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| **Class 1 Year A** |
| Term | NC objectives | Knowledge |
| 1 | **Animals Including Humans (Y1)**Sc1/2.2d identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. | Big ideas B2, B3Know that feet, legs, arms, hands, torso, head, skin, ears, eyes, nose, mouth and tongue are part so the body and identify themKnow that eyes are associated with sight, ears with sound, nose with smell, tongue with taste and skin with touch. |
| 2 | **Seasonal Changes (Y1):** AutumnSc1/4.1a observe changes across the 4 seasonsSc1/4.1b observe and describe weather associated with the seasons and how day length varies. | Big Ideas E2New learning and vocabulary**energy, freezing, melting, orbit, reflection,** Sun, clouds, wind, snow, ice, spring, summer, autumn, winterKnow that days are longer in the summer and shorter in winterKnow that weather changes through the year, getting hotter in the summer and colder in the winterKnow that the winter is likely to bring ice on the ground when water freezes due to the coldKnow that the Earth orbits the Sun with one orbit constituting a year of 365/366 days(NB: the Sun and the Earth are capitalised when being discussed in an astronomical context.) |
| 3 | **Seasonal Changes**: Winter |
| 4 | **Everyday Materials (Y1)**Sc1/3.1a distinguish between an object and the material from which it is madeSc1/3.1b identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rockSc1/3.1c describe the simple physical properties of a variety of everyday materialsSc1/3.1d compare and group together a variety of everyday materials on the basis of their simple physical properties | Big Ideas C1, C2New learning and vocabulary**absorption, matter, property,** wood, plastic, glass, metal, water, rockKnow from observation how to distinguish between materials made of wood, plastic, glass, metal, water, rockKnow that an object is made from/of a materialKnow that materials can be hard, soft, strong, weak, absorbent, heavy, light, solid and runny, smooth and rough; these descriptions denote the properties of a materialKnow that matter (stuff) is made from tiny building blocks |
| 5 | **Animals (Y1)** Sc1/2.2a identify and name a variety of common animals including, fish, amphibians, reptiles, birds and mammalsSc1/2.2b identify and name a variety of common animals that are carnivores, herbivores and omnivoresSc1/2.2c describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) | Big Idea B2, B3New learning and vocabulary**energy, growth, habitat**, fish, amphibian, reptile, bird, mammal, offspring, carnivore, herbivore, omnivore, vertebrate, skeleton, organKnow that a trout is an example of fish, a frog is an example of an amphibian; a lizard is an example of a reptile; a robin is an example of a bird; a rabbit and a human are examples of a mammalKnow that herbivorous animals eats plants; a carnivorous animal eats other animals; omnivorous animals eat both animals and plantsKnow that a cat is an example of a carnivore; that a rabbit is an example of a herbivore; know that many humans are examples of omnivores (though not vegetarians) Know that fish, amphibians, reptiles, birds and mammals are similar in that they have internal skeletons and organs; these are known as vertebrates, which means they are animals that have a backboneKnow that fish are different in having gills so that they can breathe underwater **and** scaly skinKnow that amphibians are different in that they begin their lives with gills but then develop lungs and breath on landKnow that reptiles are different in that they breath air **and** have scaly skinKnow that birds are different to other animals in that they have feathers and wingsKnow that mammals are different to other animals in that they have fur/hair **and** they feed milk to their young |
| 6 | **Living Things and their Habitats (Y2)** Sc2/2.1a explore and compare the differences between things that are living, dead, and things that have never been aliveSc2/2.1b identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each otherSc2/2.1c identify and name a variety of plants and animals in their habitats, including microhabitatsSc2/2.1d describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. | Big idea(s): **B1, B3**Revision**habitat**, **growth, absorption**, deciduous, evergreen, flower, plant, tree, structure, roots, stem, leaf, trunk, flower, herbivore, carnivore, omnivoreDandelions, rose bushes, grass, ash trees, birch trees and conifers trees are examples of plants.Trees can be deciduous or evergreen.A trout is an example of fish, a frog is an example of an amphibian; a lizard is an example of a reptile; a robin is an example of a bird; a rabbit and a human are examples of a mammalHerbivorous animals eats plants; a carnivorous animal eats other animals; omnivorous animals eat both animals and plantsNew learning and vocabulary**birth, decay, energy,** microhabitat, dead, life cycle, food chain, source, nutrients, reproduction, consumption, environmentKnow that living things move, grow, consume nutrients and reproduce; that dead things used to do these things, but no longer do; and that things that never lived have never done these things.Know that polar bears are an example of an animal adapted to its environment – thick fur for warmth and oily paw pads to ensure that they don’t freeze to the ice.Know that sharks are another example – smooth skin and streamlined shape for quick swimming; and gills for breathing underwaterKnow that cacti are an example of a plant adapted to its environment – thick skin keeps a store of water safe; sharp spikes keep animals from stealing the waterKnow that pine trees have thick bark and pine cones to protect against cold wintersKnow that woodlice live under logs – an example of a microhabitat - as they need somewhere dark and damp so that they do not dry outKnow that frogs can live in ponds – an example of a microhabitat - as they water in which to lay their eggs (frogspawn)Know that plants absorb energy from the Sun; that this energy is consumed by herbivorous animals; and that carnivorous animals eat other animals.Know that the arrows on a food chain show the direction that the energy travels. |

