Biological	EYFS	YR 1/2	YR 3/4	YR 5/6
S	• To know what a plant is	 To name these parts of a plant – root, stem, leaf, flower 	 To know that leaves makes food for the plant To know that stems support leaves transports water and nutrients up from roots To know roots anchor a plant to the ground and suck water up through tiny straw like hairs which absorb water 	
	 To notice similarities and differences between plants around them To know that different plants grow in different places e.g. garden and woodland 	 Know the names of some wild plants e.g. buttercup, dandelion Know where to find wild plants Know the names of some common garden plants e.g. tulip, rose Know where to find garden plants 	 To know that there are many varieties of plants 	
Plant	 To know what a plant needs to grow e.g. water, food and light To know what will happen to a plant if it doesn't have light, food or water 	 Know what plants need to stay healthy and why Know what happens when plants do not get what they need and why 	 To know plants have specific functions using MRSGREN To understand the process of photosynthesis To know that glucose is self-made food and is transported around the plant to help make new roots, stems, leaves and flowers. 	
	 To know that a plant comes from a seed To notice similarities and differences between a seed and a bulb 	 Understand the process of germination from seed to plant Understand how bulbs grow differently to seeds 	• To know that a flowers purpose is to attract insects to cause pollination and its job is to make seeds.	
		 Know what makes a tree including bark, trunk, crown Know the names of different types of trees Know that some trees are evergreen and some trees are deciduous 	• To know that plants excrete oxygen for life to exist on Earth	
gu	 To know what an animal is and name some 	 To know what an animal is and the groups of animals there are including mammals, fish, reptiles, amphibians, birds 	Humans are animals that eat plants and other animals	
mals (includin humans)	 To describe similarities and differences between animals e.g. a whale lives in water, an elephant lives on land 	 Describe the characteristics of each group of animals Be able to describe some similarities and difference between the groups of animals To describe an animal using terms vertebrate/invertebrate To know specific functions that an animal has (MRSGREN) 	 Vertebrates are animals with a back bone Invertebrates are animals without a back bone 	
Ani	• To name the 5 senses and say what they do	 To know a human is an animal and has five senses To know how a human uses its senses 		

 To know what a lifecycle is – frog/butterfly 	 To know that animals change through a life cycle and why 	 To know that there are male and female parts of a flower. To name the male parts stamen, anther, filament To name the female parts ovary, style, stigma, pastil To recognise that pollen is a fine powder made by the anther its genetic code to make a seed To know that insects are vital for pollination To know that pollination is the transfer of pollen to itself or to another flower from anther, stigma, style or ovary
 To know how humans, change from birth, in relation to themselves (birth to 5) 	To know how humans, change as they mature	

•	To know the similarities and
	difference in life cycles between a
	mammal and amphibian focusing on:
	sexual reproduction, classification
	(vertebrate/invertebrate), gestation,
	birth and how they grow/mature
•	To know the similarities and
	difference in life cycles between an
	insect and a bird focusing on: sexual
	reproduction, classification
	(vertebrate/invertebrate), gestation,
	birth and how they grow/mature
•	To compare and contrast the
	similarities and difference in life
	cycles between a mammal,
	amphibian, insect and bird focusing
	on: sexual reproduction, classification
	(vertebrate/invertebrate), gestation,
	birth and how they grow/mature
•	To understand that all living species
	make copies of themselves to ensure
	the survival of the species.
•	To understand that sexual
	reproduction involves male and
	female
•	Sexual reproduction ensures variation
	within the species
•	Asexual reproduction is without male
	+ female
•	Asexual reproduction makes an
	identical copy of the parent (animal or
	plant)
•	In plants, male reproduction cells are
	called pollen
•	In plants, female reproduction cells
	are called ovule
•	In plants, seeds are produced,
	germinate and create seedlings
•	In plants, understand that bulbs and
	runners are types of asexual
	reproduction
•	To understand that the individual
	stages that make up the human
	timeline
•	To know that adolescence is a stage of
	change from child to adult
•	To understand when puberty starts in
	each gender
•	Recognise some physical changes of
	puberty and how they are similar and
	different between the genders
•	Understand the importance of the
	puberty process

