

The Particle Model of Matter

30 minutes, 3 stages

All matter, from the water in your bottle to the air around you, is made of tiny particles that are always moving. Tonight you will practice explaining solids, liquids, and gases using this particle model, which is a key idea for Grade 5 science ([Outcome](#), [Understanding](#)).

Stage 1: Warm-up (8 min)

Write the three big ideas of the particle model of matter from memory, then check them against your notes ([Knowledge](#), [PDF p.1](#)):

1. All matter is made up of _____.
2. Particles of matter are always _____.
3. Particles of matter have _____ between them.

Now match each state of matter to its particle arrangement. Write the correct letter beside each number ([Knowledge](#)):

1. Solid
2. Liquid
3. Gas

- A. Particles are separated by large spaces and move quickly in all directions.
- B. Particles are close together and vibrate in place.
- C. Particles are separated by spaces and slide past each other.

Stage 2: Practice (14 min)

Part A: Draw the particles.

Draw three small boxes side by side and label them Solid, Liquid, Gas. In each box, sketch dots to show how particles are arranged in that state. Under each drawing, write one sentence describing the movement of the particles ([Skills](#), [Skills](#)).

Part B: Attractive forces.

Attractive forces are the pulls between particles that hold them together. These forces are strongest in solids and weakest in gases ([Knowledge](#)). Answer in full sentences:

1. Why do you think a solid, like an ice cube, holds its shape while a gas, like the air in a balloon, spreads out to fill its container?
2. Rank solids, liquids, and gases from strongest to weakest attractive forces between particles.

Part C: Everyday examples.

Think about melting, boiling, and condensation ([Resource](#)). For each example below, name the two states of matter involved and describe what happens to the particles:

1. An ice cube melting into a puddle of water.
2. Water boiling in a pot on the stove.
3. Steam turning back into water droplets on a cold window.

Stage 3: Apply and reflect (8 min)

Choose one household item you can see right now, such as a glass of juice, a bag of chips (the air inside), or a wooden pencil. Write four sentences that answer:

1. What state of matter is it?
2. How are its particles arranged?
3. Are its particles moving fast, slow, or vibrating in place?
4. Are the attractive forces between its particles strong or weak?

Self-check

Answer these on your own before you finish:

1. In your own words, what are the three main ideas of the particle model of matter ([Knowledge](#))?
2. Explain why a liquid can be poured but a solid cannot, using the words particles and spaces.
3. Which state of matter has the weakest attractive forces between particles, and how do you know?