Jerry Clay Academy: Science – Year Group Expectations

EYFS				
Plants/seasonal changes	Living things and their habitats	Animals, including humans	Every Day Materials	Light and sound
• look at conkers, leaves, acorns, pinecones • talk about how leaves change colour. • where is the best place for a plant to grow (investigation) • use magnifiers to explore plants and seeds • plant seeds (vegetables – cress)	*Understanding the world:* • How environments differ on earth, land and sea; Life on Planet Earth and Communities • woodland animals habitats and woodland small world • Where do different things (e.g. pumpkins) grow? • Arctic sceneries & arctic habitats • park trips	• learning facts about different animals • activities to explore senses learning about keeping happy and healthy and healthy eating • life cycle of a caterpillar/butterfly/frog	• magnets investigation station for exploring, sort objects that are magnetic and non magnetic, explore the idea of gravity/no gravity in space • mini pull and go car investigation station. •Rainbow experiment •drawing of natural materials •pancakes – changing state •floating and sinking •Recycling	Day and night, light and dark, shadow play, light for plant growth, Northern Lights •musical instruments to explore singing songs – how can we change the volume of our voice?

Jerry Clay Academy: Science – Year Group Expectations

Jerry Clay Academy: Science – Year Group Expectations

Year 1 Teachers should refer to prior knowledge documents and subject organisers which outline key vocabulary needed to understand each topic.				
Working scientifically (Working scientifically objectives cover Y1 and 2)	Plants	Animals, including humans	Every Day Materials	Seasonal Changes
• asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions	• 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	• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • Identify and name a variety of common animals that are carnivores, herbivores and omnivores • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	• 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.	• Observe changes across the four seasons • Observe and describe weather associated with the seasons and how day length varies.
Greater depth Can link prior learning to current learning to fully master topic and concept Apply knowledge in other contexts and create links to other areas of the curriculum or related contexts Can explain their understanding to others through diagrams, pictures, videos Use key vocabulary taught to explain and understand concepts Able to use observations to ask and answer questions Use data and investigations/observations to explain and justify reasons				

Year 1 - Key vocabulary taken from knowledge organisers				
Working scientifically	Plants	Animals, including humans	Every Day Materials	Seasonal Changes

Jerry Clay Academy: Science – Year Group Expectations

(Working scientifically objectives cover Y1 and 2)				
• question • answer • observe • observing • equipment • identify • classify • sort • group • record - diagram, • chart, map • data • compare, contrast • describe • biology • chemistry • physics	• Plant- A living thing that grows in one place such as an oak tree, a sunflower or a tomato plant. • Root- The part of a plant that acts as an anchor, fixing the plant into the ground. They also absorb water and minerals to help the plant to grow. • Stem -The part of the plant that grows above the ground. The leaves and flowers grow from it. The stem is also used to transport water and minerals around the plant. • Leaves- A plant's leaves absorb sunlight and turn it into energy that the plant uses to grow. seed The small part of a flowering plant that grows into a new plant. • Disperse- To spread out over a wide area. deciduous A tree that sheds its leaves during autumn.	• Fish- combination of gills, fins and the fact that they live only in the water, make fish different from all other animals • Reptile- a cold-blooded animal (as a snake, lizard, turtle, or alligator) • Mammal- a mammal is an animal that breathes air, has a backbone, and grows hair at some point during its life. • bird -warm-blooded, egg-laying animals that have vertebrae, or a backbone • amphibian -a group of cold-blooded vertebrate animals that have gills and live in water before adulthood but breathe air as adults • herbivore- something which feeds on plants omnivore something that eats plants and animals • Carnivore- something that is a meat-eater • Scales- are a small, strong part of an animal's skin which provides protection	• Absorbent: able to soak up easily. • Stiff: not easily bent or changed in shape • Stretchy: able to stretch. • Opaque: not able to be seen through. • Transparent: able to be seen through. • Rough: not smooth or level. • Waterproof: keeps out water. • Flexible: can bend without breaking. • Rigid: unable to bend or be forced out of shape. • Opaque: A material that does not let light pass through. • Transparent: A material that lets light through and you can see things very clearly through it.	• Observe • temperature • season • elements • shadows • rainfall gauge • rainfall • precipitation • Thermometer • Climate • Axis • Tilt • Orbit • Sun • Fog • Rain • Snow • Warm • Cool