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| **Class 2 - Year A** |
| Term | NC objectives | Knowledge |
| 1 | **Forces**Sc3/4.2a compare how things move on different surfacesSc3/4.2b notice that some forces need contact between 2 objects, but magnetic forces can act at a distanceSc3/4.2c observe how magnets attract or repel each other and attract some materials and not othersSc3/4.2d compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materialsSc3/4.2e describe magnets as having 2 polesSc3/4.2f predict whether 2 magnets will attract or repel each other, depending on which poles are facing. | Big idea(s): **P2**Revision**energy, matter, property,**  **wave,** metal, material, surface, friction, force, stretch, squash, rough, smoothMetal is a material from which objects can be made. As objects move across a surface there is friction when they rub against each other and that sometimes this friction is larger or smaller. Applying forces to objects can change their shape.Know that the roughness of a material is an example of a propertyNew learning and vocabularymagnetic, non-magnetic, pole, north, south, sliding friction, static friction, elastic, resist, attraction, repulsionKnow that a force can be thought of as a push or a pullKnow that there are three types of contact force: impact forces (when two surfaces collide), frictional forces (when two surfaces are already in contact) and strain forces (when an elastic material is stretched or squashed).Know that objects move differently on rough and smooth surfaces; objects resist movement more on rough surfaces because there is higher friction as the object movesKnow that there are also non-contact forces that can act between objects without them touching and that magnetism is an example of a non-contact forceKnow that magnets have two poles called north and southKnow that like poles (south-south and north-north) of two magnets repel each other and that opposite poles of two magnets (north-south) attract each otherKnow that there is a magnetic field around a magnet which is strongest at each pole Know that some materials are magnetic, meaning that they are attracted to a magnet, while other materials are non-magnetic |
| 2 | **Living things and their habitats*** Sc4/2.1a recognise that living things can be grouped in a variety of ways
* Sc4/2.1b explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
* Sc4/2.1c recognise that environments can change and that this can sometimes pose dangers to living things.
 | Big idea(s): **B2, B3**Revision**decay, energy, habitat**, **freezing** plant, structure, herbivore, carnivore, omnivore, microhabitat, environment, reproduction, vertebrateLiving things move, grow, consume nutrients and reproduce; that dead things used to do these things, but no longer do; and that things that never lived have never done these things.Polar bears are an example of an animal adapted to its environment – thick fur for warmth and oily paw pads to ensure that they don’t freeze to the ice.A trout is an example of fish, a frog is an example of an amphibian; a lizard is an example of a reptile; a robin is an example of a bird; a rabbit and a human are examples of a mammalHerbivorous animals eats plants; a carnivorous animal eats other animals; omnivorous animals eat both animals and plantsA cat is an example of a carnivore; that a rabbit is an example of a herbivore; know that many humans are examples of omnivores (though not vegetarians) Fish, amphibians, reptiles, birds and mammals are similar in that they have internal skeletons and organs; these are known as vertebrates, which means they are animals that have a backboneFish are different in having gills so that they can breathe underwater **and** have scaly skinAmphibians are different in that they begin their lives with gills but then develop lungs and breath on landReptiles are different in that they breath air **and** have scaly skinBirds are different to other animals in that they have feathers and wingsMammals are different to other animals in that they have fur/hair **and** they feed milk to their youngKnow a rose bush, grass, dandelion by sightKnow an ash tree, birch tree and conifer tree by sightNew learning and vocabularykingdom, classification key, species, fungi, bacteria, climate change, characteristics, offspring, extinction, pollutionKnow that animals can be grouped based on their physical characteristics (e.g. vertebrates and invertebrates) and based on their behavior (e.g. herbivores, carnivores and omnivores)Know that living things are divided into kingdoms: the animal kingdom, plants, fungi, bacteria, and single-celled organismsKnow that a species is a group of living things have many similarities that can reproduce together produce offspringKnow that a classification key uses questions to sort and identify different living things Know how to use a classification key to identify living things Know how to create a classification key to sort plants on the school premisesKnow that changes to the environment can make it more difficult for animals to survive and reproduce; in extreme cases this leads to extinction, where an entire species diesKnow that human activity – such as climate change caused by pollution - can change the environment for many living things, endangering their existenceKnow that the polar bear is a famous example of climate change endangering the existence of a species; as the climate changes and gets warmer, the sea ice on which polar bears live reduces in amount making it harder for them to survive and reproduce |
| 3 |
| 4 | Sc3/3.1a compare and group together different kinds of rocks on the basis of their appearance and simple physical propertiesSc3/3.1b describe in simple terms how fossils are formed when things that have lived are trapped within rockSc3/3.1c recognise that soils are made from rocks and organic matter. | Big idea(s): **C1, C2, C3, E3**Revision**decay, matter**, **melting**, material, Rock is a type of solid material.New learning and vocabulary**extinction,** igneous, metamorphic, sedimentary, paleontologist, weathering, molten rock, crust, tectonic plates, scavengers, fossilKnow that there are three kinds of rocks: igneous, sedimentary and metamorphicKnow that the Earth has a solid crust made up of tectonic plates with molten rock beneath Know that granite and basalt are types of igneous rock and that igneous rocks form from molten rock below the Earth’s crustKnow that limestone and sandstone are types of sedimentary rock which form when small, weathered fragments of rock or shell settle and stick together, often in layersKnow that marble and slate are types of metamorphic rock which form when rocks in Earth’s crust get squashed and heated in processes such as when tectonic plates press against each otherKnow that fossils form when a plant or animal dies and is quickly covered with silt or mud so that it cannot be rotted by microbes or eaten by scavenging animals; in time layers of sediment build, squashing the mud and turning it to stone around the dead plant or animal; the materials in the body are replaced by minerals that flow in water through the rock, leaving a rock in the shape of the animal or plant that was once thereKnow that soil is made from tiny particles of rock broken down by the action of weather (weathering) |
| 5 | Sc4/2.2a describe the simple functions of the basic parts of the digestive system in humansSc4/2.2b identify the different types of teeth in humans and their simple functionsSc4/2.2c construct and interpret a variety of food chains, identifying producers, predators and prey. | Big idea(s): **B3**Revision**absorption, component, energy,** nutrients, consumption, hygiene, herbivore, carnivore, organProteins are good for growth, carbohydrates for energy and fruit and vegetables provide vitamins and minerals which help keep us healthy (e.g. calcium for healthy bones and teeth)A food group can cause ill health, such as tooth decay due to excess sugarLiving things move, grow, consume nutrients and reproducePlants absorb energy from the Sun; that this energy is consumed by herbivorous animals; and that carnivorous animals eat other animals.New learning and vocabulary**dissolving,** digestion, excretion, peristalsis, anus, duodenum, small intestine, large intestine, stomach, rectum, esophagus, tongue, saliva, acid, bile, enzymes, incisors, canines, molars, predator, prey, producer, consumer, primary, secondary, tertiaryKnow that food passes through the body with the nutrients being extracted and the waste products excreted, and that this process is called digestionKnow that the process of digestion involves breaking complex foodstuffs into simpler building blocks that can be absorbed by the bodyKnow that the process of digestion begins with food being chewed in the mouth by the teeth and saliva addedKnow that a human has three types of teeth – incisors, canines and molars – and that these each perform different functionsKnow that incisors slice food, canines tear food (especially meat) and that molars grind foodKnow that children develop an initial set of teeth which are gradually replaced between the ages of 6 and 12Know that food is squeezed down the esophagus towards the stomach in a wave-like action called peristalsis Know that the stomach releases acid and enzymes to continue breaking down the food; the stomach is an organ; an organ is a part of living thing that is self-contained and has a specific important jobKnow that further enzymes and bile break down the food further as it moves through the duodenum towards the small intestineKnow that the small intestine adds more enzymes and then absorbs the nutrientsKnow that the large intestine absorbs water from the undigested foodKnow that undigested food is stored in the rectum before being excreted through a muscle called the anusKnow that a food chain traces the path of energy through a habitatKnow that all energy for a food chain initially comes from the Sun which is absorbed and turned into energy by plants which are called producersKnow that consumers take in energy by eating Know that an animal that is eaten by another is called prey, and that an animal that eats other animals is called a predator Know that the first consumer in a food chain is called a primary consumer, the second is called a secondary consumer and above it is called a tertiary consumer Know that the arrows in a food chain show the direction that energy is travelling through a habitat |
| 6 | Sc3/2.1a identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowersSc3/2.1b explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plantSc3/2.1c investigate the way in which water is transported within plantsSc3/2.1d explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. | Big idea(s): **B1, B2, B3**Revision**component, energy, growth, habitat, reproduction, decay,** offspring, adult, bulb, seed, survival, temperature,deciduous, evergreen, flower, plant, tree, structure, roots, stem, leaf, trunk, flower, Evergreen trees maintain their leaves throughout the year and that deciduous trees shed their leaves in autumnFlowering plants consist of roots, stem, leaves and flowers, and that a tree’s stem is called a trunkLiving things move, grow, consume nutrients and reproduce; that dead things used to do these things, but no longer do; and that things that never lived have never done these things.Plants absorb energy from the Sun; that this energy is consumed by herbivorous animals; and that carnivorous animals eat other animals.Seeds and bulbs need to be buried underground in soil and that they will grow into adult plants under the right conditions (water, warmth)The arrows on a food chain show the direction that the energy travels.Plants that are deprived of light, food or air will not grow and will die.New learning and vocabulary**extinction,** fruit, nectar, anther, ovary, ovule, petal, pollen, stigma, style, stamen, function, exchange, dispersal, fertilization, Know that different parts of plants have one or more functions (jobs)Know that the roots collect water and minerals from the soil, and hold the plant firmly in the groundKnow that the stem holds up the leaves so that they can gather light to make food and holds up the flowers so that they can receive pollen and disperse their fruits; know that the stem also transports water and minerals from the roots to the other parts of the plantKnow that the leaves make food by trapping light and using its energy to turn carbon dioxide and water into carbohydratesKnow that the function of a flower is reproduction, where flowers of the same kind exchange pollen – made by an anther – in a process called fertilisation, and a structure in the flower’s ovary called an ovule becomes a seed; the ovary then becomes a fruit which helps the seed leave the plant in a process called dispersal  |

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| **Class 3 - Year A** |
| Term | NC objectives | Knowledge |
| 1 | **Forces (Y5)**Sc5/4.2a explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling objectSc5/4.2b identify the effects of air resistance, water resistance and friction, that act between moving surfacesSc5/4.2c recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect | Big idea(s): **P1, P2**Revision**energy, matter, particle,** surface, friction, force, stretch, squash, rotation, rough, smooth, sliding friction, static frictionA force can be thought of as a push or a pullAs objects move across a surface there is friction when they rub against each other and that sometimes this friction is larger or smaller. Applying forces to objects can change their shape.Know that the roughness of a material is an example of a propertyThere are three types of contact force: impact forces (when two surfaces collide), frictional forces (when two surfaces are already in contact) and strain forces (when an elastic material is stretched or squashed).Objects move differently on rough and smooth surfaces; objects resist movement more on rough surfaces because there is higher friction as the object movesNew learning and vocabularyacceleration, air resistance, buoyancy, effort, force meter, fulcrum, gravity, load, mass, mesh, Newton, pivot, rigid, streamlined, terminal velocity, unsupported, water resistance, weightKnow that a force is measured in a unit called Newtons, named after a British scientist called Sir Isaac Newton who discovered lots about gravity and how planets moveKnow that pull forces can be measured using a device called a force meterKnow that the amount of matter (stuff) in an object is its massKnow that gravity is a force that acts between all objects in the universe, but that it acts much more strongly between objects that have more mass and that are close togetherKnow that unsupported objects are pulled towards the Earth by the force of gravityKnow that acceleration is a change in speed and that unbalanced forces acting on an object cause it to accelerateKnow that air resistance is a force felt by an object as it moves through the air; it is caused by the object bumping into the gas particles that make up air; the quicker an object moves, the more gas particles it bumps into and the more air resistance it experiencesKnow that a falling object will accelerate until its air resistance matches the gravitational force pulling it down; at this point, the object will continue to move at this speed (called its terminal velocity) without getting any quicker or slowing down Know that a parachute’s shape increases the air resistance that a falling object experiences, giving it a much lower terminal velocityKnow that a lever is a rigid length pivoting around a fulcrum Know that a pulley is a wheel with a fulcrum that supports a moving cable or belt Know that a gear is a rotating wheel with cut teeth that mesh with the teeth of another gear so that turning one gear turns an adjacent gear in the opposite directionKnow that gears, levers and pulleys are simple machines that used to allow a smaller force to have a greater effect; they do this by moving a smaller force over a longer distance at one end of the machine, which the machine turns into a larger forcer over a small distance at the other end |
| 2 | **Earth and Space (Y5)**Sc5/4.1a describe the movement of the Earth, and other planets, relative to the Sun in the solar systemSc5/4.1b describe the movement of the Moon relative to the EarthSc5/4.1c describe the Sun, Earth and Moon as approximately spherical bodiesSc5/4.1d use the idea of the Earth’s rotation to explain day and night, and the apparent movement of the Sun across the sky. | Big Ideas E1, E2Revision**absorption, energy, freezing, melting, orbit, reflection, wave,** Sun, spring, summer, autumn, winterDays are longer in the summer and shorter in winterWeather changes through the year, getting hotter in the summer and colder in the winterEarth orbits the Sun with one orbit constituting a year of 365/366 daysLight is a form of energyWe need light to see things and that darkness is the absence of lightLight travels in straight linesEverything that we can see is either a light source or something that is reflecting light from a light source into our eyesThe Sun is a light source, but that the Moon is not and is merely reflecting light from the SunMany light sources give off light and heatThe Sun gives off light and heat when hydrogen turns into helium(NB: the Sun and the Earth are capitalized when being discussed in an astronomical context.)New learning and vocabularyplanet, satellite, sphere, solar system, eclipse, star, universe, constellation, axis, celestial body, Moon, rotating, lunar, solar, telescope, rotationKnow that the universe comprises all matter and space in existenceKnow that a celestial