

# Holy Family Catholic School – Faculty of Science & Physiology

Science

Autumn Half Term 1

Year 7

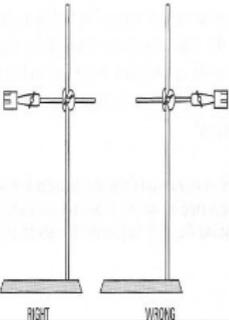
Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Red Zone
<p><b>Week 1 Lesson 1</b> What apparatus do we regularly use and how do we represent it?</p>	<p>apparatus, Bunsen burner, thermometer, tripod</p>	<p>Experimental and Investigative Skills</p>	<p>KS2 - use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety</p>	<ol style="list-style-type: none"> <li>1. I can name different pieces of lab equipment.</li> <li>2. I know what the function of some lab equipment.</li> <li>3. I can draw scientific diagrams of lab equipment.</li> </ol>	<p>A student would like to heat a beaker of water. Write a method and draw a diagram including the correct scientific apparatus they would need to do this.</p>
<p><b>Week 1 Lesson 2</b> How do scientists measure things?</p>	<p>measuring cylinder, meniscus,</p>	<p>Experimental and Investigative Skills</p>	<p>KS2 - use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety</p>	<ol style="list-style-type: none"> <li>1. I can measure the temperature of a liquid.</li> <li>2. I can measure the mass of an object.</li> <li>3. I can measure the volume of a liquid.</li> </ol>	<p>A student would like to measure the volume and the temperature of some water. Describe a method including the correct scientific apparatus they would need to do this.</p>
<p><b>Week 1 Lesson 3</b> How do we set up and use a Bunsen Burner?</p>	<p>Bunsen burner, heat proof mat, splint,</p>	<p>Experimental and Investigative Skills</p>	<p>Y7 C1 - apparatus</p>	<ol style="list-style-type: none"> <li>1. I can identify the parts of a Bunsen burner.</li> <li>2. I can describe how to use a Bunsen burner safely.</li> <li>3. I can change the flame on a Bunsen burner.</li> <li>4. I can use a Bunsen burner safely.</li> </ol>	<p>A student needs to heat up a beaker of water. Describe a method including safety precautions the student should follow to heat the water using a Bunsen burner.</p>

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<p><b>Week 2 Lesson 1</b> How do we set up and use a clamp stand?</p>	<p>clamp, boss, calorimeter,</p>	<p>Experimental and Investigative Skills</p>	<p>Y7 C1 - apparatus</p>	<p>1. I can use a clamp stand safely. 2. I can use a clamp stand correctly.</p>	<p>A student has set up their clamp stand like the image below. Explain what is wrong and how they should fix it.</p> 
<p><b>Week 2 Lesson 2</b> How do we identify the states of matter?</p>	<p>matter, particle, property, granular</p>	<p>Particles and matter</p>	<p>KS2 - states of matter &amp; changes in temperature of materials</p>	<p>1. Recall the three states of matter and identify solids, liquids, gases. 2. Describe what the three states of matter are like. 3. Explain why granular solids cannot easily be classified.</p>	<p>Some substances have properties that make it difficult for us to decide whether they are liquids or solids. Sand is a good example. 1. Write down the reasons you think sand is a solid. 2. Why might we also think sand is a liquid?</p>
<p><b>Week 2 Lesson 3</b> What types of mixtures can we make?</p>	<p>suspension, colloid, solution,</p>	<p>Particles and matter</p>	<p>KS2 - describe how to recover a substance from a solution, use knowledge of solids, liquids and gases to decide how mixtures should be separated, including filtering, sieving and evap.</p>	<p>1. State the meaning of: mixture. 2. State the meaning of: sieving, filtering, insoluble, suspension 3. Describe how insoluble solids can be separated from a liquid 4. Describe types of mixtures based on their constituents</p>	<p>1. A mixture of _____ and _____ solids were poured into the filter funnel. The insoluble solid _____ remains on the filter paper. The soluble solids in solution pass through the filter paper in the _____.</p> <p>2. Sam says that shaving foam is an example of a colloid A Sam is correct because a gas is dispersed in a liquid. B Sam is correct because a liquid is dispersed in a gas. C Sam is incorrect because the gas will rise to the top of the foam is left to stand still. D Sam is incorrect because the gas is dissolved in the liquid.</p> 

