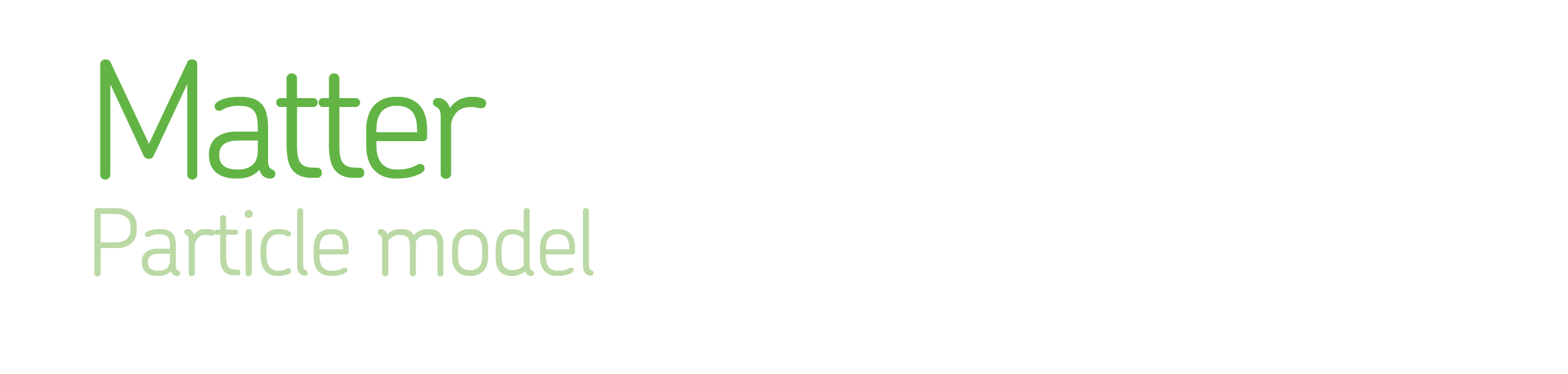
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Relate the features of the particle model to the properties of materials in different states.



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| --- | --- | --- | --- | --- |
| Know | |  | Apply  2  1 | |
| Ideas | |  |  |  |
| K1 | Properties of solids, liquids and gases can be described in terms of particles in motion but with differences in the arrangement and movement of these same particles: closely spaced and vibrating (solid), in random motion but in contact (liquid), or in random motion and widely spaced (gas). |  | A1 | Explain unfamiliar observations about gas pressure in terms of particles. |
| A2 | Explain the properties of solids, liquids and gases based on the arrangement and movement of their particles. |
| A3 | Explain changes in states in terms of changes to the energy of particles. |
| K2 | Observations where substances change temperature or state can be described in terms of particles gaining or losing energy. |  | A4 | Draw before and after diagrams of particles to explain observations about changes of state, gas pressure and diffusion. |
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| Facts | |
| K3 | A substance is a solid below its melting point, a liquid above it, and a gas above its boiling point. |  | A5 |  |
|  | |  |  |  |
| Key words | |
| K4 | **Particle:** A very tiny object such as an atom or molecule, too small to be seen with a microscope. |  |  |  |
| K5 | **Particle Model:** A way to think about how substances behave in terms of small, moving particles. |  |  |  |
| K6 | **Diffusion:** the process by which particles in liquids or gases spread out through random movement from a region where there are many particles to one where there are fewer. |  |  |  |
|  |
| K7 | **Gas** **pressure:** Caused by collisions of particles with the walls of a container. |  |  |  |
| K8 | **Density:** How much matter there is in a particular volume, or how close the particles are. |  |  |  |
| K9 | **Evaporate:** Change from liquid to gas at the surface of a liquid, at any temperature. |  |  |  |
| K10 | **Boil:** Change from liquid to a gas of all the liquid when the temperature reaches boiling point. |  |  |  |
| K11 | **Condense:** Change of state from gas to liquid when the temperature drops to the boiling point. |  |  |  |
| K12 | **Melt:** Change from solid to liquid when the temperature rises to the melting point. |  |  |  |
| K13 | **Freeze:** Change from liquid to a solid when the temperature drops to the melting point. |  |  |  |
| K14 | **Sublime:** Change from a solid directly into a gas. |  |  |  |
| 3 | Extend |  |  |  |
| E1 | Argue for how to classify substances which behave unusually, as solids, liquids, or gases. |  |  |  |
| E2 | Evaluate observations that provide evidence for the existence of particles. |  |  |  |
| E3 | Make predictions about what will happen during unfamiliar physical processes, in terms of particles and their energy. |  |  |  |
| E4 |  |  |  |  |
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|  |  |  |  |  |
| E5 |  |  |  |  |
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