

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions for this lesson	Red Zone
Week 1 Lesson 1						
Week 1 Lesson 2 How do we keep safe in the laboratory? Lab safety.pptx	hazard, risk, precaution, safety	Experimental and Investigative Skills	classroom expectations, safety in the classroom	1. To identify some important safety rules in a laboratory. 2. To recall and identify hazard symbols. 3. To explain how to keep yourself and others safe in a laboratory, especially during practical investigations.	Which of the following is the safest action in a science laboratory? A. Smelling a chemical directly from the container. B. Running to tell the teacher about a spill. C. Wearing safety goggles and following instructions carefully. ☒ D. Tasting a substance to identify it.	A student is about to carry out a practical using three chemicals: •Hydrochloric acid (corrosive) •Ethanol (flammable) •Copper sulfate solution (harmful/irritant) The student is not wearing goggles, has left their bag in the middle of the floor, and is holding a lit splint near the ethanol beaker while talking to a friend. Task: Explain all the hazards and risks in this situation and describe the control measures the student should follow to make the practical safe. Your answer should refer to hazard symbols, lab rules, and safe behaviour.
Week 1 Lesson 3 What apparatus do we regularly use and how do we represent it?	apparatus, Bunsen burner, thermometer, tripod	Experimental and Investigative Skills	KS2 - use appropriate techniques, apparatus, and materials during fieldwork and laboratory	1. I can name different pieces of lab equipment. 2. I know what the function of some lab equipment. 3. I can draw	Which piece of equipment is used to measure the volume of a liquid accurately? A. Beaker B. Measuring cylinder ☒	Miss Sherborne's kettle has broken! Write a paragraph explaining how she could heat some water safely. Include a labelled diagram showing the apparatus, discuss how it is used and any safety precautions she should take.

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0. equipment.pptx			work, paying attention to health and safety	scientific diagrams of lab equipment.	C. Test tube D. Conical flask	
Week 2 Lesson 1 How do scientists measure things? 0. measurements.pptx	measuring cylinder, meniscus,	Experimental and Investigative Skills	KS2 - use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety	1. I can measure the temperature of a liquid. 2. I can measure the mass of an object. 3. I can measure the volume of a liquid.	Which piece of equipment should you use to measure the mass of an object? A. Thermometer B. Measuring cylinder C. Balance ☒ D. Ruler	Imagine you are writing a letter to a Y5 student who has never seen scientific equipment before. Tell them what each piece of equipment can do, how it works and draw a diagram.
Week 2 Lesson 2 How do we set up and use a Bunsen Burner? 0. Using a Bunsen burner.pptx	Bunsen burner, heat proof mat, splint,	Experimental and Investigative Skills	Y7 C1 - apparatus	1. I can identify the parts of a Bunsen burner. 2. I can describe how to use a Bunsen burner safely. 3. I can change the flame on a Bunsen burner. 4. I can use a	What should you do first before lighting a Bunsen burner? A. Open the air hole fully B. Check the rubber tubing is connected properly ☒ C. Light the match after turning on the gas D. Put paper under the flame	Sylvia tries to set up a Bunsen burner. She places the bunsen burner on the table then turns on the gas. She then remembers she needs to light a splint. She runs to the teacher's lit Bunsen burner, her long hair getting in her face. She gets back to her seat, sits down then lights her Bunsen burner. What has Sylvia done wrong? Can you write a method correcting her errors?

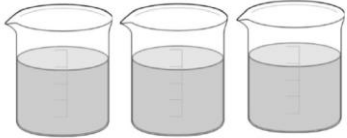
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				Bunsen burner safely.		
Week 2 Lesson 3 How do we set up and use a clamp stand? 0. Using a clamp stand.pptx	clamp, boss, calorimeter,	Experimental and Investigative Skills	Y7 C1 - apparatus	1. I can use a clamp stand safely. 2. I can use a clamp stand correctly.	Why is a clamp stand used in experiments? A. To heat substances B. To measure volume C. To hold equipment in place safely ☒ D. To store glassware	1. A student has set up their clamp stand like the image below. Explain what is wrong and how they should fix it. 2. Draw and label a diagram to show how you would clamp a test tube over a Bunsen burner.
Week 3 Lesson 1 How do we identify the states of matter? 0. States of Matter.pptx	matter, particle, property, granular	Particles and matter	KS2 - states of matter & changes in temperature of materials	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.	Which statement best describes a gas? A. Fixed shape and fixed volume B. Fixed volume but changes shape C. No fixed shape and no fixed volume ☒ D. Particles cannot move	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? Extension: Define a granular solid.

