PRESENTER SCRIPT · GRADE 6 · Enrichment · not in IN 2023 Gr 6

Particle Model of Matter & States of Matter: teacher script

Use with the Lesson presenter (room page -> Lesson presenter). Slides show only student cues; this script has what to say. Students need the printed lesson worksheet and a pencil.

Presenter keys: Right/left arrows change slides. N shows short notes. T pauses the timer. P picks a student. F is fullscreen.

Response routine: Students write each answer on their worksheet, then show it with fingers (1 = A, 2 = B, 3 = C, 4 = D). Scan the room before revealing.

SLIDE 1: TODAY'S TARGET — 1 min

Say	Today's learning target is: "I can use the particle model to explain the states of matter and changes of state." Read it with me.
Say	Here is how you will know you have it: the success criteria. You will prove it on the exit ticket at the end of class.
Point to	The agenda and the key vocabulary. Tell students they need their notebook, guided notes page, and pencil.

SLIDE 2: WARM-UP — 0:00–0:08

Say	Turn to Part 2 of your lesson worksheet. Answer the three questions in complete sentences. You have 5 minutes of silent work. Go.
Do	Start the 8:00 timer. Circulate. At 5 minutes say: "Turn to your partner and compare answers for 2 minutes."
Look for	1) Solid (ice), liquid (water), gas (water vapor/air). 2) The water evaporates: it changes from liquid to gas. 3) Water vapor in the air cools on the can and condenses into liquid.
Say	Call on 2-3 students for questions 1 and 2, then reveal. Say: "We will come back to question 3 at the end of class."

SLIDE 3: HOOK — 1 min

Say	Read the question on the screen: "Which particles are moving right now: the ones in your desk, your water bottle, or the air?" Circle your prediction in Part 3 of your worksheet and write why. Then vote.
Background	Ask three volunteers to act as particles: a solid (shoulder to shoulder, vibrating), a liquid (close but sliding past each other), a gas (spread out, moving fast). Ask the class to name each state.

Do	Tap +1 for each vote. Do not give the answer. Say: "By the end of the lesson, you will be able to check your prediction."

SLIDE 4: LEARN 1: PARTICLES ARE ALWAYS MOVING — 3 min

Say	All matter is made of tiny particles that never stop moving. Temperature measures how fast they move on average.
Worksheet	Say: "Part 5: fill in the blanks (A), do the task (B), write what your partner said (C), and answer the check (D)." Blank answers: All matter is made of PARTICLES that are always MOVING. TEMPERATURE measures their average speed. (tap "Show the missing words" after students try.)
Explore	Run the simulation: Heat and cool the water particles. Before each change, ask students to predict in their notes. Students do: Describe how the particles move at -20 °C in 5 words or fewer.
Turn and talk	Say: "A spoon feels solid and still. Are its particles moving? How do you know?" Start the 1:00 timer. Then pick a pair to share.
Check	Read the question aloud. Students write, then show fingers. Scan, then reveal. Answer: (A) They move faster. More thermal energy means faster particles.
If < 80% correct	Go back to the Explore box and model a second example out loud, then re-ask the check with a partner discussion first. See "Misconceptions to watch for" at the end of this script.

SLIDE 5: LEARN 2: SOLIDS, LIQUIDS, GASES — 3 min

Say	Solids: packed tight, vibrate in place, definite shape. Liquids: close but slide past each other, take the container's shape. Gases: far apart, fast, fill the container.
Worksheet	Say: "Part 6: fill in the blanks (A), do the task (B), write what your partner said (C), and answer the check (D)." Blank answers: In a SOLID, particles vibrate in place. In a LIQUID, they slide past each other. In a GAS, they spread far apart. (tap "Show the missing words" after students try.)
Explore	Flip each card only after students guess: Solid = Definite shape and volume. Particles vibrate in place.; Liquid = Definite volume, no definite shape. Particles slide.; Gas = No definite shape or volume. Particles spread out.. Students do: Draw three boxes labeled solid, liquid, gas. Draw the particles in each.
Turn and talk	Say: "Why can you pour water but not a block of ice? Explain with particles." Start the 1:00 timer. Then pick a pair to share.
Check	Read the question aloud. Students write, then show fingers. Scan, then reveal. Answer: (B) Liquid. Liquid particles are close together but can slide.
If < 80% correct	Go back to the Explore box and model a second example out loud, then re-ask the check with a partner discussion first. See "Misconceptions to watch for" at the end of this script.

