

	Class 1	Class 2 (Year 2)	Class 2 (Year 3)	Class 3 (Year 4/5)	Class 4 (Year 5/6)
Autumn 1 National Curriculum Objectives:	Animals including humans - Identify, name draw and label the basic parts of the human body and say which part of the body is associated with each sense Name body parts How has what I eat changed Healthy eating Seasonal changes - observe changes across the four seasons - observe and describe weather associated with the seasons and how day length varies. Seasonal changes Autumn	Animals including humans - notice that animals, including humans, have offspring which grow into adults - find out about and describe the basic needs of animals, including humans, for survival (water, food and air) - describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. Vocabulary: offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/hen, kitten/cat, caterpillar/butterfly), survive, survival, water food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types (e.g. meat, fish, vegetables, bread, rice, pasta, dairy)	Magnets and friction OGDEN UNIT - compare how things move on different surfaces - notice that some forces need contact between two objects, but magnetic forces can act at a distance - observe how magnets attract or repel each other and attract some materials and not others - compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials - describe magnets as having two poles - predict whether two magnets will attract or repel each other, depending on which poles are facing. Vocabulary: Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole, move, movement, surfaces, contact, distance, magnetic materials	Y5: Forces OGDEN UNIT - explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object - identify the effects of air resistance, water resistance and friction, that act between moving surfaces - recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. Vocabulary Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears, upthrust	Y5: Forces OGDEN UNIT - explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object - identify the effects of air resistance, water resistance and friction, that act between moving surfaces - recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. Vocabulary Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears, upthrust
Substantive knowledge:	1. Can we name parts of the human body? <i>Name external parts of the body</i> 2. Can we name the five senses? <i>Name the senses and identify which part of the body is responsible to which sense</i> 3. Can we explore using our five senses? <i>Use senses to explore – what can we see? Hear? Smell? Touch? Taste?</i> 1. What do we know about weather? <i>Know what weather is and name some weather.</i> 2. Can I name the four seasons? <i>Name the four seasons and be able to order them</i> 3. How does the weather change across the seasons? <i>Identify typical weather from each season and begin to understand temperature</i> 4. How does a weather chart work and how can we measure rainfall? <i>Record the weather</i> <i>Make a rain gauge</i> 5. How can we record wind direction? <i>Begin to understand the scales used to measure wind.</i> <i>Make a windsock</i> 1. Can you name your body parts? 2. How does my body work?	1. Can you describe how animals have offspring which grow into adults? <i>Sort animals into different groups, such as amphibians or reptiles. group animals at different stages of growth by looking at what is similar and different.</i> 2. Can you describe how humans have offspring which grow into adults? <i>Foetus, baby, childhood, adolescence, adulthood, old age</i> 3. Can you research and describe the things animals, including humans need to survive? <i>Humans and animals need water, food and air to survive.</i> 4. Can you test the effects of exercise on the human body? (Page 22) <i>Exercise helps to build strong bones, muscle tone and good posture. It also helps you to remain flexible and maintain high energy levels and impacts on your mental health</i> 5. Can you describe the importance of healthy eating? <i>Supports physical development, improves mood, keeps illness away, maintain a healthy weight</i> 6. Can you describe the importance of hygiene?	1.What is a contact and non-contact force? <i>I know that some forces, such as pushes and pulls, need contact to act. I know that some forces, such as magnetic forces, act without contact.</i> 2. Which materials are magnetic? <i>Most metals are magnetic, but some alloys and metals are not (i.e. copper and gold)</i> 3.How do magnets vary in strength and what effect can this have? <i>I know that magnets can vary in strength. I know that a stronger magnet can attract magnetic objects from a greater distance than a weaker magnet.</i> 4. How do magnets interact with one another? <i>I can describe magnets as having North and South Poles. Magnets have a North and South Pole and opposites attract and the same Poles repel</i> 5. How do things move differently on different surfaces? <i>I know that different amounts of force are needed to move an object on different surfaces.