

Molecule Model Match

Classroom-ready printable pack · Grades 6–8

Pack contents

Two identical atom-and-bond sets; Descriptor-only molecule challenge cards. Two student sets are included.

Teacher directions

1. Give each partner one identical atom-and-bond set and place a barrier between them.
2. The Descriptor chooses a challenge card and builds its structural model.
3. The Descriptor states atom symbols, quantities, bond types, and connectivity; the Builder recreates it.
4. Compare with the answer key. Count atoms and bonds, then discuss what the model shows and what it simplifies.

Before class

- Print at 100% on US Letter paper. Use cardstock or laminate for reuse.
- Cut on the thick solid borders. Keep Set A and Set B separate.
- Give challenge/model cards only to the Descriptor.
- Use a folder, book, or tabletop barrier so partners cannot see each other's work.

Accessibility and accommodations

Begin with water or carbon dioxide; use the atom key; allow the Builder to repeat directions. Atom pieces use element symbols, names, border styles, and patterns, not color alone.

Storage-envelope labels

Molecule Model Match

Set A — Describer

Count pieces before storing.

Molecule Model Match

Set B — Builder

Count pieces before storing.

Molecule Model Match

Challenge / model cards

Count pieces before storing.

Molecule Model Match

Teacher reference

Count pieces before storing.

