








Science Curriculum Overview

Year 5

Term	Science Topic	Knowledge and understanding	Scientific Enquiry Skills	What I will know and remember
1	Animals including humans	Describe the changes as humans develop to old age.	<p>Compare graph types and select which is most appropriate for my data.</p> <p>Analyse and report findings in written explanations.</p> <p>Name the 6 stages of human development.</p> <p>Give reasons why changes occur during puberty.</p>	<p>I can observe and research the stages of human development.</p>   <p>I can observe and find patterns in how babies grow and develop and present data.</p>   <p>I can observe the main changes that occur during puberty.</p>  <p>I can research the changes that take place in old age.</p>  <p>I can report findings from enquiries.</p> <p>I can record complex data using graphs and models, identifying the relationship between variables.</p> 

Vocabulary





- **Circulatory system:** circulation, **heart**, pulse, heartbeat, heart rate, lungs, breathing, **blood vessels**, blood, pump, transported, **oxygenated blood**, **deoxygenated blood**, oxygen, arteries, veins, capillaries, chambers, plasma, platelets, white blood cells, red blood cells.
- **Lifestyle:** **drug**, **alcohol**, smoking, disease, calorie, energy input, energy output.
- **Other:** water transportation, nutrient transportation, waste products.

Working towards

End of unit assessment

Working at

Working above

Term	Science Topic	Knowledge and understanding	Scientific Enquiry Skills	What I will know and remember
2	Forces	<p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Identify the effects of air resistance, water resistance and friction, that acts between moving surfaces.</p> <p>Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.</p>	<p>Identify and explain the different forces acting on objects.</p> <p>Explain Newton's role in discovering gravity.</p> <p>Accurately measure an object's weight and mass.</p> <p>Explain how to increase the effects of air resistance.</p> <p>Explain Galileo's 'Tower of Pisa' experiment into gravity and air resistance.</p> <p>Identify streamlined shapes;</p> <p>Explain how friction is used in brake pads;</p> <p>Investigate the effects of friction;</p> <p>Explain how different mechanisms work;</p> <p>Design their own mechanism to achieve a given purpose;</p>	<p>I can observe forces acting on objects.</p>  <p>I can find patterns in the effect gravity has on objects and how gravity was discovered.</p>  <p>I can fairly test the effects of air resistance.</p>  <p>I can fairly test the effects of water resistance.</p> 

Identify the variables in an investigation;
Make observations and conclusions;
Be able to answer questions based on their learning.

*Ogden Trust Resource : Phizzi Earth and Space :
Enquiry D - Rockets*

*Ogden Trust Resource : Phizzi Earth and Space :
Enquiry E - Parachutes*

*Ogden Trust Resource : Phizzi Forces : Enquiry C
- Slippy Shoes*

*Ogden Trust Resource : Phizzi Forces : Enquiry G
- Balloon Race*

*Ogden Trust Resource : Phizzi Forces : Enquiry H
- Pendulum Swing*

*Ogden Trust Resource : Phizzi Forces : Enquiry I
- Planetary Landings*

*Ogden Trust Resource : Phizzi Forces : Enquiry J
- Simple Machines*

I can **compare** the effects of friction.



I can **fairly test**, explore and design mechanisms.



Vocabulary

- Types of forces: air resistance, water resistance, buoyancy, upthrust, Earth's gravitational pull, gravity, opposing forces, driving force.
- Mechanisms: levers, pulleys, gears/cogs.
- Measurements: weight, mass, kilograms (kg), Newtons (N), scales, speed, fast, slow.
- Other: streamlined, Earth.






Previously introduced vocabulary: air, heat, moon.

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Working at

Working above

Term	Science Topic	Knowledge and understanding	Scientific Enquiry Skills	What I will know and remember
3	Properties and change	<p>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.</p> <p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p>	<p>Follow instructions to test a material's properties.</p> <p>Explain the uses of thermal and electrical conductors and insulators.</p> <p>Order materials according to their electrical conductivity.</p> <p>Explain and investigate dissolving and the processes used to separate mixtures.</p> <p>Explain irreversible changes.</p> <p>Identify the variables in an investigation.</p> <p>Make observations and conclusions.</p> <p>Be able to answer questions based on their learning.</p>	<p>I can group materials according to their properties.</p>  <p>I can compare thermal conductors and insulators.</p>  <p>I can fairly test which electrical conductors make a bulb shine brightest.</p>  <p>I can observe materials which will dissolve.</p>  <p>I can fairly test different processes to separate mixtures of materials.</p>  <p>I can research and explain irreversible chemical changes.</p>

		<p>Demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>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.</p>		
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Vocabulary

- Properties of materials: thermal **conductor/insulator**, magnetism, electrical resistance, **transparency**.
- Mixtures and solutions: dissolving, substance, soluble, insoluble.
- Changes of materials: reversible change, physical change, irreversible change, chemical change, burning, new material, product.
- Separating: sieving, filtering, magnetic attraction.

Previously introduced vocabulary: electrical **conductor/insulator**, bulb, **translucent**.

<u>Working towards</u>	<u>End of unit assessment</u>	<u>Working at</u>	<u>Working above</u>
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4	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.	<p>Explain the function of the parts of a flower. Give two differences between sexual and asexual reproduction. Identify the features of plants pollinated by insects or the wind. Describe the stages of sexual reproduction. Describe the differences between the three types of mammals. Give four facts about Jane Goodall. Describe the stages of the life cycles of mammals, birds, insects and amphibians. Identify similarities and differences between the life cycles of different plants and animals.</p>	<p>I can observe how some plants reproduce.</p>  <p>I can identify the life cycles of different mammals.</p>  <p>I can research what Jane Goodall discovered about chimpanzees.</p>  <p>I can compare the life cycles of amphibians and insects and group accordingly.</p>  <p>I can compare the life cycles of plants, mammals, amphibians, insects and birds, and group accordingly.</p> 
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Vocabulary

- **Reproduction:** asexual reproduction, sexual reproduction, gestation, metamorphosis, gametes, tuber, runners/side branches, plantlet, cuttings, embryo, adolescent, penis, vagina, egg, pregnancy, gestation.