</i>	1. What is a force? <i>A force is a push or a pull</i> 2. What is gravity? <i>Gravity is the force which pulls objects down towards the earths centre</i> 3. What is friction? <i>Friction is a force between two surfaces when one attempts to move across the other. The friction increases when the surfaces are rough, smooth surfaces have less friction. Friction slows an object down</i> 4. What is the effect of air-resistance on a moving object? <i>Air resistance is a type of friction, between air and another material. Air resistance can slow things down. To increase the level of air resistance you increase the surface area of the object. A more streamline shape will decrease the amount of air-resistance and make the object faster.</i> 5. What is water resistance? <i>Water resistance is a type of friction, between water and another material. Water resistance can slow things down. To increase the level of Water resistance you increase the surface area of the object. A more streamline shape will decrease the amount of water-resistance and make the object faster.</i> 6. What mechanisms can you use to make a smaller force?	1. What is a force? <i>A force is a push or a pull</i> 2. What is gravity? <i>Gravity is the force which pulls objects down towards the earths centre</i> 3. What is friction? <i>Friction is a force between two surfaces when one attempts to move across the other. The friction increases when the surfaces are rough, smooth surfaces have less friction. Friction slows an object down</i> 4. What is the effect of air-resistance on a moving object? <i>Air resistance is a type of friction, between air and another material. Air resistance can slow things down. To increase the level of air resistance you increase the surface area of the object. A more streamline shape will decrease the amount of air-resistance and make the object faster.</i> 5. 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	3. How have I changed since being a baby? 4. How has what I've eaten changed? 5. What are the signs of autumn?	<i>Hygiene helps to reduce the risk of illness, build self-esteem and teach life skills and ensures safety, prevent</i>		<i>Gears, pulleys and leavers can be used to make a smaller force have a greater effect.</i>	<i>Gears, pulleys and leavers can be used to make a smaller force have a greater effect.</i>
TAPS	Y1plan Seasonal change 2020 (1).docx Y1eg Animals Body model WS Rev Additional extra: Rec - Pumpkin obs learning story (1)	Y2eg Animals Order life cycles	Y3eg Forces Car track conc WS Review	class 3 autumn taps.docx	Class 4 Autumn 1 TAPS.docx
Autumn 2 National Curriculum objectives:	Animals including humans Y1 - Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals - Identify, name a variety of common animals that are carnivores, herbivores & omnivores - Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) - Natural world - Animals and observations - Nocturnal animals	Living things and their habitats - explore and compare the differences between things that are living, dead, and things that have never been alive - 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 other - identify and name a variety of plants and animals in their habitats, including micro-habitats 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. Vocabulary: living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, names of local habitats (e.g. pond, woodland etc.), names of micro-habitats (e.g. under logs, in bushes etc.), conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold, names of living things in the habitats and micro habitats studied	Animals including humans - identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat - identify that humans and some other animals have skeletons and muscles for support, protection and movement. Vocabulary: Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, support, protect, move, skull, ribs, spine, muscles, joints, diet, movement	Y6 Classification - describe 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 - give reasons for classifying plants and animals based on specific characteristics. Vocabulary vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, warm-blooded, cold-blooded, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers	Y6 Classification - describe 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 - give reasons for classifying plants and animals based on specific characteristics. Vocabulary vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, warm-blooded, cold-blooded, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers
