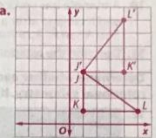
#105

rotation about point *A*. (Example 1) **See Answer Appendix.**

2. Triangle *JKL* has vertices *J*(1, 4), *K*(1, 1), and *L*(5, 1). (Example 2)
   a. Graph the figure and its image after a clockwise rotation of 270° about vertex *J*.
   b. Give the coordinates of the vertices for triangle *J'K'L'*. ***J'*(1, 4), *K'*(4, 4), *L'*(4, 8)**

2a.



3. A figure has vertices *D*(1, 1), *F*(2, 3), *G*(5, 3), and *H*(5, 1). (Example 3)
   a. Graph the figure and its image after a rotation of 180° about the origin. **See Anwer Appendix.**
   b. Give the coordinates of the vertices for figure *D'F'G'H'*. ***D'*(−1, −1), *F'*(−2, −3), *G'*(−5, −3), *H'*(−5, −1)**

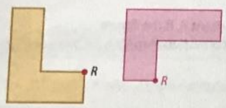
4. Determine if the blades of the windmill shown at the right have rotational symmetry. If they do, describe the angle of rotation. (Example 4) **yes; 90°**

Independent Practice

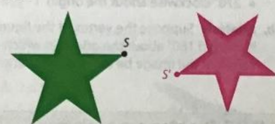
Go online for Step-by-Step Solutions eHelp

Draw each figure after the rotation described. (Example 1)

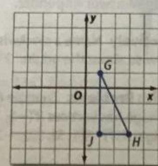
5. 90° clockwise rotation about point *R*



6. 180° clockwise rotation about point *S*



7. Triangle *GHJ* is shown at the right. (Example 2)
   a. Graph the figure after a clockwise rotation of 90°about vertex *G*. **See Answer Appendix.**
   b. Give the coordinates of the vertices for $\triangle G'H'J'$. ***G'*(1, 1), *H'*(−3, −1), *J'*(−3, 1)**



8. Trapezoid *ABCD* has vertices *A*(−3, 1), *B*(−3, 4), *C*(1, 4), and *D*(−1, 1). (Example 3)
   a. Graph the figure and its image after a clockwise rotation of 180° about vertex *D*. **See Answer Appendix.**
   b. Give the coordinates of the vertices for trapezoid *A'B'C'D'*. ***A'*(1, 1), *B'*(1, −2), *C'*(−3, −2), *D'*(−1, 1)**

If they need more help, use the Personal Tuto available online.

TICKET Out the Door

Give students the coordinates of a triangle them to name the steps they would use to the coordinates of the image after a 90° c rotation about the origin. Then have stud write the coordinates of the rotated trian **See students' work.**

3 Practice and Apply

Homework

The **Independent Practice** pages are me used as the homework assignment. If yo wish to assign the entire exercise set, yo the table below to select appropriate ex your students' needs.

	Differentiated Homework Option	
AL	Approaching Level	5–14, 17, 18, 20–39
OL	On Level	5–13 odd, 15–18, 20–
BL	Beyond Level	15–39

Create Your Own Homew

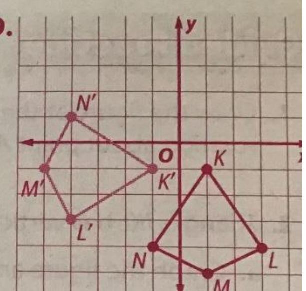
Solutions Manual can be used to crea for the suggested assignments above, own worksheets for differentiated hom

9. A figure has vertices *K*(1, −1), *L*(3, −4), *M*(1, −5), and *N*(−1, −4). Graph the figure and its image after a rotation of 270° counterclockwise about the origin. (Example 3)

10. A triangle has vertices *P*(−3, 1), *Q*(0, 4), and *R*(1, −1). Graph the triangle and its image after a rotation of 180° about the origin. (Example 3) **See Answer Appendix.**

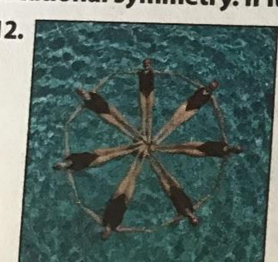
11. Describe the rotational symmetry of the star in Exercise 6. (Example 4) **72°**

9.



Determine whether each synchronized swimming formation has rotational symmetry. If it does, describe the angle of rotation. (Example 4)

12.



yes; $51\frac{3}{7}$°

13.

yes; 180°

14.

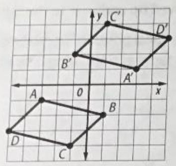
no

15. **CCSS Model with Mathematics** Pat is placing the tile at the right in different ways on a wall. Describe three rotations that would change the appearance of the tile. Use drawings to show what the tile looks like after each rotation. **See Answer Appendix.**

CCSS Multiple Representations A figure is ...

Page 530 *Lesson 11-5* *Need Another Example*

3.



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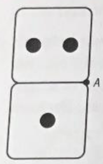
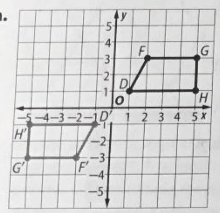
1.



3a.



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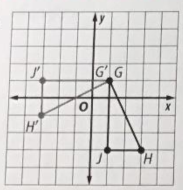
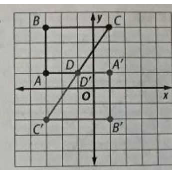
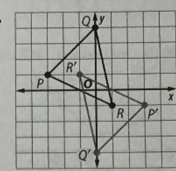
7a.



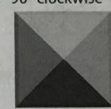
8a.



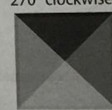
10.



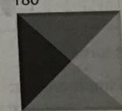
15. 90° clockwise



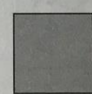
270° clockwise



180°



17. Sample answer: 90°



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3. Sample answer: a rotation of 180° about the center of the logo

4. The two parallelograms are not congruent because no sequence of transformations will map *RSTU* onto *WXYZ* exactly.

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5. The two triangles are congruent because a counterclockwise rotation of 90° followed by a translation will map $\triangle ABC$ onto $\triangle RST$.