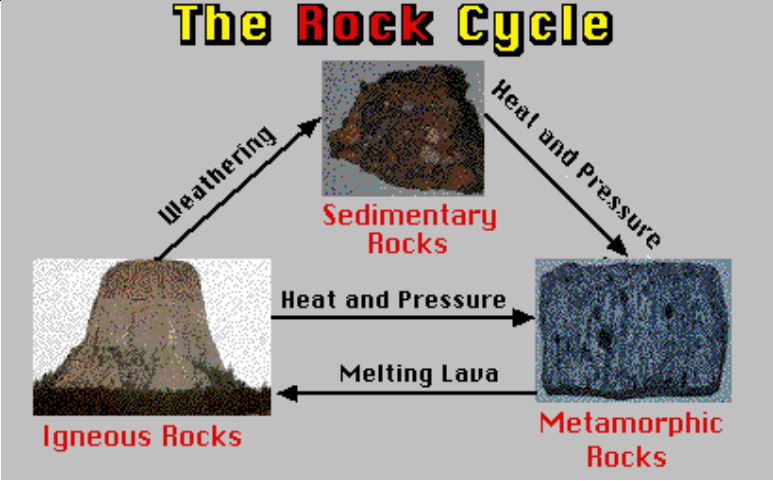
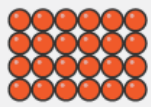




Knowledge Organiser

Science Strand: States of Matter and Rocks      Year: A      Term: Spring

Learning Objectives - Knowledge			
C3 - Year 2/3		Key Driver	Key Driver
To know that there are three ‘states of matter’ (solid, liquid and gas) and be able to recognise the features of each.		C	To know that there are many different types of rock, all with different properties and uses.
To know how to group and compare everyday materials according to their states of matter, and recognise that some materials might be familiar in more than one state (e.g. water as liquid or solid).		C	To know how to observe and sort rocks according to their various properties.
To know that some materials are hard to classify due to their unusual properties (e.g. cornflour/water mix, yoghurt etc).		C	To know, in simple terms, how sedimentary, metamorphic and igneous rocks are formed.
To know the scientific terms used for when materials change from one state to another (e.g. melting/ evaporation/condensation) and that these changes can be observed.		C	To know, in simple terms, how rocks change from one type to another.
To know that the above changes are affected by conditions such as temperature and wind speed.		C	To know how fossils are made.
To know how to plan, do and review a comparative investigation into the melting times of different types of chocolate.		C	To know that soil is made from a mixture of rocks and organic materials.
To know the basics of the water cycle.		C/NW	To know how to compare soil types using observation and practical tests.

Key Vocabulary			
Word	Meaning	Word	Meaning
Solid	Solids are objects that keep their own shape and do not flow. They aren’t always hard!	Sedimentary, Metamorphic, Igneous	All rock can be grouped into one of these three groups according to how it was made.
Liquid	Liquids have no set shape - they take the shape of their container, but are pulled by gravity to the bottom of the container. It is possible to pour a liquid.	Fossil	The remains of a living thing from a past age that have been preserved in a rock.
Gas	Gases have particles that spread out inside their container, moving round all the time.	Geology	The study of rocks
Melting	The process of a solid becoming a liquid.	Geologist	A scientist who studies rocks.
Evaporation	The process of a liquid becoming a gas.	Organic material	Material that comes from living things (leaves, for example).
Condensation	The process of a gas becoming a liquid.	Texture	How something feels to the touch. This word is used often when describing rocks or soil.
Solidifying	The process of a liquid becoming a gas. In the case of water, this is called fre		