Substantive knowledge:	1. What is the difference between living and non-living things? <i>Identify and name living and non-living things and things that have never been alive</i> <i>Know what a living thing is</i> 2. What is the difference between an invertebrate and a vertebrate? <i>Know that invertebrates do not have a backbone, but vertebrates do.</i> 3. Which animals are vertebrates? <i>Name animals which are vertebrates</i> 4. Which animals are invertebrates? <i>Name animals which are invertebrates</i> 5. What are the differences between mammals and birds? <i>Know the characteristics of birds and mammals</i>	1. Can you name the common characteristics shared by all living things? <i>Living things move, feed, grow, reproduce and use their senses.</i> 2. Can you explore and compare differences between things that are living, dead, and things that have never been alive? <i>A living thing is something that is currently alive and needs food, air and water to stay alive. Something that is dead was once living but is no longer alive.</i> <i>A non-living thing is something that has never been alive.</i> 3. Can you describe how animals obtain their food from plants and other animals, using a simple food chain? <i>Food chain means eaten by.</i> 4. Can you identify organisms as producers, consumers, or decomposers? <i>A producer is an</i>	1. What types of nutrition do we need? <i>Animals including humans need a balanced diet including: protein, carbohydrates, fats, fibre. dairy, water, vitamins and minerals.</i> 2. What is a balanced diet? <i>Need to eat a combination of the food plate in moderation</i> 3. How does our skeleton help us? <i>A skeleton provides support for muscles and protects vital organs</i> 4. Do our bones affect what we can do? <i>Our bones allow us to create and generate movement</i> 5. What do our muscles do? Muscles <i>Muscles permit movement of the body, maintain posture, and circulate blood throughout the body</i> 6. Do all animals have a skeleton?	1.Why do we classify living things? Who is Carl Linneaus and the Linnean system. Living things can be formally grouped according to characteristics. 2.Can you give reasons for classifying animals based on specific characteristics? <i>Animals can be divided into two main groups: those that have backbones (vertebrates); and those that do not (invertebrates). Vertebrates can be divided into five small groups: fish; amphibians; reptiles; birds; and mammals. Each group has common characteristics. Invertebrates can be divided into a number of groups, including insects, spiders, snails and worms.</i> 3.Can you give reasons for classifying plants based on specific characteristics? <i>Plants can be divided broadly into two main groups: flowering plants; and non-flowering plants.</i>	1.Why do we classify living things? Who is Carl Linneaus and the Linnean system. Living things can be formally grouped according to characteristics. 2.Can you give reasons for classifying animals based on specific characteristics? <i>Animals can be divided into two main groups: those that have backbones (vertebrates); and those that do not (invertebrates). Vertebrates can be divided into five small groups: fish; amphibians; reptiles; birds; and mammals. Each group has common characteristics. Invertebrates can be divided into a number of groups, including insects, spiders, snails and worms.</i> 3.Can you give reasons for classifying plants based on specific characteristics?

	Compare the characteristics of birds and mammals 6. What are the differences between fish and reptiles? Know the characteristics of fish and reptiles Compare the characteristics of fish and reptiles 7. What type of food do living things eat? Know the terms carnivore, herbivore and omnivore and name some animals belonging to each group. 1. Why do we have day and night? 2. How do we see at night? 3. What happens at night? 4. What observations can I make on local animals? 5. What observations can I make on nocturnal animals?	organism that makes its own food. A consumer is a living thing that eats other plants and animals. A decomposer is a living thing that breaks down dead plants, animals, or waste. 5. Can you identify invertebrates in micro-habitats through a wildlife survey? Invertebrates are animals that don't have a backbone. Some have soft bodies, like worms, slugs 6. Can you identify the habitat of animals noting how they have adapted to suit their habitat? Animals have adapted their physical characteristics or behaviours to give them an advantage when it comes to survival e.g. giraffes and their necks	Investigate which animal species have an endoskeleton, exoskeleton or none	4. How are micro-organisms classified? Plants and animals are two main groups but there are other living things that do not fit into these groups e.g. micro-organisms such as bacteria and yeast, and toadstools and mushrooms. 3 main types are fungi, bacteria and virus. They have good and bad qualities and uses 5. Can I use and devise a classification system to classify plants and animals in your immediate environment?	Plants can be divided broadly into two main groups: flowering plants; and non-flowering plants. 4. How are micro-organisms classified? Plants and animals are two main groups but there are other living things that do not fit into these groups e.g. micro-organisms such as bacteria and yeast, and toadstools and mushrooms. 3 main types are fungi, bacteria and virus. They have good and bad qualities and uses 5. Can I use and devise a classification system to classify plants and animals in your immediate environment?
