LESSON MAKER PRO

Angle Moves Match

Track angle measure through transformations.

GRADE 8 · NY-8.G.1.b

NY-8.G.1.b "Verify experimentally angles are mapped to angles of the same measure."

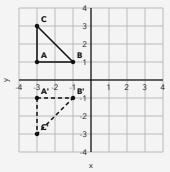
NAME _____ DATE _____

SAME-SIZE ANGLES

A rotation, reflection, or translation can change an angle's location or direction, but not its measure. To verify this, match each original vertex to its image vertex and compare the two angle measures.

WORKED EXAMPLE

The solid triangle is reflected across the x-axis to make the dashed triangle. Verify whether angle A and angle A' have the same measure.



1. At A, one side is horizontal and one side is vertical.
2. Perpendicular sides make m angle A = 90°.
3. At A', the matching sides are also horizontal and vertical.
4. m angle A = m angle A' = 90°, so the reflection preserved the angle measure.

Answer: m angle A = m angle A' = 90°.

PRACTICE 4 problems

1 A rotation maps angle R to angle R'. If m angle R = 47°, find m angle R'.

ANSWER _____

2 A reflection maps angle S to angle S'. If m angle S = 118°, find m angle S'.

ANSWER _____

3 A translation maps angle D to angle D'. If m angle D' = 63°, find m angle D.

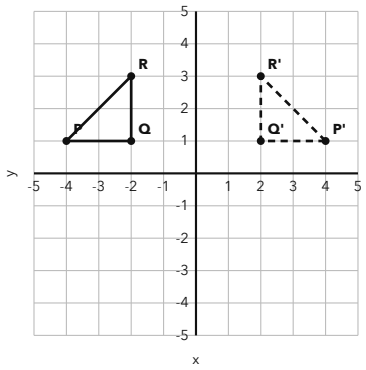
ANSWER _____

4 A student says a reflection changes an 82° angle into a 98° angle. Is the student correct? Explain.

ANSWER _____

APPLY IT Show your work

1 The esports club reflects the solid badge design across the y-axis to make the dashed design. Use the grid. Find m angle P and m angle P'. What does this verify?



ANSWER _____

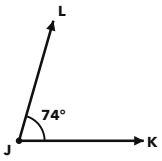
2 A student animator rotates a 135° robot-arm corner, then translates it to a new spot on the screen. What is the corner's final angle measure?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A dance-team logo uses angle KJL shown. The logo is rotated, reflected, and translated. Maya says the final image is 106° because a flip changes angle size. Is Maya correct? State the final measure and explain.



WORK SPACE AND ANSWER

ANSWER KEY

Angle Moves Match

GRADE 8 · NY-8.G.1.b

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A rotation maps angle R to angle R'. If m angle R = 47°, find m angle R'.	**47°**
2	A reflection maps angle S to angle S'. If m angle S = 118°, find m angle S'.	**118°**
3	A translation maps angle D to angle D'. If m angle D' = 63°, find m angle D.	**63°**
4	A student says a reflection changes an 82° angle into a 98° angle. Is the student correct? Explain.	**No. A reflection preserves angle measure, so the image angle is 82°.**

PART 2 · APPLY IT

1. **m angle P = 45° and m angle P' = 45°. The reflection preserved the angle measure.** At P and P', the diagonal rises the same distance that it runs, making each angle 45°. The matching angles have equal measure.
2. **135°** Both a rotation and a translation preserve angle measure. The final corner remains 135°.

CHALLENGE

No. The final angle measure is 74° because rotations, reflections, and translations preserve angle measure.

Accept equivalent statements that matching angles have equal measure. For explanations, students must state that the transformation preserves angle measure.