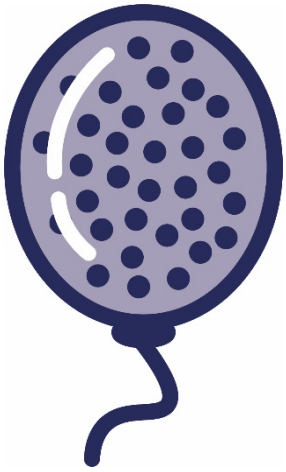
Particles



Why can a river flow? How does the smell of cooking food reach your bedroom? Why does ice cream melt in the Sun? Why do bubbles appear in a boiling pan of water? Why does the bathroom mirror steam up when we have a shower?

Matter is made of atoms; atoms can link together and arrange in a variety of ways leading to the formation of different structures. This behaviour and arrangement of atoms explain the properties of different materials.

This is the **first** unit we are studying as part of the big idea: **Structure Determines Properties.**

In this unit we will learn how particles are arranged in solids, liquids and gases using the particle model. This is the first time we will use a model in science so we will discuss why scientists use models. We will learn how the particle model can be used to represent expansion, melting, boiling, freezing and condensing.

We will also learn about diffusion and pressure and learn many of the ways that particle behaviour affects our everyday life.

We will develop our maths skills by plotting melting and boiling point data onto number lines. We will then be able to use these to identify the state of different substances at different temperatures. We will also learn how to calculate the density of different objects.

We will develop our practical skills in this unit because there will be lots of demonstrations to help us understand what we are learning. We will also learn about types of variables in science and be able to use the language of variables when describing an experiment into the rate of diffusion.

TASKS:
What subject will this unit focus on? BIOLOGY CHEMISTRY PHYSICS
(circle the correct subject)

There are lots of keywords underlined above. List these into the two columns:

Words I know	Words I haven't seen before

To answer before the unit:

1. What are you most excited to learn about in this topic?

   _____

   _____

   _____

2. What do you already know about this topic?

   _____

   _____

   _____

3. Why do you think it's important to learn that particles affect the properties of substances?

   _____

   _____

   _____

4. What knowledge from previous science lessons might help us?

   _____

   _____

   _____

5. What questions do you have about this topic?

   _____

   _____

   _____

To answer at the end of the unit:

1. Tick off any words in the 'words I haven't seen before' column that you are now confident with. Circle any you still need more practice to use.
2. What have you most enjoyed about this unit?

   _____

   _____

   _____

3. What more would you like to learn about particles as part of the big idea: 'Structure Determines Properties'?

   _____

   _____

Teacher guidance:

The purpose of this resource is to provide students with an overview at the beginning and end of each unit. It is designed to create a discussion about the unit prior to the sequence of lessons.

The unit scope should be read as a guided reading activity. Tier 3 vocabulary has been highlighted. It may need to be adapted further for LPAs or pupils with different reading ages.

There are a range of ways to use this resource.

1. Display on a slide for students to read as a class. Direct students to complete the activities in their book.

2. Print off for students to stick into their book at the beginning of the unit along with their knowledge organiser. Complete as a guided reading task together. Direct students to complete the activities.

3. Have students complete as part of a booklet.

4. Set as a homework prior to a unit.

If you have any feedback about how this resource could be used/improved, please contact the science mastery team: sciencemastery@arkonline.org