Useful Diagrams																							
Diagram 1		Diagram 2	Diagram 3																				
<table><tr><th>State</th><th>Solid</th><th>Liquid</th><th>Gas</th></tr><tr><th>Diagram</th><td></td><td></td><td></td></tr><tr><th>Arrangement of particles</th><td>Regular arrangement</td><td>Randomly arranged</td><td>Randomly arranged</td></tr><tr><th>Movement of particles</th><td>Vibrate about a fixed position</td><td>Move around each other</td><td>Move quickly in all directions</td></tr><tr><th>Closeness of particles</th><td>Very close</td><td>Close</td><td>Far apart</td></tr></table>	State	Solid	Liquid	Gas	Diagram				Arrangement of particles	Regular arrangement	Randomly arranged	Randomly arranged	Movement of particles	Vibrate about a fixed position	Move around each other	Move quickly in all directions	Closeness of particles	Very close	Close	Far apart			
State	Solid	Liquid	Gas																				
Diagram																							
Arrangement of particles	Regular arrangement	Randomly arranged	Randomly arranged																				
Movement of particles	Vibrate about a fixed position	Move around each other	Move quickly in all directions																				
Closeness of particles	Very close	Close	Far apart																				

Useful Websites or Resources

BBC Bitesize States of Matter <https://www.bbc.co.uk/bitesize/topics/zkgg87h/articles/zsgwwxs>

BBC Bitesize Rocks and Fossils: <https://www.bbc.co.uk/bitesize/topics/z9bbkqt>

Collection of rocks to study and sort

Knowledge Organiser

Science Strand: Earth and Space      Year: A      Term: Spring

Learning Objectives - Knowledge			
C4 - Year 4/5		Key Driver	Year 4/5
To know the eight planets and other Solar System objects - planets		C, NW	To know how the Earth’s tilt creates seasons
To know the eight planets and other Solar System objects - moons		C, NW	To know about the phases of the moon
To know the eight planets and other Solar System objects - asteroids and meteors		C, NW	To know that light travels in straight lines which creates shadows (Investigation ‘How can you change the size of shadows? - plan)
To know the eight planets and other Solar System objects - comets		C, NW	To know how to carry out an investigation, following a plan
To know the movements of the Earth, Sun and Moon		C, NW	To know how to transfer data into graphs
To know how the rotation of the Earth creates day and night		C, NW	To know how to write-up an investigation and to conclude

Key Vocabulary			
Word	Meaning	Word	Meaning
Solar System	Consists of the Sun and everything that orbits, or travels around, the Sun.	Waning	When we start to see less and less of the Full moon (after it reaches its Full Phase).
planets	Large natural objects that orbit around stars.	anti-clockwise	Moving in the opposite direction to the hands on a clock.
spherical	Relating to the form of a sphere (a ball).	rotation	The movement of an object in a circular motion.
asteroids	A chunk of rock and metal in outer space that is in orbit of the Sun.	axis	An imaginary line an object turns around, which runs directly through the object’s centre from the North to South poles.
comets	A small chunk of dust and ice that orbits around the sun.	tilt	To move or place so that one side is higher than the other.
satellites	Natural objects e.g. Moons, that orbits a planet. There are several hundred of them in our Solar System.	Northern Hemisphere	The part of the Earth that is North of the equator.
orbit	The path of an object around a particular point in space. E.g. the path the Moon takes around the Earth.	Southern Hemisphere	The half of the Earth that is South of the equator.
eclipse	A complete hiding of the Sun caused by the Moon’s passing between the Sun and the Earth.	Equator	An imaginary line around the middle of a planet or other celestial body.
moon phases	The Phase of the Moon, is how much of the Moon appears to us on Earth to be lit up by the Sun.	shadows	The dark shape created when something blocks light. You must have a source of light in order to have shadows.
New Moon	When the Moon cannot be seen by us on Planet Earth because we are looking at the unlit half of the Moon.	seasons	Are four different times during the year with different types of weather.
Waxing	When the moon looks like a crescent and the crescent increases in size from one day to the next.		

Useful Diagrams

Diagram 1

WHAT IS THE SOLAR SYSTEM?

