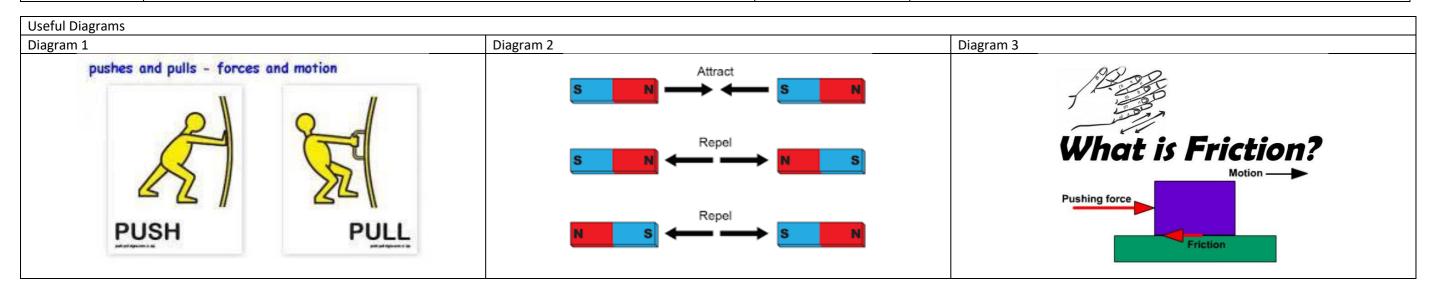


Science Curriculum KS2 Knowledge Organisers

Science Strand: Forces & Magnets Year: B Term: Autumn

Learning Objectives - Knowledge	
C3 - Y2/3	Key Driver
To know that forces act as pushes or pulls	С
To know that a magnet is attracted to a magnetic material using a pull force.	С
To know that magnets also work using push forces, when two poles repel.	C, NW
To know examples of materials that are magnetic and not magnetic.	C, NW
To know, through exploration, how magnets and magnetic objects behave in a variety of situations.	C, NW
To know, in simple terms, what gravity is, and how magnets can act against it.	C, NW
To know how to plan, do and review a comparative investigation into the strength of magnets.	С
To know examples of how magnets are used in everyday life.	С
To know what friction is.	C, NW
To know examples of situations in which friction can be considered helpful or unhelpful, or a combination of both.	С
To know how to make a prediction of how much friction a surface will create.	С
To know how to carry out a simple comparative investigation to compare the friction of different surfaces.	С

Key Vocabular	y		
Word	Meaning	Word	Meaning
Force	Forces make things move (or change shape) by either pushing or pulling; they affect how far or how	Repel	When two magnets push away from each other due to magnetic force.
	fast something moves.		
Magnet	A magnet is an object that makes a magnetic field around itself which can have an effect on other	Pole	The scientific name for the opposite ends of a magnet
	objects that are close to it.		
Magnetic	An adjective used to describe a material that is attracted to a magnet.	Gravity	The pull force that pulls objects to the ground.
Attract	When two objects (e.g. a magnet and an object made of magnetic material) are pulled towards	Friction	The force that works between two surfaces, or an object and a surface
	each other by a magnetic force.		



Useful Websites or Resources

BBC Bitesize - What is a magnet? https://www.bbc.co.uk/bitesize/topics/zyttyrd/articles/zpvcrdm

BBC Btiesize - Tom and Jerry magnets https://www.bbc.co.uk/bitesize/clips/z3gvr82

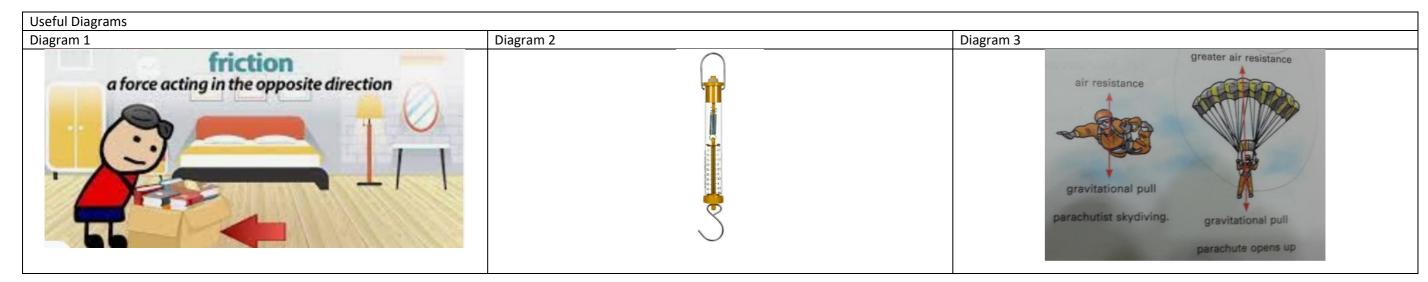
BBC Bitesize - Super powerful magnets https://www.bbc.co.uk/bitesize/clips/zsg3cdm