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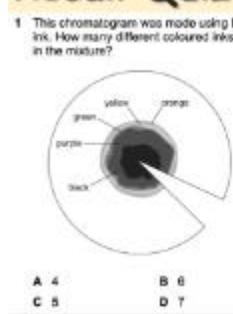
Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Red Zone
<p><b>Week 3 Lesson 1</b> What is a solution and how do we make one?</p>	<p>solute, solvent, dissolve</p>	<p>Particles and matter</p>	<p>KS2 - Understand how some materials dissolve in liquid to form a solution. Y7 C1 - mixtures</p>	<p>1. State what happens to mass in a physical change. 2. Recall definitions of the words: soluble, solute, solvent, solution.</p>	<p>Mrs Mitchell makes a cup of coffee. a) Which substance is the solvent? b) Which substance is the solute? c) Describe what happens to the particles in the cup of coffee solution.</p>
<p><b>Week 3 Lesson 2</b> How can we change solubility?</p>	<p>saturated, solubility, dissolve</p>	<p>Particles and matter</p>	<p>KS2 - Understand how some materials dissolve in liquid to form a solution. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. Y7 C1 - solutions</p>	<p>1. Describe what happens when a liquid will not dissolve any more of a solid and use correctly the terms: solubility, saturated solution. 2. Plan a fair test to discover how different factors affect the solubility of a substance.</p>	<p>A student has experimented with how much sugar can dissolve in a cup of water. She had added 10g and can see some undissolved sugar at the bottom of the cup. Describe a) what the solution is called and b) what she could do to allow more of the sugar to dissolve in the water.</p>
<p><b>Week 3 Lesson 3</b> How can we separate a solution?</p>	<p>evaporation, boiling point, soluble</p>	<p>Particles and matter</p>	<p>KS2 - Use knowledge of solids, liquids and gases to decide how mixtures might</p>	<p>1. Describe what happens during evaporating. 2. State what happens at a material's boiling point. 3. Justify the decision to separate a solution in a certain way.</p>	<p>Describe a method to separate salt from salt water. Use the key words 'evaporation', 'boiling point' and 'soluble'.</p>

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			be separated, including through filtering, sieving and evaporating. Y7 C1 - solutions		
<p><b>Week 4 Lesson 1</b> How can we separate a mixture of liquids that are different colours?</p>	chromatography, chromatogram, solute	Particles and matter	KS2 - Understand how some materials dissolve in liquid to form a solution	<ol style="list-style-type: none"> <li>1. Give examples of where chromatography is used.</li> <li>2. Describe how chromatography is used to separate mixtures.</li> <li>3. Evaluate the information provided by chromatograms.</li> </ol>	 <p>1 This chromatogram was made using black ink. How many different coloured inks were in the mixture?</p> <p>2 What is chromatography used for?</p> <p>A to separate a solid from a liquid          B to separate out dissolved solids          C to separate a liquid from a solution          D to separate a mixture of liquids</p> <p>3 Why do the substances separate in a chromatogram?</p> <p>A The solvent dissolves the substances and carries them up the paper.          B Some of the substances evaporate before the others.          C The solvent carries the substances at different speeds.          D The solvent evaporates at different points up the chromatogram.</p>
<p><b>Week 4 Lesson 2</b> How can we separate a mixture of liquids that have different boiling points?</p>	distillation, solvent, evaporating, condensing,	Particles and matter	KS2 - Describe how to recover a substance from a solution. Y7 C1 - solutions, states of matter, Bunsen burners	<ol style="list-style-type: none"> <li>1. Give examples of where distillation is used</li> <li>2. Describe how distillation can separate mixtures</li> <li>3. Explain how fractional distillation is used in making perfumes</li> </ol>	Describe how distillation is used to separate water from a solution. Include the key words 'evaporation' and 'condensation'.
<p><b>Week 4 Lesson 3</b> <b>Investigative Skills:</b> <b>Identify which sample of rock salt contains the most salt.</b></p>	solvent, evaporating, condensing, crystallisation	<ul style="list-style-type: none"> <li>• Particles and matter</li> <li>• Thinking Like a Scientist</li> </ul>	Y7 C1 to date	<ol style="list-style-type: none"> <li>1. State the variables in an investigation</li> <li>2. Make a prediction based on scientific knowledge</li> <li>3. Design a method</li> </ol>	None – learning over 2 lessons