SLIDE 6: LEARN 3: ADDING AND REMOVING ENERGY — 3 min

Say	Adding thermal energy speeds particles up until they break free: melting, then boiling/evaporation. Removing energy slows them: condensation, freezing.
Worksheet	Say: "Part 7: fill in the blanks (A), do the task (B), write what your partner said (C), and answer the check (D)." Blank answers: Adding THERMAL ENERGY causes melting and evaporation. Removing it causes CONDENSATION and freezing. (tap "Show the missing words" after students try.)
Explore	Point to the model: Heating curve: flat parts are melting (0 °C) and boiling (100 °C). Ask: "What do you notice?" Students do: Explain why the heating curve is flat at 0 °C and at 100 °C.
Turn and talk	Say: "Why does the thermometer stop rising while water is boiling, even though the stove is still on?" Start the 1:00 timer. Then pick a pair to share.
Check	Read the question aloud. Students write, then show fingers. Scan, then reveal. Answer: (D) Energy is breaking particles free to melt the ice. During a change of state, added energy changes the state instead of the temperature.
If < 80% correct	Go back to the Explore box and model a second example out loud, then re-ask the check with a partner discussion first. See "Misconceptions to watch for" at the end of this script.

SLIDE 7: LEARN 4: EVAPORATION, CONDENSATION, SUBLIMATION — 3 min

Say	Evaporation: liquid to gas. Condensation: gas to liquid. Sublimation: solid straight to gas (dry ice).
Worksheet	Say: "Part 8: fill in the blanks (A), do the task (B), write what your partner said (C), and answer the check (D)." Blank answers: CONDENSATION is gas turning into liquid. SUBLIMATION is solid turning straight into gas. (tap "Show the missing words" after students try.)
Explore	Students do: Name each change: steam on a mirror, frost disappearing, a puddle drying.
Turn and talk	Say: "Frost disappears on a cold, sunny morning without melting. What happened to the particles?" Start the 1:00 timer. Then pick a pair to share.
Check	Read the question aloud. Students write, then show fingers. Scan, then reveal. Answer: (B) Condensation. Water vapor lost energy and became liquid.
If < 80% correct	Go back to the Explore box and model a second example out loud, then re-ask the check with a partner discussion first. See "Misconceptions to watch for" at the end of this script.

SLIDE 8: WORKED EXAMPLE (I DO) — 2 min

Say	Watch how I solve this. Write the final answer in Part 9 of your worksheet.

Think aloud	Draw three boxes on the board and sketch particles in each. Think aloud as you draw arrows: "When I heat this ice, the particles vibrate faster... faster... at 0 °C they break out of fixed positions and slide: now it is liquid water."
Reveal	Problem: Explain what happens to ice particles as the ice is heated. | Step 1: At -10 °C, particles are packed tightly and vibrate in place: solid. | Step 2: Adding thermal energy makes them vibrate faster. | Step 3: At 0 °C they break out of fixed positions and slide past each other: liquid. | Step 4: At 100 °C they spread far apart and move fast: gas.

SLIDE 9: WE DO — 2 min

Say	Now we solve one together in Part 10. Read the problem with me.
Do	Before revealing each step, ask: "What should we do next?" Take one answer, then tap "Show next step."
Steps	The balloon is full of gas particles moving quickly and hitting the inside of the balloon. | In the freezer, thermal energy leaves the gas. | The particles slow down and hit the balloon walls less often and less hard. | The gas takes up less space, so the balloon shrinks. The number of particles did not change.
Answer	Slower particles take up less space

SLIDE 10: YOU DO — 2 min

Say	Now on your own: Part 11. Solve it with no talking. You have 2 minutes.
Answer	(B) They lose energy, slow down, and move closer together. Condensation: gas particles lose thermal energy and come together as a liquid.
Then	Students who got it: launch the room. Students who missed it: 3-minute reteach at your table, then start the room at the Explorer level.

SLIDE 11: WORK TIME: THE WATER MOLECULE'S QUEST — 0:20–0:48

Say	Open The Water Molecule's Quest on your device. Type your name, choose the level I assigned, and begin. Whisper voice with your partner only.
Do	Start the 28:00 timer and leave this slide up. Circulate with the answer key.
Checkpoints	At 10 minutes: stage 2 done. At 20 minutes: stage 4 done; give a 5-minute warning for the final lock and turn-in.
Turn-in	Students tap "Copy my work" and paste it into the Canvas assignment (Text Entry).

SLIDE 12: DEBRIEF — 0:48–0:52

Ask	Use the word particles to explain why a balloon shrinks in the freezer. | Why does the temperature stay the same while ice is melting? | Which state of matter was hardest to model? Why?
Say	Back to warm-up question 3 and our hook vote: were our predictions right? What evidence changed your mind?
Answer	Water vapor in the air cools on the can and condenses into liquid.

SLIDE 13: EXIT TICKET 0:52–1:00

Say	Clear your desk except a pencil. Work silently and on your own. For every answer, write "I know because..." and use evidence.
Do	Hand out the exit ticket. Start the 8:00 timer. Collect and sort with page 3 (Mastered / Approaching / Beginning).

MISCONCEPTIONS TO WATCH FOR

- "Particles in a solid do not move." They vibrate in place.
- "The bubbles in boiling water are air." They are water vapor (gas).
- "Particles expand when heated." Particles themselves do not grow; the spaces between them get larger.