Britain at the Winter Olympics - Curling (example of friction) https://www.youtube.com/watch?v=BoJzmmsOeW8

Science Strand: Forces Year: B Term: Autumn

Learning Objectives - Knowledge	
C4 - Y4/5	Key Driver
To know what a force is - a push and a pull.	С
To know about two famous Scientists: Galileo Galilei and Isaac Newton.	C, NW
To know that unsupported objects fall towards the earth because of the force of gravity acting between the Earth and the falling object.	C, NW
To know how to identify and explain water resistance and know it is a type of friction.	С
To know how to measure a force and identify the effects of friction acting between moving surfaces.	С
To plan an investigation on surfaces and friction.	C
To know how to review an investigation.	C
To know what is meant by Air Resistance and that it is a type of friction.	C, NW
To know how to plan an investigation	C
To know how to make a parachute for investigation	С
To know how to carry out an investigation	С
To know how to review an investigation	С

Key Vocabulary	
Word	Meaning
force	Forces make things move by either pushing or pulling; it can change the shape of an object and even the speed.
friction	A force between two surfaces that are sliding, or trying to slide, across each other - friction always works in the direct opposite to the direction the object is moving or trying to move.
Newton Metre	A piece of equipment that is used to measure the forces acting on an object - measured in Newtons (after Isaac Newton).
(Force Metre)	
gravity	An invisible force that pulls objects towards each other.
water resistance	A type of force that uses friction to slow things down that are moving through water.
air resistance	A type of friction between air and another material.
upthrust	the upward force that a liquid or gas exerts on a body floating in it
mass	The amount of matter or substance that makes up an object.



Useful Websites or Resources

What is a force? https://vimeo.com/168139447

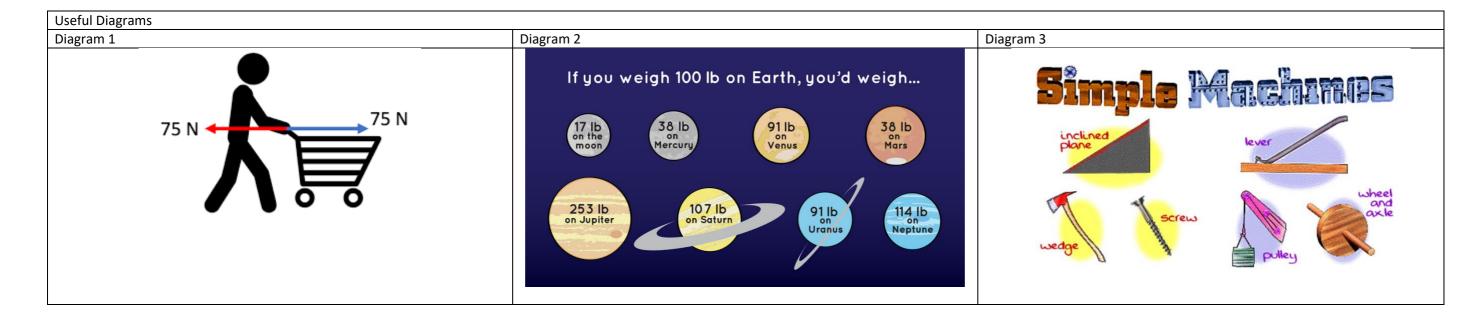
What is friction? https://www.youtube.com/watch?v=P6 VUfHzaaM and https://www.youtube.com/watch?v=BAysbEMEv50

What reduces friction? https://www.youtube.com/watch?v=ZKSefWfRjQw
Water and Air Resistance https://www.youtube.com/watch?v=Fr9JxrqnpGU
Gravity and Air Resistance https://www.youtube.com/watch?v=SNaCCWGlh7A
What is upthrust? https://www.youtube.com/watch?v=SNaCCWGlh7A

