<table>
<tr><td>Class: Year 5</td><td>Topic Title: Living things and their habitats</td><td>Key Vocabulary</td></tr>
<tr><td>NC Objectives:
• 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</td><td rowspan="2">• Observe and record the life cycle of a butterfly or a chick.
• Research and record the life cycle of a bird, a mammal, an insect and an amphibian.
• Use a Venn diagram to record similarities and differences between the life cycles of different animals
• Know that a dolphin, a whale and a platypus are mammals.
• Know that all mammals feed their young milk and most give birth to live young (platypus lay eggs).
• Look for patterns in gestation data for different mammals.
• Dissect a flower (lily or daffodil) to identify male (stamen) and female (stigma) parts.
• Know and describe the processes of pollination and fertilisation.
• Observe and record how plants reproduce asexually.
• Take cuttings from a plant and observe how it develops.</td><td rowspan="2">Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, gestation

asexual, plantlets, runners, bulbs, cuttings, pollination, fertilisation.</td></tr>
<tr><td>Working Scientifically Objectives:
• 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.

Objectives highlighted in yellow to be taught in this topic.</td></tr>
<tr><td colspan="2">Previous Learning Experiences:
Year 2:
• notice that animals, including humans, have offspring which grow into adults
Year 3:
plore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and ed dispersal.</td><td></td></tr>
<tr><td>Possible Community Links/trips
• Junk food café – plants
• Links with the Tawd Valley park
• Links with the Beacon Country Park
• Links with local farm for chicks
• Chester zoo – life cycles</td><td colspan="2">Future Learning Experiences:
KS3:
• reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes,</td></tr>
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	fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta • reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms.

Class: Year 5	Topic Title: Animals including Humans	Key Vocabulary
NC Objectives: • describe the changes as humans develop to old age Working Scientifically Objectives: • 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	• Research different animals to find out their gestation, life span, average number of offspring per pregnancy, and size of animal and compare to Humans. • Observe and record how a foetus develops in the womb. • Observe and identify changes from baby, toddler to child using pictures brought in from home. • Take and record measurements to observe changes as humans develop into adults. • Know the changes experienced during puberty for girls and boys. • Know the changes experienced in old age. • Know that when women reach the menopause they no longer menstruate and are unable to have children. • Draw a timeline to describe the stages of growth and development experienced by humans.	Puberty, foetus, womb, gestation, Baby, toddler, adolescent, adult, hormones, menstruation, menopause

• identifying scientific evidence that has been used to support or refute ideas or arguments. *Objectives highlighted in yellow to be taught in this topic.*	Previous Learning Experiences: Year 2: notice that animals, including humans, have offspring which grow into adults
Possible Community Links	Future Learning Experiences:
	KS3: • reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta.

Class: Year 5	Topic Title: Properties and changes of materials	Key Vocabulary
NC Objectives: • 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 • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • 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 • 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	• Devise tests to compare materials on the basis of their properties. • Use sorting diagrams (Carroll or Venn) to compare and group materials on the basis of their properties. • Use comparative tests to explore the properties of different materials and report and present findings giving reasons. • Plan an investigation to compare the absorbency of different materials. • Explore materials that are used in everyday items and give reasons for their use. • Carryout an investigation into thermal insulation (also explore how insulation can keep things cool as well as warm). • Observe what happens to different materials when mixed with water: salt, chalk, coffee, flour and custard powder.. • Plan an investigation to explore factors that affect the rate of dissolving.	soft, hard, stretchy, rigid, flexible, waterproof, absorbent, thermal conductivity, melting, solid, liquid, gas, dissolve, solution, soluble

<table>
<tr><td>Working Scientifically Objectives:
• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary (absorbency and dissolving)
• 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.
Objectives highlighted in yellow to be taught in this topic.</td><td colspan="2">• Record results from an investigation exploring absorption and dissolving.
• Observe reversible changes: melting, freezing, evaporation, condensation, mixing and filtering.
• Use knowledge to separate a mixture of materials (salt, sand, pasta, dried paper clips, rice).
• Observe different irreversible changes: heating bread, shaking cream to make butter, mixing vinegar with baking soda. Notice that new materials are formed.</td></tr>
<tr><td></td><td colspan="2">Previous Learning Experiences:</td></tr>
<tr><td></td><td colspan="2">Year 4:
• 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</td></tr>
<tr><td>Possible Community Links</td><td colspan="2">Future Learning Experiences:</td></tr>
<tr><td>Manchester Science Museum</td><td colspan="2">KS3:
• chemical reactions as the rearrangement of atoms
• representing chemical reactions using formulae and using equations
• combustion, thermal decomposition, oxidation and displacement reactions
• defining acids and alkalis in terms of neutralisation reactions
• the pH scale for measuring acidity/alkalinity; and indicators</td></tr>
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Class: Year 5	Topic Title: Earth and Space	Key Vocabulary

