

## St. Mary's Science Department Topic Overview Sheet

<b>Topic:</b>	Cells	<b>Year Group:</b>	7
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<b>Big Question:</b>	What are living things made from?
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<b>Pupils should arrive at the unit already knowing:</b>	<p>During Classification of Living Things in Year 6, pupils looked at micro-organisms, plants and animals to give reasons for classifying them based on SPECIFIC characteristics.</p> <p>When studying Humans as Organisms, pupils identified and named the main parts of the human circulatory system, and described the functions of the heart, blood vessels and blood. This included description of the ways in which nutrients and water are transported within animals, including humans.</p> <p>In Year 4, pupils described the simple functions of the basic parts of the digestive system in humans. In Year 5, pupils described the changes as humans develop to old age. They should have drawn a timeline to indicate stages in the growth and development of humans.</p>
<b>During this unit pupils will need to learn:</b>	<p>Cells as the fundamental unit of living organisms, including how to observe, interpret and record cell structure using a light microscope.</p> <p>The functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts.</p> <p>The similarities and differences between plant and animal cells.</p> <p>Compare different specialised cells in terms of structure and function. The role of diffusion in the movement of materials in and between cells. The structural adaptations of some unicellular organisms.</p> <p>The hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms.</p>
<b>This unit links to the following future learning:</b>	<p>In the following topic, pupils will study the structure and functions of the human skeleton, to include support, protection, movement and making blood cells. They will look at biomechanics – the interaction between skeleton and muscles, including the measurement of force exerted by different muscle. The function of muscles and examples of antagonistic muscles. The structure and functions of the gas exchange the structure and functions of the gas exchange system in humans, including adaptations to function the mechanism of breathing to move air in and out of the lungs. 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.</p>

During this unit pupils will have the following key experiences:	During the unit pupils will use the following key vocabulary:	The following links to Bitesize support this topic
<ul style="list-style-type: none"> <li>● Recognise that Cells are the fundamental unit of living organisms.</li> <li>● Identify recognise and recall similarities and differences between plant and animal cells</li> <li>● Can observe, interpret and record cell structure using a light microscope.</li> <li>● Describe functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts.</li> <li>● Compare different specialised cells in terms of structure and function.</li> <li>● Understand the role of diffusion in the movement of materials in and between cells.</li> </ul>	amoeba cell wall      vacuole cells chloroplasts concentration diffusion euglena flagellum leaf cell microscope nerve cell nucleus observation organisms red blood cell root hair cell specialised cell sperm cell	<a href="https://www.bbc.co.uk/bitesize/topics/znyycdm/articles/zkm7wnb">https://www.bbc.co.uk/bitesize/topics/znyycdm/articles/zkm7wnb</a>  <a href="https://www.bbc.co.uk/bitesize/topics/znyycdm/articles/zfj3rwx">https://www.bbc.co.uk/bitesize/topics/znyycdm/articles/zfj3rwx</a>  <a href="https://www.bbc.co.uk/bitesize/topics/znyycdm/articles/z2vrr2p">https://www.bbc.co.uk/bitesize/topics/znyycdm/articles/z2vrr2p</a>  <a href="https://www.bbc.co.uk/bitesize/topics/znyycdm/articles/z8cqqr">https://www.bbc.co.uk/bitesize/topics/znyycdm/articles/z8cqqr</a>

Working scientifically skills in this unit:	Correct use of a microscope. Making observations using a microscope. Reviewing observations of cells to compare similarities and differences. Record the observation you want to explain. Record observations using scientific words. Decide if a diagram might help the explanation. Suggest a scientific idea that might explain the observation. Explain why the evidence supports your idea.
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The literacy links for this unit will be:	Spellings of scientific vocabulary. Writing exercise explaining gas exchange.	The numeracy links for this unit will be:	Scale of the universe. Reference (but not calculation) of magnifying lenses.
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## St. Mary's Science Department Topic Overview Sheet