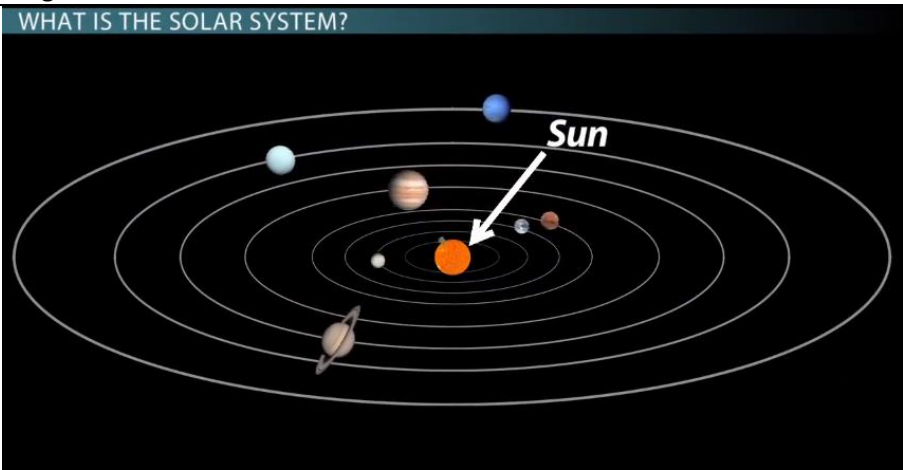


Diagram 2

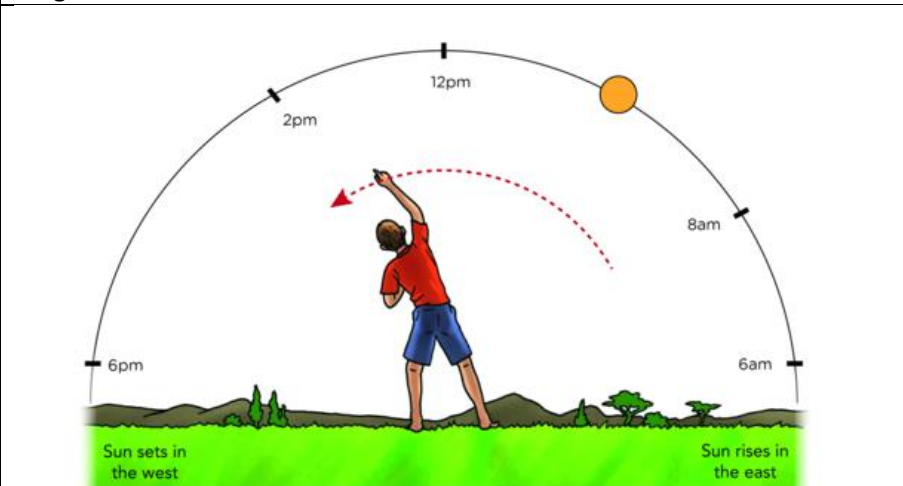
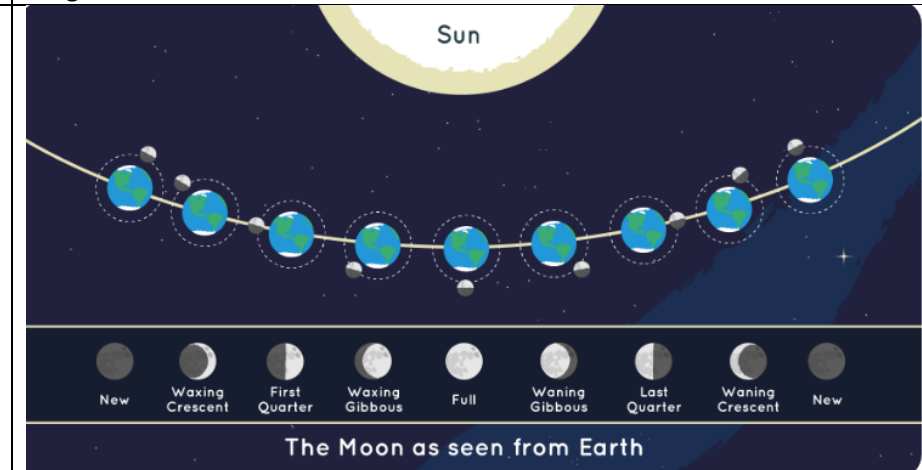


