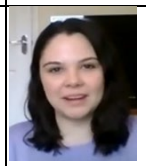
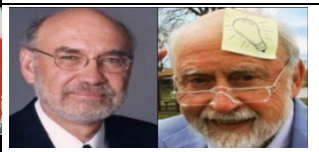
Science Knowledge and Skills Coverage. (Year 5)

INTENT

Content/ Knowledge	Living Things and Habitats	Animals Including Humans	Space	Properties of materials	Forces
	Describe the differences in 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 from birth to old age.	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 approximate spherical bodies. Use Earth rotation to explain day and night due to the apparent movement of the sun across the sky.	Compare and group together everyday materials based on their properties, including hardness, solubility, transparency, conductivity 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 solid, liquid and gas to decide how mixtures might be separated including through filtering, sieving and evaporation. Give reasons based on evidence from comparative 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 this kind of change is not usually reversible including changes associated with burning and the action of acid on bicarbonate of soda.	I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I can identify the effects of air resistance, water resistance and friction, that act between moving surfaces I can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect
Book/ Science Capital	 Jane Goodall  David Attenborough	 Midwife  Curiosity	 Neil Armstrong Buzz Aldrin Tim Peake Helen	 Spencer Silver Arthur Fry	  Galileo  Helen Margolis
Scientific Enquiry	Identify patterns that might be found in the natural environment. Identify and classify different life cycles. I can use secondary sources to research naturalists and behaviouralists. Report and present findings from Research. I can plan and carry out a fair test accurately. I can look for patterns when Considering gestation periods of Animals.	Look for patterns in gestation periods. Notice changes over time Use research and own subject knowledge to order stages of human development. Identify changes in the human body I can research and use subject knowledge to help others. I can research and use subject knowledge to help others.	Identify and classify planets Identify and classify planets. Observe changes over time Use research and secondary sources to find out about the moon. Look for patterns in day light hours. Conduct a fair test where variables are Controlled.	Identify different materials and classify based on its properties. I can identify the properties of different Materials based on whether it will dissolve. I can make observations over time I can compare how reversible and Irreversible materials act when heated and Cooled. I notice patterns in my results. I learn about famous scientists and what major discoveries they have made.	Research the effects of gravity and Sir Isaacs equipment. Observe over time how many times a pendulum swings. Conduct a fair test to explore the effects of air resistance on a falling object. Conduct a comparative test to investigate water resistance. Conduct a fair test to investigate friction. Look for patterns in my results.
Working Scientifically	Use oral and written forms to report conclusions. Present data in a variety of different ways to help answer my questions. Ask relevant questions and find ways to answer them. I can make accurate and relevant predictions. I can suggest next steps based on the Weakest aspects of the enquiry. Record my results using a bar chart and explain the results.	Make predictions on gestation Periods. Record data using scatter graphs Make careful observations as we grow older Record learning using scientific diagrams. Interpret findings to help others. Evaluate my learning	Raise questions and suggest reasons for similarities and differences. Use measurement to represent planets in a model Record my work using scientific diagrams and labels. Use a model to discuss, communicate and justify scientific ideas using scientific vocabulary. Present results in a variety of ways to Answer a question. Plan own test and control variables.	Evaluate my test. I can make predictions about which materials are soluble and insoluble. I can use scientific language and illustrations to discuss, communicate and justify ideas. I can make careful observations when heating solutions. I can plan my own test based on how Materials react with one another. I can record results in a table	Observe different forces and measure the force using different equipment. Set up a test to change the speed of a pendulum. Interpret and communicate results from data using scientific vocabulary Plan different types of enquiry to answer a question. Take measurements using a range of scientific equipment. Record results in a table.