TAPS	Nurs - Observing tadpoles learning story (2).pdf	Y2eg Living Habitat survey WS Do.pdf Y2eg Living Sorting liv and nonliv.pdf	Y3eg Animals Skeleton explanations-1.pdf	Y6plan Invertebrate research 2020.docx Y6plan Outdoor keys 2020 (1).docx	Y6plan Invertebrate research 2020.docx Y6plan Outdoor keys 2020 (1).docx
Spring 1 National Curriculum objectives:	Everyday materials: Y1 - Distinguish between an object and the material from which it is made - Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock - Describe the simple physical properties of a variety of everyday materials - Compare and group together a variety of everyday materials on the basis of their simple physical properties • Changing states of matter • Floating and sinking	Uses of materials - identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses - find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching Vocabulary: Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboard Properties of materials – as for Year 1 plus opaque, transparent and translucent, reflective, non reflective, flexible, rigid Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching	Rocks , soils and fossils - compare and group together different kinds of rocks on the basis of their appearance and simple physical properties - describe in simple terms how fossils are formed when things that have lived are trapped within rock - recognise that soils are made from rocks and organic matter. Vocabulary: Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil, organic matter, sedimentary rock	Earth and Space Y5 - describe the movement of the Earth, and other planets, relative to the Sun in the solar system - describe the movement of the Moon relative to the Earth - describe the Sun, Earth and Moon as approximately spherical bodies - use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. Vocabulary Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbit, planets solar system, spherical bodies, rotation, satellite	Earth and Space Y5 - describe the movement of the Earth, and other planets, relative to the Sun in the solar system - describe the movement of the Moon relative to the Earth - describe the Sun, Earth and Moon as approximately spherical bodies - use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. Vocabulary Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbit, planets solar system, spherical bodies, rotation, satellite
Substantive knowledge:	1. What is a material? Know that materials are non-living Identify and name common materials around the classroom 2. What are objects made from? Be able to name materials that everyday objects are made from. 3. How can I describe an object? Explore and investigate materials, use scientific language to describe their properties such as hard, soft, bendy, transparent, opaque, absorbent and waterproof	1. What are materials? Know the names of materials fabric, wood, plastic, metal, stone, glass. 2. What are things made from? Know/name the material objects are made from and explain why. 3. Which materials should pigs make their house from? Know that a house needs to be strong and waterproof. Test materials to see which are strong and waterproof materials.	1. What are the properties of rocks? Rock is a naturally occurring material. Rocks can be hard or soft. They have different sizes of grain or crystal. They may absorb water. Rocks can be different shapes and sizes (stones, pebbles, boulders). 2. Can I group different types of rocks based on their properties? There are different types of rock e.g. sandstone, limestone, slate etc. which have different properties. 3. How is soil made? Soils are made up of pieces of ground down rock which may be mixed with plant and	1. What are the names and order of the planets from the sun? The Sun is a star. It is at the centre of our solar system. There are 8 planets. Planets travel around the Sun in fixed orbits 2. What is the size and scale of the planets? Know that each planet is a different size. Children to know the order of the planets in size. 3. What are the movements of the sun, earth and moon? Earth takes 365½ days to complete its orbit around the Sun. The Moon orbits the Earth. It	1. What are the names and order of the planets from the sun? The Sun is a star. It is at the centre of our solar system. There are 8 planets. Planets travel around the Sun in fixed orbits 2. What is the size and scale of the planets? Know that each planet is a different size. Children to know the order of the planets in size. 3. What are the movements of the sun, earth and moon? Earth takes 365½ days to complete its orbit around the Sun. The Moon orbits