Diagram 3



Useful Websites or Resources

<https://spaceplace.nasa.gov/menu/solar-system/>

<https://www.esa.int/kids/en/learn>

<https://www.bbc.co.uk/bitesize/clips/zrd9wmn>

<https://www.bbc.co.uk/bitesize/topics/zkvv4wx/articles/ztdnyrd>

<https://www.ducksters.com/science/earth.php>

<https://www.ducksters.com/science/astronomy.php>

<https://www.ducksters.com/science/astronomy.php>



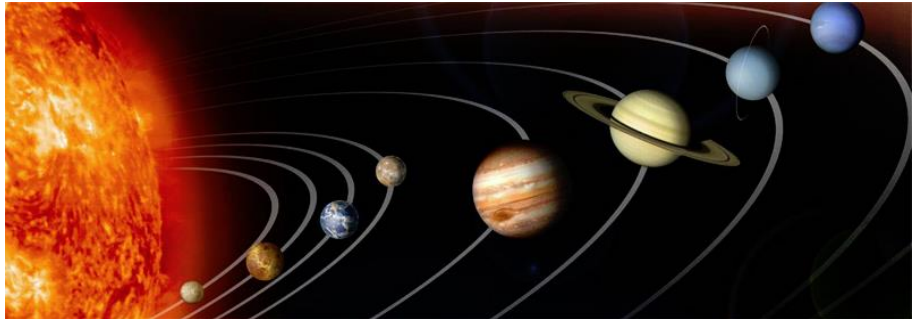

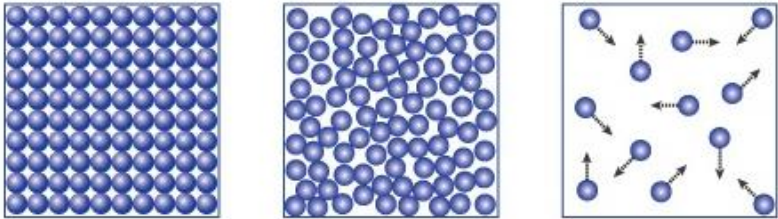
Knowledge Organiser

Science Strand: Earth and Space & Materials      Year: A      Term: Spring

*Note: This Unit has been shortened to include ‘Materials’ as this was missed due to the first ‘lockdown’*

Learning Objectives - Knowledge			
C5 - Year 5/6 Earth and Space	Key Driver	C5 - Year 5/6 Materials	Key Driver
I know the movement of the Earth, and other planets, relative to the Sun in the solar system.	C, NW	I know why some materials are used for a specific task or purpose.	C
I know the Sun, Earth and Moon are approximately spherical bodies.	C, NW	I know how to compare, group and classify everyday materials based on hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets.	C, NW
I know the idea of the Earth’s rotation and can use this to explain day and night and the apparent movement of the sun across the sky.	C, NW	I know that dissolving, mixing and changes of state are reversible changes.	C, NW
I know the movement of the Moon relative to the Earth.	C, NW	I know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.	C, NW
I know the main events of the Space Race.	C, NW	I know that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of vinegar (acid) on bicarbonate of soda.	C, NW
		I know, in detail, the properties of liquids, solids and gases.	C, NW
		I know how mixtures might be separated, including through filtering, sieving and evaporating, using my knowledge of solids, liquids and gases.	C, NW

