



Subject: Year 9 P.3 The Particle Model of Matter

Overarching Topic: P.3 The Particle Model of Matter											
<p>Why is this topic being studied at this time?</p> <p>How does it fit into the wider subject curriculum?</p>	<p>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!</p> <p>Having looked at states of matter in KS3 the next step is to think about all the interactions and how it effects pressures and temperatures. This is an in depth look into particle interactions</p>										
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Why do the different states of matter have different densities in terms of mass and volume of the material? Why does the temperature of a substance remain constant when the substance is changing state? How does the strength of the bonds between the particles affect how much energy is needed to change the state of the substance? Can you calculate the change in thermal energy, mass, specific heat capacity or the temperature change of a substance that is heated or cooled? Why is more energy required to vaporise 1 kg of water than to melt 1 kg of ice? How does changing the volume of a gas affects the pressure?</p> </td> <td> <p>Why do objects float? What are the limitations of the particle model of matter? How well do these models cope with water which is less dense than ice (solid water)? How, when a substance changes state, does the mass of the substance remain unchanged? Why is water used in central heating systems? 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<p>The Key Skills/ Techniques</p>	<p>The sophistication and application of skills will become more advanced as students' progress through the critical, core and pinnacle knowledge.</p>										
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5. Working Scientifically

Identify hazards and planning to limit risk. Describe how to improve accuracy/precision/repeatability/reproducibility/validity. Evaluate reliability of methods and investigations, taking in to account data analysis.