<b>Topic:</b>	Structure and Function of Body Systems	<b>Year Group:</b>	7
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<b>Big Question:</b>	How is a multicellular organism organised?
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<b>Pupils should arrive at the unit already knowing:</b>	<p>During the preceding topic of Cells, pupils studied Cells as the fundamental unit of living organisms, including how to observe, interpret and record cell structure using a light microscope.</p> <p>They saw the functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts.</p> <p>The similarities and differences between plant and animal cells.</p> <p>The role of diffusion in the movement of materials in and between cells the structural adaptations of some unicellular organisms.</p> <p>They were introduced to the hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms.</p>
<b>During this unit pupils will need to learn:</b>	<p>The structure and functions of the human skeleton, to include support, protection, movement and making blood cells. They will look at biomechanics – the interaction between skeleton and muscles, including the measurement of force exerted by different muscle. The function of muscles and examples of antagonistic muscles. The structure and functions of the gas exchange the structure and functions of the gas exchange system in humans, including adaptations to function. The mechanism of breathing to move air in and out of the lungs.</p> <p>The impact of exercise, asthma and smoking on the human gas exchange system</p>
<b>This unit links to the following future learning:</b>	<p>Following this topic, pupils will study 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 reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms.</p>

During this unit pupils will have the following key experiences:	During the unit pupils will use the following key vocabulary:	The following links to Bitesize support this topic
<ul style="list-style-type: none"> <li>State/Define/Explain examples of tissues, organs, and organ systems. Explain the hierarchy of organisation in a multicellular organism.</li> <li>Describe the structure of the gas exchange system and describe how the parts of the gas exchange system are adapted to their function.</li> <li>Describe the structure of the skeleton. Describe the functions of the skeletal system. Describe the role of joints.</li> <li>I can describe the function of major muscle groups. I can explain how antagonistic muscles cause movement.</li> </ul>	alveolus antagonistic muscles bone cartilage gas exchange inhale joint ligament lungs multicellular organism organ organ system respiration respiratory system ribcage skeleton tendon tissue	<a href="https://www.bbc.co.uk/bitesize/topics/znyycdm/articles/zgbddp3">https://www.bbc.co.uk/bitesize/topics/znyycdm/articles/zgbddp3</a>  <a href="https://www.bbc.co.uk/bitesize/topics/znyycdm/articles/zd7yydm">https://www.bbc.co.uk/bitesize/topics/znyycdm/articles/zd7yydm</a>  <a href="https://www.bbc.co.uk/bitesize/topics/zf339j6/articles/zv8m7yc">https://www.bbc.co.uk/bitesize/topics/zf339j6/articles/zv8m7yc</a>  <a href="https://www.bbc.co.uk/bitesize/topics/zvrrd2p/articles/zk9t6g8">https://www.bbc.co.uk/bitesize/topics/zvrrd2p/articles/zk9t6g8</a>  <a href="https://www.bbc.co.uk/bitesize/topics/zvrrd2p/articles/zkq7wnb">https://www.bbc.co.uk/bitesize/topics/zvrrd2p/articles/zkq7wnb</a>

Working scientifically skills in this unit:	Observation and research into organ position and function. Presenting data in regards to gas exchange. Data interpretation activitiesAQA KS3 Science Syllabus 2.1 Analyse patterns - Identify a pattern in data from a results table or bar chart (Gas exchange inhaled and exhaled air comparison)
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The literacy links for this unit will be:	Spellings of scientific vocabulary. Writing exercise explaining gas exchange.	The numeracy links for this unit will be:	Data analysis (exam style questions) Data representation as graphs.
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## St. Mary's Science Department Topic Overview Sheet

<b>Topic:</b>	Reproduction	<b>Year Group:</b>	7
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<b>Big Question:</b>	How do humans produce offspring?
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<b>Pupils should arrive at the unit already knowing:</b>	<p>During the Cells topic, pupils saw cells as the fundamental unit of living organisms. They learnt the functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts. They identified similarities and differences between plant and animal cells. They saw the hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms. They should link this to Reproduction as part of the organisation of an organism.</p>
<b>During this unit pupils will need to learn:</b>	<p>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. Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms.</p>
<b>This unit links to the following future learning:</b>	<p>Ecosystem processes in Year 8-The reactants in, and products of photosynthesis, and a word summary for photosynthesis. The dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphere. The adaptations of leaves for photosynthesis. Aerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life. A word summary for aerobic respiration. The products formed in aerobic and anaerobic respiration and the implications for the organism. The interdependence of organisms in an ecosystem, including food webs and insect pollinated crops. How organisms affect, and are affected by, their environment, including the accumulation of toxic materials.</p>