	4. Which materials float and sink? <i>Properties of materials – heavy and light</i> <i>Investigation</i> <i>Name materials that float and sink</i> 5. Which materials are waterproof? <i>Properties of materials – waterproof and absorbent</i> <i>Investigation</i> <i>Name materials that are waterproof and absorbent</i> 6. Which material is best for different objects? <i>Properties of materials</i> <i>Sort facts about materials using knowledge of properties</i> 1.What will happen when we put something in the water? 2. What will happen to water when it is put into the freezer? 3. What can we do to stop the ice from melting? 4. How can we release an object from ice?	4. Which material will protect Humpty Dumpty? <i>Know which materials are breakable.</i> 5. How can we change materials? <i>Know that some materials can change shape by twisting, bending and stretching.</i>	<i>animal material (organic matter). The type of rock, size of rock pieces and the amount of organic matter affect the property of the soil.</i> 4.How are fossils formed? <i>Some rocks contain fossils. Fossils were formed millions of years ago. When plants and animals died, they fell to the seabed. They became covered and squashed by other material. Over time the dissolving animal and plant matter is replaced by minerals from the water</i> 5.What are rocks used for and why? <i>Granite, Limestone, Chalk, Slate, Marble, sandstone, Quartz, Clay</i>	<i>takes about 28 days to complete its orbit. These are all spherical bodies</i> 4. How does the earth's rotation create day and night? <i>The Earth rotates (spins) on its axis every 24 hours. As Earth rotates half faces the Sun (day) and half is facing away from the Sun (night). As the Earth rotates, the Sun appears to move across the sky.</i> 5. How does the movement of the moon create different phases? <i>To explain the 8 moon phases and how each phase of the moon is formed due to the reflection of the sun on the moon.</i> 6. What are the different theories of the solar system? <i>Consider the views of scientists in the past and evidence used to deduce shapes and movements of the Earth, Moon and planets before space travel.</i>	<i>the Earth. It takes about 28 days to complete its orbit. These are all spherical bodies</i> 4.How does the earth's rotation create day and night? <i>The Earth rotates (spins) on its axis every 24 hours. As Earth rotates half faces the Sun (day) and half is facing away from the Sun (night). As the Earth rotates, the Sun appears to move across the sky.</i> 5.How does the movement of the moon create different phases? <i>To explain the 8 moon phases and how each phase of the moon is formed due to the reflection of the sun on the moon.</i> 6.What are the different theories of the solar system? <i>Consider the views of scientists in the past and evidence used to deduce shapes and movements of the Earth, Moon and planets before space travel.</i>
TAPS	Rec - Float and sink learning story.pdf Y1eg Materials Umbrella WS Plan.pdf	Y2eg Boat expln (1).pdf	Y3eg Rocks water test WS Review.pdf	Y5plan Solar system research (3).docx	Y5plan Solar system research (3).docx
Spring 2 National Curriculum objectives:	All of class one: Pioneer & Leaders - What is a pioneer? - What is a leader? Big Question: What can we discover beyond Earth? - Seasonal changes Spring - Observing life cycles, including butterflies/honey bees/frogs/chickens	Pioneers & Leaders - What is a pioneer? - What is a leader? Big Question: What makes a habitat a good place to live?	Pioneers And Leaders - What is a pioneer? - What is a leader? Big Question: How do plants respond to the world around them?	Pioneers And Leaders - What is a pioneer? - What is a leader? Big Question: How can understanding animals help us care for them better?	Pioneers and Leaders - What is a pioneer? - What is a leader? Big Question: How can science and maths change the world?
Substantive knowledge:	Year 1: Lesson 1: Who is Tim Peake? - Learn about Tim Peake's life and career. - Explore what astronauts do. - Create a simple fact file.. Lesson 2: What is it Like in Space? - Discover how astronauts eat, sleep and exercise. - Compare life in space with life on Earth. Lesson 3: Exploring Like a Scientist - Learn that scientists ask questions and investigate.	Lesson 1: Who is Geerat Vermeij? - Learn about his life as a blind scientist. - Explore how he became a leading expert in evolution and shells. - Discuss resilience and determination. Lesson 2: Adaptation and Survival - Investigate how animals are adapted to their habitats. - Examine shells and other natural structures.	Lesson 1: Who was Jagadish Chandra Bose? - Learn about Bose's life and achievements. - Explore how he studied plants. - Discuss barriers he faced as an Indian scientist. Lesson 2: Do Plants Respond to Their Environment? - Investigate how plants respond to light and water. - Make predictions and observations. - Link findings to Bose's discoveries. Lesson 3: Why Are Plants Important? - Explore the role of plants in ecosystems.	Lesson 1: Who is Temple Grandin? - Learn about Temple Grandin's life and achievements. - Discuss autism and how different people think differently. - Explore her contributions to animal welfare. Lesson 2: What Do Animals Need? - Investigate animal habitats and needs. - Consider how animals experience the world through their senses. Lesson 3: Designing for Animals - Examine examples of animal-friendly environments.	Lesson 1: Who was Katherine Johnson? - Explore her role at NASA. - Learn about the challenges she faced. - Discuss equality and opportunity in STEM. Lesson 2: The Science of Space Travel - Explore forces involved in rocket launches. - Learn about space missions.