			-
 To know what animals, eat To know what animals, need to stay alive e.g. water, food + air 	 To know what animals need to do to stay alive and why To know the different types of food humans act and how they been up 	 Carbohydrates gives us energy they include, bread cereals vegetables sugar and should be consumed more Fats provides energy and helps perves 	
	 humans eat and how they keep us healthy To understand what a food chain is To know why animals and plants need each other using key vocabulary prey/predator, consumers/producer To know what animals eat, which type of food group they eat and why 	 Fats provides energy and helps nerves and the brain. It helps to absorb vitamins but should be consumed less Protein helps us to grow, this includes meat and fish eggs and dairy Vitamins minerals fibre helps keeps us healthy. Such as fruit and vegetables which should be consumed as part of your 5 a-day Water blood, muscles and organs need water to work. Water is a large component as muscles are 79% water The food pyramid gives a guide on how these categories should be consumed. You should eat more of the lower layers and eat less of the top layers tongue moves food taste pushes bolus into the oesophagus saliva liquid in mouth enzymes break food down taste food torn crushed small pieces = bolus oesophagus teeth and saliva prepare the food for digestion 	

٠	Length of human gestation period is
	40weeks
٠	Identify the length of an animal's
	gestation period (e.g. elephant = 95
	weeks)
٠	Compare human and animal gestation
	periods
٠	Understand and compare life
	expectancy of a human vs animal (e.g.
	human 79years, butterfly 2weeks)
•	To know kidneys are located either
	side of the spine and that kidneys
•	To know that blood ontors the kidnows
•	and filters out waste substances
	(toxins) that the body does not need
•	To recognise that toxins must be
	dissolved in liquid to be excreted so
	they are transformed into urine using
	water
٠	To recognise that dehydration could
	be thirst, dry mouth, headache,
	decreased urination as water makes
	up 75% of our body.
•	Plasma is mainly water and a liquid
	waste is carried
•	To know that red blood cells carry
•	oxygen to cells in the body. It takes
	oxygen and exchanges it for carbon
	dioxide
٠	To understand white blood cells
	defend us and attack threats that
	could make us ill
•	To recognise platelets clot together to
	stop blood leaking out when wounds
	OCCUF
•	need to feed, grow and multiply
	To know that cells feed by getting
•	nutrients through cell walls
•	To understand important nutrients
	and early abuduated fate mustains

- are carbohydrates, fats, proteins, vitamins, minerals, water and fibre
- To know the circulatory system is the heart, lungs, arteries, veins and capillaries
- To know the right side of the heart receives blood from the body and sends it to the lungs

	 To know what humans need to do to stay healthy e.g. healthy eating, exercise, brushing teeth and hand washing 	 To understand why humans need to exercise 	 Skeleton supports and protects organs and blood travels through bones. We control our skeletal muscles- voluntary movement We don't control the muscles of our heart, intestines or our bladder- involuntary movement Biceps and triceps work in opposition we contract our biceps when we bend our arm and contract our triceps when we straighten our arm
			 Animals including humans have incisor/canines/pre-molars/molars and what they do Children have 20 teeth and adults have 32 teeth Herbivores have incisors and lots of molars Carnivores have incisors, canniness and a few molars To know that teeth cut, rip, grind To know that enzymes break food down using saliva liquid in the mouth To understand teeth and saliva prepare food for digestion Food is torn, crushed into small pieces and sent down the oesophagus in a bolus
Living Things & Their Habitats	 To describe similarities and differences between living things. 	 To explain using MRS GREN what makes something alive/living To know which things have never been alive To know what living things (animals, humans, plants) have in common 	 Characteristic of living things - MRS GREN Movement Respiration Sensitivity Growth Reproduction Excretion Nutrition Biodiversity- enormous variety of life on earth Organism is a single living thing. Vertebrates means having a backbone, sometimes called a spine. Categories of vertebrates include; fish, amphibian; mammal; reptiles; birds Invertebrates means without backbone. Categories of invertebrates include; insects; annelids; arachnids; molluscs. Plants are classified as flowering and non-flowering. non-flowering plants reproduce using spores and seed cones

- To know the left side of the heart receives blood from the lungs and pumps it away from the heart
- To understand that healthy means eating the right foods to keep our body functioning effectively

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groups under headings of
gdoms, Phylum and Class

