11–10 Rotations

Main Idea

- Graph rotations on a coordinate plane.

Build Your Vocabulary (page 262)

A **rotation** occurs when a figure is rotated around a _____.

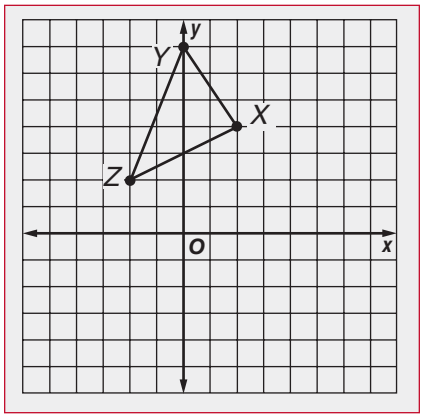
EXAMPLE **Rotate a Figure Clockwise**

1 **Triangle XYZ has vertices $X(2, 4)$, $Y(0, 7)$, and $Z(-2, 2)$. Graph the figure and its image after a clockwise rotation of 90° around the origin. Then find the coordinates of the rotated image.**

Graph triangle XYZ on a coordinate plane.

Sketch segment $\overline{ZO}$ connecting point Z to the _____.

Sketch another segment $\overline{Z'O}$ so that the angle between points Z, O, and Z' measures _____ and the segment is congruent to $\overline{ZO}$.



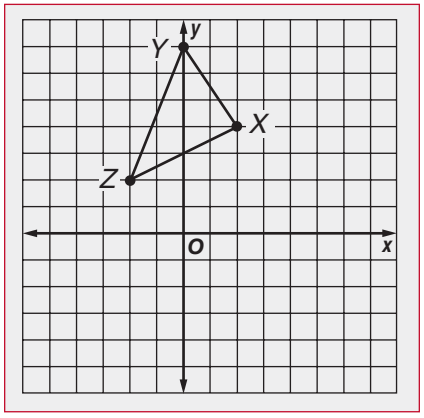
Similarly, draw segments for points X and Y. Then connect the vertices to form triangle $X'Y'Z'$.

The coordinates are

X' _____,

Y' _____,

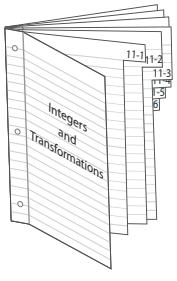
and Z' _____.



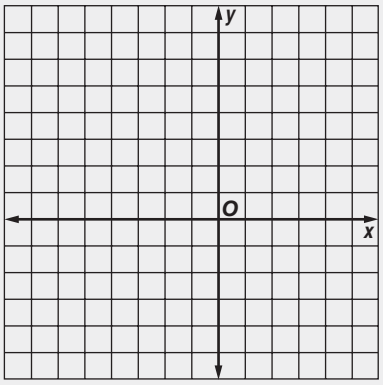
FOLDABLES

Organize It

Under the Lesson 11-10 tab of your Foldable, record what you learn about rotating figures. Include an example of a clockwise rotation and a counterclockwise rotation.



Check Your Progress Triangle XYZ has vertices $X(2, 4)$, $Y(0, 7)$, and $Z(-2, 2)$. Graph the figure and its image after a counterclockwise rotation of 90° around the origin. Then find the coordinates of the rotated image.



BUILD YOUR VOCABULARY (page 262)

A figure has **rotational symmetry** if the figure can be rotated about its center by a certain number of degrees and still look like the original.

The **angle of rotation** is the degree measure of the angle through which the figure is rotated.

EXAMPLE **Determine Rotational Symmetry**

2 **Determine whether the letter has rotational symmetry. Write *yes* or *no*. If *yes*, name the angle of rotation.**

Since the letter cannot be rotated and still look like it does in its original position, the letter [ ] have rotational symmetry.

A

Check Your Progress Determine whether the letter has rotational symmetry. Write *yes* or *no*. If *yes*, name the angle of rotation.

H

HOMEWORK ASSIGNMENT

Page(s):

Exercises: