

Porthleven School

Yearly Science 2023-2024

World Citizens		Resilient Individuals		Respectful Communicators		Health & Wellbeing	
Stage	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	
EYFS	<p>All About Me</p> <p>Humans all have heads, arms, legs and other body parts.</p> <p>As we get older we look different.</p> <p>Humans take care of themselves by exercising, healthy eating, brushing our teeth, sleeping and being safe.</p> <p>We have five senses: touch, taste, smell, hear and see.</p> <p>Vocabulary: Head, nose, ears, neck, leg, knee, foot, toes, arm, hands, fingers, chest, tummy. Baby, toddler, teenager, adult, elderly. Sight, sound, taste, smell, touch.</p>	<p>Celebrations</p> <p>Spiders have a head, body, eyes, 8 legs and fangs.</p> <p>Reindeers have a head, eyes, nose, antlers, 4 legs, hooves, tail and a body.</p> <p>Spiders, insects and worms belong to a group of animals called minibeasts.</p> <p>Some animals have similar body parts where others have different ones.</p> <p>Materials can change when heated.</p> <p>When ice gets warm it melts.</p> <p>Vocabulary: Spider, Halloween, head, body, fangs, legs, eyes. Creepy crawlies, Christmas, snow, chocolate, cold, freezing, melting, soft.</p>	<p>People Who Help Us</p> <p>Humans take care of themselves by exercising, healthy eating, brushing our teeth, sleeping and being safe.</p> <p>Many people have jobs that help us to keep healthy and safe such as Dentists, Doctors, Firemen and Policemen.</p> <p>Materials can change when heated.</p> <p>Vocabulary: People, dentist, firefighter, police officer, teacher, teeth, health, safe, safety, 999, emergency, emergency services, hygiene, infection</p>	<p>Minibeasts and growing</p> <p>Spiders, insects and worms belong to a group of animals called minibeasts.</p> <p>When a caterpillar grows it turns into a butterfly.</p> <p>Some of the food that we eat such as fruit and vegetables grows on plants.</p> <p>Seeds grow into plants. They need light and water to grow.</p> <p>Some animals have similar body parts where others have different ones.</p> <p>All animals change as they grow up.</p> <p>Vocabulary: Minibeast, insect, habitat, diet, caterpillar, butterfly, growing, legs, food, life cycle.</p>	<p>Animals</p> <p>Some animals have similar body parts where others have different ones.</p> <p>Some animals only live in specific places in the world.</p> <p>Where an animal lives is called its habitat.</p> <p>There are 4 seasons: Autumn, winter, spring and summer.</p> <p>Vocabulary: Animal, seasons, hibernation, habitat, warm, cold, rest, fat, movement, Earth, live, weather, food, shelter.</p>	<p>Under the Sea</p> <p>Where an animal lives is called its habitat.</p> <p>Some animals live in water and some live on land.</p> <p>Some animals have similar body parts where others have different ones.</p> <p>Fish have a body, eyes, fins, tails and gills.</p> <p>Some objects float and some sink in water.</p> <p>Vocabulary: Fish, sea, life, ocean, ocean floor, sand, coral reef, shore, rockpool, habitat, turtle, eye, fin, tail, mouth, gills, float, sink, crab, lobster, dolphin, seal, whale, starfish, octopus, jellyfish, shark.</p>	