	- Make observations and record discoveries. Lesson 4: Social Action Project Curiosity Champions - Create space posters, displays or a short assembly. - Share exciting science facts with Reception or the wider school. - Encourage younger children to ask questions and be curious about the world.	Lesson 3: Exploring Through Different Senses - Complete investigations using limited sight. - Consider how scientists gather evidence in different ways. Lesson 4: Social Action Project Biodiversity Detectives - Survey plants and animals in the wildlife area. - Record and identify species. - Use findings to recommend improvements, such as additional planting or habitats. Impact: Helps the school understand and increase biodiversity.	- Investigate how plants support humans and wildlife. - Plan improvements for the school wildlife area. - Outcome: Wildlife area improvement plan. Lesson 4: Social Action Project Pollinator Paradise - Plant wildflowers and pollinator-friendly plants in the wildlife area. - Create signs explaining why plants matter. - Monitor which insects visit over time. - Impact: Improves biodiversity and supports local wildlife.	- Identify ways to improve the school grounds for wildlife. - Design a habitat or shelter. Lesson 4: Social Action Project Wildlife Welcome Project - Build bird feeders, bug hotels, hedgehog shelters, or bird baths. - Place them around the school grounds. - Monitor wildlife throughout the year. Impact: Supports local animals and increases biodiversity.	- Understand why accurate calculations matter. Lesson 3: Problem Solving Like Katherine Johnson - Complete STEM challenges. - Collect and interpret data. - Work collaboratively to solve real-world problems. - Outcome: STEM challenge solution. Lesson 4: Social Action Project STEM for Everyone - Plan and deliver science activities for younger classes. - Run a mini science fair. - Create displays celebrating diverse scientists. - Become STEM ambassadors across the school.
Summer 1 National Curriculum objectives:	Y1: plants - Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees - Identify and describe the basic structure of a variety of common flowering plants, including trees Observe plants and draw pictures - What plants need to grow, including planting sunflower seeds, investigation into growing cress in different conditions	Plants - observe and describe how seeds and bulbs grow into mature plants (<i>plant bulbs in Autumn Term</i>) - find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. Vocabulary: light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling	Plants - identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers - 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 plant - investigate the way in which water is transported within plants - explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. Vocabulary: Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal), functions, nutrients, nutrition, air, transport (water), life cycle, reproduce, fertiliser	Y4 Sound OGEN UNIT - identify how sounds are made, associating some of them with something vibrating - recognise that vibrations from sounds travel through a medium to the ear - find patterns between the pitch of a sound and features of the object that produced it - find patterns between the volume of a sound and the strength of the vibrations that produced it recognise that sounds get fainter as the distance from the sound source increases Vocabulary Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation	Digestion and teeth - describe the simple functions of the basic parts of the digestive system in humans - identify the different types of teeth in humans and their simple functions Vocabulary Digestive system, digestion, mouth, teeth, saliva, salivary gland, oesophagus, stomach, small intestine, duodenum, pancreas, liver, anus, sphincter, colon, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore
Substantive Knowledge:	1. How do I plant a bean? <i>Know what a seed needs to grow. Know there are different types of seeds. Plant a seed in conditions so it will grow.</i> 2. What types of plants grow in the wild? <i>Know that some plants and flowers grow in the wild. Name common British wild flowers:</i>	1. Can I name and describe the purpose of parts of a flowering plant? <i>Be able to name the stem, root, flower, stalk and roots and describe their function.</i> 2. Can I group and classify plants based on a common criteria? <i>Be able to justify why you have grouped you plants in a specific way.</i> 3. Can I plan and carry out a comparative test?	1. What are the functions of the different parts of flowering plants? <i>Root, stem/trunk, leaves and flowers, Roots: Anchor the plant in the soil and help it absorb water, Stem: Supports the plant and carries water to the leaves, Leaves: Use sunlight to make food for the plant, Flowers: Produce seeds to make new plants</i> 2.How is water transported within plants?	1. How are sounds made and how do we hear them? <i>Sound is created by vibration through the air</i> 2. How well does sound travel through different materials? <i>Sound travels much better through certain materials but can be muffled</i>	1. How do humans digest their food? <i>Know that food digestion starts in the mouth with saliva and food needs to be chewed before being swallowed.</i> 2. Which organs are involved with digestion and what is their function? <i>Know that the next stage of swallowing through the oesophagus and that the food moves through</i>