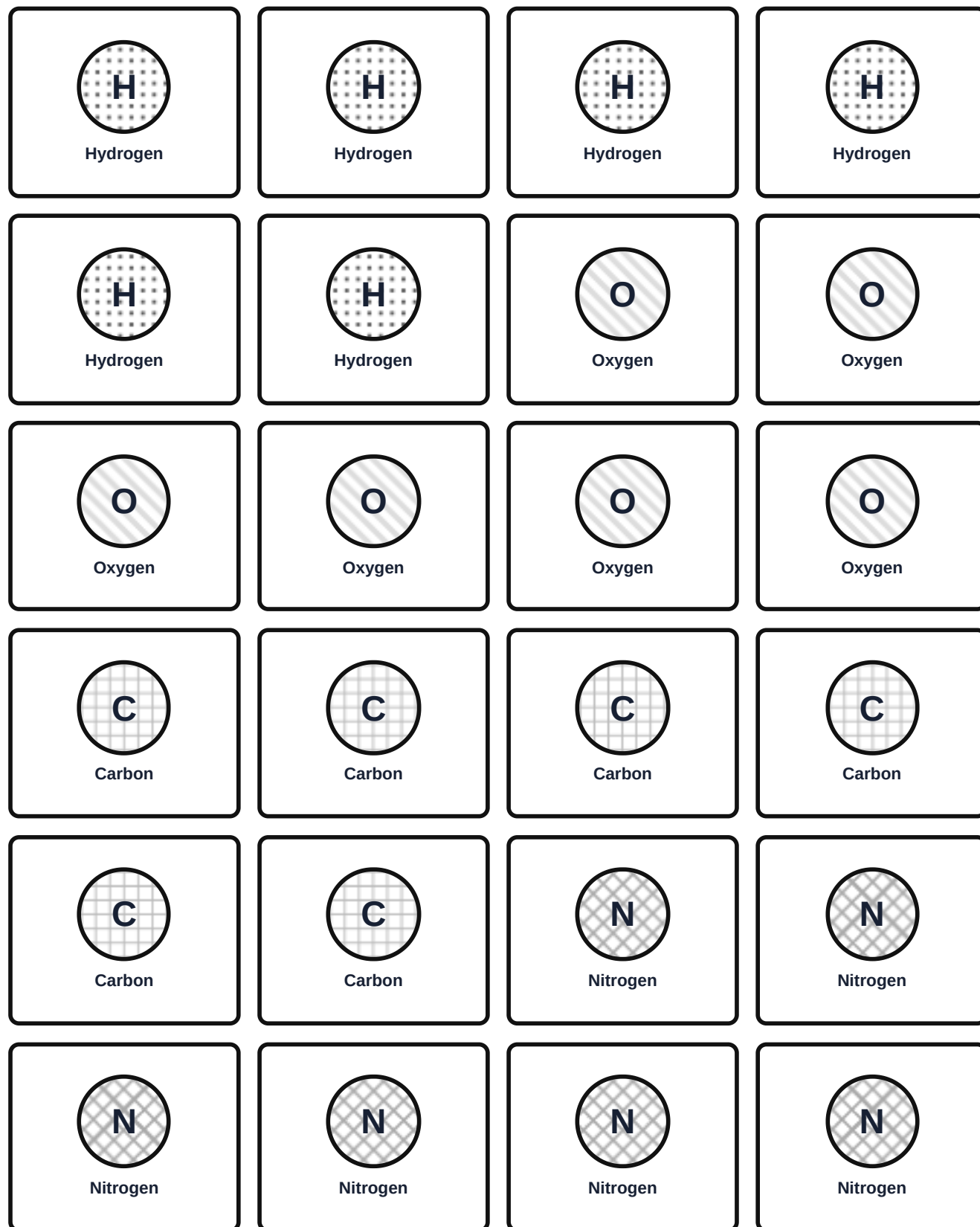
Student language supports

Position: above · below · beside · between · near · far · left · right · clockwise**Clarify:** “Please repeat...” · “Is ___ beside ___?” · “What should I place next?”**Compare:** same · different · rotate · move · replace · sequence

Atom pieces

Set A

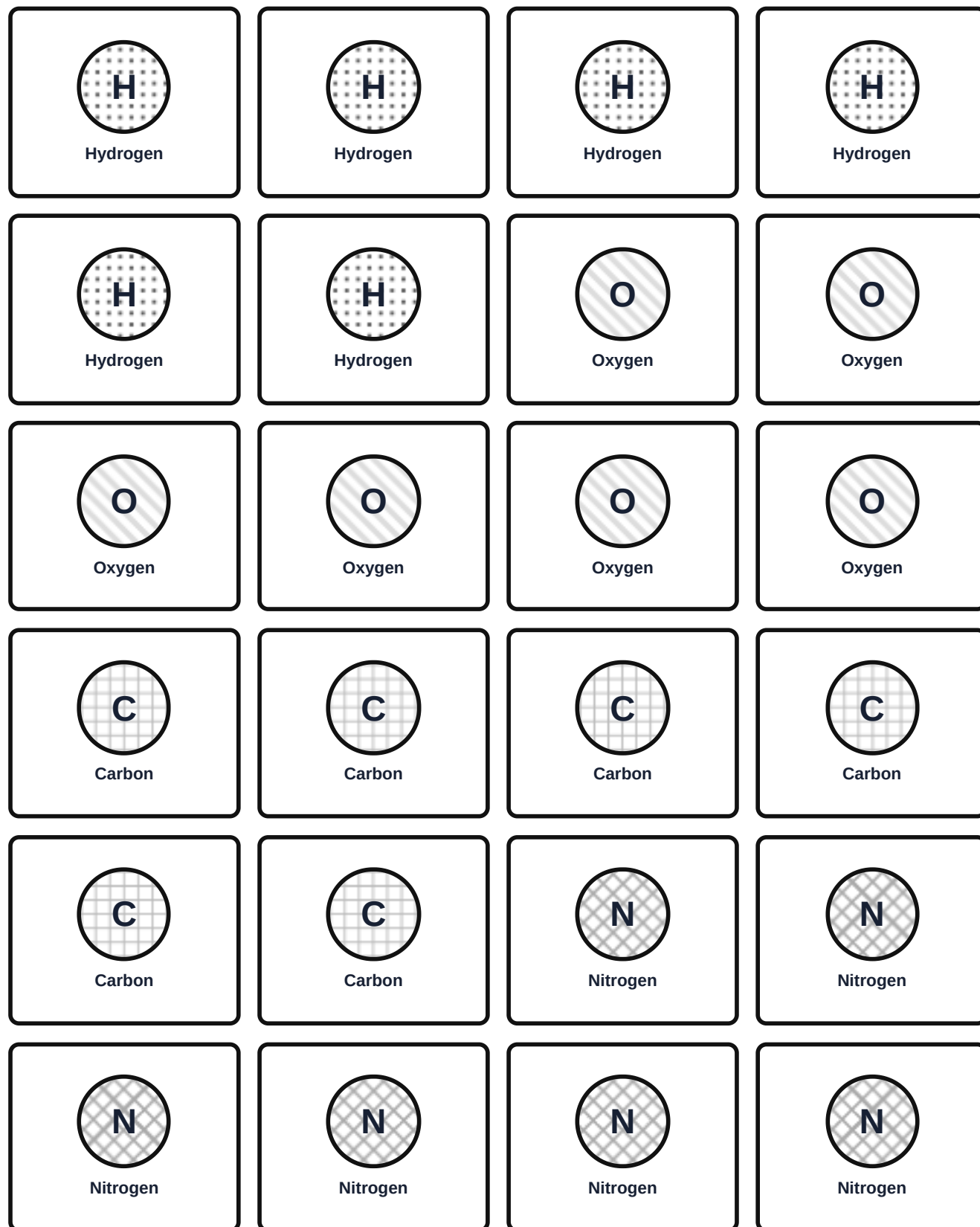
Cut on the solid borders. This set is identical to the partner set.