IMPLEMENTATION

Ideas/WOW moments.	1. Recap previous learning- animal classification and lifecycles. Classification drama. Classify animals. Draw a lifecycle. 2. Life cycles of different organisms. Life cycle drama. Comparing lifecycles using a diagram. 3. Find out about the work of Jane Goodall and David Attenborough. Observe animals and take notes in a table. 4. Pollination vs fertilisation. Recap on pollination. Pollination drama recap. Sexual and asexual reproduction. School group survey for different types of plants. Children research how different plants reproduce. 5. Investigate how to grow new plants from different parts of the parent plant. Children carry out a fair test to grow their own plant. 6. How do animals reproduce? Investigate different gestation periods and make top Trumps. Assessment test.	1. Recap body systems, teeth and animals. Research gestation periods of animals. 2. Lifecycle of a human. Use fruits and vegetables as models for foetus development. Plot developmental stages on line graph. 3. Observe how we change as we age. Developmental milestones. Order what happens at different stages. 4. Puberty and changes on the body. 5. Looking after mental health and design a poster. 6. Relaxation techniques, complete poster and end of unit test.	1. Recap previous learning on light and shadow. Read Curiosity, ordering planets and looking at relative sizes through Playdough planets. 2. Investigation into how big each planet is using fruit and veg. Creating a solar system in my pocket. 3. Investigate phases of the moon through drama and Oreo moon phases. Children draw the 8 moon phases. 4. Children use a model to investigate the relationship between the sun, moon and earth. Ext investigate how their weight would change on different planets. 5. Investigate day and night and why different parts of the world have day at a different time. 6. Look at what astronauts do and famous astronauts. What causes craters on the moon? Chn learn about asteroids and comets and plan their own crater experiment.	1. Recap previous learning on materials and forces. Investigate materials and their properties through a 'Cinderella' materials problem solving. 2. Understand the difference between melting and Dissolving, soluble and insoluble. Children will conduct a test to find out which materials are soluble, and which are not. 3. Children will investigate if they can recover a substance from a solution by heating materials. 4. Children will learn about reversible changes by changing milk into butter. 5. Children will recap irreversible and reversible materials then look at changes resulting in new materials through various investigations such as tea bag rockets, bicarb balloons, pop rockets. 6. Children will find out about Spencer Silver and Arthur Fry and the invention of the post it note. Children will use their findings to make their own glue. Assessment test.	1. Recap previous learning- forces. Find out about Sir Isaac Newton. Learn about gravity and different forces by investigating different forces applied. 2. Focus on gravity and space. Explore difference between weight and mass. Focus on Galileo and investigate time using pendulums. 3. Investigate air resistance. Investigate effects of air resistance with parachutes. 4. Investigation into water resistance. 5. Investigate friction through slippy shoes investigation. 6. Investigate levers, pulleys and gears through a range of activities.
Cross Curricular	**PSHE**- growing up and reproduction. **Maths**- Using keys and grouping. Creating recording tables and looking for patterns. Plotting on a graph. **English-** spell scientific vocabulary correctly. Report findings in a logical way. **Geography-** different climates and explore how animals are adapted to different climates. **Sustainability-** Explore different types of pollution and the effects on animals. **MFL**- Learn animal names in a different language. **History**- learning about scientists of the past and present.	**PSHE-** links to puberty, relationships and healthy relationships. **Maths**- Plotting data on a line graph. Using a table to collect data. **English**- spelling scientific words correctly and writing ideas in a logical way. **Art-** Designing a poster for an audience to give information.	**English**- Enjoy science texts, follow instructions, asking questions, **Maths**- size and mass. Measuring using cms, reading tables. Link to fractions when folding paper. **History**- learning about historical development of space and scientists of the past and present. **PSHE**- Dangers about looking at the sun. **IT**- Use of video to share abstract concepts. Slow motion video technology (optional)	**English**- interpreting results and using and spelling scientific words correctly. Drama activities to reenact concepts. **Maths**- Using tables and Venn diagrams. **DT**- evaluating the effectiveness of different materials. **PSHE**- Safety when testing and making own glue. Safety when dealing with flames and heat. **History**- learning about historical developments and scientists of the past and present.	**DT**- evaluating the effectiveness of different materials to create parachutes. **English**- interpreting results and using and spelling scientific words correctly. Write a letter to a driving company. **Maths**- Using tables and Venn diagrams. Using scales to read force metres. Bar and line graphs. Learn about weight and mass. **IT**- Use of video to show abstract concepts. **History**- learning about historical development of electricity and scientists of the past and present.