<table>
<tr>
<td>NC Objectives:
• 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</td>
<td rowspan="2">• Know that the Sun, Earth and Moon are approximately spherical.
• Know the names and order of the planets relative to the Sun: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.
• Know that Pluto is a dwarf planet.
• Know that all the planets orbit around the Sun in an anticlockwise direction.
• Know that all the planets rotate on their axis. Uranus and Venus rotate clockwise and the others (like the Sun) rotate anti-clockwise.
• Replicate the movement of the planets through roleplay.
• Know that Earth orbits the Sun every 365 day and a quarter. This is called a year. Every four years we combine the 4 quarters to make an extra day and we call this a leap year.
• Know that the Moon orbits the Earth every 28 days and this is what we call a month.
• Know the eight phases of the Moon: new moon, waxing crescent, first quarter, waxing Gibbous, full moon, waning gibbous, third quarter and waning crescent.
• Know that we see the Moon because it reflects light from the Sun.
• Know that Neil Armstrong was the first astronaut to land on the Moon.
• Know that the Earth spins on its axis every 24 hours and this is called a day.
• Know that because the Earth spins on its axis we experience longer/shorter periods of daylight at different times of the year causing the four seasons.
• Know that areas close the North and South Poles experience full days of daylight/darkness at certain times in the year due to Earth's rotation on its axis.
• Use a model to replicate and explain day and night.
• Know that the Sun appears to rise in the East and set in the West.
• Observe how shadows change due to the apparent movement of the Sun across the sky.</td>
<td rowspan="2">Earth, Sun, Moon, Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune Spherical, Solar system, rotates, star, orbits, planets, axis</td>
</tr>
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<td>Working Scientifically Objectives:
• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
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Objectives highlighted in yellow to be taught in this topic.</td>
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<tr>
<td colspan="3">Previous Learning Experiences:</td>
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<tr>
<td colspan="3">Year 1:
• observe changes across the four seasons.
observe and describe weather associated with the seasons and how day length varies.</td>
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<tr>
<td>Possible Community Links/trips</td>
<td colspan="2">Future Learning Experiences:</td>
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<tr>
<td>Liverpool World Museum</td>
<td colspan="2">KS3:
• gravity force, weight = mass x gravitational field strength (g), on Earth g=10 N/kg, different on other planets and stars; gravity forces between Earth and Moon, and between Earth and Sun (qualitative only)</td>
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</table>

	• our Sun as a star, other stars in our galaxy, other galaxies • the seasons and the Earth's tilt, day length at different times of year, in different hemispheres • the light year as a unit of astronomical distance.

Class: Year 5	Topic Title: Forces	Key Vocabulary
NC Objectives: • 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	• Know that Isaac Newton discovered gravity when an apple dropped on his head. • Know that weight is a measure of the gravitational force acting on it. • Know that weight is measured in Newtons and Mass is measured in g and kg. • Know that Aristotle theorised that the speed of a falling object was proportionate to its weight. • Know that Galileo tested Aristotle's theory by dropping items from the top of the Leaning Tower of Pisa. • Plan an investigation to explore the relationship between weight and the velocity of a falling object. • Know that weight doesn't affect the rate an object falls but air resistance does. • Carryout an investigation to explore the effect of air resistance on a falling object. • Investigate and review the effect of water resistance. • Plan an investigation to identify the effects of friction (cars on different surfaces). • Explore using levers, pulleys and gears. • Classify and group images showing examples of levers, pulleys and gears seen in everyday objects. • Plan an investigation to explore the effect of levers.	Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears
Working Scientifically Objectives: • 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. *Objectives highlighted in yellow to be taught in this topic.*	Previous Learning Experiences: Year 3: • 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	

Possible Community Links/trips	Future Learning Experiences:
Manchester Science Museum	KS3: • forces as pushes or pulls, arising from the interaction between two objects • using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces • moment as the turning effect of a force • forces: associated with deforming objects; stretching and squashing – springs; with rubbing and friction between surfaces, with pushing things out of the way; resistance to motion of air and water • forces measured in newtons, measurements of stretch or compression as force is changed