Science Strand: Forces Year: B Term: Autumn

C5 - Year 5/6	Key Driver		Key Driver
To know that a force is a push or a pull	С	To know the effects of water resistance and upthrust	C, NW
To know how to measure a force	С	To know how gears, pulleys, levers and springs allow a smaller force to have a greater effect.	С
To know the difference between a balanced and unbalanced force	С	To know that weight is a force	C, NW
To know that unsupported objects fall to Earth because of the force of gravity acting between the Earth and the falling object	C, NW	To know how to show a force on a diagram	С
To know the effects of air resistance on moving objects	C, NW		
To know the effects of friction on moving surfaces and objects	С		

Key Vocabulary	ey Vocabulary						
Word	Meaning	Word	Meaning				
Gravity	the force that attracts a body towards the centre of the earth	Accelerate	Getting faster				
Air resistance	the force that acts in the opposite direction to an object moving through the air.	Decelerate	Getting slower				
Water resistance	the force that uses friction to slow things down that are moving through water	Push	to press against something in order to get it to move				
Friction	the resistance that one surface or object encounters when moving over another	Pull	to hold onto something in order to move it				
Pulley	a wheel with a grooved rim around which a cord passes, which acts to change the direction of a force applied to the cord and is used to raise heavy weights	Balanced	equal force on both sides				
Gear	a simple machine with teeth that increases the force needed to push or pull something	Unbalanced	unequal force on one side				
Spring	a twisted or coiled piece of metal that returns to its original shape when it is pressed down or stretched	Brake	to stop or slow down				
Forcemeter Force	an instrument to measure the size of a force a push or pull upon an object	Effect	a change as a consequence of something				
Upthrust	the upward force that a liquid or gas exerts on a body floating in it	Lever	a simple machine made of a rigid beam and a fulcrum				



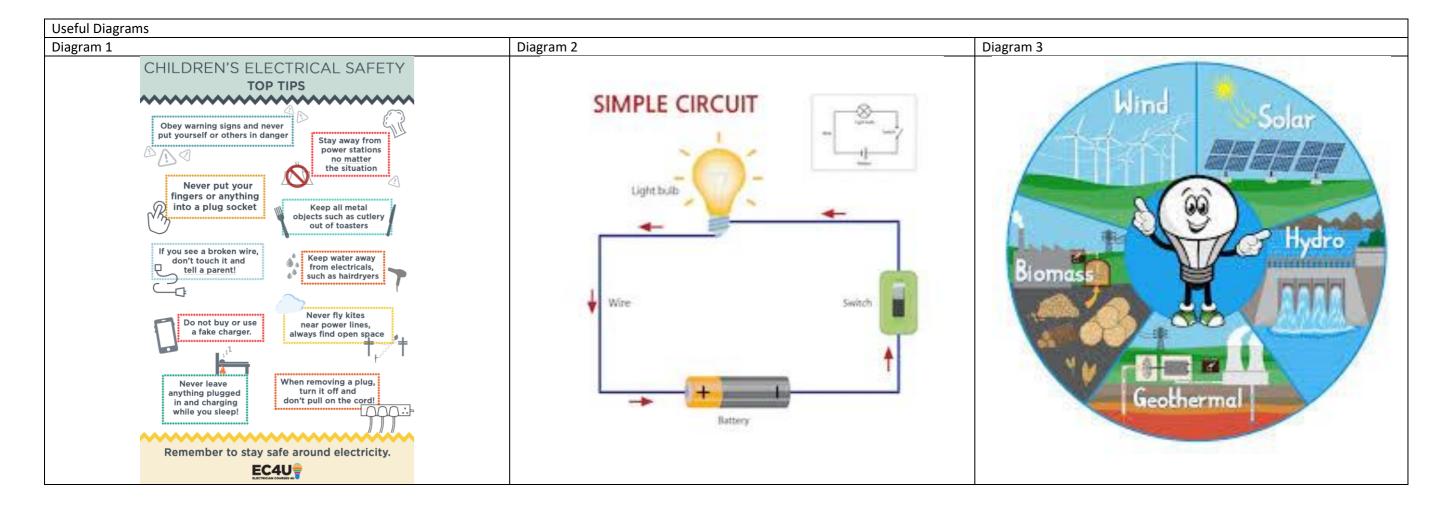
Useful Websites or Resources

https://www.bbc.co.uk/bitesize/topics/zvpp34j/articles/zywcrdm (BBC guide to forces (& links to friction)
https://spaceplace.nasa.gov/what-is-gravity/en/ - gravity
https://www.explainthatstuff.com/toolsmachines.html - simple tools and their effects