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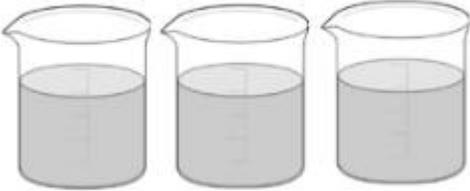
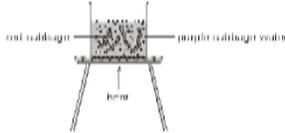
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		<ul style="list-style-type: none"> <li>• Experimental and Investigative Skills</li> <li>• Analysis and Evaluation</li> </ul>		<ol style="list-style-type: none"> <li>4. Draw a labelled diagrams of apparatus</li> <li>5. Record results into a pre-drawn table</li> </ol>	
<p><b>Week 5 Lesson 1</b>  <b>Investigative Skills:</b>  <b>Identify which sample of rock salt contains the most salt.</b></p>	solvent, evaporating, condensing, crystallisation	<ul style="list-style-type: none"> <li>• Particles and matter</li> <li>• Thinking Like a Scientist</li> <li>• Experimental and Investigative Skills</li> <li>• Analysis and Evaluation</li> </ul>	Y7 C1 to date	<ol style="list-style-type: none"> <li>6. Draw a bar graph</li> <li>7. Describe results</li> <li>8. Evaluate experiments</li> </ol>	Evaluation of method design.
<p><b>Week 5 Lesson 2</b>                      How do we know what chemicals are hazardous?</p>	hazard, risk, precaution, corrosive, irritant	Chemical reactions	KS2 - use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety. Y7 C1 - setting up a Bunsen burner	<ol style="list-style-type: none"> <li>1. Describe the differences between corrosives and irritants</li> <li>2. Describe the meaning of different hazard symbols</li> <li>3. Recall everyday examples of acids</li> </ol>	A student has planned to use hydrochloric acid in an experiment. Write a risk assessment including any hazards, risks and precautions they should take to keep themselves safe.

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<p><b>Week 5 Lesson 3</b> What are indicators?</p>	<p>indicator, acid, alkali, neutral, pH</p>	<p>Chemical reactions</p>		<p>1. Describe how indicators are used to distinguish between acidic, alkaline and neutral solutions. 2. Explain why litmus is purple in neutral solutions.</p>	<p>There are 3 mystery beakers, each containing a colourless liquid that doesn't smell. One is an acid, one is an alkali and one is neutral.</p>  <p>Describe how you could use litmus paper to work out which beaker is the alkali. What you would see?</p>												
<p><b>Week 6 Lesson 1</b> How can we make an indicator?</p>	<p>universal indicator, acid, alkali, neutral</p>	<p>Chemical reactions</p>		<p>1. Use solutions of known acidity/alkalinity in order to deduce a colour chart for an indicator.</p>	<p>Shama boiled some red cabbage in water. The cabbage water turned purple.</p>  <p>(b) Shama mixed the purple cabbage-water with some other liquids. She wrote the colours of the mixtures in a table as shown below.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>colour of cabbage-water mixed with liquid</th> <th>Is the liquid acidic, alkaline or neutral?</th> </tr> </thead> <tbody> <tr> <td>liquid 1</td> <td>red</td> <td>acidic</td> </tr> <tr> <td>liquid 2</td> <td>blue</td> <td>alkaline</td> </tr> <tr> <td>liquid 3</td> <td>purple</td> <td>neutral</td> </tr> </tbody> </table> <p>Use the information in the table to answer parts (i) and (ii) below.</p> <p>(i) Shama mixed cabbage-water with colourless washing-up liquid. The mixture turned <b>blue</b>. What does this tell you about the washing-up liquid? ..... 1 mark</p> <p>(ii) Shama then mixed cabbage-water with lemon juice. Lemon juice is <b>acidic</b>. What colour was the mixture? ..... 1 mark</p>		colour of cabbage-water mixed with liquid	Is the liquid acidic, alkaline or neutral?	liquid 1	red	acidic	liquid 2	blue	alkaline	liquid 3	purple	neutral
	colour of cabbage-water mixed with liquid	Is the liquid acidic, alkaline or neutral?															
liquid 1	red	acidic															
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<b>Week 6 Lesson 3</b> What happens when we mix an acid and an alkali?	neutralisation, salt, word equation	Chemical reactions	KS2 - defining acids and alkalis in terms of neutralisation reactions. Reactions of acids with alkalis to produce a salt plus water	1. Explain how chemical reactions are different to physical changes. 2. Interpret a word equation to identify the products and reactants in a chemical reaction. 3. Model simple reactions using word equations. 4. Supply missing reactants or products to complete a word equation. 5. Describe the reactions of acids with alkalis	Look at the word equation below. Complete the sentences that follow using words from the box. You will not need to use all the words in the box. $\text{hydrochloric acid} + \text{sodium hydroxide solution} \rightarrow \text{sodium chloride solution} + \text{water}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">                         acid    alkali    chemical    neutralisation    neutralised    physical  <span style="margin-left: 100px;">products</span>    <span style="margin-left: 20px;">reactants</span> </div> a Sodium hydroxide solution has a pH of 13 so it is an ..... b When sodium hydroxide is mixed with hydrochloric acid a ..... reaction takes place. c Hydrochloric acid and sodium hydroxide are the ..... in the reaction. d When only sodium chloride and water are left the alkali has ..... the ..... e The reaction between an acid and an alkali is called ..... f One of the ..... of the reaction is a salt.
<b>Week 7 Lesson 1</b> How do we use neutralisation in our lives?	neutralisation, base, insoluble	Chemical reactions	Y7 C1 - neutralisation	1. Explain how everyday examples of neutralisation are useful (changing the pH of soils, antacids, toothpastes, treating waste gases, rust removal). 2. Describe the reactions of acids with bases. 3. Investigating antacid tablets.	1. A bee sting was known to contain acid. Suggest an everyday substance you could have used to treat it. 2. A wasp sting used to be treated with vinegar. What does the sting contain? 3. Explain why toothpaste might contain magnesium hydroxide. 4. Acid can be used to clean metals. Objects made of iron and steel can rust forming iron oxide. Sulphuric acid can attack the rust and remove it from the surface via a