Key Vocabulary			
Word	Meaning	Word	Meaning
Sun	The star around which the Earth orbits	Material	The substance of which something is made
Mercury	The smallest and closest planet to the Sun	Hard	Solid, rigid and not easily bent or broken
Venus	The second planet from the Sun	Soluble	Able to be dissolved
Earth	The planet on which we live	Transparent	Allowing light to pass through
Mars	The fourth planet from the Sun and the second-smallest planet in the Solar System	Conduct	Allowing electricity to heat to travel through a material
Jupiter	A gas giant which is the fifth planet from the Sun and the largest in the Solar System	Insulate	Preventing electricity to heat to travel through a material
Saturn	A gas giant which is the sixth planet from the Sun and the second-largest in the Solar System	Magnetic	Being attracted by magnetic substances
Uranus	A gas giant which is the seventh planet from the Sun	Dissolve	Mix a solid so it becomes absorbed in a liquid
Neptune	A gas giant which the eighth and farthest-known Solar planet from the Sun	State of matter	The distinct forms in which matter can exist
Moon	The natural satellite of the Earth	Solid	Materials which stay in one place, can be held and keep their shape and volume
Satellite	A body (celestial or artificial) orbiting a planet	Liquid	Materials which can flow and change their shape depending on the container they are in, but keep the same volume
Celestial body	A natural object which is located outside of Earth's atmosphere	Gas	Materials which do not have a fixed shape but spread out and change their shape and volume to fill up whatever container they are in.
Solar system	A collection of planets and celestial bodies in orbit around a sun	Change of state	A physical change in matter from one state to another
Spherical	Ball-shaped	Reversible	Can be restored to its original form
Orbit	The curved path in space that is followed by an object going round and round	Irreversible	Cannot be restored to its original form
Rotation	a planet, moon or star	Solution	A mixture where one substance (the solute) is dissolved into another (the solvent)
Axis	Turning around an axis	Filter	Remove solid particles from a liquid
Lunar	To do with the Moon	Sieve	To put through a fine mesh to strain solids from liquids or large solids from smaller solids
Waxing	To appear to get bigger (Moon)	Evaporate	To turn a liquid into a gas
Waning	To appear to get smaller (Moon)	Condense	To turn a gas into a liquid
Space Race	The competition between nations (especially the USA and USSR) regarding achievements in the field of space exploration		

Useful Diagrams		
Diagram 1	Diagram 2	Diagram 3
		 <p>Solid                      Liquid                      Gas</p> <p>© The University of Waikato Te Whare Wānanga o Waikato   <a href="http://www.sciencelearn.org.nz">www.sciencelearn.org.nz</a></p>

Useful Websites or Resources
Planets, space exploration, Space Race - <a href="https://www.spacekids.co.uk/learn/">https://www.spacekids.co.uk/learn/</a> Days, Nights and Seasons - <a href="https://www.bbc.co.uk/teach/class-clips-video/science-physics-ks3-ks4-professor-brian-cox-day-night-seasons/zdjmhg8">https://www.bbc.co.uk/teach/class-clips-video/science-physics-ks3-ks4-professor-brian-cox-day-night-seasons/zdjmhg8</a> The Moon (Nasa) - <a href="https://solarsystem.nasa.gov/moons/earths-moon/lunar-phases-and-eclipses/">https://solarsystem.nasa.gov/moons/earths-moon/lunar-phases-and-eclipses/</a> States of matter - <a href="#">What are the states of matter? - BBC Bitesize</a> Reversible and irreversible changes - <a href="#">(111) Exploring Reversible and Irreversible Changes - YouTube</a>

Knowledge Organiser

Science Strand: Light and Sound    Year: A    Term: Summer

Learning Objectives - Knowledge	
C3 - Y3/4	Key Driver
To know how light reflects off objects and travels to our eyes, allowing us to see	C, NW
To know examples of natural and artificial light sources and how to be safe when looking at light sources.	C, NW
To know that light travels in straight lines.	C, NW
To know how light reflects, demonstrating with a simple mirrors experiment.	C, NW
To know how shadows are created and how they change throughout the day.	C, NW
To know how to investigate the effect on a shadow of changing the distance between an object and a light source.	C, NW
To know that sounds are made by vibrations	C, NW
To know that sounds travel in waves from the source to our ear, and the volume decreases with distance.	C, NW
To know that sound travels through solids, liquids and gases in different ways.	C, NW
To know that some materials can be used to muffle sound.	C, NW
To know how to investigate the change in pitch of a plucked rubber band (thickness and tightness) and how this relates to musical string instruments.	C

Key Vocabulary	
Word	Meaning
light source	something that gives out light
natural	found in nature (not man-made).
artificial	not found in nature, man-made.
reflect	when light bounces off an object and travels in a different direction.
shadow	a darker area made when light is blocked.
vibrations	tiny, repeating movements
volume	how loud a sound is
muffle	to reduce the loudness of a sound.
pitch	how high or low a sound seems