Science Strand: Electricity Year: B Term: Spring

Learning Objectives - Knowledge			_
C3 - Year 3/4	Key Driver		Key Driver
To know the dangers of electricity and know the difference between mains power and battery power.	Н	To investigate and make circuits that perform various functions: lighting more than one bulb, operating a buzzer and a motor	С
To know what is needed to make a simple circuit.	С	To investigate the effect of adding more batteries or different types of batteries to a circuit (Whole class investigation and write-up).	С
To know the correct terms for the components of electrical circuits.	С	To investigate and know good conductors and poor conductors of electricity (Assessed investigation - Planning section).	С
To know the function of a switch in a circuit and experiment with different designs of homemade switches.	С	To know sources of electricity, including renewable and non-renewable.	N C

Key Vocabulary			
Word	Meaning	Word	Meaning
Mains electricity	Electricity that comes from the electrical supply to the building, usually accessed via a plug socket on the wall.	Switch	A device that changes an electrical circuit from being 'open' to 'closed' and therefore makes a component work (e.g. light up a bulb).
Circuit	A path around which electricity flows, usually to make something work, involving electrical components such as wires, switches, buzzers and bulbs.	Conductor	A material through which electricity passes. They are described from 'good' (allowing electricity to pass through easily) to 'poor' (not allowing electricity to pass through easily).
Electrical	The individual parts of an electrical circuit eg bulbs, buzzers, batteries,	Renewable/	Renewable energy is made using a resource of unlimited supply e.g. sun, wind or water.
components	wires	Non-renewable	Non-renewable energy is made by burning a fuel which is not of unlimited supply (eg coal).



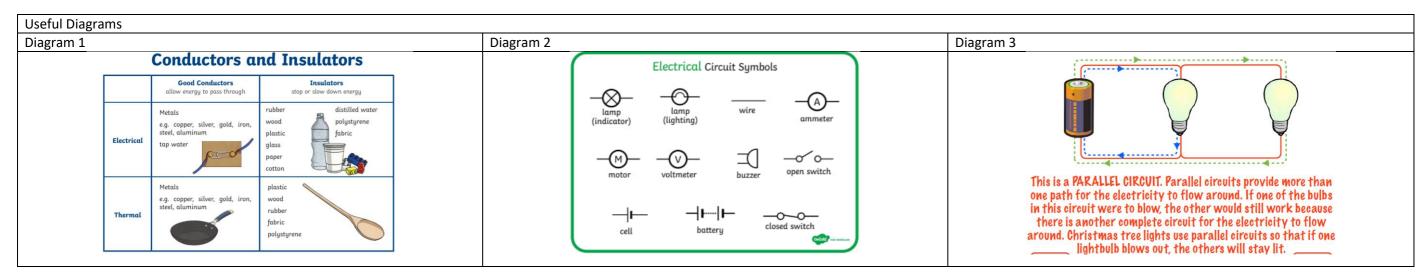
Useful Websites or Resources

http://www.switchedonkids.org.uk/electrical-safety-in-your-home
https://www.bbc.co.uk/bitesize/topics/zj44jxs
http://www.learningcircuits.co.uk/index.html

Science Strand: Electricity 'Circuits and Conductors' and 'Changing Circuits' Year: B Term: Spring

Learning Objectives - Knowledge			
C4 - Year 4/5 'Circuits and Conductors'	Key Driver	Year 4/5 'Changing Circuits'	Key Driver
To know common appliances that run on electricity.	С	Assessment (Second Half Term)	С
		To review knowledge of series and parallel circuits and Assessment - Prior knowledge quiz 'Changing Circuits'	
To know how to keep safe around electrical appliances.	С	To investigate and know ways in which the brightness of a bulb or speed of a motor is changed	С
To know how to construct simple circuits.	C NW	To know, recognise and use conventional symbols for circuits	С
To know common conductors and insulators.	CNW	To be able to plan, carry out evaluate an experiment to see how the wire in a circuit affects the brightness of a bulb	С
To know how to plan and make a simple device which includes a circuit e.g. torch/alarm	C NW	To carry out an experiment and analyse the results scientifically	С
To know how to review and evaluate learning.	С	To know how to write a conclusion to an experiment	С
POP Quiz.		End of unit quiz	

