Year 5 – Forces **Term: Autumn**

National Curriculum	*Pupils should be taught to:* • ***To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.*** • ***To identify the effects of air resistance, water resistance and friction.***

	National Curriculum	Key Learning	Activities	Working Scientifically	Key Vocabulary	Exit Questions
1	***To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.*** ***To identify the effects of air resistance, water resistance and friction.***	Children will be able to identify forces acting on objects.	- Identify the forces in action using the bingo boards - Identify the opposing forces in action	**Research** Use the Lesson Presentation to learn about different kinds of forces to then identify them.	***Force, push, pull, gravity, air resistance, water resistance, friction.***	Name a push and pull force that you can see someone using around the classroom.
2	***To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.***	Children will be able to explore the effect that gravity has on objects and how the first theory of gravity was developed.	- Children explain Newton's law - Measure the force of gravity- predict, measure, conclusion	**Pattern Seeking** Notice links between the weight and mass of an object. **Comparative and Fair Testing** Complete a fair test to investigate if there is a link between the weight and mass of an object. **Research**	***Gravity, force, Isaac Newton, newton, newton meter, weight, mass.***	Why do you think forces are measured in newtons with a newton metre?

				Read the Newton and Gravity Fact Sheet to find the answers to questions.		
3	***To identify the effects of air resistance***	Children will be able to investigate the effects of air resistance	- Children to plan and investigate air resistance using a parachute - Produce a report outlining their conclusions	**Comparative and Fair Testing** Carry out a test to investigate which parachute would take the longest time to fall to the ground.	***Gravity, air resistance, Galileo Galilei, mass, parachute, force, prediction, investigation, measure, observe, variables, results.***	Why did you change the size if the spinner propellers in your investigation?
4	***To identify the effects of water resistance***	Children will be able to explore the effects of water resistance.	- Children to build boats and race them- paying attention to the shape to make it streamlined - Children to evaluate their boat's performance	**Comparative and Fair Testing** Carry out a comparative test investigating how the shape of a boat has an impact on how much water resistance is created, affecting the speed of the boat.	***Water resistance, streamline, force.***	Streamlined boats will travel slower through the water. True or false? Explain.
5	***To identify the effects of friction***	Children will be able to investigate the effects of friction.	- Children to investigate the best material for a brake pad by testing the friction of different materials	**Comparative and Fair Testing** Carry out a comparative test to find out which material would make the most effective brake pads for a tricycle or scooter.	***Friction, force, brake, prediction, investigation, measure, observe, variables, results.***	Why does a brake pad need friction?
6	***To recognise that some mechanisms, including*** ***levers, pulleys and gears, allow a smaller force*** ***to have a greater effect***	Children will be able to explore and design mechanisms.	- Explore range of mechanisms - Identify the mechanisms shown - Design their own machine that uses different mechanisms	**Identifying, Grouping and Classifying** Identify if an object has a lever, gear or pulley. **Research**	***Mechanism, lever, gear, cog, pulley, machine, force.***	Name the mechanism that would be used to lift a heavy bucket of water up out of a well.

				Children complete a carousel activity, finding out about different types of mechanism by reading and making notes.		
	Assessment		-			

Year 5- Earth and Space **Term: Autumn**

National Curriculum	*Pupils should be taught to:* • **Describe the movement of the Earth and the 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.**

	National Curriculum	Key Learning	Activities	Working Scientifically	Key Vocabulary	Exit Question
1	***Describe the sun, Earth and moon as approximately spherical bodies.***	Children will be able to explain why we know the Sun, Earth and Moon are spherical.	- Sort evidence into two groups- suggests Earth is spherical and suggests the Earth is flat - Choose the most powerful evidence that the Earth is a sphere and explain why in more depth	**Researching** Complete a research enquiry exploring theories for a flat Earth and a spherical Earth.	*Earth, Sun, Moon, sphere, circle, evidence, flat, round.*	What shape is the Earth, Sun and Moon?
2	***Describe the movement of the Earth and the other planets relative to the sun in the solar system.***	Children will be able to name and describe features of the planets in our solar system. Children will be able to order the planets in our solar system.	- Create a poster, ordering the planets in the solar system	**Researching** Use fact files to research, name and record information about planets.	***Star, planet, Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.***	Mercury, Venus, Mars, Jupiter. What is wrong with this order of planets?
3	***Describe the movement of the Earth and the other planets relative to the sun in the solar system.***	Children will be able to explain how planet move in our solar system.	- Read the story of the change from the geocentric model to the heliocentric model - Children are split into small groups and create a film about their character	**Researching** Use the lesson resources to learn about theories of planetary movement in the solar system and how ideas have changed over time, to then compose a short sketch.	***Orbit, rotate, heliocentric, geocentric.***	Describe how the Earth moves relative to the Sun