During this unit pupils will have the following key experiences:	During the unit pupils will use the following key vocabulary:	The following links to Bitesize support this topic
<ul style="list-style-type: none"> <li>● State/describe/explain the difference between adolescence and puberty. Describe/Explain the main changes which take place during puberty.</li> <li>● Describe the main structures in the male and female reproductive systems. Describe the function of the main structures in the male and female reproductive systems.</li> <li>● Describe the process of fertilisation.</li> <li>● Describe/Explain what happens during gestation.</li> <li>● State what the menstrual cycle is. I can describe the main stages of the menstrual cycle.</li> </ul>	Adolescence    cervix Cilia            embryo Fertilisation    foetus    germination Implantation    menstrual cycle ovary (human) Oviduct        ovulation Ovule            penis Period            placenta Puberty        scrotum Semen    sperm cell    urethra sperm duct        testes umbilical cord	<a href="https://www.bbc.co.uk/bitesize/topics/zybbkqt/articles/zwb6xbk">https://www.bbc.co.uk/bitesize/topics/zybbkqt/articles/zwb6xbk</a>  <a href="https://www.bbc.co.uk/bitesize/topics/zybbkqt/articles/zmx94xs">https://www.bbc.co.uk/bitesize/topics/zybbkqt/articles/zmx94xs</a>  <a href="https://www.bbc.co.uk/bitesize/topics/zybbkqt/articles/zvwb3j6">https://www.bbc.co.uk/bitesize/topics/zybbkqt/articles/zvwb3j6</a>

Working scientifically skills in this unit:	AQA KS3 Science Syllabus 2.1 Analyse patterns - Identify a pattern in data from a results table or bar chart (Use of data regarding gestation)
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## St. Mary's Science Department Topic Overview Sheet

<b>Topic:</b>	Particle Theory	<b>Year Group:</b>	7
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<b>Big Question:</b>	Can one theory explain how all materials behave?
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<b>Pupils should arrive at the unit already knowing:</b>	<p>In year 5, during the topic of Properties and Changes of Materials, pupils compared and grouped together everyday materials on the basis of their properties, including:</p> <p>Hardness, Solubility, Transparency, Conductivity (electrical and thermal) Response to magnets</p> <p>They saw how some materials will dissolve in liquid to form a solution, and described how to recover a substance from a solution.</p> <p>They used their knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. They gave reasons for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>They showed practically how dissolving, mixing and changes of state are reversible changes.</p> <p>They explained 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. Pupils will have referenced Diffusion of substances in and out of cells during the Cells topic earlier in the year.</p>
<b>During this unit pupils will need to learn:</b>	<p>The properties of the different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure. Changes of state in terms of the particle model. The concept of a pure substance. Mixtures, including dissolving. Diffusion in terms of the particle model. Similarities and differences, including density differences, between solids, liquids and gases. Diffusion in liquids and gases driven by differences in concentration. The difference between chemical and physical changes. The identification of pure substances.</p>
<b>This unit links to the following future learning:</b>	<p>In the following Atoms, Elements and Compounds topic, pupils study the differences between atoms, elements and compounds, Chemical symbols and formulae for elements and compounds and Conservation of mass. They will also identify changes of state and chemical reactions.</p>