<p>Year 1</p>	<p>Seasonal Changes - Autumn Weather can change.</p> <p>There are lots of different types of weather: Rain, Sun, Cloud, Wind, Snow.</p> <p>Days are longer and hotter in the summer and shorter and colder in the winter.</p> <p>There are four seasons: Spring, Summer, Autumn, Winter and each has different weather.</p> <p>Vocabulary: weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length</p> <p>Everyday Materials (Links to Toy topic)</p> <p>There are many different materials that have different describable and measurable properties.</p> <p>Materials that have similar properties are grouped into metals, rocks, fabrics, wood, plastic and ceramics (including glass).</p> <p>The properties of a material determine whether they can be used for a purpose.</p> <p>Vocabulary: object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through</p>	<p>Seasonal Changes - Winter & Spring Weather can change.</p> <p>There are lots of different types of weather: Rain, Sun, Cloud, Wind, Snow.</p> <p>Days are longer and hotter in the summer and shorter and colder in the winter.</p> <p>There are four seasons: Spring, Summer, Autumn, Winter and each has different weather.</p> <p>Vocabulary: weather, rainy, raining, shower, windy, snowy, cloudy, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, spring, Sun, sunrise, sunset, shorter day length</p> <p>Animals inc Humans - Animals & Human Body</p> <p>There are many different animals with different characteristics and body parts.</p> <p>Animals have senses to help individuals survive. When animals sense things they are able to respond.</p> <p>Animals need food to survive.</p> <p>Animals need a variety of food to help them grow, repair their bodies, be active and stay healthy.</p> <p>Vocabulary: head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group, parts of the human body including those within the school's RSE policy, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ears, tongue.</p>	<p>Seasonal Changes - Summer Weather can change.</p> <p>There are lots of different types of weather: Rain, Sun, Cloud, Wind, Snow.</p> <p>Days are longer and hotter in the summer and shorter and colder in the winter.</p> <p>There are four seasons: Spring, Summer, Autumn, Winter and each has different weather.</p> <p>Vocabulary: weather, sunny, hot, warm, rainbow, seasons, summer, Sun, sunrise, sunset, longer day length</p> <p>Plants</p> <p>Plants grow from seeds/bulbs.</p> <p>Plants need light and water to grow and survive.</p> <p>Plants have roots, stems and leaves.</p> <p>Plants are important and have different parts with different jobs.</p> <p>We can eat lots of plants such as fruit and vegetables.</p> <p>Vocabulary: leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, names of trees in the local area, names of garden and wild flowering plants in the local area</p>
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<p>Year 2</p>	<p>Living things and their habitats</p> <p>Some things are living, some were once living but now dead and some things never lived.</p> <p>There is variation (differences) between living things.</p> <p>Different animals and plants live in different places.</p> <p>Living things are adapted to survive in different habitats.</p> <p>Environmental change can affect plants and animals that live there.</p> <p>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.</p>	<p>Everyday Materials</p> <p>There are many different materials that have different describable and measurable properties.</p> <p>Materials that have similar properties are grouped into metals, rocks, fabrics, wood, plastic and ceramics (including glass).</p> <p>The properties of a material determine whether they are suitable for a purpose.</p> <p>Materials can be changed by physical force (twisting, bending, squashing and stretching).</p> <p>Vocabulary: opaque, transparent, translucent, reflective, non-reflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching.</p>	<p>Animals including humans</p> <p>Animals move in order to survive.</p> <p>Different animals move in different ways to help them survive.</p> <p>Exercise keeps animal's bodies in good condition and increases survival chances.</p> <p>All animals change as they grow up.</p> <p>All animals eventually die.</p> <p>Animals reproduce new animals when they reach maturity.</p> <p>Animals grow until maturity and then don't grow any larger.</p> <p>Vocabulary: offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/chicken, kitten/cat, caterpillar/butterfly), survive, survival, water, food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types</p>	<p>Plants</p> <p>Plants grow from seeds/bulbs.</p> <p>Plants need light, water and warmth to grow and survive.</p> <p>Flowers make seeds to make more plants (reproduce)</p> <p>Plants have roots, stems and leaves.</p> <p>Plants are important and have different parts with different jobs.</p> <p>We need plants to survive. Plants clean the air and give us food to eat.</p> <p>We can eat different parts of the plants (leaves, stems, roots, seeds, fruit)</p> <p>Vocabulary: light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling names of plants in local habitats and microhabitats.</p>	
<p>Year 3</p>	<p>Forces & Magnets</p> <p>Forces are pushes and pulls which make things move and stop moving</p>	<p>Rocks & Soils</p> <p>There are different types of rocks and soils.</p>	<p>Animals Including Humans Nutrition & Movement</p> <p>Different animals are adapted to eat different foods.</p>	<p>Light</p> <p>There must be light for us to see. Without light it is dark.</p>	<p>Plants</p> <p>A producer is a living thing that produces its own food such as green plants.</p>