Useful Diagrams		
Diagram 1	Diagram 2	Diagram 3
		

Useful Websites or Resources
<a href="https://www.youtube.com/watch?v=d65mdTJaTI">https://www.youtube.com/watch?v=d65mdTJaTI</a> <a href="https://www.bbc.co.uk/bitesize/topics/zbssgk7">https://www.bbc.co.uk/bitesize/topics/zbssgk7</a> <a href="https://www.bbc.co.uk/bitesize/clips/zyntsbk">https://www.bbc.co.uk/bitesize/clips/zyntsbk</a> - Various videos introducing light. <a href="https://www.bbc.co.uk/bitesize/topics/zgffr82">https://www.bbc.co.uk/bitesize/topics/zgffr82</a> - Various videos introducing sound.

Knowledge Organiser

Science Strand: Materials - ‘Properties and Changes of Materials’ Year: A Term: Summer

Learning Objectives - Knowledge	
C4 - Y4/5	Key Driver
To know that some materials will dissolve in liquid to form a solution - Part 1: Theory	C, NW
To know that some materials will dissolve in liquid to form a solution - Part 2: To conduct a Fair Test	C, NW
To know how to use knowledge of solids, liquids and gases to decide how mixtures and solutions might be separated - Part 1:Theory	C, NW
To know how to use knowledge of solids, liquids and gases to decide how mixtures and solutions might be separated - Part 2: Investigation task	C, NW
To know that some changes form new materials, and that these changes are not usually reversible - Part 1: Theory	C, NW
To know that some changes form new materials, and that these changes are not usually reversible - Part 2: Fair Test	C, NW
To know and identify when a change is caused by heating or cooling is reversible or irreversible - Part 1: Theory	C, MW
To know and identify when a change is caused by heating or cooling is reversible or irreversible - Part 2: Fair Test	C, NW
To investigate the materials needed for something to burn and the new materials formed by burning	C, NW
To know that everyday materials can be grouped and compared on the basis of their properties	C, NW
To know the particular uses of everyday materials in relation to their properties	C, NW

Key Vocabulary	
Word	Meaning
solution	A mixture of two or more substances that stays evenly mixed.
solute	The substance that dissolves to form a solution.
solvent	The liquid that a substance is dissolved in.
soluble	Substances that do dissolve in water.
insoluble	Substances that do not dissolve in water.
substance	The material or matter of which something is made e.g. salt, sugar, coffee granules.
dissolve	To mix completely with liquid.
opaque	Objects that do not allow light to pass through.
transparent	Objects that allow light to pass through it.
evaporate	To turn from a liquid into a gas.

Useful Diagrams		
Diagram 1	Diagram 2	Diagram 3
		

Useful Websites or Resources
ISEB Science Textbook - Materials PlanBee BBC Bitesize Oak National Academy

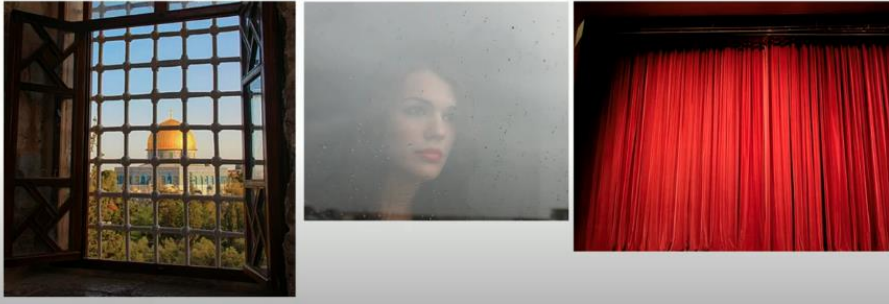
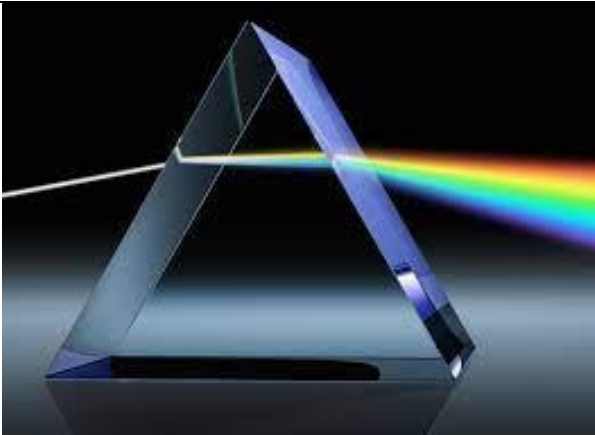
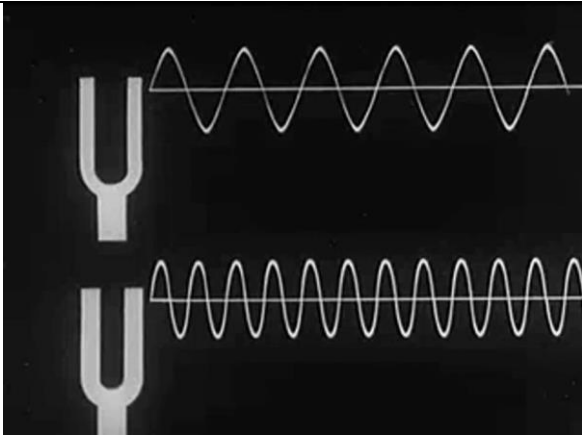