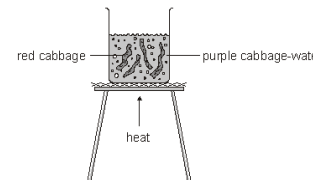
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Week 3 Lesson 2 What types of mixtures can we make? 0. Mixtures.pptx	suspension, colloid, solution,	Particles and matter	KS2 - describe how to recover a substance from a solution, use knowledge of solids, liquids and gases to decide how mixtures should be separated, including filtering, sieving and evaporating.	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	Which method is best for separating sand from water? A. Evaporation B. Filtering ☒ C. Distillation D. Chromatography	Your teacher has given you a suspension. 1. Define the term suspension. 2. Write a method to describe how you could separate the suspension into a solid and liquid.
Week 3 Lesson 3 What is a solution and how do we make one?	solute, solvent, dissolve	Particles and matter	KS2 - Understand how some materials dissolve in liquid to form	1. State what happens to mass in a physical change. 2. Recall definitions of the words: soluble, solute, solvent, solution.	What happens to mass when ice melts into water? A. Mass increases B. Mass decreases C. Mass stays the same ☒ D. Mass disappears	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 of coffee in the solution.

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0. Solutions.pptx			a solution. Y7 C1 - mixtures			
Week 4 Lesson 1 How can we change solubility? 0. Solubility.pptx	saturated, solubility, dissolve	Particles and matter	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	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 (WS)	What does it mean if a solution is saturated? A. The solid has disappeared B. More solid can still dissolve C. No more solid will dissolve ☒ D. The solution is boiling	A student experimented with how much sugar can dissolve in a cup of water. She added 10g and saw 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.

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Week 4 Lesson 2 How can we separate a solution? Lesson 1 of 2 0. Evaporation.ppt x	evaporation, boiling point, soluble	Particles and matter	KS2 - Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Y7 C1 - solutions	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.	Which statement about boiling is correct? A. It can happen at any temperature B. It only happens at the surface C. It happens at a fixed temperature ☒ D. It is the same as melting	Describe a method to separate salt from salt water. Use the key words 'evaporation', 'boiling point' and 'soluble'.
Week 4 Lesson 3 How can we separate a solution? Lesson 2 of 2 0. Evaporation.ppt x	evaporation, boiling point, soluble	Particles and matter	KS2 - Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Y7 C1 - solutions	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.	Which statement about boiling is correct? A. It can happen at any temperature B. It only happens at the surface C. It happens at a fixed temperature ☒ D. It is the same as melting	Describe a method to separate salt from salt water. Use the key words 'evaporation', 'boiling point' and 'soluble'.

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Week 5 Lesson 1 How can we separate a mixture of liquids that are different colours? 0. Chromatography.pptx	chromatography, chromatogram, solute	Particles and matter	KS2 - Understand how some materials dissolve in liquid to form a solution	1. Give examples of where chromatography is used. 2. Describe how chromatography is used to separate mixtures. 3. Evaluate the information provided by chromatograms.	Why is chromatography useful? A. To heat substances B. To destroy mixtures C. To separate mixtures ☒ D. To dissolve solids faster	Imagine you are a detective! You have arrived at a crime scene and you need to use the victim's blood to deduce if they were poisoned. Describe your method.
Week 5 Lesson 2 How can we separate a mixture of liquids that have different boiling points? 0. Distillation.pptx	distillation, solvent, evaporating, condensing,	Particles and matter	KS2 - 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. Y7 C1 -	1. Give examples of where distillation is used 2. Describe how distillation can separate mixtures 3. Explain how fractional distillation is used in making perfumes	Which mixture can be separated using distillation? A. Sand and salt B. Oil and water ☒ C. Ink colours D. Stone and water	1. A student wants to separate a flavouring from a drink. Describe how the student could do this. Include the key words 'evaporation' and 'condensation'. 2. Another student tries the same experiment but only has a bunsen burner, delivery tube and beaker. What key piece of equipment are they missing and why is this important?

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			solutions, states of matter, bunsen burners			
Week 5 Lesson 3 How do we know what chemicals are hazardous? 0. Hazards and risks.pptx	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	1. Describe the differences between corrosives and irritants 2. Describe the meaning of different hazard symbols 3. Recall everyday examples of acids	What does a corrosive hazard mean? A. It smells bad B. It can burn skin or materials ☒ C. It explodes easily D. It is harmless in small amounts	A student has planned to react hydrochloric acid with sodium hydroxide, then evaporate the solution to crystallise the salt formed. Write a risk assessment including any hazards, risks and precautions they should take to keep themselves safe.
Week 6 Lesson 1 What are indicators? 0. Indicators.pptx	indicator, acid, alkali, neutral, pH	Chemical reactions		1. Describe how indicators are used to distinguish between acidic, alkaline and neutral solutions. 2. Explain why litmus is purple in neutral solutions.	What colour is universal indicator in a neutral solution? A. Red B. Blue C. Purple ☒ D. Yellow	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.  Describe how you could use litmus paper to work out which beaker is the alkali. What you would see?

