| Physics<br>Year 10<br>Summative Comment | | Curriculum Checkpoints: What do students know and what can they do? | | | | YT Clips | Further guidance |
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| | | Developing | Securing | Mastering | Excelling | | |
| 3. Particle model of matter | Substantive Knowledge | To be able to describe changes of state as physical changes. To be able to describe how heating raises the temperature of a system. To be able to state that when an object changes state there is no change in temperature. To be able to recall that gases can be compressed or expanded by pressure changes. To be able to state that in the particle model the higher the temperature the faster the molecules move. | To be able to describe how mass is conserved when substances change state. To be able to explain that changes of state are physical, not chemical, changes because the material recovers its original properties if the change is reversed. To be able to describe that heating raises the temperature or changes the state of a system but not at the same time. | To be able to explain that changes of state conserve mass. To be able to describe that the temperature of a gas is related to the average kinetic energy of the molecules. To be able to use the particle model to explain that increasing the volume of a gas, at constant temperature, can lead to a decrease in pressure. | To be able to explain that internal energy is the total kinetic energy and potential energy of all the particles that make up a system. | https://www.youtube.com/playlist?list=PLidqqlGKox7UVC-8WC9djoeBzwxPeXph7 Video 25-31 | Knowledge organiser<br><br>Particle Model of Matter Exam Questions<br><br>Particle Model of Matter extended writing questions<br><br>Revision Book pages 38-42 |
| 3. Particle model of matter | Disciplinary Knowledge | To be able to use particle diagrams to communicate ideas about relative densities of different states. To be able to use density = mass/volume to calculate density. | To be able to use the particle model to explain the effect on temperature of increasing the pressure of a gas at constant volume. | To be able to use the particle model to explain the effect on temperature of increasing the pressure of a gas at constant volume. To be able to use the particle model to explain why the latent heat of vaporisation is much larger than the latent heat of fusion. To be able to use the specific heat capacity equation to calculate mass, specific heat capacity or temperature change. | To be able to use the specific heat capacity equation to calculate mass, specific heat capacity or temperature. To be able to use the specific heat capacity equation to calculate mass, specific heat capacity or temperature change. To be able to use the equation pV = constant to calculate the pressure or volume of a gas at constant temperature. Use the equation E = mL | | |
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| 4. Atomic Structure | Substantive Knowledge | To know types of energy and be able to describe energy changes. To know energy is measure in Joules. To be able to describe ways of reducing energy waste. To know the main energy resources available for use on Earth. | To know the 1st law of thermodynamics. To be able to describe changes in energy. To be able to explain specific heat capacity. To know the definition of power and work done. To be able to describe advantages and disadvantages of global energy resources. | To be able to explain energy changes mathematically. To be able to determine changes in thermal energy through practical. To be able to calculate the efficiency for any energy transfer. To be able to describe the environmental impact arising from use of different energy resources. | To be able to link thermal conductivity of material with rate of energy transfer by conduction. To be able to describe ways of increasing the efficiency of energy transfer. To explain patterns and trends in the use of energy resources. | | |

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| 4. Atomic Structure | Disciplinary Knowledge | To be able to draw Sankey diagrams. To be able to safely carry out thermal conductivity practical.<br>To be able to use SI units correctly. | To recall and use equations for power, work done and efficiency.<br>To know that science can be used to identify global energy resource issues.<br>To outline simple ethical arguments about the rights and wrongs of a new technology. | To be able to manipulate equations and calculate work done, power and efficiency values as a decimal or as a percentage.<br>To be able to explain how scientific advances can have a global impact. | To be able to describe and evaluate with the help of data, methods that can be used to tackle problems caused by human impact on the environment.<br>To know that energy resource issues cannot always be resolved due to political, social, ethical or economic considerations. | | |
| Physics<br>Year 10 | | ***Curriculum Checkpoints: What do students know and what can they do?*** | | | | ***YT Clips*** | Further guidance |
| **Summative Comment** | | **Developing** | **Securing** | **Mastering** | **Excelling** | | |
| 5. Forces 1 | Substantive Knowledge | To be able to describe how a fluid exerts a pressure on a surface.<br>To be able to describe how pressure varies with depth in a fluid.<br>To be able to explain that a moment is the turning effect of a force. | To be able to calculate pressure at any depth in a fluid and explain what causes atmospheric pressure.<br>To be able to calculate the size and direction of a moment. | To be able to explain how a partially (or totally) submerged object experiences upthrust and why atmospheric pressure decreases with height.<br>To be able to explain how gears and levers transmit the rotational effect of a force. | To be able to describe the factors which influence floating and sinking.<br>To be able to apply the idea of moments to contexts such as the balancing of a seesaw. | | |
| 5. Forces 1 | Disciplinary Knowledge | To be able to know that forces are vectors and have magnitude and direction. | To be able to explain the difference between contact and non-contact forces. | To be able to represent vector quantities by arrows. | To be able to determine the components of a force using a vector arrow diagram. | | |