	<p>Forces are shown by arrows in diagrams. The bigger the arrow, the bigger the force. The direction of the arrow shows the direction of the force.</p> <p>Most forces need contact between objects, but magnets can act at a distance.</p> <p>The north pole of one magnet will repel the north pole of another magnet. However, it will attract the south pole of another magnet.</p> <p>Magnets can attract or repel one another. They attract some materials & not others.</p> <p>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</p>	<p>Rocks are classified in three groups: igneous (Granite) , sedimentary (Sandstone & Limestone) and metamorphic (Marble).</p> <p>Different rocks and soils have different properties.</p> <p>Fossils are formed when things that had lived are trapped within rock. They tell us what has happened before.</p> <p>Vocabulary: rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorbs water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, types of soil (e.g. peaty, sandy, chalky, clay)</p>	<p>Many animals have skeletons to support their bodies and protect vital organs.</p> <p>Not all skeletons look the same.</p> <p>Muscles are connected to bones and move them when they contract.</p> <p>Muscles work in pairs to contract and relax to move bones and joints.</p> <p>vocabulary: nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine</p>	<p>We need light to see things, even shiny things.</p> <p>Transparent materials let light through them and opaque materials don't let light through.</p> <p>Beams of light bounce off some materials - this is called reflection..</p> <p>Shiny materials reflect light beams better than non-shiny materials.</p> <p>Light comes from a source.</p> <p>Shadows are formed when light is blocked.</p> <p>Vocabulary: light, light source, dark, absence of light, surface, shadow, reflect, mirror, Sun, sunlight, dangerous, opaque, block, transparent, translucent.</p>	<p>Their leaves absorb sunlight and carbon dioxide.</p> <p>Plants have roots, which provide support and draw water from the soil.</p> <p>Flowering plants have specific parts which help it carry out pollination, fertilisation and seed production.</p> <p>Seed dispersal improves a plants chances of successful reproduction.</p> <p>Seeds/bulbs require light, water, warmth, soil and air to grow.</p> <p>Vocabulary: photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil, absorb, transport</p>
Year 4	<p>Electricity</p> <p>A source of electricity (mains of battery) is needed for electrical devices to work.</p>	<p>States of Matter</p> <p>Everything in the world is made of particles.</p>	<p>Animals including Humans Teeth, Food Chains and Digestion</p> <p>Animals have teeth to help them eat.</p>	<p>Living things and habitats Classification</p> <p>Living things can be divided into groups</p>	<p>Sound</p> <p>Sound is produced when an object vibrates.</p>

	<p>Electricity sources push electricity round a circuit. More batteries will push the electricity round the circuit faster.</p> <p>A complete circuit is needed for electricity to flow and devices to work.</p> <p>Materials which allow electricity to flow easily through them are called conductors.</p> <p>Materials that don't allow electricity to flow easily through them are called insulators.</p> <p>Vocabulary: 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</p>	<p>Solids, liquids and gases are described by observable properties.</p> <p>Materials can be divided into solids, liquids and gases. Heating causes solids to melt into liquids and liquids evaporate into gases.</p> <p>Cooling causes gases to condense into liquids and liquids to freeze into solids.</p> <p>Water freezes at 0 degrees and boils at 100 degrees.</p> <p>The water cycle is the path that all water follows as it moves around Earth in different states.</p> <p>Vocabulary: solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle</p>	<p>There are 3 main types of teeth: Incisors, Canines and Molars. Different types of teeth do different jobs.</p> <p>Food is broken down by the teeth and further in the stomach and intestines where nutrients go into the blood.</p> <p>The mouth, teeth, oesophagus, stomach, large and small intestines and rectum are all part of the digestive system.</p> <p>A producer is a living thing that produces its own food such as green plants.</p> <p>A predator is an animal that eats another animal.</p> <p>A food chain shows how nutrients are passed on from a plant (producer) to the animals that eat it (consumer) and the animals that eat them (predator).</p> <p>Vocabulary: digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, incisor, canine, molar, premolar, herbivore, carnivore, omnivore, producer, predator, prey</p>	<p>based upon their characteristics.</p> <p>Environmental change affects different habitats and animals differently.</p> <p>Different food chains occur in different habitats.</p> <p>A producer is a living thing that produces its own food such as green plants.</p> <p>A predator is an animal that eats another animal.</p> <p>Human activity significantly affects the environment.</p> <p>vocabulary: classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate, herbivore, carnivore, omnivore, producer, predator, prey</p>	<p>Sound travels from its source and we hear it when it travels to our ears. Changing the shape, size and material of an object will change the sound it produces.</p> <p>Sound moves through all materials by making them vibrate.</p> <p>Changing the way an object vibrates changes its sound.</p> <p>Bigger vibrations produce louder sounds and smaller vibrations produce quieter sounds.</p> <p>Faster vibrations (higher frequencies) produce higher pitched sounds.</p> <p>Vocabulary: sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, quiet, loud, insulation</p>
<p>Year 5</p>	<p>Living things and habitats – Life Cycles</p> <p>Different types of animals have different life cycles.</p>	<p>Forces</p> <p>Forces are pushes and pulls which make things move and stop moving.</p> <p>Forces are shown by arrows in diagrams. The bigger the arrow, the bigger the force.</p>	<p>Properties and Changes of Materials</p> <p>All matter has mass.</p> <p>Some changes to materials can be changed (reversible) but others cannot return back to their original state (irreversible).</p>	<p>Animals including Humans</p> <p>Change & Growth</p> <p>Different animals mature at different rates and live to different ages.</p>	<p>Earth and Space</p> <p>The planets in order from the sun are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.</p>

