

Combining Transformations: Congruence & Similarity

Name: _____ Date: _____

LEARNING OBJECTIVE

Students will apply a sequence of two transformations to a figure and determine whether the final image is congruent or similar to the original.

MATERIALS NEEDED

- graph paper
- ruler
- protractor
- pencil
- colored pencils (3 colors)

HANDS-ON ACTIVITY

1. On graph paper, plot square JKLM at J(1,1), K(3,1), L(3,3), M(1,3) and connect the points in blue.
2. Step 1 - Translate the square using the rule $(x,y) \rightarrow (x+4, y+0)$. Plot the image J'K'L'M' in green.
3. Step 2 - Reflect J'K'L'M' across the y-axis. Plot the final image J''K''L''M'' in red.
4. Measure all four side lengths of the original square and the final image with your ruler. Compare them.
5. Write a two-step description of the full transformation sequence you performed (e.g., 'translated 4 right, then reflected across the y-axis'), and state whether JKLM and J''K''L''M'' are congruent, similar, or neither, with your reasoning.

QUESTIONS

1. What are the final coordinates of J'', K'', L'', M'' after both transformations?
-

2. Is the final square congruent to the original square? Explain using your measurements.
-

3. What is the difference between a sequence of transformations that produces a congruent image versus one that produces only a similar image?

-
4. If you performed the same translation and reflection in the opposite order (reflect first, then translate), would you get the same final image? Test it and explain.
-