TEACHER GUIDE / ADULT ONLY

Medicine Bow Field Station

Grade 8 | MS-PS1-1 | PILOT 1.4

Use this tomorrow

Students build particle models and compare a separate molecule with a repeating crystal. The shared exit uses new models.

Target: 10-15 minutes of practice, plus the exit question. Classroom timing is untested.

Open the game | Student packet | Shared exit question

https://polemountainlearning.com/medicine-bow-field-station

Practice: student pages 1-2. Exit: page 3 or the separate one-page exit.

1. Practice

Use the hosted game or student pages 1-2. Check all five practice parts before giving hints. Use the matching hints on Teacher Guide page 2, then allow one retry. Keep first tries and results after feedback separate.

2. Give the shared exit question

Use student page 3, the separate exit sheet or the screen exit. Students work independently. Keep practice and keys out of sight. Collect answers before showing keys.

3. Record and choose a teaching step

Practice has 5 parts; the independent exit has 3. Score with Teacher Guide page 2. Use the teaching suggestions on Teacher Guide page 3; these scores are not proficiency labels.

Codes and receipts

Screen receipts show answers, not an exit score. Record the code, both practice counts and all exit responses before closing. For paper-only practice, assign P01, P02 or your own class codes. A code identifies work; it does not retrieve a saved record.

Teacher Guide page 2: keys and practice hints. Teacher Guide page 3: full routines, scoring details and science limits. Keep this guide with the teacher.

Built and reviewed with AI tools; no human classroom trial of this revision yet.

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Keys, hints and scoring

Student practice pages 1-2 | Exit page 3 | Keep this guide with the teacher

Practice keys

1. Build a water molecule

The center O joins the H at each end. The model shows two hydrogen atoms and one oxygen atom.

2. Repair a carbon dioxide molecule

Put C in the center and O at both ends. The atom counts stay the same, and the new arrangement gives carbon two oxygen neighbors.

3. Extend a rock salt crystal

From top to bottom, add Cl, Na, Cl. The pattern alternates along rows and down columns and can continue beyond the edge.

4. Explain the difference

4a: Shows one separate molecule. = Carbon dioxide; Shows part of a pattern that can keep repeating. = Rock salt; Contains more than one kind of element. = Carbon dioxide, Rock salt. 4b: Menu 1: B (ends after three joined atoms); Menu 2: A (shows a pattern that can keep repeating).

Exit key / 3 points

A: C at left center, O at right center, H at all four ends. B: O at row 2 column 1; Mg at row 3 column 3. C: A and D only. Use the original filled positions: Mg at row 1 column 3 has several O neighbors, and the given pattern extends across rows and columns. These observations contradict separate Mg-O pairs without supplying the two missing element labels. Merely using two symbols does not distinguish a molecule from a crystal.

Matching hints / practice only

1. Check the card. How many hydrogen atoms and how many oxygen atoms belong in one molecule? Look for the one position that joins both ends.

2. Check the card. How many carbon atoms and how many oxygen atoms belong in one molecule? Check the neighbors of your carbon. Does it join both oxygen atoms?

3. Trace how the two symbols alternate across a row and down a column.

4a. Follow the carbon dioxide joins and trace a row of rock salt. Check the element symbols in both models.

4b. Use evidence about where each arrangement ends or continues, rather than the size of the drawing.

Practice has 5 parts: three model tasks, the entire comparison grid, and the entire two-menu sentence. Each part earns 1 only when fully correct. Exit A and B each earn 1 for a fully correct model. Exit C earns 1 for choices A and D only, with no extras. No partial credit. Preserve incomplete versus incorrect responses and all raw choices. New-format scores are not interchangeable with earlier editions.

First try ____ / 5

After feedback ____ / 5

Independent exit ____ / 3

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Run the classroom pilot

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Use the matched editions

Students practice on screen or student pages 1-2, then complete the shared exit on student page 3 or the separate one-page exit. Target 10-15 minutes of practice plus the exit; classroom timing is untested.

Keep first tries and retries separate

Check all five practice parts before hints. Give the matching hint, allow one retry, then discuss the worked explanation. For a whole class, collect first tries, read missed-part hints aloud, allow a silent retry, then discuss. Paper learners keep original model answers and use another color for corrections; the grid and sentence have separate retry records.

Mark mixed responses

One point requires a fully correct part. The entire grid counts once, including its both-models row. Both sentence menus must be correct. On exit C, A and D with no extras earn one point. A response with blanks is incomplete; retain its raw responses. Parts 4a and 4b are dependent evidence, not two independent demonstrations.

Codes and classroom collection

Assign P01, P02 or class codes for paper-only practice. The paper-exit button supplies a game code for screen practice. Codes identify work; they do not retrieve saved records. For a class of screen exits, collect paper slips with name, code, first-try/after-feedback practice counts and every exit response before screens close.

Student navigation and sessions

The stop screen offers screen or paper exit. Go back changes formats while retaining entered answers. Nothing is saved or sent; leaving or reloading after work begins asks first. Use the hosted student link for phones and school Chromebooks; downloaded HTML may not run from Drive or Classroom.

Use scores cautiously

Score 0-1: revisit how separate molecules differ from a continuing crystal. Score 2: discuss the missed part and try a fresh model. Score 3: ask for a structural explanation. These are teaching steps, not proficiency labels. Changed response formats mean scores from this edition and earlier ones are not interchangeable.

Science and review limits

These are simplified models. Rock salt and magnesium oxide are ionic crystals, not separate two-atom molecules. The flat slices omit charges and three-dimensional geometry. The carbon dioxide and methanol models show individual molecules. Built and reviewed with AI tools; no human classroom trial yet. Physical printing, classroom timing and screen-reader use are untested.

Standard and source: NGSS MS-PS1-1

https://www.nextgenscience.org/pe/ms-ps1-1-matter-and-its-interactions