	<p>Different animals mature at different rates and live to different ages.</p> <p>Environmental change can affect how well an animal is suited to its environment.</p> <p>Vocabulary: puberty, mammal, amphibian, insect, bird, fish, reproduction life cycle, foetus, baby, child, adolescent, adult, reproduce, sexual, sperm, fertilises, egg, live young.</p>	<p>The direction of the arrow shows the direction of the force.</p> <p>Gravity is a force that pulls everything down to the centre of the earth.</p> <p>Air resistance and water resistance are forces against objects caused by objects having to move air and water out of their way.</p> <p>Friction is a force against motion caused by two surfaces rubbing against each other.</p> <p>Forces can speed up or slow objects down or make them change direction.</p> <p>Some objects require large forces to make them move; gears, pulley and levers can reduce the force needed to make things move.</p> <p>Vocabulary: force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears</p>	<p>Sometimes mixed substances react to make a new substance. These changes are usually irreversible.</p> <p>Heating can sometimes cause materials to change permanently. When this happens, a new substance is made. These changes are irreversible.</p> <p>When two or more substances are mixed and remain present the mixture can be separated.</p> <p>Materials change state by heating and cooling.</p> <p>Materials can be separated using several techniques: magnetics, filtering, sieving, evaporation and floating.</p> <p>Vocabulary: thermal insulator, conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible, non-reversible change, burning, rusting, new material, change of state, mixture, dissolve, solution, filter, sieve.</p>	<p>Puberty is something we all go through, a process which prepares our bodies for being adults, and reproduction.</p> <p>Hormones control these changes; which can be physical and/or emotional.</p> <p>Some organisms reproduce sexually where offspring inherit information from both parents.</p> <p>Some organisms reproduce asexually by making a copy of a single parent.</p> <p>Different animals have different lifecycles.</p> <p>Vocabulary: puberty, mammal, amphibian, insect, bird, fish, reproduction life cycle, foetus, baby, child, adolescent, adult, reproduce, sexual, sperm, fertilises, egg, live young.</p>	<p>The Earth, Moon and Sun are spherical.</p> <p>The planets orbit the sun - this is called Heliocentric.</p> <p>Stars, planets and moons have so much mass they attract other things, including each other due to a force called gravity.</p> <p>Gravity works over distance.</p> <p>Objects like planets, moons and stars spin/rotate.</p> <p>Smaller mass objects like planets orbit large mass objects like stars.</p> <p>Night and day occur due to the earth spinning on its axis once every 24 hours.</p> <p>Vocabulary: Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation, waxing, waning, crescent, gibbous. Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, planets, solar system, day, night, rotate, orbit, axis, spherical, geocentric, heliocentric.</p>
Year 6	Electricity	Living things and habitats – Classification	Animals inc. humans – Circulation and Diet	Light	Evolution & Inheritance