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Week 6 Lesson 2 How can we make an indicator? 0. Making an Indicator.pptx	universal indicator, acid, alkali, neutral	Chemical reactions		Use solutions of known acidity/alkalinity in order to deduce a colour chart for an indicator.	Why do scientists use solutions of known pH with indicators? A. To make the solution stronger B. To create a colour chart ☒ C. To make the solution evaporate D. To heat the indicator	Sharna boiled some red cabbage in water. The cabbage-water turned purple.  (b) Sharna mixed the purple cabbage-water with some other liquids. She wrote the colours of the mixtures in a table as shown below. <table><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> Use the information in the table to answer parts (i) and (ii) below. (i) Sharna mixed cabbage-water with colourless washing-up liquid. The mixture turned blue. What does this tell you about the washing-up liquid? (ii) Sharna then mixed cabbage-water with lemon juice. Lemon juice is acidic. What colour was the mixture?		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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liquid 3	purple	neutral																
Week 6 Lesson 3 How can we describe the acidity or alkalinity of a liquid?	acid, alkali, pH scale	Chemical reactions	KS2 - the pH scale for measuring acidity/alkalinity; and indicators. Y7	1. Describe the use of universal indicator and pH meters to determine the pH of a solution. 2. Describe solutions as being more or less	Which solution is most acidic? A. pH 2 ☒ B. pH 7 C. pH 9 D. pH 12	Ruby and Arash were discussing how to measure the pH of some shampoo and conditioner. Ruby thinks the best method is to use universal indicator, but Arash is sure a pH meter is better. 1. Who do you agree with and why? 2. They measure the pH of the												

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0. Universal Indicator.pptx			C1 - what are indicators	acidic/alkaline by comparing their pHs.		shampoo to be 6 and the conditioner to be 5.5. Ruby thinks that the conditioner is more acidic because it is a number further away from 7, but Arash thinks that the shampoo is more acidic, because it is a higher number. Who do you agree with and why?
Week 7 Lesson 1 What happens when we mix an acid and an alkali? 0. Neutralisation & Salts.pptx	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	Which change is a chemical reaction? A. Ice melting B. Salt dissolving C. Paper burning ☒ D. Water boiling	1. How can sodium hydroxide be described? 2. What name is used to describe this type of reaction? 3. In the word equation above, which substances are the reactants? 4. Write the word equation for the neutralisation reaction between nitric acid and magnesium hydroxide to produce magnesium nitrate and one other product.
Week 7 Lesson 2 How do we use neutralisation in our lives? 0. Applications of	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.	A. They make acids stronger B. They neutralise excess stomach acid ☒ C. They increase pH to zero D. They cause chemical reactions in food	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.

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neutralisation.pptx				3. Investigating antacid tablets.		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 neutralisation reaction. Write a word equation for this reaction.
Week 7 Lesson 3 What do all living things do? lesson 1 living or not.pptx	respiration, nutrition, excretion, organism	Cells and Systems	KS2: They should use simple features to compare objects, materials and living things and, with help, decide how to sort and group them. Explore and compare the differences between things that are living, dead, and things that have never been alive. Recognise that	1. List the 7 life processes 2. Describe each process 3. Explain the differences between organisms and non-living things	Which of the following is not done by all living things? A: reproduce B: move from place to place C: breathe oxygen D: need nutrients Correct: C	1. What are the 7 life processes? 2. Why is a teddy bear non-living but a grizzly bear is living?

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			living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents			
Week 8 Lesson 1 How are plant and animals cells similar and different? Cells.pptx	chloroplast, mitochondria, nucleus	Cells and Systems	Y7 B1 - living or not	1. Describe what a cell is. 2. State the organelles found in cells. 3. State the function of the organelles found in cells. 4. Compare and contrast animal and plant cells.	Which structure is found in both plant and animal cells? A: cell wall B: nucleus C: chloroplast D: vacuole Correct answer: B	Compare the structure of plant and animal cells (6 marks)
Week 8 Lesson 2 How do I look at really tiny things? Lesson 5 Using a microscope NEW.pptx	microscopy, resolution, magnification, micrometer	Cells and Systems	KS2 - using microscopes to observe rocks	1. Name the parts of a microscope. 2. Describe how to use a light microscope to examine a slide. 3. Calculate total microscope magnification using formula	Why do scientists use microscopes? A: to make images clearer by adding colour B: to make large objects look bigger C: to make objects that are too small to see visible D: to protect samples from damage Correct answer: C	Write a method to describe how a student could view a specimen under a light microscope. In your answer, include the equation to calculate total magnification.

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Week 8 Lesson 3 How do you prepare microscope slides? Preparing Slides.pptx	observation, specimen, stain	Cells and Systems	Y7 B1 - cells	1. Prepare a slide of animal and plant cells. 2. Write instructions of how to prepare a microscope slide. 3. Draw a biological diagram of cells.	Which step helps stop air bubbles occurring under a cover slip? A: Pressing down hard on the coverslip B: Lowering the coverslip slowly at an angle C: Adding extra water after placing the coverslip D: Using the highest magnification first Correct answer: B	Describe how to take a thin section of a root nodule and view under a microscope.