Key Vocabulary	Key Vocabulary				
Word	Meaning	Word	Meaning		
electricity	a form of energy that can build up in one place (static electricity) or flow to another (current electricity)	insulator	is a material or device that doesn't allow electricity to pass through it		
static electricity	is the build-up of an electrical charge on the surface of an object e.g hair and a balloon or lightning! It stays in one place at a time and doesn't flow or move to another area	components	the different objects that make up a circuit which must have a source of power such as a battery and a conductor such as wire. Bulbs, buzzers and motors are components that change electricity into light, sound and movement		
current electricity	is the electricity that makes appliances like lights, televisions and washing-machines work. In order for current electricity to work it needs a 'circuit'. If the circuit breaks the flow of electricity won't flow and the appliance won't work!	series circuits	has just one path for the electricity to flow around - it is generally only used when there is one component, such as one lightbulb or one buzzer e.g a torch		
circuit	is a complete path around which electricity can flow and also need a power source e.g a battery	parallel circuits	is a current divided into more than one separate paths e.g Christmas tree lights		
conductor	is a material or device that allows electricity to pass through it	volt (voltage)	is the name for the electric force that causes electrons to flow - it comes from a battery		



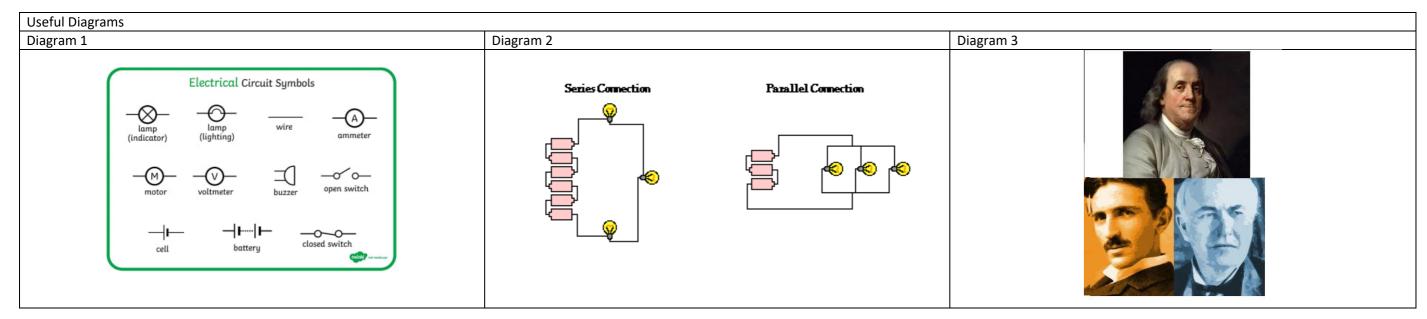
Useful Websites or Resources

https://www.bbc.co.uk/bitesize/topics/z2882hv/articles/zxv482p

Science Strand: Electricity Year: B Term: Spring

Learning Objectives - Knowledge			
C5 - Year 5/6	Key Driver		Key Drive
To know how to construct a series electrical circuit, identifying and naming its basic parts.	С	To know whether or not a bulb will light in a simple series circuit based on whether or not the bulb is part of a complete loop with a battery.	С
To know how to create circuit diagrams to record findings, using conventional symbols	С	To know the use of conductors & insulators in wires and use knowledge of conductors & insulators to construct wires.	С
To know and explain what happens if you change the number of bulbs.	С	To know whether or not a bulb will light in a simple parallel circuit based on whether or not the bulb is part of a complete loop with a battery.	С
To know and explain how to/what happens the brightness of a bulb or volume of a buzzer when you connect more than 1 battery or different voltages	С	To know about the life and work of one of the scientists responsible for the development of electricity e.g. Benjamin Franklin, Thomas Edison or Nikola Tesla	c, nw
To know that a switch opens and closes a circuit and the impact on a bulb/buzzer within a series circuit.			