<p>A source of electricity (mains of battery) is needed for electrical devices to work.</p> <p>Batteries are a store of energy and this energy pushes electricity round the circuit.</p> <p>Voltage measures the 'push.'</p> <p>When the battery's energy is gone it stops pushing.</p> <p>A complete circuit is needed for electricity to flow and devices to work.</p> <p>Current is how much electricity is flowing round a circuit. It is measured in Amps.</p> <p>The greater the current flowing through a device the harder it works. A bulb will burn brighter or a buzzer will buzz louder with more current.</p> <p>Vocabulary: 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,</p>	<p>Variation exists within a population (and between offspring of some plants).</p> <p>Organisms best suited to their environment are more likely to survive long enough to reproduce.</p> <p>Organisms are best adapted to reproduce are more likely to do so.</p> <p>Organisms reproduce and offspring have similar characteristic patterns.</p> <p>Competition exists for resources and mates.</p> <p>Vocabulary: vertebrates, fish, amphibians, reptiles, birds, mammals, warm-blooded, cold-blooded, invertebrates, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers</p>	<p>The heart and the blood vessels (arteries, veins and capillaries) form the circulatory system The heart pumps blood around the body. Oxygen is breathed into the lungs where it is absorbed by the blood.</p> <p>Muscles need oxygen to release energy from food to do work.</p> <p>Oxygen is taken into the blood in the lungs; the heart pumps the blood through blood vessels to the muscles; the muscles take oxygen and nutrients from the blood.</p> <p>Exercise makes the heart beat faster and the lungs exchange oxygen, strengthening the heart and making you healthier</p> <p>Pulse rate is the speed at which your heart beats.</p> <p>Vocabulary: heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, carbon dioxide, cycle, circulatory system, diet, drugs, lifestyle. Exercise, digestive, transport, gas exchange, villi, nutrients, water, oxygen, alcohol, drugs, tobacco.</p>	<p>Animals see light sources when light travels from the source into their eyes.</p> <p>Animals see objects when light is reflected off that object and enters their eyes.</p> <p>Light reflects off all objects (unless they are black).</p> <p>Non-shiny surfaces scatter the light so we don't see the beam.</p> <p>Light travels in straight lines.</p> <p>Vocabulary: straight lines, light ray, absorb, Refraction</p>	<p>Living things have changed over time. Fossils provide information about living things that inhabited the Earth millions of years ago.</p> <p>Living things produce offspring.</p> <p>Animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p>Over time the characteristics that are most suited to the environment become increasingly common.</p> <p>Vocabulary: Offspring, Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics, Variation, Inherited, Environmental, Mutation, Competition, Survival of the Fittest, Evidence.</p>
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	symbol, circuit diagram, circuit symbol, voltage				
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Year 4 and Year 6 in 23/24 cycle will need to cover some Y3/Y5 units they did not cover previously due to the rolling programme and avoid repeated units.

Year 4 will need to cover: Y3 Force/magnets and light instead of States of matter/Teeth and digestion. Forces magnets in the Aut 2 slot and Light in Spring.

Year 6 will need to cover: Y5 Life cycles & Properties and changes of materials instead of Evo & Inheritance/ Electricity. Would suggest for first year Life cycles Aut 1, and Properties of materials spring term and move Circulation & Diet to Summer 2.

Sequencing Rational

- Year 1 – Seasons need to be throughout the year in order to look at the change from autumn, winter, spring and summer. Everyday materials is at the same time as the toys topic as will encourage cross-curricular links between the materials part of this unit. Plants is in the summer term but also some coverage in Autumn to ensure comparison between how they change from Autumn/Winter to Spring/Summer
- Year 2 – Animals inc humans & Plants are larger units that require longer terms and weather appropriate for outdoor learning so are blocked into the Summer term.
- Year 3 – Links can be made from the light and rocks and soils topics to the plants topic so are sequenced one after enough to encourage these links. Plants are in the summer term to allow light to grow seedlings and encourage outdoor work in nicer weather. Rocks and soils in Aut 2 can link with Stone age unit and then give foundation of knowledge for the Volcanoes unit later in the year.

- Year 4 - States of matter is a large topic and sets the groundwork for changing materials in Year 5. Sound is at the end of the year as it is conceptually more challenging and requires states of matter particles learning to help to understand it.
- Year 5 – Forces needs to be completed before Earth and Space to help them to understand the concept of gravity and how planets orbit. Properties and changes of material is a big topic so spread over the spring term to ensure adequate time to cover.
- Year 6 – Light & Evolution and inheritance are more challenging concepts so are later in the school year.