During this unit pupils will have the following key experiences:	During the unit pupils will use the following key vocabulary:	The following links to Bitesize support this topic:
<ul style="list-style-type: none"> <li>● Describe how materials are made up of particles. Use the particle model to explain why different materials have different properties.</li> <li>● Describe/Explain the properties of a substance in its three states. Use ideas about particles to explain the properties of a substance in its three states, using particle diagrams to help. I can explain changes of state using particle kinetics and temperature.</li> <li>● Use the particle model to explain boiling. Explain why different substances boil at different temperatures. Describe changes of state involving gases. I can use a particle model to explain evaporating, condensing, (and subliming) HL.</li> <li>● Use the particle model to explain diffusion. Describe evidence for diffusion. I can describe the factors that affect gas pressure.</li> </ul>	Boiling boiling point change of state Condense diffusion Evaporate freezing Gas liquid solid material Melting melting point mixture particle property states of matter sublime substance	<p><a href="https://www.bbc.co.uk/bitesize/topics/z9r4jxs/articles/zqp7p3">https://www.bbc.co.uk/bitesize/topics/z9r4jxs/articles/zqp7p3</a></p> <p><a href="https://www.bbc.co.uk/bitesize/topics/z9r4jxs/articles/zyhntrd">https://www.bbc.co.uk/bitesize/topics/z9r4jxs/articles/zyhntrd</a></p> <p><a href="https://www.bbc.co.uk/bitesize/topics/z9r4jxs/articles/zgh3ydm">https://www.bbc.co.uk/bitesize/topics/z9r4jxs/articles/zgh3ydm</a></p> <p><a href="https://www.bbc.co.uk/bitesize/topics/z9r4jxs/articles/zkd3rwx#zbb9jfr">https://www.bbc.co.uk/bitesize/topics/z9r4jxs/articles/zkd3rwx#zbb9jfr</a></p>

Working scientifically skills in this unit:	Working conceptually. Identifying hazards, risks and precautions in order to work safely. Using models and role play to demonstrate theories.
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## St. Mary's Science Department Topic Overview Sheet

<b>Topic:</b>	Atoms, Elements and Compounds	<b>Year Group:</b>	7
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<b>Big Question:</b>	Can we explain why different materials have different properties?
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<b>Pupils should arrive at the unit already knowing:</b>	Following directly from the Particle Model, where pupils studied the properties of the different states of matter (solid, liquid and gas) in terms of the particle model. They should be familiar with the concept of a pure substance. They have employed simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography. They should be familiar with the identification of pure substances.
<b>During this unit pupils will need to learn:</b>	A simple (Dalton) atomic model. The differences between atoms, elements and compounds. Chemical symbols and formulae for elements and compounds ( <i>not the Periodic table, although it can be referenced</i> ) Conservation of mass. Changes of state and chemical reactions.
<b>This unit links to the following future learning:</b>	The next topic is Chemical Reactions. Representing chemical reactions using formulae and using equations. Know combustion, thermal decomposition, oxidation and displacement as reactions. Defining acids and alkalis in terms of neutralisation reactions. The pH scale for measuring acidity/alkalinity; and indicators. Reactions of acids with metals to produce a salt plus hydrogen. ( <i>This will be referenced again in Year 8 "Reactivity of Metals"</i> ) Reactions of acids with alkalis to produce a salt plus water. <i>What catalysts do</i> . Exothermic and endothermic chemical reactions (qualitative).

During this unit pupils will have the following key experiences:	During the unit pupils will use the following key vocabulary:	The following links to Bitesize support this topic
<ul style="list-style-type: none"> <li>● State what an element is. Recall the chemical symbols of six elements. State what atoms are.</li> <li>● Compare the properties of one atom of an element to the properties of many atoms.</li> <li>● State what a compound is. Explain why a compound has different properties to the elements in it.</li> <li>● Write the chemical names for some simple compounds. Write and interpret formulae.</li> </ul>	atom chemical formula chemical symbol compound element molecule Periodic Table	<a href="https://www.bbc.co.uk/bitesize/topics/zs tp34j/articles/zngddp3">https://www.bbc.co.uk/bitesize/topics/zs tp34j/articles/zngddp3</a>  <a href="https://www.bbc.co.uk/bitesize/topics/zs tp34j/articles/zc86m39">https://www.bbc.co.uk/bitesize/topics/zs tp34j/articles/zc86m39</a>  <a href="https://www.bbc.co.uk/bitesize/topics/zs tp34j/articles/zqr4tv4">https://www.bbc.co.uk/bitesize/topics/zs tp34j/articles/zqr4tv4</a>  <a href="https://www.bbc.co.uk/bitesize/topics/zs tp34j/articles/zmsk4xs">https://www.bbc.co.uk/bitesize/topics/zs tp34j/articles/zmsk4xs</a>

Working scientifically skills in this unit:	Using models and role play to demonstrate theories. Using formula to represent atoms elements and compounds. Working conceptually. Identifying hazards, risks and precautions in order to work safely.
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## St. Mary's Science Department Topic Overview Sheet

