



# Checklist

## Particles and substances and chemical reactions

# Activate

Lesson	Developing T to 1	Secure 2 to 3	
C1 1.1 The particle model	State that materials are made up of particles. Match particle models to the properties of a material.	Describe how materials are made up of particles. Use the particle model to explain why different materials have different properties.	Explain how a range of materials are made up of particles. Evaluate particle models that explain why different materials have different properties.
C1 1.2 States of matter	Identify a substance in its three states. Match properties of the three states of matter to the name of the state.	Describe the properties of a substance in its three states. Use ideas about particles to explain the properties of a substance in its three states.	Discuss the properties of a range of substances in their three states. Use ideas about how fast particles are moving to explain the properties of a substance in its three states.
C1 1.3 Melting and freezing	Describe how substances change as the temperature changes. State the meaning of the term melting point.	Discuss the change in particle movement during melting and freezing, using particle diagrams to help. Explain changes of state using particle kinetics and temperature.	Explain why there is a period of constant temperature during melting and freezing. Interpret melting point data to explain the particle movement of different substances at given temperatures.
C1 1.4 Boiling	Describe boiling as a change of state. Recognise that different substances boil at different temperatures.	Use the particle model to explain boiling. Explain why different substances boil at different temperatures.	Use the particle model and latent heat to explain boiling. Explain why different substances boil at different temperatures using particle diagrams and latent heat.
C1 1.5 More changes of state	Recall changes of state involving gases. Describe how particles change in their arrangements during evaporation, condensation, and sublimation.	Describe changes of state involving gases. Use a particle model to explain evaporating, condensing, and subliming.	Explain what occurs during sublimation and condensation using particle models. Explain, using particle models, the differences between evaporation and boiling.
C1 1.6 Diffusion	Describe examples of diffusion and the movement of particles in diffusion.	Use the particle model to explain diffusion and describe evidence for diffusion.	Use particle diagrams to explain how diffusion occurs and the factors that affect it. Describe why diffusion is faster at higher temperatures, using the concept of how fast particles are moving.
C1 1.7 Gas pressure	Describe simply what gas pressure is. State examples of gas pressure in everyday situations.	Use the particle model to explain gas pressure and describe the factors that affect gas pressure.	Use particle diagrams to explain how gas pressure is created. Explain, using particle diagrams, what happens to gas pressure as the temperature increases.
C1 2.1 Elements	Match the term 'element' to its definition. State examples of elements.	state what an element is. Recall the chemical symbols of six elements.	Explain why certain elements are used for given roles, in terms of the properties of the elements. Compare the properties and uses of different elements.
C1 2.2 Atoms	Identify substances that are elements, giving a simple reason for my answer and list the properties of some elements.	State what atoms are. Compare the properties of one atom of an element to the properties of many atoms.	Link the behaviour of atoms within substances to why elements, but not lone atoms, exhibit properties. Use information given to draw conclusions about how the properties of atoms contribute to the properties of elements.
C1. 2.3 Compounds	State that elements and compounds are different. Identify elements within compounds.	State what a compound is. Explain why a compound has different properties to the elements in it.	Differentiate elements from compounds when given names and properties. Use particle diagrams to explain why a compound has different properties to the elements in it.
C1 2.4 Chemical formulae	State how many different elements are in a compound by looking at a chemical formula. Name the elements in a compound.	Write the chemical names for some simple compounds and interpret formulae.	Calculate the percentage of a given element within a compound and use data provided to calculate formula masses for compounds.



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C2 3.1 Chemical reactions	State what a chemical reaction is and what happens to the reactants in a chemical reaction. State some signs of a chemical reaction.	Describe what happens to atoms in chemical reactions and explain why they are useful. Compare chemical reactions to physical changes.	Describe in detail what happens to particles in a chemical reaction and compare and contrast physical and chemical reactions. Explain the differences in physical and chemical changes.
C2 3.2 Word equations	Identify reactants and products for a given reaction. Complete simple word equations.	Identify reactants and products in word equations. Write word equations to represent chemical reactions.	Convert word equations into formula equations. Construct a formula equation for a reaction without the use of word equations.
C2 3.3 Burning fuels	State what a fuel is and what fuels react with when they burn.	Predict products of combustion reactions. Categorise oxidation reactions as useful or not.	Construct formula equation for some combustion reactions. Explain the benefits and disadvantages of some oxidation reactions.
C2 3.4 Thermal decomposition	State simply what a decomposition reaction is. Describe the products of a decomposition reaction.	Identify decomposition reactions from word equations. Use a pattern to predict products of decomposition reactions.	Write formula equations for decomposition reactions. Compare decomposition reactions with combustion reactions.
C2 3.5 Conservation of mass	State what happens to the mass of the reactants and products in chemical reactions. Describe how to find out the mass of a reactant or product.	Explain conservation of mass in chemical reactions. Calculate masses of reactants and products.	Apply the conservation of mass in unfamiliar situations, giving a reasoned explanation. Predict and explain whether the mass within a reaction vessel will stay the same from word and formula equations.
C2 3.6 Exothermic and endothermic	State simply what happens in endothermic and exothermic changes. Identify a reaction as endothermic and exothermic.	Describe the characteristics of exothermic and endothermic changes. Classify changes as exothermic and endothermic.	Apply temperature changes to exothermic and endothermic changes in unfamiliar situations. Begin considering endothermic and exothermic changes in terms of energy transfers to and from the surroundings.
C2 4.1 Acids and alkalis	Name some common properties of acids and alkalis. Describe, in simple terms, what the key words 'concentrated' and 'dilute' mean.	Compare the properties of acids and alkalis. Describe the differences between concentrated and dilute solutions of an acid.	Compare the different particles found in acids and alkalis. Explain what 'concentrated' and 'dilute' mean, in terms of the numbers of particles present.
C2 4.2 Indicators and pH	Describe broad colours of universal indicator for acids, alkalis, and neutral solutions. State that indicators will be different colours in acids, alkalis, and neutral solutions.	Use the pH scale to measure acidity and alkalinity. Describe how indicators categorise solutions as acidic, alkaline, or neutral.	Use a variety of indicators to measure acidity and alkalinity and explain how they work. Categorise substances as strong or weak acids and alkalis using pH values.
C2 4.3 Neutralisation	State simply what happens during a neutralisation reaction. Give one example of a neutralisation reaction.	Describe how pH changes during neutralisation reactions. State examples of useful neutralisation reactions.	Interpret a graph of pH changes during a neutralisation reaction. Explain why neutralisation reactions are useful in the context of specific examples.
C2 4.4 Making salts	State the type of chemical made when an acid and alkali react. Match the type of salt that will form from the type of acid used.	Describe what a salt is. Predict the salts formed when acids react with metals or bases.	Explain what salt formation displaces from the acid. Predict the formulae for products of reactions between acids and metals, or acids and bases.