- Vertebrates all have a backbone
- Vertebrates can be grouped in Amphibians, Birds, Fish, Mammals and Reptiles
- Invertebrates have no backbone
- Invertebrates can be grouped in Annelida, Mollusc, Arachnida, Insects, Sponges, Starfish, Sea Urchins, Jellyfish and Flatworms
- Understand that Earth's timeline is very, very long – First life, Fish, Land Plants, Amphibians, Reptiles, Dinosaurs, Mammals, Birds and then Modern humans
- Variation is differences within the same species

		 Carl Linnaeus invented the way to classify living things in 1737 through taxonomy. Linnaeus created a taxonomy a hierarchy of biological classification – here are the top three layers Kingdom animal, plant, fungi Phylum invertebrates, vertebrates Class mammal, reptile, fish
 To know that animals live in different places. To describe habitats and animals in their local environment. 	 To know what a habitat is including microhabitat, woodland habitat To explain some different types of habitats To know the habitats and animals that live in their local environment 	 Habitats are a natural place where an organism lives Environment conditions and surroundings that affect survival and growth of living things Ecosystems are how living things interact with their habitat and environment. The role of an organism in an ecosystem is called their niche. A garden spider hunts for prey amongst plants.

•	Diversity is differences between
	species

• Variation is not diversity and there is no variation between species

• Charles Darwin theorised that species

- changed over time
 Natural Selection is where living things with inherited characteristics, that favour survival, leave more offspring. The favourable characteristics increase over generations
- Survival of the fitter is where if a species could not adapt or change, this led to extinction.

Biological Scientific vocabulary							
	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
		bud	wither	adapt	classification	development	characteristic
		trunk	dormant	essential	environment	divine	interdependence
		branch	mature	glucose	interdependence	unique	specific
		back	bulb	transport	interact	generation	primitive
		seed	anchor	variety	beneficial	mature	hierarchy
		wild	sustain	vital	hierarchy	equipped	
							cell
		blood	thrive	minerals	expel	deduce	chamber
		senses	depend	skeleton	compact	process	system
σ		voung	producer	skull	digestion	re-form	vessel
r 2 nce		feathers	consume	voluntary	acid	transform	clot
Tie Iva		fur	prev	involuntary	stomach	adolescence	
Ac		scales	predator	nerves	intestines	contrast	filter
			picuatoi				expel
			healthy				substance
			survive				regulate
			overcise				transform
			heart				
			lungs				adaptation
			iungs				acquire
			muscles				theory
							generation
		nutrients	oxygen	transpiration	vertebrate	adolescence	fungus
		stem	respiration	stoma	invertebrate	puberty	arthropod
		deciduous	nutrition	pollination	biotic	gestation	taxonomy
		evergreen	sensitivity	stamen	ecosystem	embryo	kingdom
			reproduction	nistil	species	foetus	genus
			excretion	nhotosynthesis	niche	womb	genus
			hygiene	photosynthesis	inclic		plasma
		mammal	nygiene				platelet
		amphihian	lanva	hicons	incisor	covual	artery
0		rontilo		tricops	capipo	motomorphosis	capillary
cific		herbiyere	pupa	unceps	canine	ineuhoto	vein
5 be		nerbivore	vertebrates	vertebrate	molar	hischemical	Venticle
Tier Sct 3		carnivore	metamorphosis	vitamins	enzyme	fortilization	kidney
. lbje				proteins	saliva	Tertilisation	bladder
SL			germination	carbonydrates	peristaisis		urine
			perenniai				excretion
			carbon dioxide				toxin
			glucose				nutrent
			clone				evolve
							survival
							species
							clone
							inherit
							105511