Knowledge Organiser

Science Strand: Light and Sound      Year: A    Term: Summer

Learning Objectives - Knowledge	
C5 - Y5/6	Key Driver
To know the characteristics of transparent, translucent and opaque materials	NW
To know that light travels in straight lines	NW
To know how light can be reflected using mirrors, including creating and using a periscope	C
To know how shadows are created and how they can be manipulated	C/NW
To know the principle of refraction and how to split white light	C/NW
To know, basically, how the eye works	NW
To know that sound is vibration and how it changes according to the strength of the vibration	NW
To know the link between pitch and vibration	NW
To know how to muffle sound	C
To know that sound travels through different materials and how it changes when doing so	C/NW
To know, basically, how the ear works	NW
To know which variables to measure, change and keep the same and how to change one factor (variable) whilst keeping others the same (control), when carrying out investigations	C
To know about what to observe, what measurements to use and how long to measure them for when carrying out investigations	C
To know how to gather, record, classify and present data in a wide range of ways.	C

Key Vocabulary			
Word	Meaning	Word	Meaning
Transparent	Allowing light to pass through so that objects behind can be distinctly seen	Vibration	Shaking
Translucent	Allowing light, but not detailed shapes, to pass through	Pitch	How high or low a noise is
Opaque	Blocking light from passing through so nothing can be seen behind it	Volume	How loud or soft a noise is
Reflect	To throw light back so an image can be seen, albeit reversed	Muffle	To cover a noise- maker to reduce the amount of sound it makes
Periscope	A tube attached to a set of mirrors or prisms, by which an observer can see things that are otherwise out of sight.	Auditory	Related to the sense of hearing
Refraction	The act of light being deflected in different ways when passing though materials of different density	Dependent variable	The part of an investigation that is changed
Spectrum	The band of colours, as seen in a rainbow, produced by separation of the components of light	Independent variable	The part of an investigation that is not changed
Pupil	The central opening of the iris, which lets light through	Control	The part of an investigation that is used as a point of comparison
Retina	a layer at the back of the eyeball that contains cells sensitive to light which triggers the optic nerve to create images in the brain	Decibel	A unit used to measure the intensity of a sound

Useful Diagrams		
Diagram 1	Diagram 2	Diagram 3
<div>Transparent    Translucent    Opaque</div> <div></div>	<div></div>	<div></div>

Useful Websites or Resources

<https://www.stem.org.uk/resources/community/collection/12741/year-6-light> (Light lesson plans)  
<https://www.bbc.co.uk/bitesize/topics/zbssgk7> (BBC bitesize - light)  
<https://youtu.be/ss9FAdhX4mI> (Shadows)  
<https://www.bbc.co.uk/bitesize/topics/zgffr82> (BBC bitesize - sound)  
<https://kidsdiscover.com/spotlight/sound-and-vibration/>  
<https://www.ducksters.com/science/sound101.php>