Year 2 Teachers should refer to prior knowledge documents and subject organisers which outline key vocabulary needed to understand each topic.				
Working scientifically (Working scientifically objectives cover Y1 and 2)	Living things and their habitats	Plants	Animals, including humans	Use of every day materials

Jerry Clay Academy: Science – Year Group Expectations

• asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions	• 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 microhabitats • 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.	• Observe and describe how seeds and bulbs grow into mature plants • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	• 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.	• 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.

<u>Greater depth</u>

Can link prior learning to current learning to fully master topic and concept
Apply knowledge in other contexts and create links to other areas of the curriculum or related contexts
Can explain their understanding to others through diagrams, pictures, videos
Use key vocabulary taught to explain and understand concepts
Able to use observations to ask and answer questions
Use data and investigations/observations to explain and justify reasons

Year 2 Key vocabulary taken from knowledge organisers				
Working scientifically	Living things and their habitats	Plants	Animals, including humans	Use of every day materials

Jerry Clay Academy: Science – Year Group Expectations

(Working scientifically objectives cover Y1 and 2)				
• question • answer • observe • observing • equipment • identify • classify • sort • group • record - diagram, • chart, map • data • compare, contrast • describe • biology • chemistry • physics	• Habitat: home of an animal or a plant. • Carnivore: an animal that kills other animals for food. • Herbivore: an animal that eats only plants. • • Omnivore: an animal that eats from both plants and animals. • Amphibian: animals that begin their life in water and can live on land and in water. • • Mammal: have fur or hair on their body and drink their mother's milk when they are babies. • Reptile: breathes air and usually has the skin covered with scales or bony plates. • Vertebrate: an animal with a backbone Invertebrate: an animal without a backbone.	• Crop- plants such as wheat and potatoes that are grown for food • Deciduous- a tree that loses its leaves in the autumn every year • Evergreen -a tree or bush which has green leaves all the year round • Flower- the part of a plant which is often brightly coloured and grows at the end of a stem • herb- a plant whose leaves are used in cooking to add flavour to food, or as a medicine • plant -a living thing that grows in the earth and has a stem, leaves, and roots • reproduce- when an animal or plant produces one or more • individuals similar to itself • roots - the parts of a plant that grow under the ground seed the small, hard part from which a new plant grows • stem - the thin, upright part of a plant on which the flowers and leaves grow	• Metamorphosis–A change that some animals go through when they become adults. • Frogspawn–The eggs of a frog which are covered intransparent jelly. • Froglet–A young frog. • Gills–Part of a creature that helps it to breathe under water. • Pupa–A change that some animals go through when they become adults, where they often build themselves a cocoon. • Algae–A plant that lives in or near water. • Reproduce–When a living thing creates another living thing.	• Material: Something that an object is or can be made from. • Properties: The characteristics of a material e.g. glass can be transparent. Transparent is the property. • Flexible: Capable of bending easily without breaking. • Waterproof: Keeps out water. • Absorbent: Able to soak up liquid easily. • Elastic: A synthetic material. Flexible: Capable of bending easily without breaking

Year 3 Teachers should refer to prior knowledge documents and subject organisers which outline key vocabulary needed to understand each topic.	

Jerry Clay Academy: Science – Year Group Expectations

Working scientifically (Working scientifically objectives cover Y3 and 4)	Plants	Animals, including humans	Rocks	Light	Forces and Magnets
• asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.	• 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.	• 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.	• 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.	• 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 an opaque object • Find patterns in the way that the size of shadows change.	• 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.