Physical	EYFS	KS1	Y3&4	Y5&6
Seasons and weather	 Know that there are four seasons and name them. Can describe something specific for each season eg weather changes, what they do in each season Can describe the weather using appropriate language eg rain, sun, cloudy, windy, snow, storm, fog 	 Know that there are four seasons and they are in a cycle Know that each season is different and why Know what the weather is like in each season and why 		 Seasons are determined by the Earths tilt When we tilt towards the sun, the sun appears higher in the sky When we are titled away from the sun, the sun appears lower in the sky
r System	 To be able to differentiate between day and night. To describe what they do in the daytime and what they do at night time. 	Know that the Earth spins so that day becomes night		 Each planet spins on an axis The earth turns one full rotation in 24 hours Earth spins anti-clockwise Understand and describe the different stages of a the suns position – sunrise, midday, sunset and night
The Solar	•			 Understand that planets in our solar system orbit the sun Name and understand key characteristics about the 8 planets of the solar system (e.g. size, composition and orbit length)
Earth & T				 To describe how our view of the moon changes in a lunar month The moon doesn't change shape Our view of the moon changes as it orbits Earth The stages of the lunar cycle including waxing, waning, crescent, gibbous Give the order for the lunar cycle
			 Identify sources of light including sun, candle, torch. 	
Light			• We see when light reflects off a surface and enters our eyes.	 Light travels in straight lines When light reflects from an object, it continues to travel in a straight line but in a new direction The angle that light hits the mirror (angle of incidence) is the same as it leaves the mirror (angle of reflection)
			 Shadow is a dark shape formed when an opaque object blocks a light source. Opaque means an object that light cannot pass through. Transparent means light can pass through it. 	 Shadows are formed in the absence of light and have the same shape as the object that cast them

		 Translucent means some light can travel through. The size of a shadow is changed by variables including distance of light source to object.
		 Mains electricity is supplied to a building by wires.
		 A battery is portable source of stored energy.
Electricity		 Simple components of a circuit are; battery (cell), bulb (lamp), motor, switch, buzzer and wire.
Forces and magnets		 A contact force occurs when two objects physically touch such as a boot + football = contact force Contact forces push or pull Resistance is a force that slows down an object that is moving. forces act in opposite directions. Different materials have an effect on how an object moves. A force meter measures resistance friction in Newtons (N).

•	White light can be split into a visible
•	spectrum Refraction is when the water is denser
	the air so light slows down when it
	enters the water and changes
•	Electricity is a form of energy
•	Atom contain electrons
•	The nucleus contains protons and
	neutrons
•	The power source gives energy to
	electrons which can make them move
•	around a circuit (current)
•	Insulators do not allow electrons to flow
•	A series circuit contains a battery and a
•	bulb Draw a sorios sirsuit using diagrams
•	such as battery, bulb, motor, switch and
	buzzer
•	An open circuit has no flow
•	A closed circuit has a flow of electrons
	as they repel against each other
•	around an electrical circuit
•	Friction is a force that always opposes
	the direction of an objects movement
٠	Understand the role of friction and
	when it is helpful or unhelpful (e.g.
	chain on bike getting stuck)
•	Air resistance a type of friction that
	opposes the movement of an object
	through the air
•	Understand that air resistance is
•	Water resistance is a push that occurs
	when an object moves through the
	water Upthrust is a force that acts
	upwards on objects in liquid or gas
•	The shape of the object changes the
	amount of water that it displaces

		 A non-contact force is A force that acts on an object without touching it. Gravity is a non-contact force that pulls things to the ground. Magnetism non-contact force and is the invisible push or pull that works between some materials. Magnets have an invisible force field that repels or attracts certain materials- North and South. Ring, bar or horseshoe magnets all have north and south poles Any material made of iron or steel are magnetic as magnetic field will only act on materials made of iron or steel Not all metals are magnetic aluminium and copper do not contain iron or steel.
		Magnetic force can work through water
Sound		 sound is a very quick vibration travels as waves sound waves can ONLY travel through a medium such as: • gas (air) • liquid (water) • solid (wood) sound travels as vibrations through anything with particles sound you can hear see vibrations feel vibrations Vibrating sound waves move through the medium of a gas, liquid or solid. sounds get fainter energy spreads out as it travels gets fainter over larger areas pitch how high or low sounds are measured in Hertz (Hz) like 'centimetres' for sound means the number of sound waves that are produced in 1 second 3 things that affect pitch • size • length • tightness of the thing that is vibrating

•	More liquid or gas displaced = more
	upthrust

- All levers have load, arm or rod, pivot and fulcrum
- Levers are force multipliers that give us a mechanical advantage
- A pulley is a mechanism to help move heavy things
- A pulley has a grooved wheel, axle and rope
- Understand how a pulley helps move heavy things
- Recognise that gears give us a mechanical advantage
- Notice and observe gears on a particular object e.g bicycle
- Gears help to increase or decrease effort needed to make an object move

