

Marking Guide: The Particle Model of Matter

Task

Students present a labelled model or report on the particle model of matter. The presentation shows how particles are arranged and how they move in solids, liquids, and gases, and explains how attractive forces between particles differ across the three states ([Outcome](#), [Skills](#)).

Curriculum alignment

This task assesses the following learning outcomes:

- Students investigate the particle model of matter in relation to the physical properties of solids, liquids, and gases ([Outcome](#), [Outcome](#)).
- The particle model of matter explains the behaviour of particles in matter ([Understanding](#), [Understanding](#)).
- Represent solids, liquids, and gases, using the particle model of matter ([Skills](#), [Skills](#)).
- Relate the movement and arrangement of particles to the state of matter ([Skills](#), [Skills](#)).
- Describe the impact that attractive forces have on the movement and arrangement of particles in solids, liquids, and gases ([Skills](#), [Skills](#)).
- The movement and arrangement of particles affect the physical properties of matter ([Understanding](#), [Understanding](#)).

Rubric

Criterion	Beginning	Developing	Proficient	Exemplary
Particle ideas (Knowledge, Knowledge, PDF p.1)	States that matter is made of particles but omits movement or spacing.	Names two of the three core ideas: particles, movement, spaces between them.	States all three core ideas correctly: particles make up matter, particles move, particles have spaces between them.	States all three core ideas and connects them to explain why matter behaves as it does.
Representation of states (Skills, Skills)	Draws or describes one state of matter with particles shown.	Represents two states with particles, though spacing or arrangement is inaccurate.	Represents all three states with particles correctly close together, spaced apart, or widely spread.	Represents all three states accurately and labels arrangement and movement for each one clearly.
Movement and arrangement (Skills, Skills, Understanding, Understanding)	Mentions particle movement in general terms without linking it to a state.	Links movement to arrangement for one or two states, with some inaccuracy.	Correctly relates movement and arrangement to each state: vibrating in place, sliding past each other, moving freely in all directions.	Correctly relates movement and arrangement to each state and explains how this affects a physical property, such as shape or compressibility.

Attractive forces (Knowledge, Knowledge, Skills)	Does not mention attractive forces between particles.	Mentions attractive forces but does not compare them across states.	Correctly states that attractive forces are strongest in solids and weakest in gases.	Correctly compares attractive forces across all three states and explains how force strength relates to particle spacing.
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Scoring

Score each criterion at one of the four levels: 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 6 points: Beginning overall
- 7 to 10 points: Developing overall
- 11 to 13 points: Proficient overall
- 14 to 16 points: Exemplary overall

Report both the total score and the overall band to the student, along with one specific strength and one specific next step drawn from the rubric descriptors.

Notes for the teacher

- Score each criterion independently. A student can be Exemplary on particle ideas and Developing on attractive forces in the same piece of work.
- Accept any format that meets the descriptors: a physical model, a poster, a slideshow, or a written report all count.
- Watch for students who describe movement correctly but reverse the spacing pattern (for example, saying gas particles are close together). Mark this as Developing, not Proficient, since the arrangement is a key part of the model ([Knowledge](#)).
- If a student uses [Resource](#) language such as melting or condensation, credit this under Movement and arrangement only if it is tied to a correct description of particle behaviour, not just named as an example.