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Particle model

- 1 I can name, describe and explain the properties of the three states of matter
- 2 I can draw particle diagrams to represent a solid, liquid and gas
- 3 I can describe how pressure occurs in gases
- 4 I can describe what diffusion is and explain how diffusion happens in terms of the particle model
- 5 I can state that air is a mixture of gases
- 6 I can explain the following physical changes in terms of conservation of material, mass and reversibility: melting, freezing, evaporation, sublimation, condensation and dissolving

1	boiling point	The temperature at which a substance boils.
2	change of state	The process by which a substance changes from one state to another.
3	density	The mass of a material in a certain volume.
4	diffusion	The process by which particles in liquids or gases spread out through random movement from a region where there are many particles to one where there are fewer.
5	melting point	The temperature at which a substance melts.
6	particle	A very tiny object, such as an atom or molecule, that materials are made from. They are too small to be seen with a microscope.
7	sublime (sublimation)	The change of state from solid directly to gas.

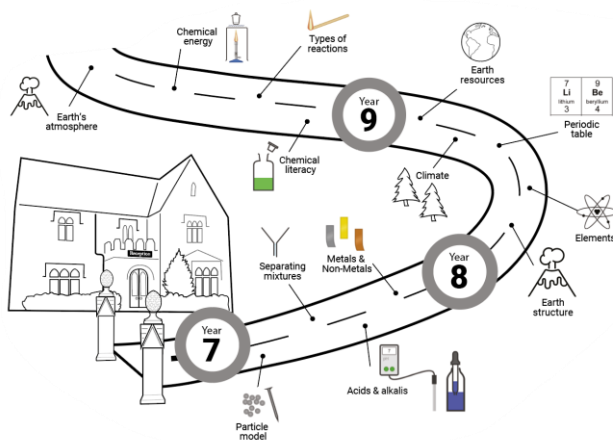
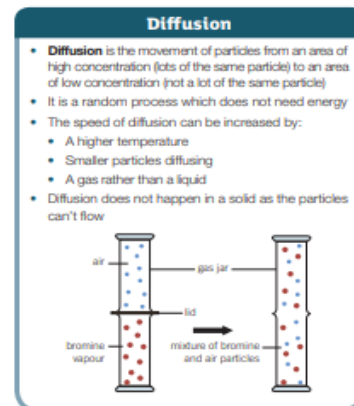
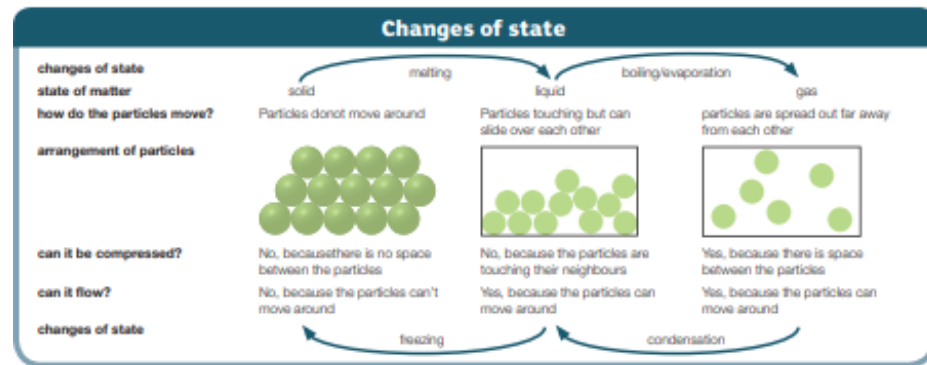
In KS2 you learnt to compare and group together everyday materials on the basis of their properties and that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. You also should have knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.

The particle model is widely used to predict the behaviour of solids, liquids and gases and this has many applications in everyday life. At GCSE you will understand how the movement of particles affects if a substance is a solid, liquid or gas.

Careers:
Chemist
Pharmacist

Why?

The particle model helps us to explain a wide range of observations and engineers use these principles when designing vessels to withstand high pressures and temperatures, such as submarines and spacecraft.



Topic	1 Point	2 Points	4 Points	6 Points	10 Points
Particle Model 	Find one example of a solid, liquid and gas at home and draw how the particles are arranged in each as a poster.	Make a labelled model of how the particles are arranged in solids, liquids and gases using recycled or 'junk' material.	Create a 'What Am I?' poster, by writing a sentence cryptically describing solid, liquid and gas for other students to guess which state of matter is being described.	Write your own explanation as to why ice floats on water and link this to density.	Research who Democritus was and create a Facebook profile page on him, focusing on him posting about his ideas on atoms.
States of matter 	Make a list of keywords from this lesson in alphabetical order and choose two to write a definition for.	Make word equations for each state changing to another. For example solid + heat = (answer).	As a journal or diary entry, list any changes of state you see during one day.	Research 'non-Newtonian fluid' and write your own definition with pictures of at least four examples.	Make a comic strip about a snowman undergoing all three changes of state.
Diffusion 	Create a poem about diffusion.	List the three states of matter in order of which would diffuse fastest to slowest, if at all.	State two gases that diffuse into lungs and leave, and in which direction (diffuse in or diffuse out).	Research how both lungs and leaves are adapted for diffusion and create a poster on these.	Design an experiment to investigate one of the factors that affects diffusion. Write a brief method and state your independent, dependent and control variables.
Gas pressure 	Write down a definition for gas pressure	Draw a diagram to explain why balloons get bigger when you blow air into them	Draw a diagram of the particle model for each state. Use this to explain the properties of a gas	If a balloon is placed in a freezer, it will shrink. Explain why	Research compressed oxygen tanks. Write a paragraph to explain how these are made