

Subject/Year group/Unit Title	Big picture questions	Pupils will focus particularly on the following statements from the programme of study:
<p>Physics Year 9 Matter</p> <p>Lesson 1: Revision of the arrangement of particles in solids, liquids and gases and introduction of the concept of internal energy of particles</p> <p>Lesson2: Revision of density and introduction of the equation to calculate density</p> <p>Lesson 3: Revision of diffusion as the movement of particles and introduction to Brownian motion as the reason why diffusion takes time.</p> <p>Lesson 4: Revision of the difference between temperature and heat energy and the introduction of the idea of objects storing thermal energy</p> <p>Lesson 5: Revision of the effect of heat energy on the volume of materials, linking into the previous concept of increasing temperature increasing thermal energy and heat energy transfer within solids (conduction)</p> <p>Lesson 6: Introduction to heat energy transfer in fluids (convection)</p> <p>Lesson 7: Revision of changes of state and introduction of the changes in internal energy (not temperature) that take place when a substance changes state. Exploration of the difference between boiling and evaporation.</p>	<p>How can observations at changes of state, and observations of conduction, expansion, and convection and rate of diffusion be explained by the particles losing or gaining energy?</p> <p>How does temperature affect the motion and spacing of particles?</p> <p>How is energy stored in materials?</p>	<ul style="list-style-type: none"> • the differences in arrangements, in motion and in closeness of particles explaining changes of state, shape and density, the anomaly of ice-water transition • conservation of material and of mass, and reversibility, in melting, freezing, evaporation, sublimation, condensation, dissolving • similarities and differences, including density differences, between solids, liquids and gases • Brownian motion in gases • diffusion in liquids and gases driven by differences in concentration • the difference between chemical and physical changes • changes with temperature in motion and spacing of particles • internal energy stored in materials

Assessment tasks	As FCJ educators, we will focus on the FCJ values by:	We will ensure students skills in reading, writing, communication and mathematics are enhanced by:
<ol style="list-style-type: none"> 1. ESSENTIAL HOMEWORK Worksheet 7Gd(9) Diffusion 2. Conduction Homework 20 marks 	<p>Excellence – set highest possible standards for all learners</p> <p>Companionship – teamwork when completing practical investigations, respect during class discussions</p> <p>Dignity – class discussions and Q&A, ensuring everyone is listened to and their views heard</p> <p>Justice - discussions during sound topic, fair treatment the deaf</p> <p>Hope – highlight progress in science and innovation to inspire learners</p> <p>Gentleness – classroom management in a firm but fair and gentle manner</p>	<p>Mathematics – graph skills, calculating mean, using equation for wave speed, use of numbers to analyse frequencies</p> <p>Reading – within lessons themselves and literacy news reports</p>
We are supporting progression from KS2 in this unit by:	We are supporting progression to KS4 in this unit by:	Misconceptions and how they will be addressed
We are supporting progression in this year by following from the KS2 particle diagrams, and following on from KS2 solids, liquids and gases.	Looking at energy changes in changes of state Using correct terminology to describe the arrangement of particles and to describe phenomena	<p>Particles in solids liquids and gases are different sizes .</p> <p>Liquid particle arrangement is half way between a solid and a gas</p> <p>– addressed by correct explanation and diagrams</p> <p>There is nothing preventing diffusion</p> <ul style="list-style-type: none"> - addressed by clear explanation of Brownian motion <p>Evaporation is the same as boiling</p> <ul style="list-style-type: none"> - addressed by demonstration of examples using water and alcohol.