<b>Topic:</b>	Chemical Reactions	<b>Year Group:</b>	7
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<b>Big Question:</b>	How are CHEMICAL REACTIONS different to PHYSICAL CHANGES?
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<b>Pupils should arrive at the unit already knowing:</b>	During the preceding topic of Atoms, Elements and Compounds, pupils identified the differences between atoms, elements and compounds. They have begun to use Chemical symbols and formulae for elements and compounds ( <b>not the Periodic table, although it can be referenced</b> ) They have been introduced to Conservation of Mass. They have compared changes of state and chemical reactions.
<b>During this unit pupils will need to learn:</b>	Chemical reactions as the rearrangement of atoms. Representing chemical reactions using formulae and using equations. Know combustion, thermal decomposition, oxidation and displacement as reactions. Defining acids and alkalis in terms of neutralisation reactions. The pH scale for measuring acidity/alkalinity; and indicators. Reactions of acids with metals to produce a salt plus hydrogen. ( <b>This will be referenced again in Year 8 "Reactivity of Metals"</b> ) Reactions of acids with alkalis to produce a salt plus water. <b>What catalysts do.</b> Exothermic and endothermic chemical reactions (qualitative).
<b>This unit links to the following future learning:</b>	In Year 8 (Autumn Term) pupils will study the Periodic Table in greater detail, and then Reactivity of Metals. This will include the reactivity of metals with Acids.

During this unit pupils will have the following key experiences:	During the unit pupils will use the following key vocabulary:	The following links to Bitesize support this topic
<ul style="list-style-type: none"> <li>● Describe what happens to atoms in chemical reactions. Why chemical reactions are useful.</li> <li>● Compare chemical reactions to physical changes.</li> <li>● Identify reactants and products in word equations. Write word equations to represent chemical reactions.</li> <li>● Predict products of combustion reactions. Categorise oxidation reactions as useful or not.</li> <li>● Recognise conservation of mass in chemical reactions. Calculate masses of reactants and products.</li> <li>● Compare the properties of acids and alkalis. Describe the differences between concentrated and dilute solutions of an acid.</li> <li>● Use the pH scale to measure acidity and alkalinity.</li> <li>● Use indicators to categorise solutions as acidic, alkaline, or neutral.</li> <li>● Describe how pH changes during neutralisation reactions. State/describe/ explain examples of useful neutralisation reactions.</li> </ul>	<p>balanced symbol equation  chemical reaction combustion  conservation of mass discrete  endothermic change  exothermic change  fuel  hazard  Oxidation physical change  Product Reactant  Acid alkali base  concentrated  Corrosive dilute  Indicator litmus  Neutral neutralisation  pH scale salt  universal indicator</p>	<p><a href="https://www.bbc.co.uk/bitesize/topics/zyvpsgk7/articles/zwxhk2p">https://www.bbc.co.uk/bitesize/topics/zyvpsgk7/articles/zwxhk2p</a></p> <p><a href="https://www.bbc.co.uk/bitesize/topics/zyvpsgk7/articles/zpbgg7h">https://www.bbc.co.uk/bitesize/topics/zyvpsgk7/articles/zpbgg7h</a></p> <p><a href="https://www.bbc.co.uk/bitesize/topics/zyvpsgk7/articles/ztwx6g8">https://www.bbc.co.uk/bitesize/topics/zyvpsgk7/articles/ztwx6g8</a></p> <p><a href="https://www.bbc.co.uk/bitesize/topics/zyvpsgk7/articles/zb7wwnb">https://www.bbc.co.uk/bitesize/topics/zyvpsgk7/articles/zb7wwnb</a></p> <p><a href="https://www.bbc.co.uk/bitesize/topics/zyvpsgk7/articles/zxgwwnb">https://www.bbc.co.uk/bitesize/topics/zyvpsgk7/articles/zxgwwnb</a></p> <p><a href="https://www.bbc.co.uk/bitesize/topics/zyvpsgk7/articles/zhp66g8">https://www.bbc.co.uk/bitesize/topics/zyvpsgk7/articles/zhp66g8</a></p> <p><a href="https://www.bbc.co.uk/bitesize/topics/zyvpsgk7/articles/zxh7isg">https://www.bbc.co.uk/bitesize/topics/zyvpsgk7/articles/zxh7isg</a></p> <p><a href="https://www.bbc.co.uk/bitesize/topics/zn6hvcw/articles/z38bbat">https://www.bbc.co.uk/bitesize/topics/zn6hvcw/articles/z38bbat</a></p> <p><a href="https://www.bbc.co.uk/bitesize/topics/zn6hvcw/articles/z9gnn9q">https://www.bbc.co.uk/bitesize/topics/zn6hvcw/articles/z9gnn9q</a></p>