Key Vocabulary	Key Vocabulary					
Word	Meaning	Word	Meaning			
circuit series circuit parallel circuit	A complete path around which electricity can flow and also need a power source e.g a battery A circuit which has just one path for the electricity to flow around A circuit divided into more than one separate paths for the current to flow around	voltage cell components	The 'push' that causes charges to move in a wire or other electrical conductor An electrical power supply (2 or more make a battery) The different objects that make up a circuit which must have a source of power such as a battery and a conductor such as wire. Bulbs, buzzers and motors are components that change electricity into light, sound			
conductor insulator	A material or device that allows electricity to pass through it A material or device that doesn't allow electricity to pass through it		and movement			



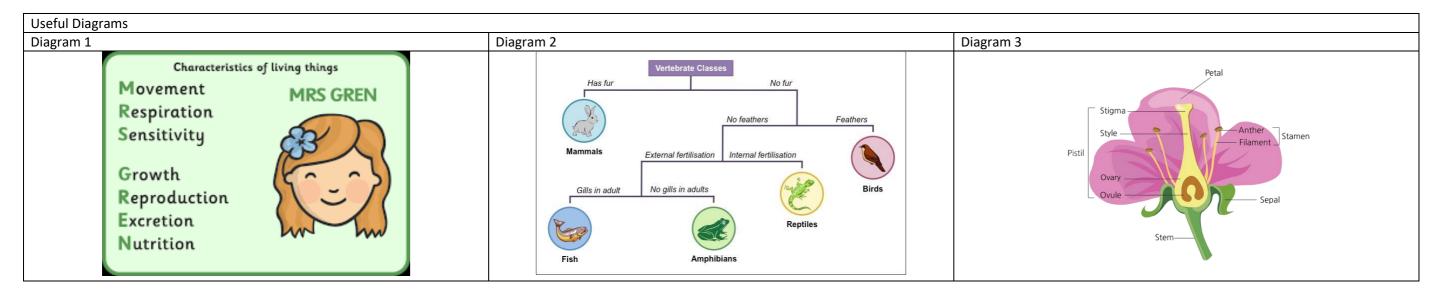
Useful Websites or Resources

https://www.learningcircuits.co.uk/learning.html (circuit simulations), https://www.livescience.com/46739-tesla-vs-edison-comparison.html, https://www.universetoday.com/82402/who-discovered-electricity/

Science Strand: Living Things & their Habitats Year: B Term: Summer

Learning Objectives - Knowledge	
C3 - Y3/4	Key Driver
To know the features and functions of living things (MRS GREN)	NW
To know that living things are grouped in different ways according to their characteristics	NW C
To know the features of main classification groups including animals, plants, fungi and bacteria, and some divisions within those groups (eg mammals/birds)	NW C
To know the definition of a habitat, and to know that animals and plants are adapted to survive in different habitats	NW C
To know basic requirements for life for plants and animals	NW C
To know a variety of simple food chains from a range of habitats	NW C
To know how to investigate a habitat within the school grounds e.g. playing field / pond	NW C
To know how to use a simple dichotomous key and make one to identify a group of 5 living things	NW C
To know the parts of a flower and the steps of plant reproduction: pollination, seed formation and seed dispersal	NW C
To know the importance of food supply for pollinating insects and its effect on food chains	NW C
To know, through investigation, the requirements for seed germination and growth	NW C
To know, through investigation, the way in which water is transported in plants	NW C

Key Vocabulary	
Word	Meaning
Classification	A way of grouping things (in this case, animals and plants) according to their features.
Habitat	A place where plants or animals live.
Food chain	A chain showing how energy is passed on from plants to animals, or from animals to other animals.
Carnivore	An animal that eats other animals
Herbivore	An animal that eats plants
Omnivore	An animal that eats animals or plants
Producer	A plant is called a producer because it captures the sun's energy and uses it to produce energy that can be passed on to animals.
Consumer	An animal is a consumer because it eats other living things (plants or other animals) and cannot make its own energy from the sun.
Pollination	Steps in the process of a plant making a seed to grow another plant of the same type.
Seed formation	Completes the process of reproduction in plants
Seed dispersal	The movement, spread or transport of seeds away from the parent plant
Germination	Usually the growth of a plant contained within a seed



Useful Websites or Resources

https://www.bbc.co.uk/bitesize/topics/zn22pv4

https://www.bbc.co.uk/bitesize/topics/zy66fg8
https://www.nhm.ac.uk/schools/teaching-resources/living-things-and-their-habitats-resources.html