Resources	• Post it notes • Books/information about endangered animals. • ICT • Sticky tape, magnifying glasses, moss. • Real flowers (optional) • Graph paper	• Post it notes • Poppy seed, grapes, lettuce, turnip, coconut, swede, papaya, pumpkin • Scrap paper • Whiteboards and pens	• Playdough/plasticine/ or salt dough at least 150g per group/person. • Plastic knife. • Peppercorn, blueberry, grape, pea, Watermelon, coconut, orange, lemon. • Trundle wheels/ tape measures/rulers. • Oreo cookies • Split pins • Sand/rice, crisp tubes. • Sticky tape, model figures, torch, globe. • Trays/baking trays, flour, coco powder, sieve, balls of different weights and sizes e.g. ping pong, marbles, bouncy balls.	• Post it notes • Rice, pins, paperclips, soil, glass beads. • Magnet, cardboard, cellotape, pencil, bluetac, containers or paper cups for sorting. Materials- • metal spoon, slinky, rock, transparent materials, opaque materials, waterproof materials, absorbent materials, flexible materials, magnetic materials, good electrical conductors • 2 glasses, one with sugar and one with butter, Spoon. Hot water. Materials- such as icing sugar, salt, flour, milkshake powder, hot chocolate powder, coffee, mini marshmallows, jelly, hundreds and thousands, popping candy, powder paint (You do not need all of these or as many- just a range). • Tea lights and tea light holders, sand trays. • Milk carton/jar per group, milk Materials for heating- ice cubes, cheese, butter, bread, apple, jelly Tea light, tealight holder, foil trays, sand, sand tray, matches/lighter. • Tea bags (These need to be the ones with a stable in) long lighter. • Bottle, balloon or glove, vinegar, bicarb • Film canisters, vit C tablets, bicarb, mentos, yeast, white vinegar, malt vinegar, water, lemon juice. • sugar, salt, baking powder, cornflour, water Beakers, bowls, stirrers, pegs/buttons, mini washing line, paper, cardboard and other surfaces to test	• Post it notes • Whiteboards and pens • Elastic bands, springs, jump cords, fitness bands (things you can stretch) • Baking cases, paper, weights, bucket of sand (things you can lift/drop) • Playdough, orange, peel, cork, feather (things that float/sink) • Chair, heavy table tidy, table, toy car, weighted objects (things to push/pull) • Force Metres- different scales. • Coffee tubes/pringles tubes with sand (optional activity) • Balloons, Weights, string, plasticine, stop watches, protractor, ruler, tape. • Strong card, bag, tissue paper • Maltesers • Different materials for parachutes e.g paper, card, acetate, plastic bag, paper, string, lego figure (optional). • Measuring cylinders, plasticine, shapes, stop watches. • Cardboard, lollypop sticks, paper, junk modelling material, hand held fans, water. • Push/pull newton metres 100g masses, Rulers, 500g masses, masking tape, force metres. • Bucket of sand, card, rope. • Cardboard, lollysticks, scissors, cellotape, compass, pencil, protractor, ruler, paper, cocktail sticks, plasticine, beads

IMPACT		Can describe the lifecycles of mammals, amphibians and insects using diagrams. Can describe similarities and differences between them.	Can explain the changes that takes place in boys and girls during puberty. Can explain how a baby changes physically as it grows and also what it is able to do.	Can show using diagrams the movement of the Earth and moon. Can explain the rotation of the Earth and how this causes night and day. Can explain evidence gathered about the position of shadows in terms of movement of the Earth. Can explain how a sundial works. Can explain why we have time zones.	Can explain everyday uses of material e.g. how bricks, wood, glass are used in buildings. Can explain what dissolving is, giving examples. Can name equipment used for filtering and sieving. Can use knowledge of liquids, gases and solids to suggest how materials can be recovered from solutions or mixtures by evaporation, filtering or sieving. Can describe simple reversible and non-reversible changes to materials, giving examples. Can create chart/table grouping materials using properties. Suggest appropriate material for purpose. Can explain results from investigations involving dissolving and non-reversible change	Can demonstrate the effect of gravity acting on an unsupported object. Can give examples of friction, water resistance and air resistance. Can give examples of when it is beneficial to have high or low friction, water resistance, and air resistance. Can demonstrate how pulleys, levers and gears work.