LESSON 9-3

Properties of Rotations

Practice and Problem Solving: A/B

Use the figures at the right for Exercises 1–5. Triangle A has been rotated about the origin.

1. Which triangle shows a 90° counterclockwise rotation? ____

2. Which triangle shows a 180° counterclockwise rotation? ____

3. Which triangle shows a 270° clockwise rotation? ____

4. Which triangle shows a 270° counterclockwise rotation? ____

5. If the sides of triangle A have lengths of 30 cm, 40 cm, and 50 cm, what are the lengths of the sides of triangle D?

_____
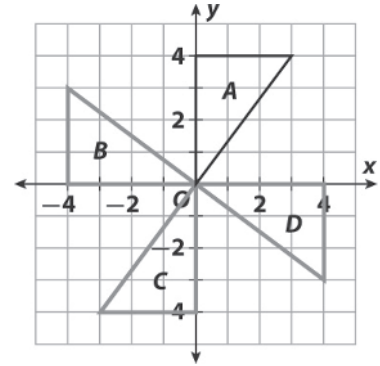
Use the figures at the right for Exercises 6–10. Figure A is to be rotated about the origin.

6. If you rotate figure A 90° counterclockwise, what quadrant will the image be in? ____

7. If you rotate figure A 270° counterclockwise, what quadrant will the image be in? ____

8. If you rotate figure A 180° clockwise, what quadrant will the image be in? ____

9. If you rotate figure A 360° clockwise, what quadrant will the image be in? ____

10. If the measures of two angles in figure A are 60º and 120°, what will the measure of those two angles be in the rotated figure?
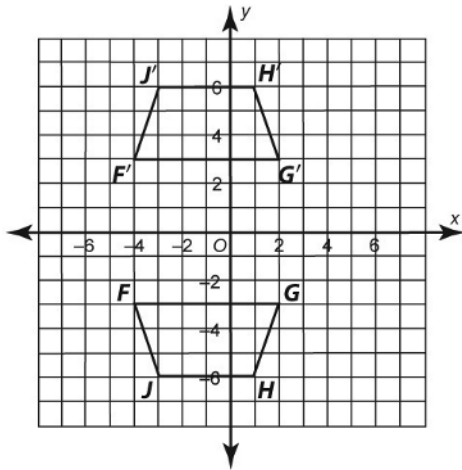
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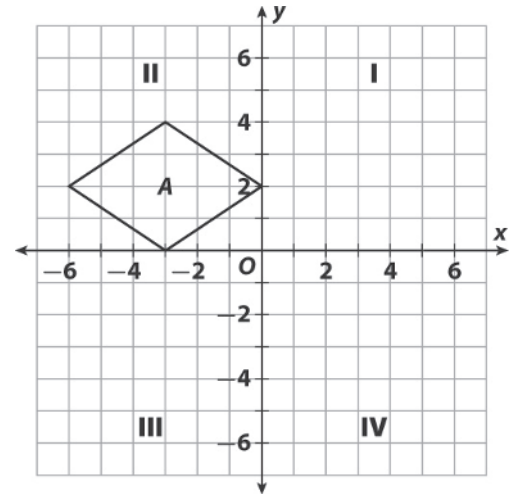
Use the grid at the right for Exercises 11–12.

11. Draw a square to show a rotation of 90° clockwise about the origin of the given square in quadrant I.

12. What other transformation would result in the same image as you drew in Exercise 11?

_____
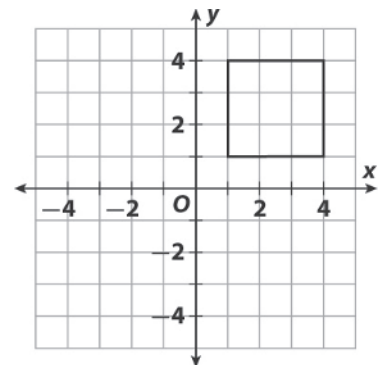
2.

Reading Strategies

1. Triangle *C′D′E′*

2. Triangle *CDE*

3. Sample answer: *C* and *C′*

4. a reflection across the *y*-axis

5. a. quadrilateral *PQRS*

   b. reflection

6. The corresponding points are the same distance from the line of reflection.
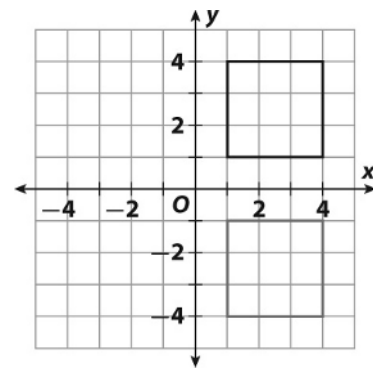
Success for English Learners

1. Reflection across the *y*-axis

2. Connect the reflected vertices to form triangle *A′B′C′*.

LESSON 9-3

Practice and Problem Solving: A/B

1. *B*

2. *C*

3. *B*

4. *D*

5. 30 cm, 40 cm, and 50 cm

6. III

7. I

8. IV

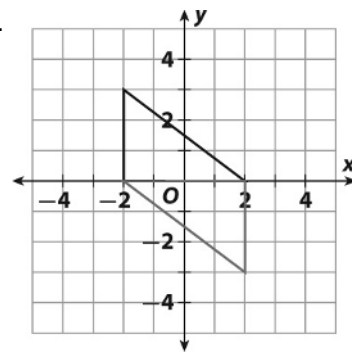9. II

10. 60° and 120°

11.

12. Accept: reflection over *x*-axis, translation of 5 units down, or rotation of 270° counterclockwise.

Practice and Problem Solving: C

1. Sample answer: Not a rotation because triangle *B* is flipped from where it would be after a rotation.

2. A rotation of 180°

3. A rotation of 90° counterclockwise OR 270° clockwise

4. a regular hexagon

5. A large square is formed with its center at the origin and each side is twice as long as the side of square *S*.

6.

7.