

Transformation Challenge

Classroom-ready printable pack · Grades 5–8

Pack contents

Coordinate grids, vertex and transformation cards, challenges, and keys. Two student sets are included.

Teacher directions

1. Choose the same grid and starting shape.
2. The Describer communicates a transformation rule.
3. The Builder moves every vertex and adds prime labels.
4. Compare ordered pairs and invariants.

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 Describer.
- Use a folder, book, or tabletop barrier so partners cannot see each other's work.

Accessibility and accommodations

Begin with quadrant-I translations. Use movable vertices before drawing.

Storage-envelope labels

Transformation Challenge

Set A — Describer

Count pieces before storing.

Transformation Challenge

Set B — Builder

Count pieces before storing.

Transformation Challenge

Challenge / model cards

Count pieces before storing.

Transformation Challenge

Teacher reference

Count pieces before storing.

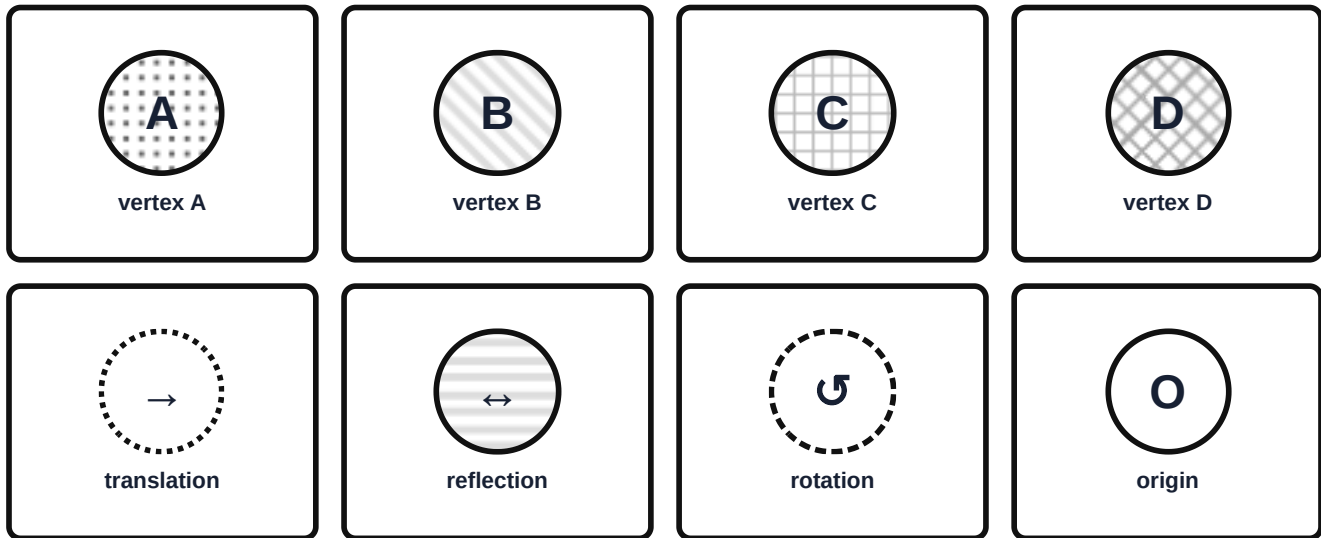
Student language supports

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

Movable pieces

Set A

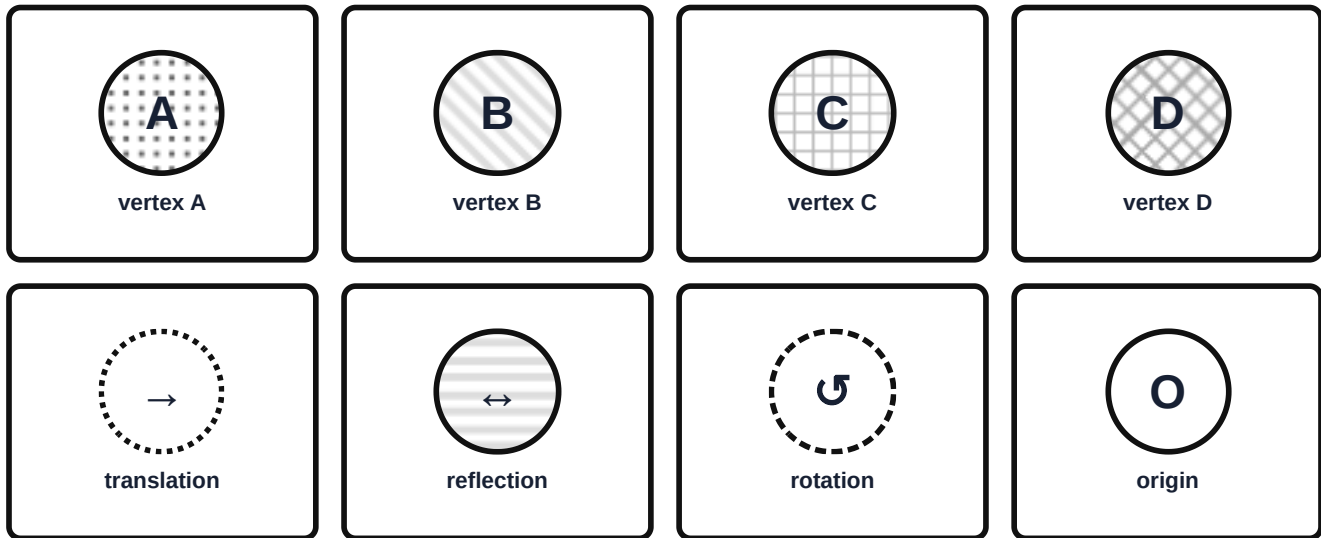
Cut on the solid borders. This set is identical to the partner set.



Movable pieces

Set B

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



Transformation grid

Cut the page in half. Both partner mats are identical.

Set A — Transformation grid

origin centered • axes -5 to 5 • use prime marks

top / far

center

bottom / near

Set B — Transformation grid

origin centered • axes -5 to 5 • use prime marks

top / far

center

bottom / near

Describer-only challenge cards

Keep these cards hidden from the Builder.

Challenge 1: Translate

A(1,1), B(4,1), C(2,3); add (3,2).

Challenge 2: Reflect y

Reflect that triangle across y-axis.

Challenge 3: Rotate 90° CCW

A(1,1), B(3,1), C(2,3).

Challenge 4: Two step

Translate, then reflect across x-axis.

Transformation Challenge reference

Transformation key

Translation: $(x,y) \rightarrow (x+a,y+b)$. Reflect y-axis: $(-x,y)$. Reflect x-axis: $(x,-y)$. Rotate 90° counterclockwise about origin: $(-y,x)$. Rigid transformations preserve lengths and angles.

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?