	daisies, dandelions, cow parsley, poppy, lavender 3. What is the difference between deciduous and evergreen trees? Know there are two types of tree. Be able to distinguish between them looking at leaves. 4. What are the parts of plants and trees called? Name root, stem, leaf, flower, branch, petal Know what the job of each part is. 5. What changes occur to a tomato plant? Know the term germination Know that some food plants are roots, some leaves and some fruit Observe what happens when a slice of tomato is planted. 6. What changes occurred to my bean plant? Explain what changes have occurred over time. Use the terms germinate, stem, leaf, root. 1. Can I draw and label pictures of plants? 2. What does a plant need to grow? 3. What do I need to do in order for a sunflower seed to become a plant? 4. Do all seeds look the same? 5. Does cress grow differently in different places?	Be able to distinguish between a plant and a seed. Be able to plant seeds and bulbs to compare growth making it a fair test. Be able to make predictions. 4. Can I observe changes over a period of time? Be able to devise a chart to record data. Be able to describe the signs of germination they are looking for. 5. Can I describe how plants need water, light and a suitable temperature to grow and stay healthy? Know that plants need sunlight, correct temperature and water to survive. 6. Can test what plants need to survive? Know what a fair test is. Know that plants will not grow as well with no sunlight or water.	Roots absorb water from the soil where the plant is planted. Then, the water travels through the plant to the stem and then the stem passes water on to the leaves. Water evaporates from the leaves into the atmosphere. This process is called transpiration. 3.Do different plants need different things to survive? The amount of light, water, nutrients, air, and proper temperature that a plant need varies by species. 4.What is the life cycle of a flowering plant? Germination, Pollination, Seed formation, fruit development and seed dispersal. 5.What are the methods of pollination in flowering plants? Wind, water, animals 6.How do seeds in flowering plants disperse? Wind, water and animals	3. Which materials can insulate sound? Loud sounds can damage human ears and they need protection 4. How can sounds be different pitches and volumes? Volume is how loud or quiet a sound is and pitch is how high or low the sound is 5. How does distance affect how well we can hear a sound? Sound vibrations can travel through the air but will dissipate over distance. 6. Does length, thickness and tightness of a string affect the pitch? Pitch can go up by tightening a string and down by loosening the string	different stages: oesophagus, stomach, small intestine, pancreas, liver, large intestine. 3. Can we identify the different functions of teeth? 20 Milk teeth are replaced by 28 permanent teeth – Incisors bite down, canines rip and tear, pre-molars and molars grind. Addition of 4 wisdom teeth at 18+ to total 32 adult teeth 4. Which food types would cause dental decay? Recognise that acidic food/drink aids tooth decay 5. I can set up an experiment to prove my scientific theory. Create a fair test with a control to use eggshells to represent enamel of teeth 6. I can suggest improvements to my scientific enquiry. Discuss and suggest improvements including other liquids to prove the link with acidity.
TAPS	Y1plan Plant structure 2020 (3).docx	Y2eg Plants Growth comic strip (3).pdf	Y3eg Plants Seed dispersal (3).pdf	▪ Y4plan String phones 2020.docx	Y4eg Animals Teeth concln WS Review.pdf
Summer 2 National Curriculum objectives:	Y1: Seasonal changes Seasonal Changes - observe changes across the four seasons - observe and describe weather associated with the seasons and how day length varies. - Day and night - How we see at night Awe and wonder	Plants (continued) Scientific Enquiry (Awe & Wonder) - Paper towel colour mixing experiment (materials recap) - Recap – what did we do? What happened and why? - Plastic bag parachutes – materials investigation - Egg drop activity Design a sports kit - Explorify - What is the best material for an umbrella? Come up with a test to decide which material would be best for an umbrella. - Bees link: Create habitats for endangered animals/ create a hive.	