<u>Greater depth</u>

Can link prior learning to current learning to fully master topic and concept
Apply knowledge in other contexts and create links to other areas of the curriculum or related contexts
Can explain their understanding to others through diagrams, pictures, videos
Use key vocabulary taught to explain and understand concepts
Set up their own investigations to ask and answer questions
Use data and investigations/ systematic observations to explain and justify reasons using a variety of ways to present data

Year 3 Key vocabulary taken from knowledge organisers	

Jerry Clay Academy: Science – Year Group Expectations

Working scientifically (Working scientifically objectives cover Y3 and 4)	Plants	Animals, including humans	Rocks	Light	Forces and Magnets
• Research - relevant questions • scientific enquiry • comparative and fair test • systematic, careful observation • accurate measurements • Equipment - thermometer, data logger • Data - gather, record, classify, present • Record - drawings, labelled diagrams, keys, bar charts, tables, oral and written explanations, conclusion, predictions, differences, similarities, changes • Evidence, improve, secondary sources, guides, keys, construct, interpret	• Pollen -A powdery yellow substance from the male part of a flower. • Fertilisation -When pollen and an egg join together to make a seed. • Nectar- A sweet fluid in flowers that attracts insects • Dispersal -Spreading things over a wide area • Pollination- The transfer of pollen from a male part of a plant to a female part of a plant • Nutrient- Any substance that plants or animals need in order to grow • Photosynthesis -The process by which a plant uses the energy from the light of the sun to produce its own food • Germination- To cause (a seed) to start growing • Stamen- The male part of a flower containing an egg 1 • Carpel- The female part of the flower	• Skeleton- Keeps the body in shape, helps movement and protects organs • Skull- A bone that protects the brain • Ribcage- A bone that protects the heart • Heart- Muscle that pumps blood around the body • Joints -Area where two bones meet • Consumers- Eating food you cannot create yourself • Muscle- Attached to the bone and are responsible for movement • Posture- The position that a person sits in • Nutrients - Substances that help plants and animals to grow • Organs- Tissues in the body that perform functions • Vitamins - Substances found in foods that keep you healthy • Digest- When food in the stomach is broken down • Tendon- A strong cord in a person or animal's body which joins a muscle to a bone	• Rock • Soil • Mineral • Metamorphic rock -Rock formed when any type of rock goes through changes caused by extreme heat and pressure (e.g. marble, slate). • Igneous rock - Rock formed by the cooling and hardening of hot magma or lava. Formed by volcanoes! (e.g. basalt, granite). • Sedimentary rock- Rock formed when sediment is pressed together over time. Formed over a long period of time (e.g. shale, limestone, sandstone). • Rock cycle • Fossil- The remains of a plant or animal that turned to stone over a long period of time. • Weathering • Erosion	• Dull: a surface that scatters light and does not look shiny. • Shiny: surfaces that reflect lots of light. • Reflect: to change the direction of light using a shiny surface. • Mirror: a shiny polished surface. • Light source: the place where light originates from. • Shadow: darkness caused by light being blocked. • Transparent: letting most or all light through. • Translucent: letting some light through. • Opaque: not letting light pass through	• force – a push or a pull. A force makes an object move, change direction or stop. • magnetism – a pushing or pulling force that a magnet has. magnetic field – the area round a magnet within which its magnetic force will work. horseshoe magnet – a curved magnet whose poles are close together. • bar magnet • iron – is the material that makes an object magnetic. compass – an instrument that tells you which direction is North and which is South. • gravity – a force that pulls objects together. friction – the force between two objects that are rubbing against each other.