4	***Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.***	Children will be able to explain day and night and the apparent movement of the sun across the sky.	- Write an explanation text in pairs for night and day. (ENGLISH LESSON?)	**Observing over time** Watch a video to observe the apparent movement of the Sun across the sky and map against the time of the day and the Earth's rotation to learn about day and night.	***Day, night, Sun, Earth, rotate, axis, shadow.***	What causes day and night?
5	***Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.***	Children will be able to investigate night and day in different parts of the Earth.	- Use the time zones map to calculate times in other countries (MATHS LESSON?)	**Researching** Use a time zone map to find out about differences in times in different parts of the Earth.	***Time, countries, daylight, night time, distance, light, dark.***	Why does day and night take place at different times in different places on Earth?
6	***Describing the movement of the*** ***Moon relative to the Earth***	Children will be able to explain the movement of the Moon.	- Children make a model of the Sun, Earth and Moon orbit model - Write a short explanation describing the movement of the moon		***Rotate, orbit, axis, face, Sun, Earth, Moon.***	What causes the moon to shine? Why do we see different shaped shadows on the moon throughout its orbit?
	Assessment		-			

Year 5 – Animals Including Humans

Term: Spring

National Curriculum	*Pupils should be taught to:* • ***Describe the changes as humans develop to old age***

	National Curriculum	Key Learning	Activities	Working Scientifically	Key Vocabulary	Exit Questions
1	***To describe the changes as humans develop to old age.***	Children will be able to describe the stages of human development.	- Describe the difference between asexual and sexual reproduction - Match characters to the stage of human growth and development - Ordering stages of human growth and development on a timeline	**Researching** Use the animal gestation periods table to research gestation periods of mammals.	***Egg, sperm, foetus, baby, toddler, child, teenager, adult, old age, development, growth, human, infancy, childhood, adulthood, adolescence, prenatal.***	*Asexual reproduction is…..*
2	***To describe the changes as humans develop to old age.***	Children will be able to explain how babies grow and develop.	- To present the data on growth in height of babies as a graph.		***Data, tables, bar graphs, line graphs, present, findings, information, growth, height, mass.***	*What happens to the height of babies in the first 12 months?* *What have you found out about the average heights of baby boys compared to baby girls?*
3	***To describe the changes as humans develop to old age***	Children will be able to describe and explain the main changes that occur during puberty.	- Label the physical changes that occur during puberty and give reasons why these occur		***Puberty, changes, breasts, pubic hair, hips, facial hair, body hair, genitals, muscular development, menstruation.***	*Name one change that happens to a girl and one change that happens to a boy during puberty.*
4	***To describe the changes as humans develop to old age.***	Children will be able to identify the changes that take place in old age.	- Children research how to stay healthy and active during old age and create a poster that could be displayed in a Drs/Care Home.	Identifying Identify and name each stage of human growth and development.	***Old age, human, development, growth rate, decrease, changes, compare.***	*Give two things that elderly people could do to stay healthy*