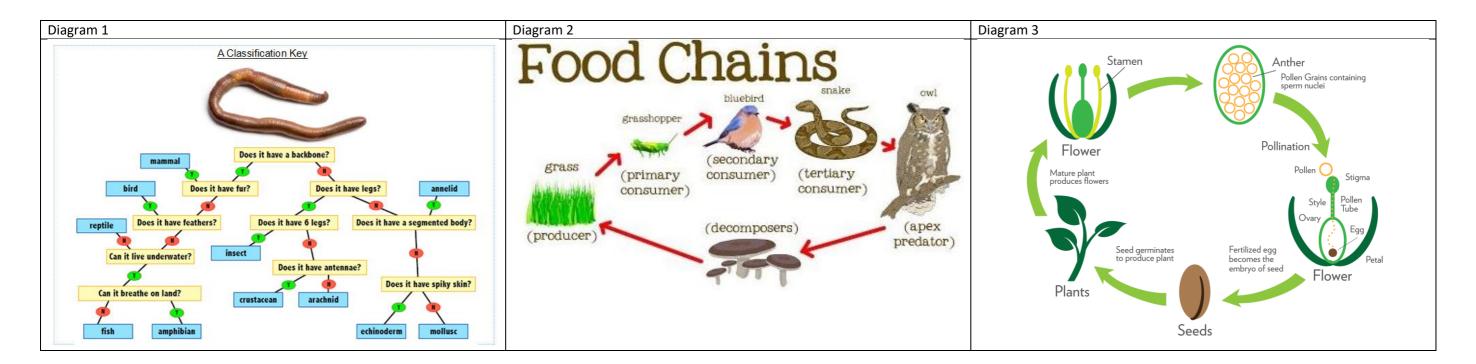
https://www.lifeinfreshwater.org.uk/

https://www.stem.org.uk/resources/elibrary/resource/25343/human-and-animal-habitats

Science Strand: Living Things & their Habitats Year: B Term: Summer

Learning Objectives - Knowledge	
C4 - Y4/5	Key Driver
Previous knowledge 'Habitats' quiz; to know a variety of habitats and explore why organisms live in different habitats.	C, NW
To know about organisms according to their characteristics.	C, NW
To know animals are classified into specific groups according to their characteristics.	C, NW
To be able to use a classification key to identify animals.	C, NW
To know a variety of British plants.	C, NW
To know about the human impact on habitats and environments & end of unit quiz.	C, NW
To use previous knowledge on Life Cycles quiz & to know about the differences in the life cycles of a mammal, an amphibian, an insect and a bird.	C, NW
To know about animals and plants in a range of habitats.	C, NW
To know about the relationships using food chains, for example; a predator and a prey.	C, NW
To know the process of reproduction in flowering plants.	C, NW
To know the process of asexual reproduction in plants.	C, NW
To know how different animals reproduce and grow; end of unit quiz.	C, NW

Key Vocabulary	
Word	Meaning
carnivores	An animal that only eats meat.
herbivores	Animals that only eat plants.
omnivores	Animals that eat, both, meat and plants.
predator	A person or animal that hunts a smaller/weaker animal.
prey	An animal being hunted, caught and eaten by another animal.
producer	An organism e.g. plant, which makes (produces) its own food (using light energy from the sun).
photosynthesis	The process by which plants make their own food.
primary consumers	An animal that eats 'primary producers' (also known as 'herbivores' - plant-eaters).
secondary consumers	Animals that eat 'primary consumers' e.g. carnivores and omnivores.
tertiary consumer	Carnivores that eat other carnivores are called tertiary consumers.
organisms	Any living things.
food chain	Describes the order in which organisms, or living things, depend on each other for food.
decomposer	Break something down into smaller or simpler parts, or be broken down in this way.
ecosystems	Is made up of all the living (e.g. animals & plants) and non-living (rocks, sand, water, soil) things in an area.
reproduction	The process by which a living organism creates a likeness of itself.
asexual	A process of mitosis.
mitosis	When a cell is replicated into exact copies of itself i.e. clones .
clone	The process of creating an identical copy of an original.
life cycle	The 'stages' a living thing goes through during its life.
habitat	The home of an animal or plant.
interdependence	How living and non-living things depend on one another - a mutual dependence between things.
adaptation	The evolutionary process where an organism becomes better suited to its habitat e.g. physical and behavioural changes in order to survive.



