

Marking Guide: The Particle Model of Matter

Task

Students present a labelled model or report on the particle model of matter ([Outcome](#)). The model or report shows solids, liquids, and gases, with labels that describe how particles move, how they are arranged, and how attractive forces act on them in each state.

Curriculum alignment

This task assesses the following outcomes from Grade 5 Science, Matter ([Guiding question](#)):

- Students represent solids, liquids, and gases using the particle model of matter, and relate particle movement and arrangement to the state of matter ([Skills](#), [Skills](#)).
- Students describe the impact that attractive forces have on the movement and arrangement of particles in solids, liquids, and gases ([Skills](#), [Skills](#)).
- Students apply the understanding that the particle model of matter explains the behaviour of particles in matter ([Understanding](#), [Understanding](#)).
- Students apply the understanding that the movement and arrangement of particles affect the physical properties of matter ([Understanding](#), [Understanding](#)).
- Knowledge content: particles are small, always moving, and separated by spaces, with attractive forces strongest in solids and weakest in gases ([Knowledge](#), [Knowledge](#), [PDF p.1](#)).

Rubric

Criterion	Beginning	Developing	Proficient	Exemplary
Particle basics	States that matter is made of particles, with little mention of movement or spacing.	Mentions particles are moving and have spaces, but descriptions are vague or incomplete.	Clearly explains that particles are small, always moving, and have spaces between them (Knowledge).	Explains particle basics accurately and links each idea directly to evidence in the model or report.
Representing states	Shows one state of matter, or states look identical to each other.	Shows solids, liquids, and gases, but arrangement or spacing is not accurate for one or more states.	Accurately represents particle arrangement and spacing for solids, liquids, and gases (Skills).	Accurately represents all three states and includes a clear visual or written comparison between them.
Movement and arrangement	Does not relate particle movement to the state of matter.	Attempts to relate movement to state, but the connection is unclear or only partly correct.	Correctly relates particle movement and arrangement to each state of matter (Skills, Understanding).	Correctly relates movement and arrangement to state and gives an example, such as melting or boiling (Resource).
Attractive forces	Does not mention attractive forces between particles.	Mentions attractive forces but does not connect them to a specific state.	Describes attractive forces as strongest in solids and weakest in gases (Knowledge, Skills).	Describes attractive forces accurately and explains how they cause differences in particle spacing across states.

Scoring

Score each criterion on a 1 to 4 scale, where Beginning equals 1 and Exemplary equals 4. Add the four scores for a total out of 16.

- 4 to 6: Beginning overall
- 7 to 10: Developing overall
- 11 to 13: Proficient overall
- 14 to 16: Exemplary overall

Report both the total score and the overall band to the student, along with the level reached on each criterion.

Notes for the teacher

- Mark the four criteria separately before adding the total. This keeps a strong model with a weak explanation of forces from being scored the same as a balanced piece of work.
- Accept a model, a written report, or a combination of both. The rubric assesses the science content, not the format.
- If a student uses a real-world example such as melting ice or boiling water, credit this under Movement and Arrangement even if it is not required ([Resource](#)).
- For students who need support, allow verbal explanation alongside the model instead of a full written report, and focus the conversation on the four criteria in order.