Atom pieces

Set B

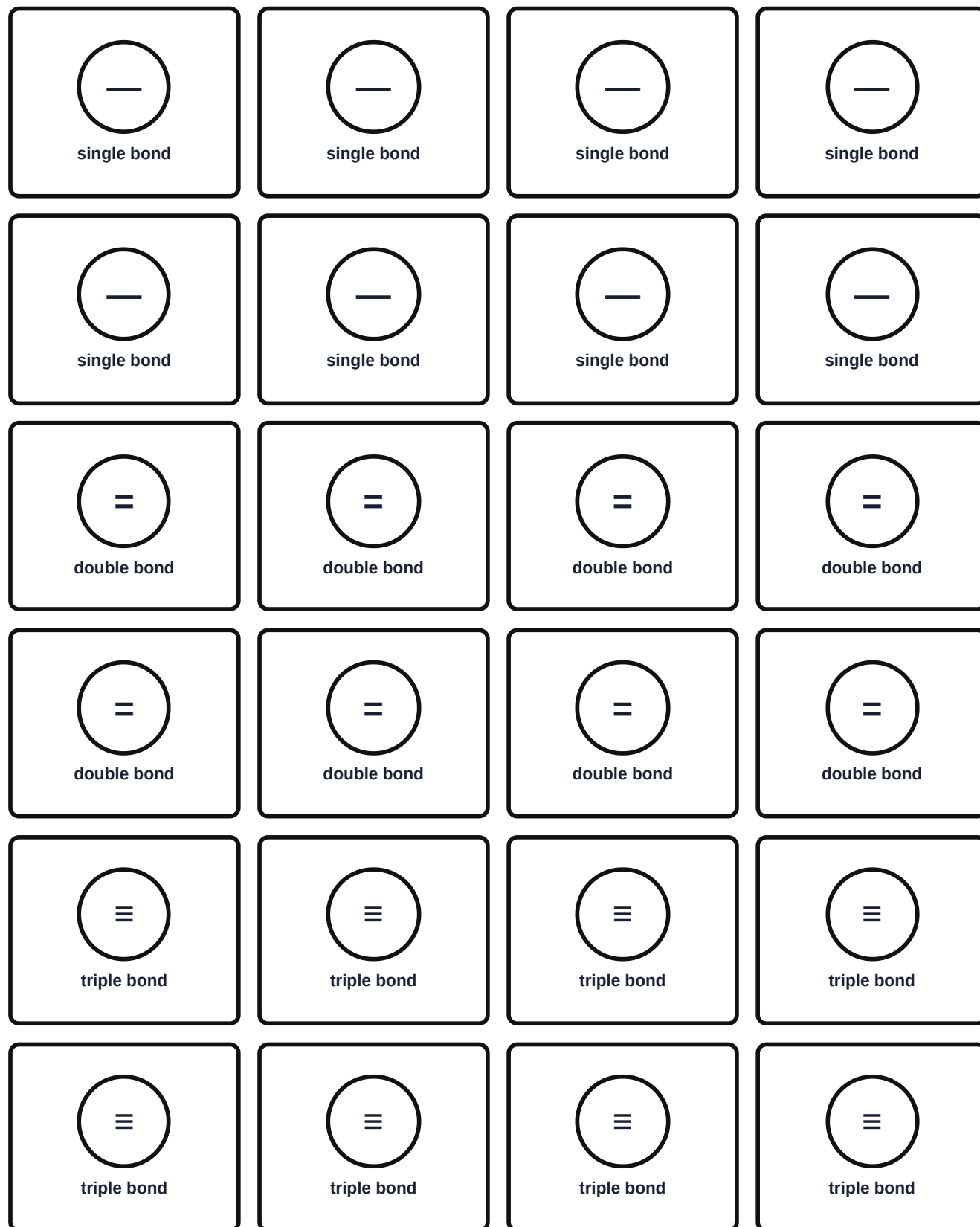
Cut on the solid borders. This set is identical to the partner set.