Jerry Clay Academy: Science – Year Group Expectations

Year 4 Teachers should refer to prior knowledge documents and subject organisers which outline key vocabulary needed to understand each topic.					
Working scientifically (Working scientifically objectives cover Y3 and 4)	Living things and their habitats	Animals, including humans	States of matter	Sound	Electricity
• asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.	• Recognise that living things can be grouped in a variety of ways • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • Recognise that environments can change and that this can sometimes pose dangers to living things.	• 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 • Construct and interpret a variety of food chains, identifying producers, predators and prey.	• Compare and group materials together, according to whether they are solids, liquids or gases • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	• 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.	• 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.

<u>Greater depth</u>

Can link prior learning to current learning to fully master topic and concept
Apply knowledge in other contexts and create links to other areas of the curriculum or related contexts
Can explain their understanding to others through diagrams, pictures, videos
Use key vocabulary taught to explain and understand concepts
Set up their own investigations to ask and answer questions
Use data and investigations/ systematic observations to explain and justify reasons using a variety of ways to present data

Jerry Clay Academy: Science – Year Group Expectations

Year 4 Vocabulary taken from knowledge organisers					
Working scientifically (Working scientifically objectives cover Y3 and 4)	Living things and their habitats	Animals, including humans	States of matter	Sound	Electricity
• Research - relevant questions • scientific enquiry • comparative and fair test • systematic, careful observation • accurate measurements • Equipment - thermometer, data logger • Data - gather, record, classify, present • Record - drawings, labelled diagrams, keys, bar charts, tables, oral and written explanations, conclusion, predictions, differences, similarities, changes • Evidence, improve, secondary sources, guides, keys, construct, interpret	• Classify: to group things so that that • they can be identified. • Key • things. • Organism: a living thing, animal or • plant. • Habitat: a place where something • lives. • Invertebrate: an animal without a • backbone. • Insect: an animal with six legs. • Millipede: an animal with two legs to • each body segment. • Centipede: an animal with one leg to • each body segment. • • Mammal: an animal that gives birth • to live young. • Bird: an animal that flies and has an • internal skeleton. • MRSGREN	• Molar, incisor, canine • Enamel -The hard covering for the tooth. • Decay • Gum • Jaw • Oesophagus - this is a muscular tube lined with mucus which connects the throat to the stomach. • Stomach- The internal organ in which the major part of the digestion of food occurs, linking the oesophagus to the small intestine. • Liver- A large organ in the abdomen of vertebrates involved in many chemical processes linked to digestion • Large intestine -This is shorter and wider than the small intestine. • Rectum- The final section of the large intestine, ending at the anus, where faeces leaves our bodies	• Matter – any solid, liquid or gas that exists in the universe • Solid – substance that stays the same shape whether in a container or not Liquid – substance that can flow and take on the shape of a container • Gas – substance that has no fixed shape, like oxygen • Temperature – how hot or cold something is, normally measured in degree Celsius (°C) • Evaporation – the process of liquid heating and changing into a gas • Condensation – the process of a gas cooling and changing into a liquid • Water cycle – the process of water being recycled over and over again • Particle – an extremely small unit of matter	•Vibration- A back-and-forth movement . Sound waves- A wave that moves through the air when a sound is made, carrying the sound to our ears •Pitch -How high or low a sound is. •Volume- How loud or quiet a sound is. •Larynx- Your voice box which is in your throat. The larynx vibrates to make sound. •Supersonic Travelling- faster than sound •Break the sound barrier- When a vehicle begins to travel faster than sound.	• Circuit • Current- A flow of electricity through a wire. Physics The study of forces including electricity and the way it effects objects. • Battery -A small device that provides power for electrical items. • Cell- A device used to generate electricity. A battery is an example of a cell. • Conductor- Any material that electricity can pass through or along. Insulator Any material that electricity cannot pass through or along. • Buzzer -An electrical device that makes a buzzing sound. • Motor- A device that changes electrical energy into movement. • Wire- A long piece of metal that carries an electrical current often covered in plastic for safety. • Voltage -An electrical force that makes electricity move through a wire. • Socket

