

Particle Model of Matter: Marking Guide

Task

Students present a labelled model or report on the particle model of matter, showing how particles behave in solids, liquids, and gases.

Curriculum alignment

This task assesses the following outcomes from Grade 5 Science, Matter: Understandings of the physical world are deepened by investigating matter and energy.

- Guiding question: How can states of matter and other physical properties be explained using the particle model of matter? ([Guiding question](#))
- Learning outcome: Students investigate the particle model of matter in relation to the physical properties of solids, liquids, and gases ([Outcome](#)).
- Knowledge and skills: representing solids, liquids, and gases using the particle model, relating particle movement and arrangement to state of matter, and describing the effect of attractive forces on particle behaviour ([Details](#)).

Rubric

Criterion	Beginning	Developing	Proficient	Exemplary
Particle ideas (all matter is made of particles, particles move, spaces exist between them)	States one particle idea with help; ideas are incomplete or missing (Details).	States most particle ideas but explanations are vague or partly incorrect (Details).	Clearly states that matter is made of moving particles with spaces between them (Details).	Explains particle ideas accurately and connects them to real examples from daily life (Details).
Representing solids, liquids, and gases	Model or report shows one state correctly; others are missing or unclear (Details).	Shows two of three states with mostly correct particle arrangement and movement (Details).	Represents all three states with correct particle arrangement and movement (Details).	Represents all three states accurately and compares them clearly to show differences (Details).
Attractive forces between particles	Does not mention attractive forces or states them incorrectly (Details).	Mentions attractive forces but does not link them to solid, liquid, or gas behaviour (Details).	Correctly describes attractive forces as strongest in solids and weakest in gases (Details).	Explains how attractive forces cause the differences in particle spacing and movement across all three states (Details).
Model or report clarity and labelling	Labels are missing or unclear; ideas are hard to follow.	Some labels are present; organization needs support to follow.	Model or report is clearly labelled and organized in a logical order.	Labels and layout are precise and help explain the science accurately to a reader unfamiliar with the topic.

Scoring

Assign each criterion a level: Beginning (1 point), Developing (2 points), Proficient (3 points), or Exemplary (4 points). Add the four scores for a total out of 16.

- 4 to 7 points: Beginning overall
- 8 to 10 points: Developing overall
- 11 to 13 points: Proficient overall
- 14 to 16 points: Exemplary overall

Share the total score and the level descriptors with students so they can see which specific skills to strengthen next.

Notes for the teacher

- Look for the words particles, spaces, and attractive forces in student explanations before scoring the top two levels on the first and third criteria.
- A model with strong visuals but weak explanation should not score higher than Developing on the particle ideas criterion.
- When students work in pairs, mark each partner separately based on their spoken or written explanation, not just the shared model.
- Keep a sample of Proficient-level work from this class to anchor your judgment when marking future submissions.