body is a large object in the universeKnow that a star is an exceptionally hot ball of gas, originally made from hydrogen and heliumKnow that the Sun is a starKnow that a planet (e.g Earth) is defined as a spherical celestial body that orbits a star and that has cleared the neighbourhood of its orbit of other objects, some of which crash into the planet and others that become moons of that planetKnow it was once thought that everything orbited the Earth, but that scientists like Copernicus and Galileo used telescopes and measurement to show that the Earth orbited the Sun Know that there are eight major planets in our solar system: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, NeptuneKnow that the universe is utterly vast and that our solar system makes up a tiny fraction of the universeKnow that a satellite orbits a planet and that moons are natural satellitesKnow that the Moon orbits the Earth roughly every 28 daysKnow that as the Moon orbits the Sun, different parts of it are lit up by the Sun, which is why we see a different shape lit up on the Moon as the lunar cycle progresses Know that humans have sent man-made satellites into orbit that assist with telecommunicationKnow that all the planets in the solar system orbit the Sun and that the further away they are from the Sun, the longer their orbitKnow that the Earth spins around an imaginary line through its centre called an axis and that this axis is tilted relative to the Earth’s orbitKnow that night and day are the result of the Earth rotating on its axisKnow that the tilt of the Earth towards and away from the Sun’s light as the Earth orbits the Sun leads to the seasons as during winter the light is spread over a wider area Know that a solar eclipse occurs when the Moon is between the Sun and the Earth, casting a shadow on the Earth; a lunar eclipse occurs when the Earth is between the Sun and the Moon, casting a shadow on the Moon |
| 3 | **Electricity (Y6)**Sc6/4.2a associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuitSc6/4.2b compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switchesSc6/4.2c use recognised symbols when representing a simple circuit in a diagram. | Big idea(s): **P1, P3**Revision**circuit, component, conductor, energy, insulator, particle, property,** material, appliance, charge, electron, battery, cell, bulb, buzzer, switch, wire, current electricity, static electricity, negative terminal, positive terminal, voltage, chemical reaction, emitAn object is made from/of a materialMetal is a material from which objects can be made. Matter (stuff) is made from tiny building blocksElectrical energy is a form of energyEnergy comes in different forms and can be neither created nor destroyed, only changed from one form to anotherStatic electricity is an imbalance of charged particles on a material; it does not operate by flowing around a complete circuit Current electricity is the flow of charged particles called electrons around a circuitElectrical current flows well through some materials, called electrical conductors, and poorly through other materials, called electrical insulatorsConductors have free electrons, and when electrical current flows through a conductor, the electrons move like people in a queueElectrical conductivity (how well a material conducts electricity) is an example of a propertyMetals are good electrical conductorsA chemical reaction inside a cell produces the charged particles that can flow around a circuitMore than one cell lined up to work together is called a batteryElectrical current can flow if there is a complete circuitWires – which contain a conductor inside them, usually made of metal – can allow electrical current to flow around a circuitWhen electrical current flows through a circuit components within that circuit – such as buzzers which make a noise and bulbs which emit light – begin to workA switch functions by completing or breaking a complete circuitA simple circuit can be constructed using componentsExposure to high levels of electrical current can be dangerousNew learning and vocabularyseries circuit, parallel circuit, resistance, voltageKnow that voltage is a measure of the power of a cell to produce electricity; it is a measure of the ‘push’ of electric current, **not** the size of the electric currentKnow that as the number and voltage of cells in a circuit increases, the brightness of a bulb or the volume of a buzzer will increase (though too high a voltage may ‘blow’ the bulb or buzzer)Know how to draw simple circuit diagrams Know the recognized symbols for a battery, bulb, motor, buzzer and wireKnow how to predict whether components will function in a given circuit, depending on whether or not the circuit is complete; whether or not a switch is in an on or off position; and whether or not there is a cell to provide electrical current to the circuitKnow that two bulbs in a circuit can be wired up to create a series circuit or a parallel circuit; if one bulb blows in a series circuit the other will not shine as the circuit has been broken; in contrast, if one bulb blows in a parallel circuit, there will still be a complete circuit for the other bulb so it will continue to shine; use this knowledge to explain the advantages of using parallel circuits (e.g. in the lighting in homes) |