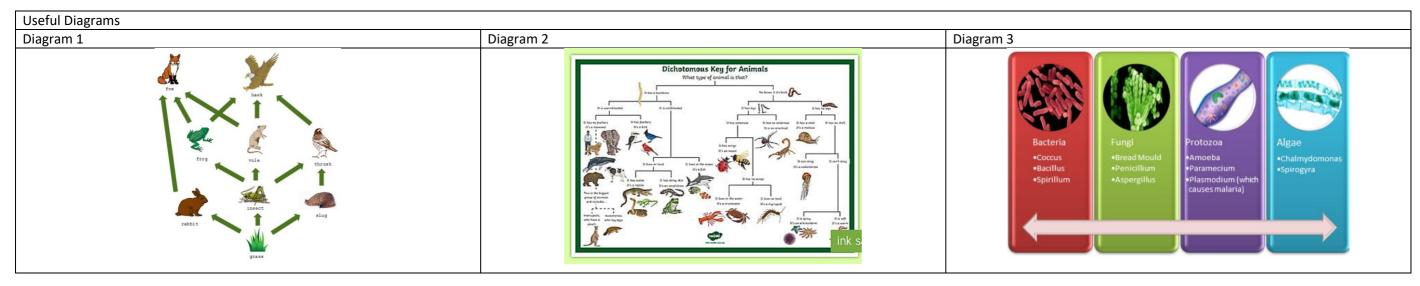
Useful Websites or Resources

https://www.bbc.co.uk/bitesize/clips/zjshfg8 https://www.bbc.co.uk/bitesize/topics/zbnnb9q

Science Strand: Living Things & their Habitats Year: B Term: Summer

Learning Objectives - Knowledge	
C5 - Y5/6	Key Driver
To know the main processes of plant reproduction	NW
To know the process of photosynthesis	NW
To know the features and function of the stigma, root and leaf	NW
To know the key features of living and non-living things in detail	NW
To know how to use keys based on external features to help identify and group living things systematically	NW C
To know how living things are classified into broad groups according to common observable characteristics and based on similarities and differences including micro-organisms, plants and animals	NW C
To know some reasons for classification of plants and animals based on specific characteristics	NW
To know the purpose & importance of classification	NW
To know why different organisms, including micro-organisms are found in different habitats	NW
To know about the impact of changes to environmental factors [for example, the availability of light or water]	NW
To know how to describe relationships using food chains, for example, predator and prey, in a range of habitats	NW C
To know how to develop and use complex keys and food chains	NW C
To know that living things have changed over time and that fossils provide information about living things that inhabited the earth millions of years ago	NW
To know about the 3 types of micro-organisms (Bacteria, Fungi, Virus) and the differences between them	NW
To know that micro-organisms feed, grow and reproduce like other organisms	NW
To know ways of preventing the spread of harmful micro-organisms	NW H

Key Vocabulary			
Word	Meaning	Consumer	A thing (animal) that eats something
Reproduction	The production of offspring	Predator	An animal that naturally preys on others
Photosynthesis	The process by which plants make their own food.	Prey	An animal that is hunted and killed by another for food
Stigma	A part of a flower that gets pollen from pollinators such as bees.	Key	A series of questions about the physical characteristic which will identify an unknown organism
Classification	The arrangement of animals and plants in groups according to their observed similarities	Bacteria	Microscopic living organisms, usually one-celled
Characteristics	A feature that serves to identify a plant or animal	Fungi	Any of a wide variety of organisms that reproduce by spores
Micro-organisms	A microscopic organism e.g. a virus, bacterium or fungus	Virus	A microscopic parasite that can infect living organisms and cause disease
Environmental	Relating to the natural world and the impact of human activity on its condition	Fossil	The remains or impression of a prehistoric plant or animal embedded in rock and preserved in petrified form
Food chain	A series of organisms each dependent on the next as a source of food		



Useful Websites or Resources

https://kidshealth.org/en/parents/germs.html (Different types of microorganism)
https://www.bbc.co.uk/teach/class-clips-video/science-ks2--ks3-food-chains-and-food-webs-in-animals/zn7g92p (Food webs)

https://www.stem.org.uk/resources/elibrary/resource/34255/grouping-and-classification-suitable-home-teaching (Classification)