

# Scheme of Learning: Particle Model of Matter

## Topic Sequence:

1	2	3	4	5	6	7	8	9	10
Cell Biology	Particle Model of Matter	Infection & Response	Atomic Structure & the Periodic Table	Atomic Structure (Physics)	Bonding & Structure	Energy	Bioenergetics	Rates of Reaction	Chemistry of the Atmosphere

## Topic Overview:

The particle model is widely used to predict the behaviour of solids, liquids and gases and this has many applications in everyday life. It 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. It also explains why it is difficult to make a good cup of tea high up a mountain

## Lesson Sequence:

We begin with a recap of the states of matter and changes of state from key stage three. We then build on this foundation to look deeper at what internal energy of a substance is and how potential and kinetic energy of particles changes during temperature rises and state changes. We include the required practical on specific heat capacity.

The middle part of the topic concerns density. We complete another required practical to calculate the densities of regular shapes, irregular shapes and liquids. We finish by looking at gas pressure.

In this topic, we will focus on the skill of 'describe'.

## Sequence of Lessons:

1	States of Matter
2	Change of State
3	Internal Energy
4	Specific Heat Capacity (2 lessons worth) (required practical)
5	Specific Latent Heat
6	Density of Regular Shapes (required practical)
7	Density of Irregular Shapes (required practical)
8	Density of Liquids (required practical) Mid topic assessment
9	Gas Pressure & Temperature
10	Revision
11	Test

## Resources:

1	n/a
2	Melted stearic acid in test tubes in a water bath
3	n/a
4	Demo: Specific heat capacity required practical – use a joule meter, not an ammeter and voltmeter.
5	n/a
6	Various metal cubes, callipers.
7	Variety of irregular shaped objects, eureka cans, washing up bowls.
8	Variety of liquids (golden syrup, wallpaper paste, sugar water, salt water, glycerol, sunflower oil) balances.
9	Empty drink cans, washing up bowls.
10	n/a
11	n/a

## Supportive Reading:

Extended answer practice	8 marker written answer in lesson 3
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## Assessment:

Knowledge:	Multiple choice and short answer questions.
Application of Knowledge:	Exam questions based on the skill of describe