<p>Working scientifically skills in this unit:</p>	<p>Identifying hazards and risks during chemical reaction investigations. Taking relevant safety precautions and working safely. Following methods. Making appropriate observations and comparing them. Making predictions of observations and of the products of reactions. Use of indicators.</p> <p>Discuss Limitations - Identify variables that could not control properly (size of surface area in metal/acid reactions)</p> <ul style="list-style-type: none"> <li>- Identify aspects of the method that did not go according to plan (neutralisation)</li> <li>- Comment on whether you finding fit with known scientific explanations (predicting a reaction)</li> <li>- Suggest better ways to control variables (generic in this unit)</li> </ul>
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## St. Mary's Science Department Topic Overview Sheet

<b>Topic:</b>	Forces	<b>Year Group:</b>	7
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<b>Big Question:</b>	Why are scientists so interested in FORCES?
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<b>Pupils should arrive at the unit already knowing:</b>	In Year 5, pupils saw that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. They identified the effects of air resistance, water resistance and friction, that act between moving surfaces. They recognised that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.
<b>During this unit pupils will need to learn:</b>	Forces as pushes or pulls, arising from the interaction between two objects. Using force arrows in diagrams. 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 force-extension linear relation; Work done. Non-contact forces: gravity forces acting at a distance on Earth and in space, forces between magnets and forces due to static electricity. Opposing forces and equilibrium: weight held by stretched spring or supported on a compressed surface. Forces being needed to cause objects to stop or start moving, or to change their speed or direction of motion (qualitative only). Change depending on direction of force and its size
<b>This unit links to the following future learning:</b>	Pupils will need to employ their knowledge of Forces during the following topic "Space".

During this unit pupils will have the following key experiences:	During the unit pupils will use the following key vocabulary:	The following links to Bitesize support this topic
<ul style="list-style-type: none"> <li>● Explain what forces do including what is meant by an interaction pair, how forces deform objects and how solid surfaces provide a support force.</li> <li>● Describe/explain the effect of drag forces and friction and why drag forces and friction arise.</li> <li>● The effect of a field and the effect of gravitational forces on Earth and in space.</li> </ul>	air resistance    balanced Compress    contact force Deform    drag force    driving force electrostatic force Equilibrium    extension Field    friction Gravity    interaction pair kilogram (kg)    lubrication magnetic force    Mass <i>mean average</i> newton (N) Newtonmeter    non-contact force <i>Outlier</i> pull    push Reaction    streamlined    tension Unbalanced    water resistance weight	<a href="https://www.bbc.co.uk/bitesize/topics/z4brd2p/articles/zs3896f">https://www.bbc.co.uk/bitesize/topics/z4brd2p/articles/zs3896f</a>  <a href="https://www.bbc.co.uk/bitesize/topics/z4brd2p/articles/zhnfp4j">https://www.bbc.co.uk/bitesize/topics/z4brd2p/articles/zhnfp4j</a>  <a href="https://www.bbc.co.uk/bitesize/topics/z4brd2p/articles/z6xjdp3">https://www.bbc.co.uk/bitesize/topics/z4brd2p/articles/z6xjdp3</a>  <a href="https://www.bbc.co.uk/bitesize/topics/z4brd2p/articles/z6s4r2p">https://www.bbc.co.uk/bitesize/topics/z4brd2p/articles/z6s4r2p</a>  <a href="https://www.bbc.co.uk/bitesize/topics/z4brd2p/articles/zr3xh39">https://www.bbc.co.uk/bitesize/topics/z4brd2p/articles/zr3xh39</a>  <a href="https://www.bbc.co.uk/bitesize/topics/z4brd2p/articles/zr3xh39">https://www.bbc.co.uk/bitesize/topics/z4brd2p/articles/zr3xh39</a>

