Particle model

Changes of state

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| **Key term** | **Definition** |
| Boil | when a liquid is heated, gains energy and turns into a gas, at its boiling point |
| Boiling point | the temperature at which a pure substance changes from a liquid to a gas or from a gas back to a liquid |
| Condense | when a gas is cooled, energy is transferred from the gas to the gas’ surroundings and the gas turns into a liquid |
| Endothermic | a physical change or chemical reaction which transfers energy from its surroundings, causing the surroundings to get cooler |
| Evaporate | when the surface of a liquid gains energy and turns into a gas; this can happen below the boiling point |
| Exothermic | a physical change or chemical reaction which transfers energy to its surroundings, causing the surroundings to get hotter |
| Freeze | when a liquid is cooled, energy is transferred from the liquid to the liquid’s surroundings and the liquid turns into a solid |
| Melt | when a solid is heated, gains energy and turns into a liquid, at its melting point |
| Melting point | the temperature at which a pure substance melts and changes from a solid to a liquid, or from a liquid back to a solid |
| Sublime | when a solid is heated, gains energy and turns into a gas, without turning into a liquid first |

Diffusion

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| **Key term** | **Definition** |
| Concentration | the amount of solute present in a known volume of solution |
| Diffusion | the movement of a substance from an area of high concentration to an area of low concentration |
| High concentration | a large amount of solute present in a known volume of solution |
| Low concentration | a low amount of solute present in a known volume of solution |

Solutions

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| **Key term** | **Definition** |
| Dissolve | when a solute is added to a solvent and the solute breaks into much smaller particles and spreads out |
| Insoluble | describes a substance which does not dissolve in a particular solvent |
| Miscible | when two liquids can mix and do not separate out into layers |
| Soluble | describes a substance which dissolves in a particular solvent |
| Solute | a substance that dissolves in a solvent to make a solution |
| Solution | the mixture produced when a solute dissolves in a solvent |
| Solvent | a substance that dissolves the solute to make a solution |

States of matter

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| **Key term** | **Definition** |
| Atom | the smallest possible particle of an element; atoms are made up of protons, neutrons and electrons |
| Chemical bond | a strong (electrostatic) force of attraction holding atoms together |
| Flow | when a gas or liquid moves steadily and continuously |
| Force | the attraction (pull) and repulsion (push) between objects; in chemistry, these objects are particles |
| Gas | a state of matter with no defined shape or volume and where the particles move randomly and have a large distance between them |
| Ion | a charged particle formed when one or more electrons are lost or gained from an atom or molecule |
| Kinetic energy | the energy an object has because of its motion |
| Latent heat | energy transferred to or from a substance during a change in its physical state that occurs without changing its temperature |
| Liquid | a state of matter with a defined volume but not a defined shape and where the particles are touching and moving randomly |
| Molecule | two or more atoms connected by chemical bonds |
| Particle | a small portion of matter; examples include atoms, molecules or ions |
| Solid | a state of matter with a defined shape and volume and where the particles are touching and vibrating |
| Vibrate | move repetitively and rapidly to and fro |