				Identify changes during puberty, Researching Use the lesson presentation to learn about adolescence and puberty and recognise that information can be reliable or unreliable.		
5	***To describe the changes as humans develop to old age.***	Children will be able to report findings from enquiries.	- Predict and compare the gestation periods of different types of vertebrates (and invertebrates) - Present their findings in their own chosen way	**Grouping and Classifying** Group changes that occur in late adulthood into 'physical changes' and 'other changes'. **Researching** Use the lesson presentation and lesson resources to learn about changes that may occur in late adulthood, before completing a sorting and poster task.	***Gestation, growth, fetus, animals, vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, protozoa, coelenterates, flatworms, annelid worms, echinoderms, molluscs, arthropods, arachnids, crustaceans, insects, myriapods.***	*What is a gestation period?*
6	***To describe the changes as humans develop to old age.***	Children will be able to record complex data using graphs and models. Children will be able to identify the relationship between variables.	- Choose the most appropriate graphing method for each set of data - Present the data in a graph - Analyse the data - Establish the kind of relationship there is between gestation periods and life expectancy	**Identifying, Grouping and Classifying** Identify and name each stage of human growth and development. **Pattern seeking** Establish if there is a relationship between gestation period and life expectancy **Researching** Use the lesson presentation to learn about and take notes	***Life expectancy, association, causal relationship, correlation, positive, negative.***	*Is there a relationship between gestation period and life expectancy?*

				about the stages of human growth and development.		
	Assessment		-			

Year 5-Living Things and Their Habitats **Term: Spring**

National Curriculum	*Pupils should be taught to:* • **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.**

	National Curriculum	Key Learning	Activities	Working Scientifically	Key Vocabulary	Exit Questions
1	**Describe the life process of reproduction in some plants and animals.**	Children will be able to explain how some plants reproduce	- Add information about the function to labelled parts of a flower - Identify the method of pollination- insect or wind - Sort statements into sexual or asexual reproduction	**Grouping and Classifying** Sort flowers into groups of those that are pollinated by the wind and those that are pollinated by insects.	***Sexual, asexual, reproduction, gamete, cell, pollen, ovule, fusion, fertilisation, pollination.***	*How does the wind pollinate plants?* *Is pollination sexual or asexual reproduction?*
2	**Describe the life process of reproduction in some plants and animals.**	Children will be able to describe how some plants reproduce	- Sort statements according to whether they describe advantages or disadvantages of each type of reproduction - Take cuttings from a geranium plant and plant these- explain this method of asexual reproduction	**Observe over time** Take cuttings and observe their growth over time. **Grouping and Classifying** Sort statements into groups of advantages and disadvantages of sexual and asexual reproduction in plants **Researching** Use a source to learn about sexual and asexual reproduction in plants to then complete a sorting activity.	***Asexual, sexual, reproduction, cuttings, roots.***	*How many parent plants are needed for asexual reproduction?*

3	**Describe the life cycle of a mammal.** **Describe the life process of reproduction in some plants and animals.**	Children will be able to describe the life cycles of different mammals	- Order the stages of reproduction and describe what is happening in each stage - Describe the stages of the life cycle of a chosen mammal (either a monotreme, a marsupial or a placental) - Compare life cycles of different types of mammal	**Researching** Use a source to find out about reproduction and life cycles of mammals to then make a 'life cycle wheel' and make comparisons between mammals.	***Sexual, reproduction, gamete, male, female, sperm, ovum, penis, vagina, fertilise, pregnancy, gestation, monotreme,*** ***marsupial, young.***	*In what way are monotreme mammals different from other mammals?*
4	**Describe the process of reproduction and the life cycle of a mammal**	Children will be able to explain what Jane Goodall discovered about chimpanzees	- Fact or fiction about Jane Goodall - Children create a fact file about Jane Goodall, explaining her role as a naturalist and conservationist	**Researching** Use a source to learn about Jane Goodall to then create a fact file about her life and work with chimpanzees.	***Family tree, chimpanzee, Jane Goodall, naturalist, conservationist, life cycle, endangered, extinct.***	*Name three things that Jane Goodall discovered about Chimpanzees*
5	**To describe the differences in the life cycles of an amphibian and an insect**	Children will be able to compare the life cycles of amphibians and insects	- Identify animals that undergo metamorphosis - Describe the stages of different life cycles of amphibians and insects - Identify similarities and differences between the life cycles they have described	**Researching** Use a source to research and complete life cycles of amphibians and insects that undergo metamorphosis.	***Metamorphosis, amphibian, insect, transform, larvae, pupa, nymph, egg.***	*What is metamorphosis? Name 2 animals that undergo this process*
6	**To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird**	Children will be able to compare the life cycles of mammals, amphibians, insects and birds	- Identify the parts and function of the parts of an egg - Order the stages of the life cycle of a bird - Compare the life cycle of a frog to the life cycle of a bird - Write a script to narrate a programme all about life cycles of different animals	**Researching** Use a source to learn about different life cycles to then produce a short narrative in the role of a wildlife presenter.	***Egg, yolk, albumen, embryo, bird, mammal, amphibian, insect, plant, life cycle, reproduce.***	*Name the function of the albumen*
	Assessment					