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					neutralisation reaction. Write a word equation for this reaction.
<b>Week 7 Lesson 2</b> What do all living things do?	respiration, nutrition, excretion, organism	Cells and Systems	Ks2 - Group and compare things by simple features.	<ol style="list-style-type: none"> <li>List the 7 life processes</li> <li>Describe each process</li> <li>Explain the differences between organisms and non-living things</li> </ol>	Why is a teddy bear non-living, but a grizzly bear is living?
<b>Week 7 Lesson 3</b> How are plant and animals cells similar and different?	chloroplast, mitochondria, nucleus	Cells and Systems	Y7 B1 - living or not	<ol style="list-style-type: none"> <li>Describe what a cell is.</li> <li>State the organelles found in cells.</li> <li>State the function of the organelles found in cells.</li> <li>Compare and contrast animal and plant cells.</li> </ol>	Compare the structure of plant and animal cells (6 marks)
<b>Week 8 Lesson 1</b> What are eukaryotic and prokaryotic cells?	unicellular, multicellular, eukaryotic, prokaryotic	Cells and Systems	KS2 - microorganisms, Y7 B1 - living or not, cells & organelles	<ol style="list-style-type: none"> <li>Describe what is meant by unicellular and multicellular organisms</li> <li>Give examples of unicellular and multicellular organisms</li> <li>Compare eukaryotic and prokaryotic cells</li> </ol>	Identify similarities and differences between the prokaryotic and eukaryotic cells in the diagram. Use these diagrams to answer the following questions. <div style="text-align: center;"> </div>
<b>Week 8 Lesson 2</b> What are genes?	gene, chromosome, nucleus, double helix	Inheritance and Evolution	Y7 B1 - cells, KS2 - inheritance	<ol style="list-style-type: none"> <li>Describe what chromosomes are made of.</li> <li>State the number of pairs of chromosomes in most human cells.</li> <li>Recall where genes are found.</li> <li>State that genes control</li> </ol>	Write a paragraph linking together the words nucleus, chromosome, DNA and gene.  Stretch: Draw a diagram to go along with it.

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				characteristics (in terms of containing instructions). 5. Describe the structure of DNA. 6. Briefly describe how Franklin, Watson & Crick discovered the structure of DNA	
<b>Week 8 Lesson 3</b> What are fungi?	yeast, carbon dioxide, microorganism	Cells and Systems	KS2 - microorganisms, Y7 B1 - cells, eukaryotic and prokaryotic	1. Describe a fungus as a type of microorganism. 2. Give examples of types of fungi. 3. State uses of fungi	Question: What is yeast?