| 4 | **Forces (Y5 cont.)**Sc5/4.2b identify the effects of air resistance, water resistance and friction, that act between moving surfaces | Know that water resistance is a force felt by an object as it moves through water; it is caused by the object bumping into the water particlesKnow that the shape of an object determines how much air resistance or water resistance it experiences; shapes of object that experience little air resistance or water resistance are described as streamlinedKnow how to draw a force diagram with arrows representing the different forces acting on an object  |
| 5 | **Animals incl Humans (Y5)**Sc5/2.2a describe the changes as humans develop to old age. |  |
| 6 | **Animals incl Humans (Y6)**Sc6/2.2a identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and bloodSc6/2.2b recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies functionSc6/2.2c describe the ways in which nutrients and water are transported within animals, including humans. | Big idea(s): **B1**Revision**component, energy, growth,** survival,nutrients, consumption, skeleton, ribcage, protein, carbohydrate, fat, digestion, skeleton, organLiving things move, grow, consume nutrients and reproduce; that dead things used to do these things, but no longer do; and that things that never lived have never done these things.Animals, including humans, need food, water and air to survivePeople need to exercise often to help their body stay strong and fitKeeping clean, including washing and brushing teeth, is an important part of staying healthyThere are food groups: fruit and vegetables, carbohydrates, protein, dairy, fat and sugary foodsProteins are good for growth, carbohydrates for energy and fruit and vegetables provide vitamins and minerals which help keep us healthy (e.g. calcium for healthy bones and teeth)More than half of our diet should be made up of carbohydrates, fruit and vegetablesFats and sugary foods should be eaten rarely and in small amountsGetting the right amount of each food group (including over half of the diet made up of fruit, vegetables and carbohydrates) is called a balanced dietA lack of a nutrient can cause ill health; for example, a lack of vitamin D leads to a disease called ricketsKnow that excess of a food group can cause ill health, such as tooth decay due to excess sugar**NB – some food groups are difficult to afford for some families so sensitivity is required in teaching this area**Food passes through the body with the nutrients being extracted and the waste products excreted, and that this process is called digestionThe process of digestion involves breaking complex foodstuffs into simpler building blocks that can be absorbed by the bodyNew learning and vocabularyartery, aorta, atrium, blood vessels capillary, circulatory system, vein, pulse, ventricle, replenished, resting heart rate, bodyKnow that the heart and lungs are organs protected by the ribcageKnow that blood travels around the body transporting nutrients that have been absorbed into the blood stream from digestion; blood also carries oxygen around the body which is used to power the body; this use of oxygen to create energy is called respirationKnow that the heart beats, pumping blood around the body and that blood vessels carry the blood; arteries carry blood away from the heart; veins carry blood towards the heart; capillaries are tiny blood vessels that connect arteries and veinsKnow that the heart is composed of four chambers: two atria and two ventricles; the aorta is the largest artery in the body and most major arteries branch off from it Know that when we exercise, our heart beats more frequently so that the oxygen that is used around the body can be replenished; it returns to a resting heart rate afterwards; fitter people tend to have lower resting heart ratesKnow that drugs are chemicals that have an impact on the natural chemicals in a person’s; know that drugs can be harmful or helpful, depending on what they are and how they are used; know that all drugs can be harmful if overusedKnow that paracetamol and aspirin are examples of drugs that can be helpful as a painkillerKnow that cannabis and cocaine are examples of illegal drugs that can have serious negative effectsKnow that alcohol and tobacco are examples of drugs that are legal to adults but that can have serious negative effects, such as liver disease and lung disease, respectively**NB – note that discussion of drugs needs sensitive teaching due to family circumstances** |