Previously introduced vocabulary: **life cycle**, **pollination**, offspring, **fertilise**, fertilisation, sepal, filament, anther, stamen, pollen, petal, stigma, style, ovary, carpel, ovule, stem, bulb, roots, mammal, adult, baby, sperm, cells, live young.





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Term	Science Topic	Knowledge and understanding	Scientific Enquiry Skills	What I will know and remember
5	Earth and space	<p>Describe the movement of the Earth and other planets relative to the Sun in the solar system.</p> <p>Describe the movement of the Moon relative to the Earth.</p> <p>Describe the Sun, Earth and Moon as approximately spherical bodies.</p> <p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p>	<p>Describe the Sun, Earth and Moon as spherical.</p> <p>Name the planets in the solar system independently.</p> <p>Distinguish between heliocentric and geocentric ideas of planetary movement.</p> <p>Explain that day and night is due to rotation of the Earth.</p> <p>Support the idea that different places on Earth experience night and day at different times with evidence.</p> <p>Report and present findings from enquiries.</p> <p>Explain how the Moon moves relative to the Earth.</p> <p><i>Ogden Trust Resource : Phizzi Earth and Space : Teaching Point 2</i></p> <p><i>Ogden Trust Resource : Phizzi Earth and Space : Teaching Point 3</i></p> <p><i>Ogden Trust Resource : Phizzi Earth and Space : Teaching Point 4</i></p> <p><i>Ogden Trust Resource : Phizzi Earth and Space : Teaching Point 5</i></p>	<p>I can research and observe why we know the Sun, Earth and Moon are spherical.</p>   <p>I can research and observe the features of the planets in our solar system and put them in order.</p>   <p>I can research how planets move in our solar system.</p>  <p>I can research and observe day and night and the apparent movement of the sun across the sky.</p>   <p>I can identify and observe scientific evidence which does or does not provide evidence for an idea or argument.</p>  <p>I can observe and pattern seek night and day in different parts of the Earth.</p>

				  I can report and present findings from enquiries. I can research and observe the movement of the Moon.  
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Vocabulary

- Solar system: star, planet.
- Names of planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Neptune, Uranus.
- Shape: spherical bodies, sphere.
- Movement: rotate, axis, orbit, satellite.
- Theories: geocentric model, heliocentric model, astronomer.
- Day length: sunrise, sunset, midday, time zone.

Previously introduced vocabulary: Sun, moon, shadow, day, night, heat, light, reflect.

<u>Working towards</u>		<u>End of unit assessment</u>		<u>Working above</u>
		<u>Working at</u>		

Term	Science Topic	Knowledge and understanding	Scientific Enquiry Skills	What I will know and remember
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6	Scientists and inventors	<p>Understand how scientific evidence has been used to support or refute ideas or arguments and how scientific ideas have changed over time.</p> <p>Know and understand that the movement of the Earth and other planets is relative to the sun in the solar system.</p> <p>Understand the life process of reproduction in some plants and animals.</p> <p>Knowledge of planning scientific enquiries to help answer questions.</p>	<p>Explain whether evidence supports or refutes ideas.</p> <p>Use chromatography to separate mixtures.</p> <p>Identify a mixture by analysing its component.</p> <p>Explain how Margaret Hamilton's software inventions changed the way computer programmes were used.</p> <p>Explain Neil deGrasse Tyson's ideas about Pluto.</p> <p>Identify the largest and smallest planets in our solar system.</p> <p>Record their results accurately and explain what they show.</p> <p>Use their results to make new predictions.</p> <p>Describe the life cycle of bees.</p> <p>Order facts about Stephanie Kwolek's life.</p> <p>Identify evidence that supports or refutes the idea that Stonehenge was used as an astronomical calendar.</p> <p>Explain their own theories and ideas.</p>	<p>I can research how evidence is used to solve crimes.</p>  <p>I can use chromatography to separate mixtures fairly.</p>  <p>I can research Margaret Hamilton's life and work.</p>  <p>I can seek patterns in the sizes, surfaces and orbits of planets in our solar system.</p>  <p>I can research Eva Crane and her work with bees.</p>  <p>I can research Stephanie Kwolek and her work with materials and identify materials for jobs based on their properties.</p>   <p>I can carry out an inquiry fairly to answer a question and use my results to make new predictions.</p>  <p>I can research evidence that supports or refutes scientific theories about Stonehenge.</p> 
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Vocabulary

Recap of vocabulary covered over the year.

Naturalist, documentary, wildlife, animals

CSI, technician, chromatography, evidence, support, refute

Apollo, mission, Moon, astronaut, spacecraft, NASA, software, engineer

Solar system, astrophysics, orbit, gas, atmosphere, liquid, solid, galaxy, milky way, universe, telescope, terrestrial planets, gas giants, ice giants, dwarf planets, Sun, Moon,

Mercury, Venus, Earth, Mars, Jupiter, Saturn,

Uranus, Neptune, Pluto, Ceres, Haumea, Makemake, Eris

Bee, decline, honey, egg, larvae, pupa

Materials, properties, hard, soft, light, heavy, dense, density, flexible

Leonardo da Vinci, anatomy, proportions

Stonehenge, astronomy, midsummer,

midwinter, Sun, Moon, eclipse, lunar, align,

theory, calendar.

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