

The Particle Model of Matter

How tiny particles explain solids, liquids, and gases



What the Particle Model Tells Us

- All matter is made up of small particles.
- Particles of matter are always moving.
- There are spaces between particles.
- The particle model explains how solids, liquids, and gases behave.

Particles in Solids, Liquids, and Gases

Solids

Particles are close together and vibrate in place.

Liquids

Particles have spaces between them and can slide past each other.

Gases

Particles have large spaces and move constantly in all directions.

Attractive forces

Strongest in solids, weakest in gases.

Mass, Volume, and Density

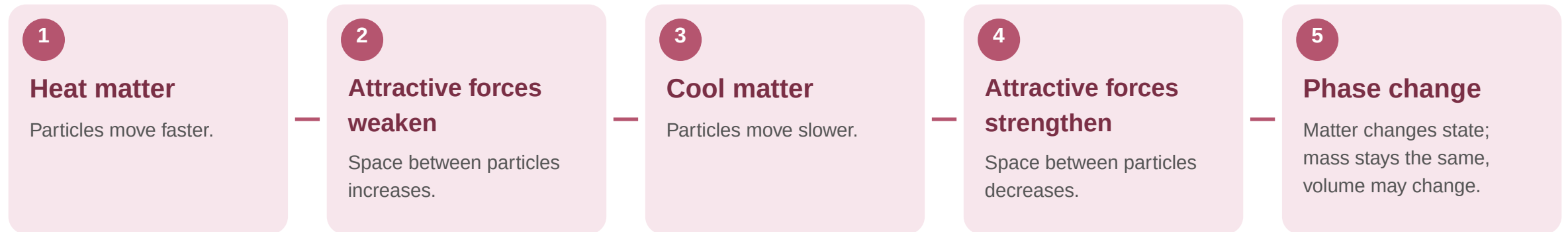
Mass and Volume

Mass is the amount of matter in a solid, liquid, or gas, measured in grams (g) or kilograms (kg). Volume is the amount of space matter takes up, measured in millilitres (mL) or litres (L) for liquids.

Density

Density compares the mass of matter to its volume. A denser object has more mass packed into the same space. Something less dense than a liquid will float on it, and something denser will sink.

Heating and Cooling Change Particle Behaviour



Bringing It Together

The particle model of matter helps us explain why solids, liquids, and gases look and act the way they do. Particles are always moving, and the spaces and forces between them determine whether matter is a solid, a liquid, or a gas. These same ideas help explain mass, volume, and density, and they connect to how matter changes when heated or cooled.

If you could shrink down and stand between the particles of your favourite drink, would you be sliding past your neighbours or zooming around in wide open space? What state of matter would that be?