Light OGDEN UNIT - recognise that they need light in order to see things and that dark is the absence of light - notice that light is reflected from surfaces - recognise that light from the sun can be dangerous and that there are ways to protect their eyes - recognise that shadows are formed when the light from a light source is blocked by a solid object - find patterns in the way that the size of shadows change. Vocabulary Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous, reflective surface	Y4 Electricity (New Ogden unit to follow) - identify common appliances that run on electricity. - construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. - identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery - recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. - recognise some common conductors and insulators, and associate metals with being good conductors. Vocabulary:	Y4 Sound OGDEN UNIT - identify how sounds are made, associating some of them with something vibrating - recognise that vibrations from sounds travel through a medium to the ear - find patterns between the pitch of a sound and features of the object that produced it - find patterns between the volume of a sound and the strength of the vibrations that produced it recognise that sounds get fainter as the distance from the sound source increases Vocabulary Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation

				Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol	
Substantive Knowledge:	1. What do we know about weather? <i>Know what weather is and name some weather.</i> 2. Can I name the four seasons? <i>Name the four seasons and be able to order them</i> 3. How does the weather change across the seasons? <i>Identify typical weather from each season and begin to understand temperature</i> 4. How does a weather chart work and how can we measure rainfall? <i>Record the weather</i> <i>Make a rain gauge</i> 5. How can we record wind direction? <i>Begin to understand the scales used to measure wind.</i> <i>Make a windsock</i> 1. Why we have day and night 2. How do I see at night – explore light sources, including making shadows 3. How I stay safe at night Awe and wonder: - Dancing raisins - Making bubbles - Cornflour slime - Set up a rainwater collection tank outside your classroom- How long does it take to reach a certain level? Does it ever overflow? Is that expected or unexpected? - Science in stories: The Emperor’s new clothes Energising Futures	7. Can I identify and name a variety of plants in their habitats and micro habitats? <i>Know what habitats and micro-habitats are. Know that different types of plants thrive in different habitats.</i>	1.How can we see things? <i>We see objects because our eyes can sense light. Dark is the absence of light. We cannot see anything in complete darkness.</i> 6. What are light sources? <i>Some objects, for example, the sun, light bulbs and candles are sources of light. Objects are easier to see if there is more light. Some surfaces reflect light. Objects are easier to see when there is less light if they are reflective.</i> 7. How can we need to look after our eyes? <i>The light from the sun can damage our eyes and therefore we should not look directly at the sun and can protect our eyes by wearing sunglasses or sunhats in bright light.</i> 8. What is a shadow? <i>Shadows are formed on a surface when an opaque or translucent object is between a light source and the surface and blocks some of the light.</i> 9. How can shadows change? <i>The size of the shadow depends on the position of the source, object and surface.</i>	1. Which machines need electricity? <i>Exploring a range of photographs, talking with peers to engage conversation about how these are powered. Whether it is battery powered or through the mains.</i> 2. What are the electrical components and what do their symbols looks like? <i>To explore the circuit sign. Exploring different components; bulb, wire, battery. Ch will then draw some simple circuits in their book.</i> 3. How does an electrical switch work? <i>To explore what happens when a switch is open and where it creates a gap. Exploring what happens to the bulb – eventually finding out that it causes a break in the circuit, stopping the bulb from lighting up.</i> 4. Which objects are conductors, and which are insulators? <i>Conductors- Are materials that carry or conduct electrical currents well such as iron and steel.</i> <i>Insulators are materials that do not like glass and plastic.</i> 5. How can electricity be dangerous? <i>Children learn about the safety handling of electricity, ie. Not touching a switch with wet hands. The ch will explore some pictures with some hazards in and explain what is wrong. (exposed wire, water on the floor)</i>	1. How are sounds made and how do we hear them? <i>Sound is created by vibration through the air</i> 2. How well does sound travel through different materials? <i>Sound travels much better through certain materials but can be muffled</i> 3. Which materials can insulate sound? <i>Loud sounds can damage human ears and they need protection</i> 4. How can sounds be different pitches and volumes? <i>Volume is how loud or quiet a sound is and pitch is how high or low the sound is</i> 5. How does distance affect how well we can hear a sound? <i>Sound vibrations can travel through the air but will dissipate over distance.</i> 6. Does length, thickness and tightness of a string affect the pitch? <i>Pitch can go up by tightening a string and down by loosening the string</i>
TAPS	Y1eg Seasonal change tree (1).pdf		Y3eg Light Shadow investn WS Review (1).pdf Y3plan Make shadows 2020.docx	Y4eg Electricity Purposeful switches WS Review.pdf	▪ Y4plan String phones 2020.docx