<b>Working scientifically skills in this unit:</b>	Making precise and accurate measurements. Recording and presenting data. Data analysis. Drawing conclusions and evaluating data. <ul style="list-style-type: none"> <li>- Calculate mean from a set of data</li> <li>- Read values from a line graph</li> <li>- Spot a data point that does not fit a pattern</li> <li>- Identify the variables from information about an investigation</li> <li>- Identify a pattern in data from a results table or bar chart</li> <li>- Express a linear relationship between variables in the form of an er... and er... style question.</li> <li>- Suggest reason for difference in repeat readings (newton meters and spring extension)</li> <li>- Comment on whether you finding fit with known scientific explanations</li> <li>- Suggest ways to reduce measurement errors (generic in this unit)</li> </ul>
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## St. Mary's Science Department Topic Overview Sheet

<b>Topic:</b>	Space	<b>Year Group:</b>	7
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<b>Big Question:</b>	What have scientists learned from studying Space?
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<b>Pupils should arrive at the unit already knowing:</b>	In Year 5, pupils described the movement of the Earth and other planets relative to the Sun in the solar System. They described the movement of the Moon relative to the Earth and the shape of the Sun, Earth and Moon. They identified the link between the the earth's rotation and day and night, and the apparent movement of the Sun across the sky.
<b>During this unit pupils will need to learn:</b>	Measurement of 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). 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. The study of the universe

<b>During this unit pupils will have the following key experiences:</b>	<b>During the unit pupils will use the following key vocabulary:</b>	<b>The following links to Bitesize support this topic</b>
<ul style="list-style-type: none"> <li>Describe the objects you can see in the night sky.</li> <li>Describe how objects in the Solar System are arranged. Compare similarities and differences between the planets of the Solar System.</li> <li>Explain why seasonal changes happen.</li> <li>Natural and artificial satellites.</li> <li>Describe the motion of the Sun, stars, and Moon across the sky. The phases of the Moon and why we see the</li> </ul>	artificial satellite asteroid Astronomer axis comet Constellation dwarf planet Earth Ellipse exoplanets galaxy gas giant gravity lunar eclipse Mars Mercury meteor Meteorite Milky Way Moon natural satellite Night orbit	<a href="https://www.bbc.co.uk/bitesize/topics/z8c9q6f/articles/zxyw7yc">https://www.bbc.co.uk/bitesize/topics/z8c9q6f/articles/zxyw7yc</a>  <a href="https://www.bbc.co.uk/bitesize/topics/z8c9q6f/articles/zqtj2v4">https://www.bbc.co.uk/bitesize/topics/z8c9q6f/articles/zqtj2v4</a>  <a href="https://www.bbc.co.uk/bitesize/topics/z8c9q6f/articles/zktckty">https://www.bbc.co.uk/bitesize/topics/z8c9q6f/articles/zktckty</a> <a href="https://www.bbc.co.uk/bitesize/topics/z8c9q6f/articles/zktckty">https://www.bbc.co.uk/bitesize/topics/z8c9q6f/articles/zktckty</a>

<p>phases of the Moon.</p> <ul style="list-style-type: none"> <li>Describe/explain why total eclipses happen.</li> </ul>	<p>partial eclipse  phases of the Moon  Planet      season  solar eclipse      Solar System  Star      Sun      terrestrial  total eclipse      Universe      Venus  year</p>	<p><a href="https://www.bbc.com/news/health-56123456">6f/articles/z846p4j</a></p>
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<p>Working scientifically skills in this unit:</p>	<ul style="list-style-type: none"> <li>- Calculate mean from a set of data (Discussion about why different text book/sources have different values)</li> <li>- Identify a pattern in data from a results table or bar chart (Linking year length to position from the Sun, Compare statistical data between celestial bodies, Day length data for seasons)</li> <li>- Identify variables that could not control properly (reference weight on other planets)</li> <li>- Suggest reason for difference in repeat readings (Discussion about why different text book/sources have different values)</li> </ul> <p>Presenting data - Select a good way to display data.  Create line graphs to display relationships.  Develop an explanation. Communicate ideas, evidence and reasoning.</p> <p>Justify opinions -  List all the facts, scientific ideas, data, or conclusions that support your opinion.  Identify the most important piece of evidence, as well as one or two supporting pieces of evidence.</p>
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