

What's Really Happening Inside a Balloon?

Everything around you is made of tiny particles. These particles are too small to see. They are in solids, liquids, and gases. The way these particles move explains how matter behaves.

Prompt: Think about the air inside a blown-up balloon and the solid material the balloon is made from. Using the particle model of matter, describe how the particles are arranged and moving inside the balloon. Then compare them to the particles in the solid balloon skin itself ([Outcome](#), [Details](#)).

Where to start:

- Would you expect the particles in the air to be spread far apart or packed close together, and why?
- Are the particles inside the balloon staying still, vibrating in place, or moving quickly from spot to spot?
- Where are the spaces between particles bigger: in the air or in the solid balloon skin?
- Are the attractive forces holding particles together stronger in the gas or in the solid, and how does this affect how the particles move?

Model answer for teacher reference:

The particles of air inside the balloon are spread far apart and move fast in all directions, colliding with each other and with the inside of the balloon skin. The particles that make up the solid balloon skin are packed close together and vibrate in place rather than moving from spot to spot, because the attractive forces between them are strong. In the air, these attractive forces are much weaker, which is why the particles can spread out and move freely. A strong response should clearly contrast spacing, movement, and strength of attractive forces between the gas and the solid.

Stretch:

Predict what would happen to the particles of air inside the balloon if you left it outside on a cold winter day, and explain your thinking using the particle model. (Note: this question draws on Grade 6 knowledge about how heating and cooling affect particle speed, spacing, and attractive forces, so use it as an extension for students ready to go beyond Grade 5 expectations.)