OUR MISSIONS: Love of learning – Grow Spiritually – Foster Respect – Serve our Community – Opportunity to Flourish – Prepare and Equip

YEAR 5 **Science**

Autumn Term – Properties and changes of materials

Key Questions:

What is and why is it important to create a fair test?
What are properties and how do we categories them?
Which materials make good thermal conductors and insulators?
What processes can be used to separate materials?
What is the difference between a reversible change and an irreversible change?

Key Skills: Plan Do Record Review

- ask relevant questions and using different types of scientific enquiries to answer them
- set up simple practical enquiries, comparative and fair tests
- make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using equipment such as rulers and thermometers.
- gather, record, classify and present data in a variety of ways to help in answering questions.
- record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- report on findings from enquiries, include oral and written explanations, displays or presentations of results and conclusions
- use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identify differences, similarities or changes related to simple scientific ideas and processes.
- use straightforward scientific evidence to answer questions or to support their findings.

Learning	Activities	Learning	Activities
Properties and changes of materials • 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		Creating questions around the picture of Gallium. Bring out the Gallium for children to observe and touch. Identify which materials/ elements the children have heard of from The Periodic Table. Children try to identify a range of objects through only touch (feely bags). Conduct a series of fair tests on a range of materials in reference to their properties. Create an experiment to answer the big question, *'Which materials make the best insulator?'* Using their new knowledge of separating materials children will have to decide on techniques to help the supermarket to separate their goods. Demonstrate what happens when you combine bicarbonate of soda and vinegar.	
Key Vocab: Enquiry, scientific, materials, properties, periodic table, elements, metal, liquid, solid, natural, expanding, Gallium, magnetic, hard, transparent, flexible, permeable, solubility, conduction, convection, radiation, transfer, energy, insulator, thermal, independent, controlled, dependent, reversible, irreversible, physical, chemical, reaction, reactant, product. Separate, mixture, solution, suspension, soluble, insoluble, dissolve, evaporate, filter, sieve, magnet, attract, particles.			
Extension and Enrichment Opportunities			

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YEAR 5 **Science**

Spring 1 – Earth and Space	Spring 2 - Forces
Key Questions: The Earth is flat, true or false? Prove it. If Earth was the size of a Cherry tomato, which fruit would represent the size of Jupiter? Is the Earth at the centre of the solar system? Winter solstice occurs in June and December, true or false? Our Moon - friend or foe?	**Key Questions:** Who was Sir Isaac Newton? Is there a difference between Mass and Weight? What is gravity? Do the effects differ depending on where you are? Is there a difference between Mass and Weight? What is the effect of water resistance?

Key Skills: Plan Do Record Review

- ask relevant questions and using different types of scientific enquiries to answer them
- set up simple practical enquiries, comparative and fair tests.
- make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using equipment such as rulers and thermometers.
- gather, record, classify and present data in a variety of ways to help in answering questions.
- record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- use straightforward scientific evidence to answer questions or to support their findings.

Learning	Activities	Learning	Activities
Earth and space • 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	Discuss the topic's big questions and famous scientists. Complete, 'What the children know/ questions to find out about,' sheet. Complete the quiz (do not reveal the answers at this time. Look at research cards, evidence to support flat/ spherical theories, alongside ICT research on iPads for some more specific detail. Using a range of different sized fruits, children to work out which planets they represent and then place them in order (closest to furthest from the sun). Create own/ existing mnemonics to remember the order of the planets from the sun in our Solar System. Read through the characters (scientists through time), including narrator information. Watch and look at pictures of the different models of the universe.	Forces • 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	Conduct an experiment to check if different objects (different sizes or weights perform differently, when they are dropped. Research Isaac Newton. For example: Where did he study? Which item inspired him to study gravity? Have a look at the timeline to really appreciate Isaac's achievements. Explain that Mass is not the same as Weight. Watch video and additional information on the website. Children collect 3-5 objects from the classroom. They need to measure the Mass Kg) and then convert it to the Weight (in Newtons). Testing their sports shoe to see which surfaces their shoe works best on. (Friction) Mini investigation into streamlining shapes to determine the least water resistance to win a boat race.

	Use Oreo's to demonstrate the different moon phrases.		
Key Vocab- Rotate, orbit, axis, face, Sun, Earth, Moon, space, Solar System, Moon, planets, scientists, physicists, mathematicians, astronomers, Dark Matter, theories, knowledge, evidence, questions, Spherical bodies, Mercury, Mars, Saturn, Uranus, Jupiter, Neptune, Venus. .		**Key Vocab** - Earth, Gravity, force, Isaac Newton, newton, meter, weight, mass, friction, grip, surface, Newton, meter, weight, pull, push. Water resistance, streamline,	
Extension and Enrichment Opportunities			
Planetarium visit? (Chichester)			

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YEAR 5 **Science**

Summer 1 – Animals, including humans		Summer 2 – Living things and their habitats	
Key Questions:		**Key Questions:**	
Key Skills: Plan Do Record Review		Key Skills: Plan Do Record Review	
Learning	**Activities**	**Learning**	**Activities**
Animals, including humans • describe the changes as humans develop to old age		**Living things and their habitats** • 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	
Key Vocab .		**Key Vocab**	
Extension and Enrichment Opportunities			