**This Curriculum was developed using Chris Such’s Curriculum mapping ideas.**

**THE BIG IDEAS OF SCIENCE**

Physics

P1: The universe follows unbreakable rules that are all about forces, matter and energy.

P2: Forces are different kinds of pushes and pulls that act on all the matter that is in the universe. Matter is all the stuff, or mass, in the universe.

P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it.

Chemistry

C1: All matter (stuff) in the universe is made up of tiny building blocks.

C2: The arrangement, movement and type of the building blocks of matter and the forces that hold them together or push them apart explain all the properties of matter (e.g. hot/cold, soft/hard, light/heavy, etc).

C3: Matter can change if the arrangement of these building blocks changes.

Biology

B1: Living things are special collections of matter that make copies of themselves, use energy and grow.

B2: Living things on Earth come in a huge variety of different forms that are all related because they all came from the same starting point 4.5 billion years ago.

B3: The different kinds of life, animals, plants and microorganisms, have evolved over millions of generations into different forms in order to survive in the environments in which they live.

Earth science

E1: The Earth is one of eight planets that orbit the sun.

E2: The Earth is tilted and spins on its axis leading to day and night, the seasons and the climate.

E3: The Earth is made up of several layers, including a relatively thin rocky surface which is divided into tectonic plates, and the movement of these plates leads to many geologic events (such as earthquakes and volcanoes) and geographical features (such as mountains.)

Along with the ‘big ideas’ *of* science, it can be worthwhile to consider ‘big ideas’ *about* science[[1]](#footnote-1). The former underpin the substantive knowledge of primary science; the latter underpin the disciplinary knowledge:

Big ideas *about* science

D1: Science seeks to explain things that we see in the natural world by attempting to understand their causes.

D2: Scientific theories are explanations of what we see in the natural world that best fit with evidence that has been gathered. Because of this, theories can be changed when new evidence is found.

D3: The knowledge produced by science leads to new technology that humans find useful. These technologies don’t always necessarily make the world better so we have to think carefully about how – and whether – we use them.

The disciplinary knowledge of science is supported by the ‘working scientifically’ statements of the national curriculum that relate to the scientific enquiries that children should undertake in primary science.

Repeating key concepts

Also contained within this science curriculum document are 26 key concepts that repeat in different topics across the curriculum: **absorption, birth, bond, circuit, component, condensation, conductor, decay, dissolving, energy, evaporation, extinction, freezing, growth, habitat, insulator, irreversible, matter, melting, orbit, particle, property, reflection, reproduction, reversible, wave.** All of the vocabulary that children learn is important for their understanding of science. However, an understanding of these key concepts is essential and provides uniquely powerful opportunities to assess children’s grasp of the knowledge contained within the curriculum.

1. Harlen, Wynne, ed. *Principles and big ideas of science education*. Association for Science Education, 2010. [↑](#footnote-ref-1)