SP14 Particle Model

SP14a Particles and density

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| --- | --- | --- | --- | --- |
| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|  | Describe the arrangements of particles in solids, liquids and gases. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L7.jpg | Use the particle model to explain the different properties of solids, liquids and gases. |  |  |  |
|  | Recall the formula relating density, mass and volume. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L7.jpg | Use the formula relating density, mass and volume. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L7.jpg | Use the particle model to explain why solids, liquids and gases have different densities. |  |  |  |
|  | Describe what happens to the mass of a substance when it changes state. |  |  |  |

SP14b Energy and changes of state

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| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|  | Explain how heating affects the particles in a substance or object, including changes of state. |  |  |  |
|  | Describe how the temperature of an object changes with time while being heated or cooled to make it change state. |  |  |  |
|  | Define the term specific heat capacity. |  |  |  |
|  | Define the term specific latent heat. |  |  |  |
|  | Explain the difference between specific heat capacity and specific latent heat. |  |  |  |
|  | Explain ways of reducing unwanted energy transfer through thermal insulation. |  |  |  |

SP14c Energy calculations

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| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|  | Use the formula relating change in thermal energy, mass, temperature change and specific heat capacity. |  |  |  |
|  | Use the formula relating thermal energy, mass and specific latent heat. |  |  |  |
|  | Recall that the value of specific latent heat for a substance is different for melting/solidifying and for evaporating/condensing. |  |  |  |

SP14d Gas temperature and pressure

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| --- | --- | --- | --- | --- |
| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|  | Explain how the movement of particles causes gas pressure. |  |  |  |
|  | Explain how changing the temperature of a gas affects the speed of its particles. |  |  |  |
|  | Explain how temperature affects the pressure of a fixed mass of gas at constant volume. |  |  |  |
|  | Explain the significance of absolute zero. |  |  |  |
|  | Convert temperatures between the Kelvin and Celsius temperature scales. |  |  |  |

SP14e Gas pressure and volume

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| --- | --- | --- | --- | --- |
| Step | Learning outcome | Had a look | Nearly there | Nailed it! |
|  | Explain how gases can be compressed or expanded by pressure changes. |  |  |  |
|  | Explain how the pressure of a gas produces a force at right angles to any surface. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L7.jpg | Explain why changing the volume of a gas changes the pressure. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L7.jpg | Use the formula relating pressure and volume changes in a gas of fixed mass at constant temperature. |  |  |  |
| D:\WD\Live Job\2016\Sep-16\regcsesciencewordformattingsb3sc13sp4andsp5\Required_Input\Required_Input\TTPP progression steps icons\Progression_icon_L7.jpg | **H** Explain why doing work on a gas can increase its temperature. |  |  |  |