

Lesson	Know	Apply	Extend
5.1.1 The particle model	I can state that materials are made up of particles. <input type="checkbox"/>	I can explain, in terms of particles, why different substances have different properties. <input type="checkbox"/>	I can evaluate particle models that explain the properties of substances. <input type="checkbox"/>
	I can state that the properties of substances can be described in terms of particles in motion. <input type="checkbox"/>	I can explain properties, such as density, based on the arrangement and mass of particles. <input type="checkbox"/>	I can use data about particles to predict and explain differences in properties such as density. <input type="checkbox"/>
	I can state what toy building blocks are representing when they are used to model substances. <input type="checkbox"/>	I can use models to investigate the relationship between the properties of a material and the arrangement of its particles. <input type="checkbox"/>	I can design and explain a new model for representing the particle model. <input type="checkbox"/>
5.1.2 States of matter	I can describe the properties of a substance in its three states. <input type="checkbox"/>	I can compare the properties of a substance in its three states. <input type="checkbox"/>	I can argue for how best to classify substances that behave unusually as solids, liquids, or gases. <input type="checkbox"/>
	I can state that the properties of substances can be described in terms of the arrangement and movement of its particles. <input type="checkbox"/>	I can explain the properties of solids, liquids, and gases based on the arrangement and movement of their particles. <input type="checkbox"/>	I can justify whether a given property of a substance in a given state can be explained by the arrangement, or by the movement, of its particles. <input type="checkbox"/>
	I can make the relevant observations needed to decide if a substance is in its solid, liquid, or gas state. <input type="checkbox"/>	I can use observations to decide if a substance is in its solid, liquid, or gas state. <input type="checkbox"/>	I can evaluate a representation of the particle model. <input type="checkbox"/>
5.1.3 Melting and freezing	I can describe how the properties of a substance change as it melts. <input type="checkbox"/>	I can use words, and annotated before and after diagrams of particles, to explain observations about melting and freezing. <input type="checkbox"/>	I can explain, in detail, the difference between melting and freezing. <input type="checkbox"/>

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	I can recognise an energy transfer during a change of state. <input type="checkbox"/>	I can explain melting and freezing in terms of changes to the energy of particles. <input type="checkbox"/>	I can suggest reasons for the different melting points of different substances based on the arrangement, movement, and energy of their particles. <input type="checkbox"/>
	I can describe the changes in state of matter as stearic acid cools. <input type="checkbox"/>	I can use cooling data to identify the melting point of stearic acid. <input type="checkbox"/>	I can explain why there is a period of constant temperature during melting and freezing based on the arrangement and movement of particles, and energy transfers. <input type="checkbox"/>
5.1.4 Boiling	I can describe how the properties of a substance change as it boils. <input type="checkbox"/>	I can use words, and annotated before and after diagrams of particles, to explain observations about boiling. <input type="checkbox"/>	I can explain why there is a period of constant temperature during boiling based on the arrangements and movement of particles, and energy transfers. <input type="checkbox"/>
	I can recognise an energy transfer during a change of state. <input type="checkbox"/>	I can explain why different substances boil at different temperatures in terms of changes to the energy of particles. <input type="checkbox"/>	I can suggest reasons for the different melting points of different substances based on the arrangement, movement, and energy of their particles. <input type="checkbox"/>
	I can draw straightforward conclusions from boiling point data presented in tables and graphs. <input type="checkbox"/>	I can select data and information about boiling points and use them to contribute to conclusions. <input type="checkbox"/>	I can assess the strength of evidence from boiling point data, deciding whether it is sufficient to support a conclusion. <input type="checkbox"/>

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5.1.5 More changes of state	I can state the names of changes of state involving gases. <input type="checkbox"/>	I can draw annotated before and after diagrams of particles, and use words, to explain observations about evaporation, condensing, and subliming. <input type="checkbox"/>	I can make predictions about what will happen during an unfamiliar physical process – deposition – in terms of particles and their energy. <input type="checkbox"/>
	I can describe one difference between evaporation and boiling. <input type="checkbox"/>	I can explain the differences between evaporation, sublimation, and boiling based on the arrangement and movement of particles. <input type="checkbox"/>	I can compare evaporation, boiling, and sublimation based on the arrangement, movement, and energy transfers of particles. <input type="checkbox"/>
	I can write a fair test enquiry question about evaporation, and plan the method and how to control the variables. <input type="checkbox"/>	I can explain why it is important to control variables to provide evidence for a conclusion in an evaporation investigation. <input type="checkbox"/>	I can justify the procedure and evaluate the results in an evaporation investigation. <input type="checkbox"/>
5.1.6 Diffusion	I can describe examples of diffusion. <input type="checkbox"/>	I can describe the evidence for diffusion. <input type="checkbox"/>	I can evaluate observations that provide evidence for the existence of particles. <input type="checkbox"/>
	I can state that observations about diffusion can be explained in terms of particles in motion. <input type="checkbox"/>	I can draw annotated before and after diagrams of particles, and use words, to explain diffusion. <input type="checkbox"/>	I can draw annotated before and after diagrams of particles, and use words, to predict the relative speed of diffusion when the value of a given independent variable is changed. <input type="checkbox"/>
	I can write a fair test enquiry question on diffusion, identify the independent and dependent variables, and plan the method and how to control the variables. <input type="checkbox"/>	I can explain why it is important to control variables to provide evidence for a conclusion in a diffusion investigation. <input type="checkbox"/>	I can justify the procedure and evaluate the results in a diffusion investigation. <input type="checkbox"/>

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5.1.7 Gas pressure	I can describe examples of gas pressure. <input type="checkbox"/>	I can draw annotated particle diagrams, and use words, to explain gas pressure. <input type="checkbox"/>	I can draw annotated before and after particle diagrams, and use words, to explain what happens to gas pressure as conditions are changed. <input type="checkbox"/>
	I can use words to explain gas pressure simply. <input type="checkbox"/>	I can explain unfamiliar observations about gas pressure in terms of particles. <input type="checkbox"/>	I can predict what will happen to gas pressure as conditions are changed in terms of particles and their energy. <input type="checkbox"/>
	I can collect and interpret simple data to provide evidence for gas pressure. <input type="checkbox"/>	I can collect, analyse, and draw a conclusion from data providing evidence for gas pressure. <input type="checkbox"/>	I can evaluate how well a conclusion about gas pressure is justified by the evidence collected. <input type="checkbox"/>
5.1.8 Inside particles	I can state definitions of atoms, elements, molecules, and compounds. <input type="checkbox"/>	I can represent atoms, molecules, and elements using models. <input type="checkbox"/>	I can compare atoms, molecules, and elements using models. <input type="checkbox"/>
	I can name one element and one compound. <input type="checkbox"/>	I can use diagrams to represent atoms and molecules of elements and compounds. <input type="checkbox"/>	I can use diagrams to compare molecules of an element and a compound. <input type="checkbox"/>