Jerry Clay Academy: Science – Year Group Expectations

Year 5 Teachers should refer to prior knowledge documents and subject organisers which outline key vocabulary needed to understand each topic.					
Working scientifically (Working scientifically objectives cover Y5 and 6)	Living things and their habitats	Animals, including humans	Properties and changes of materials	Earth and Space	Forces
• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments	• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • Describe the life process of reproduction in some plants and animals.	• Describe the changes as humans develop to old age.	• Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • Demonstrate that dissolving, mixing and changes of state are reversible changes • Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda	• 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.	• 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

<u>Greater depth</u>

Can link prior learning to current learning to fully master topic and concept
Apply knowledge in other contexts and create links to other areas of the curriculum or related contexts
Can explain their understanding to others through diagrams, pictures, videos
Use key vocabulary taught to explain and understand concepts
Set up their own investigations to ask and answer questions. Use scientific evidence to back up ideas and findings.
Use data of increasing complexity and investigations/ systematic observations to explain and justify reasons using a variety of ways to present data

Year 5 Key vocabulary taken from knowledge organisers

Jerry Clay Academy: Science – Year Group Expectations

Working scientifically (Working scientifically objectives cover Y5 and 6)	Living things and their habitats	Animals, including humans	Properties and changes of materials	Earth and Space	Forces
• Plan – variables, measurements, accuracy, precision, repeat readings • Report data - scientific diagrams, labels, classification keys, tables, scatter graphs, bar graph and line graphs, predictions, further comparative and fair test • Report and present- conclusions, causal, relationship, explanations, degree of trust, oral and written display and presentation. • Evidence - support, refute ideas or arguments, identify, classify and describe patterns systematic, quantitative measurements	• Bulb: a part of a plant that stores food underground, which grow a new shoot. • Pollination: when pollen from one plant is transferred to the ovary of another. • Fertilisation: when an egg and pollen join together. • Larva: the young form of some animals, which looks very different from its parents. It undergoes a dramatic change to become an adult, and loses its young features or gains new ones. • Gestation: when a baby animal develops inside its mother. • Metamorphosis: a dramatic change in the life cycle of an animal in which it ends up looking totally different.	• Gestation- of time • Foetus- An unborn offspring of a mammal/an unborn human more than eight weeks after conception • Infancy- The time of babyhood or early childhood • Adolescence- The time during which a young person develops from a child into an adult • Offspring - A person's child or children/an animal's young • MRSGREN- Movement, Respiration, Sensitivity, Growth, Reproduction, Excretion, Nutrition	• Transparent • translucent • Flexible • Rigid • Opaque • Material • Properties • Smooth hard • Rough, textures • Natural • Man made • magnetism • hardness • transparency • flexibility • permeability • thermal insulator • conductor • investigation • variables	• Earth. • Star • The Sun -The Sun is the closest star to Earth. The • Moon • Solar System - The solar system includes the Sun and all the objects that orbit around it due to its gravity, including Earth. • Planet -A planet is an object orbiting the Sun, which is made of rock or gas. • Orbit -The curved path of an object or spacecraft around a star, planet or moon	• Force • Friction • Gravity- The force that attracts a body towards the centre of the Earth • Repel- To force back or away • Attract -To draw closer by an unseen force • ResistanceMagnet- A piece of iron that attracts objects containing iron and points north and south when suspended • Streamlined- Designed with a shape that gives little resistance to the flow or air and water • Buoyancy- Able to float

Jerry Clay Academy: Science – Year Group Expectations

Year 6 – Teachers should refer to prior knowledge documents and subject organisers which outline key vocabulary needed to understand each topic.

Working scientifically (Working scientifically objectives cover Y5 and 6)	Living things and their habitats	Animals, Including humans	Evolution and Inheritance	Light	Electricity
• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments	• Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals • Give reasons for classifying plants and animals based on specific characteristics.	• Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • Describe the ways in which nutrients and water are transported within animals, including humans	• Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	• Recognise that light appears to travel in straight lines • Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	• Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • 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 switches • Use recognised symbols when representing a simple circuit in a diagram.