Physical Scientific vocabulary							
	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Tier 2 Advanced	EYFS	dawn dusk mild rotate soaked weather		consequence contact force attract north south absence cast impenetrable reflect shadow source	associate identify portable effect appliance series	opposite reaction advantage displace weight mass luminous phenomenon attraction approximately relative apparent	impurity emit absorb constituent filter artificial component consequence systematic represent source generate
Tier 3 Subject specific		month season spring summer autumn winter		magnet resistance friction repel pale magnetic field constant dependent independent illuminate translucent variable	component electrical insulator electrical conductor circuit hypothesis variable	pulley gear pivot fulcrum lever up-thrust orbit axis crescent gravitational waxing waning	refraction incidence spectrum prism pigment lux proton neutron electron terminal series voltage

Physical	EYFS	KS1	Y3&4
	 Recognise things are made from different materials. 	 Name different types of materials including wood, metal and paper. Identify different materials in a school environment. 	 Rocks are natural, not made by humans.
	 Learn some correct language to describe materials. E.g. rough, smooth, metal, wood, waterproof 	 Describe the properties of different materials using appropriate vocabulary. 	 Rocks are in three categories; sedimentary; metamorphic; igneous.
operties	 Use play to explore and investigate materials and their properties. 	 Explain which material is best to use for certain things. Select the correct material for its use and why. Explain why more than one material is used to make certain things. 	•
Materials and their pro	 Explore what happens when they manipulate a material and describe what happens. E.g. squashing playdoh, scrunching paper. 	 Know what happens to materials when you bend, squash, twist or stretch them. Know which materials are waterproof 	 Sedimentary rocks are formed through deposits of tiny grains of pebbles and are squashed together over millions of years. Metamorphic rocks changed because they have been squashed and heated. Igneous and sedimentary rocks can change into metamorphic rocks. Igneous and sedimentary rocks are changed and reformed. Calcium carbonate in chalk and limestone will react to acids to produce carbon dioxide. Soil is made up of tiny pieces of broken rocks, decaying materials and microorganisms. Materials are not permanently solid they can change state, depending on the temperature.
		 Index which materials are water proof and which are not. Understand what absorbent means. Understand what waterproofing is. 	
			 Fossils are the remains of prehistoric life. (Covered quickly + body not broken up)

	Y5&6
•	Know some of the properties of materials: conductor, insulator, hardness, solubility, transparency and magnetism. Sort materials according to these properties.
•	Understand how we use materials based on their properties. E.g. Copper in pots ensures heating of food.
•	

		 Matter is something that takes up space, despite its size or composition. E.g. ice, water, air anything that exists is called matter. Matter has mass and volume. State is one of three distinct ways matter exists; solid, liquid or gas. Solid can't flow/ has a fixed volume/ particle are very close together.
tates of Matte		 Liquid takes the shape of the container/ can flow/ has a fixed volume/ particle very close but not fixed.
Š		 Liquids can change states through evaporation or freezing. Gases can change state through condensation.
		•

- Know that there are various types of mixtures (Liquid + Salt, Solid + Solid and Liquid + Liquid).
- Understand the states of matter; solid, liquid and gas.
- A solution is materials that combined e.g. salt and water.
- Salt is a solute because it is soluble.
- Dissolving in a solution is a physical change and understand how to reverse it.
- Melting solid to a liquid is physical change and understand how to reverse it.
- Freezing liquids into a solid is a physical change and understand how to reverse it.
- Evaporating liquid into vapour is a physical change and understand how to reverse it.
- Understand that an irreversible change is a chemical reaction- cannot get it back.

Chemical Scientific vocabulary							
	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
		absorb	brittle	cemented	permanent	property	
		rough	artificial	compacted	particle	particle	
		smooth	extracted	decay	solid	separate	
		waterproof	fabric	prehistoric	liguid	combine	
		metal	manufactured	soil	gas	recover	
		plastic	natural	transform	vapour	comparative	
		process (
2 ced							
ier /an							
T							
	_						
		materials	ceramic	fossil	evaporate	atom	
		prospectus	durable	igneous	condense	molecule	
		flexible	inflexible	magma	melt	chemical (changes)	
		transparent	reflective	metamorphic	matter	physical (changes)	
		opaque	rigid	minerals	state	reversible	
			translucent	sedimentary	volume	reaction	
fic							
eci							
er 3 t sp							
jec							
gub							
0,							