Year 5- Changes of materials **Term: Summer**

National Curriculum	*Pupils should be taught to:* • **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 filtering, sieving and evaporating.** • **Give reasons, based on evidence from comparative and fair tests, for the particular use 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.**

	National Curriculum	Key Learning	Activities	Working Scientifically	Key Vocabulary	Exit Questions
1	***To compare and group together everyday materials on the basis of their properties, including their hardness, transparency and response to magnets.***	Children will be able to compare materials according to their properties.	- Write definitions for properties - Test the properties of different materials	**Identifying, Grouping and Classifying** Carry out tests to identify properties of materials.	***Material, property, magnetic, hard, transparent, flexible, permeable.***	*What does permeable mean?*
2	***To give reasons, based on evidence from comparative and fair tests, for the particular use of everyday materials, including metals, wood and plastic.*** ***To compare and group together everyday materials on the basis of their thermal conductivity.***	Children will be able to investigate thermal conductors and insulators.	- Plan and carry out investigation on best thermal insulator for a new lunchbox - Create a conclusion	**Identifying, Grouping and Classifying** Carry out tests to identify properties of materials. **Observing over Time** When exploring thermal insulation, observe the effects over time of different materials and how well they keep what is inside them cool. **Comparative Testing**	***Thermal, conductor, insulator, heat, material, variable.***	*What makes a good thermal insulator?*

				Carry out a test to find out which material would be the best thermal insulator to make a lunch bag from.		
3	***To give reasons, based on evidence from comparative and fair tests, for the particular use of everyday materials, including metals, wood and plastic.*** ***To compare and group together everyday materials on the basis of their electrical conductivity.***	Children will be able to investigate which electrical conductors make a bulb shine brightest.	- Investigate the conductivity of materials using a simple circuit - Present findings to the rest of the class	**Comparative Testing** Set up a test to find out which metal makes the best electrical conductor.	***Electric, resistance, circuit.***	*What were the results of your investigation?*
4	***To know that some materials will dissolve in liquid to form a solution.*** ***To compare and group together everyday materials on the basis of their solubility.***	Children will be able to investigate materials which will dissolve.	- Investigate which temperature different materials dissolve at - Record results on a bar chart	**Identifying, Grouping and Classifying** Test materials to identify if they are soluble or insoluble. **Comparative Testing** Carry out a test to investigate dissolving and how different variables have an effect on how a material dissolves.	***Dissolve, soluble, insoluble, liquid, solid.***	*Where does the material go when it has dissolved?*
5	***To use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.***	Children will be able to use different process to separate mixtures of materials.	- Separate the mixtures using different processes	**Observing over Time** Observe evaporation when trying to separate a salt and water solution.	***Separate, mixture, solution, suspension, evaporate, filter, sieve, magnet, attract, particles.***	*Name 2 processes that can be used to separate mixtures*

	To demonstrate that dissolving, mixing and changes of state are reversible changes. ***To describe how to recover a substance from a solution.***					
6	***To 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 soda.***	Children will be able to identify and explain irreversible chemical changes.	- Explain how the reversible changes can be reversed and identify the reactants and products of the changes - Carry out two irreversible chemical changes to make new materials	**Identifying, Grouping and Classifying** Sort materials into groups of reversible and irreversible changes.	***Reversible, irreversible, physical, chemical, reaction, reactant, product.***	*What is an irreversible chemical change?*
	Assessment		-			