<u>Greater depth</u>

Can link prior learning to current learning to fully master topic and concept
Apply knowledge in other contexts and create links to other areas of the curriculum or related contexts
Can explain their understanding to others through diagrams, pictures, videos
Use key vocabulary taught to explain and understand concepts
Set up their own investigations to ask and answer questions. Use scientific evidence to back up ideas and findings.
Use data of increasing complexity and investigations/ systematic observations to explain and justify reasons using a variety of ways to present data

Jerry Clay Academy: Science – Year Group Expectations

Year 6 – Key vocabulary taken from subject organisers					
Working scientifically (Working scientifically objectives cover Y5 and 6)	Living things and their habitats	Animals, Including humans	Evolution and Inheritance	Light	Electricity
• Plan – variables, measurements, accuracy, precision, repeat readings • Report data - scientific diagrams, labels, classification keys, tables, scatter graphs, bar graph and line graphs, predictions, further comparative and fair test • Report and present- conclusions, causal, relationship, explanations, degree of trust, oral and written display and presentation. • Evidence - support, refute ideas or arguments, identify, classify and describe patterns systematic, quantitative measurements	• Micro-organisms-A living thing too small to been seen by the human eye. • Annelids-An invertebrate that is a segmented worm. • Invertebrate-Animals without a backbone. • Arachnid-Small invertebrate usually with 8 legs. • Vertebrate-Animals with a backbone or spinal column. • Species -A group of living things that are closely related. • Arthropod- An invertebrate with an exoskeleton an a segmented body. • Bacteria -A single celled micro-organism that can live anywhere. • Insect -A small arthropod animal that has six legs and three body parts. • Deciduous-Plants that shed their leaves annually. • Molluscs-Invertebrate with an unsegmented body that can have a hard shell. • Coniferous-Evergreen plants usually with needle-shaped or scale-like leaves, pines or cones.	• Heart • Lungs • Blood: the liquid that transports oxygen around the body. • • Oxygen: the gas in the air that is needed for respiration. • Vein: blood vessel carrying blood back to the heart. • • Artery: blood vessel carrying blood away from the heart. • • Exercise: the activity of exerting your muscles in various ways to keep fit. • Addiction: when you feel an uncontrollable urge to do something as it makes you feel good. • Nicotine: the addictive substance in cigarettes. • Cancer: a disease caused by an uncontrolled division of abnormal cells in a part of the body. • System: a set of organs in the body with a common structure or function. • Circulatory System: the system that circulates blood and lymph through the body.	• Recessive genes- A recessive gene is a gene that can be masked by a dominant gene. In order to have a trait thatis expressed by a recessive gene, such as blue eyes, you must get the gene for blue eyes from both of your parents. • Natural selection-The process whereby organisms better adapted to their environment tend to survive and produce more offspring. • Inherited characteristics - • Dominant characteristic- Being or produced by a form of a gene that prevents or hides the effect of another form	• Filter – Pass through a device to remove unwanted material (liquid, gas, light or sound) • Light • Light source – • Periscope – An apparatus consisting of a tube of attached to a set of mirrors or prisms through which an observer can see things that are otherwise out of sight • Rainbow – An arch of colours visible in the sky, caused by the refraction and dispersion of the sun's light by rain or other water droplets in the atmosphere • Reflection – The throwing back by a body or surface of light, heat or sound without absorbing it • Refraction – The bending of light as it passes from one substance to another with the bending caused by the difference in density between two substances	• bulb • buzzer • cell / battery - • circuit • conductor • current • electricity • filament -A conducting wire or thread with a high melting point that is part of an electric bulb • motor -A machine powered by electricity that will enable a device to move • switch- A device for making or breaking the connection in a circuit • voltage- An electrical force that makes electricity move through a wire, measured in volts • component- The individual parts that are put together to make the circuit