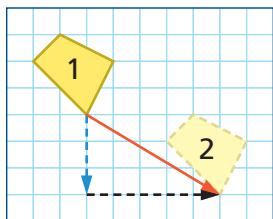


Frequently Asked Questions

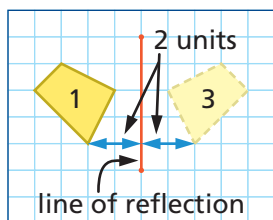
Q: What is a translation?



A: A translation is a transformation in which a shape slides up, down, right, or left along a straight line. Each point in the shape follows the same translation rule.

For example, shape 1 is translated to shape 2 using the following translation rule: three units down and five units to the right.

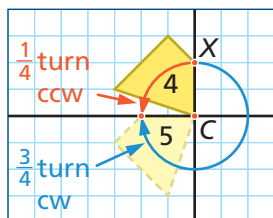
Q: What is a reflection?



A: A reflection is a transformation in which a shape is flipped across a line of reflection. Each point in the shape flips to the opposite side of the line of reflection, but stays the same distance from the line.

For example, shape 1 is reflected to shape 3. Matching points in shape 1 and shape 3 are the same distance from the line of reflection.

Q: What is a rotation?



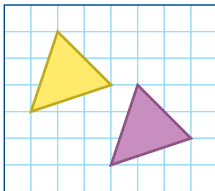
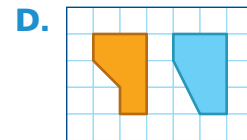
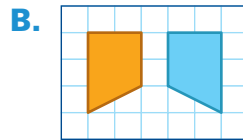
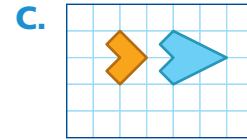
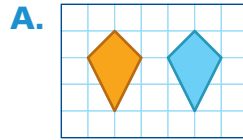
A: A rotation is a transformation in which a shape is turned. Each point in the shape stays an equal distance from the centre of rotation.

For example, shape 4 is rotated to shape 5 using a $\frac{1}{4}$ turn ccw around the centre of rotation C. Shape 4 can also be rotated to shape 5 using a $\frac{3}{4}$ turn cw around the centre of rotation C.

Practice

Lesson 1

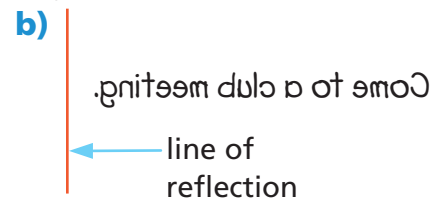
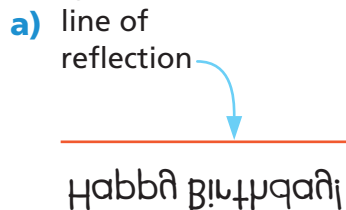
1. Which diagram below shows a translation?
How do you know?



2. Tyler translated a triangle three units right and two units down, as shown at the left. He drew the second triangle in another colour. Which triangle did he start with? Explain.

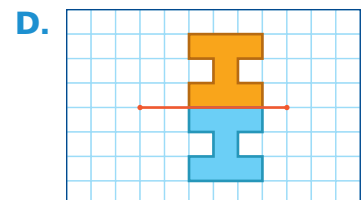
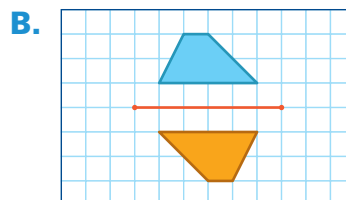
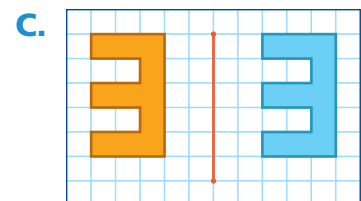
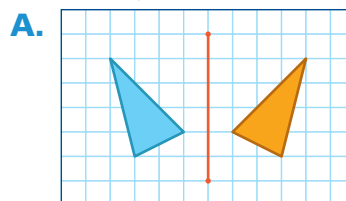
Lesson 2

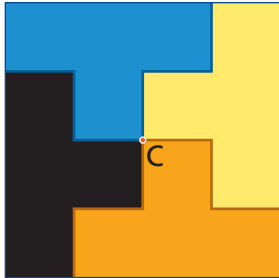
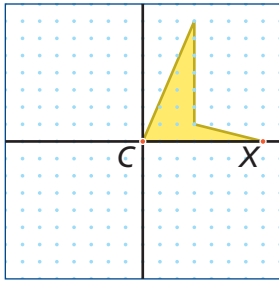
3. Reflect each secret message across the line of reflection using a mirror. What does it say?



Lesson 3

4. Which diagrams below show reflections?
How do you know?





Lesson 4

5. Copy the yellow shape at the left. Make a design by performing the following rotations with the yellow shape. Start each rotation at the original position.

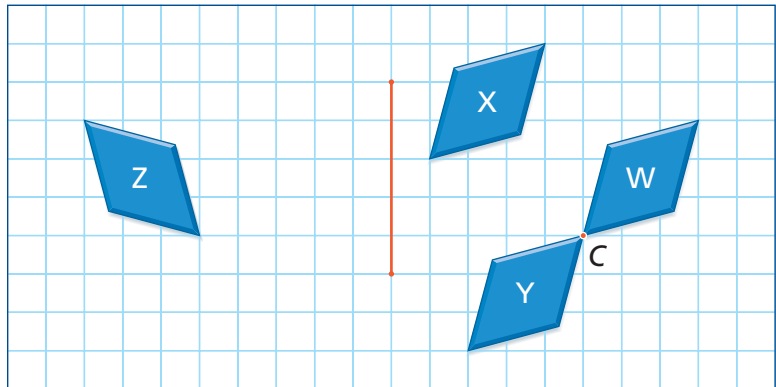
- a) $\frac{1}{4}$ turn cw around point C
- b) $\frac{1}{2}$ turn cw around point C
- c) $\frac{1}{4}$ turn ccw around point C

6. Which of the following describes the rotation from the blue shape to the black shape? Explain how you know.

- A. $\frac{1}{4}$ turn cw around point C
- B. $\frac{1}{4}$ turn ccw around point C
- C. $\frac{1}{2}$ turn ccw around point C
- D. $\frac{3}{4}$ turn ccw around point C

Lesson 5

- 7. a) Describe each transformation of shape W to shape X, shape Y, and shape Z.
- b) Trade descriptions with a partner. Can you improve your partner's descriptions?



What Do You Think Now?

Look back at **What Do You Think?** on page 151. How have your answers and explanations changed?