Bond pieces

Set A

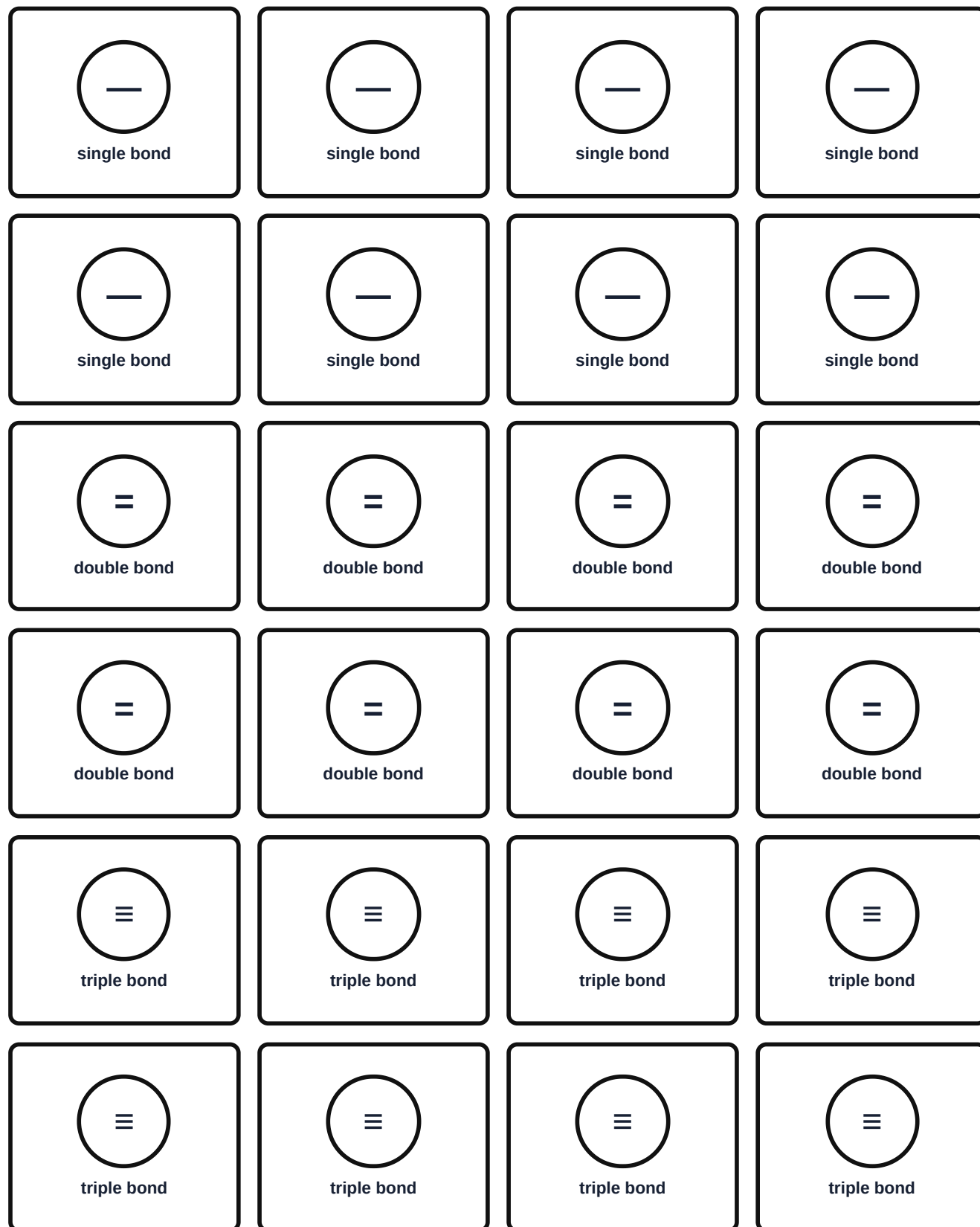
Cut on the solid borders. This set is identical to the partner set.



Bond pieces

Set B

Cut on the solid borders. This set is identical to the partner set.



Describer-only challenge cards

Keep these cards hidden from the Builder.

Challenge 1: Water



bent · H—O—H

Challenge 2: Carbon dioxide



linear · O=C=O

Challenge 3: Methane



tetrahedral · four C—H single bonds

Challenge 4: Oxygen



linear · O=O

Challenge 5: Nitrogen



linear · N≡N

Challenge 6: Ammonia



trigonal pyramidal · three N—H single bonds

Molecule Model Match reference

Science accuracy & answer key

Water, H₂O: H—O—H; two single O—H bonds; bent molecule.

Carbon dioxide, CO₂: O=C=O; two double C=O bonds; linear molecule.

Methane, CH₄: four single C—H bonds around carbon; 3-D shape is tetrahedral.

Oxygen, O₂: O=O; one double bond.

Nitrogen, N₂: N≡N; one triple bond.

Ammonia, NH₃: three single N—H bonds; 3-D shape is trigonal pyramidal.

Model limits: Pieces represent connectivity and simplified geometry, not atom scale, electron distribution, bond length, or motion. Teacher science-content review completed against standard molecular formulas and VSEPR descriptions; classroom instructors should match challenge choice to their curriculum.

Quality check after a round

- Can each student identify pieces by shape or label without relying on color?
- Do both models match in pieces, order, orientation, and relative position?
- Which direction was most precise? Which should be revised?