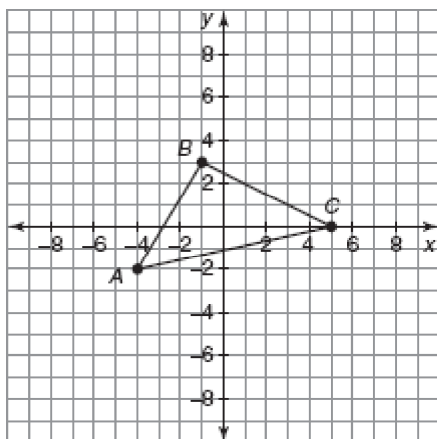


CONGRUENCE THROUGH TRANSFORMATIONS

1. Triangle ABC has vertices $A(-4, -2)$, $B(-1, 3)$, and $C(5, 0)$.

- a. Translate $\triangle ABC$ down 3 units to form $\triangle A'B'C'$. Graph $\triangle A'B'C'$ on the same coordinate plane as $\triangle ABC$.



- b. What are the coordinates of the vertices of $\triangle A'B'C'$?

The coordinates of A' are (____, ____).

The coordinates of B' are (____, ____).

The coordinates of C' are (____, ____).

- c. How could you determine the coordinates of the vertices of the image without using a graph?

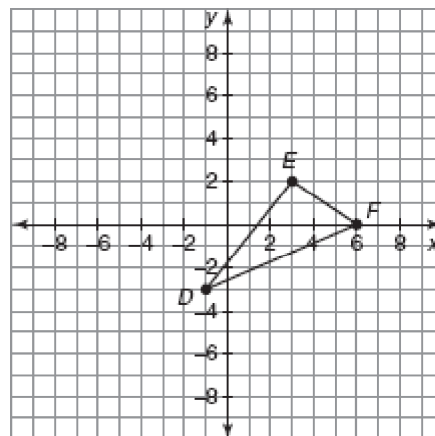
2. Consider the congruence statement $\triangle RUG \cong \triangle CAR$.

- a. Identify the congruent sides.

- b. Identify the congruent angles.

3. Triangle DEF has vertices $D(-1, -3)$, $E(3, 2)$, and $F(6, 0)$.

- a. Translate $\triangle DEF$ 4 units to the left to form $\triangle D'E'F'$. Graph $\triangle D'E'F'$ on the same coordinate plane as $\triangle DEF$.



- b. What are the coordinates of the vertices of $\triangle D'E'F'$?

The coordinates of D' are (____, ____).

The coordinates of E' are (____, ____).

The coordinates of F' are (____, ____).

- c. How could you determine the coordinates of the vertices of the image without using a graph?

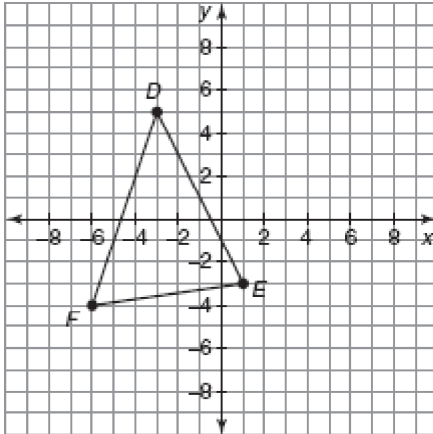
4. Consider the congruence statement $\triangle SUN \cong \triangle FOG$.

- a. Identify the congruent sides.

- b. Identify the congruent angles.

5. Triangle DEF has vertices $D(-3, 5)$, $E(1, -3)$, and $F(-6, -4)$.

a. Translate $\triangle DEF$ 2 units to the right and 3 units up to form $\triangle D'E'F'$. Graph $\triangle D'E'F'$ on the same coordinate plane as $\triangle DEF$.



b. What are the coordinates of the vertices of $\triangle D'E'F'$?

The coordinates of D' are (____, ____).

The coordinates of E' are (____, ____).

The coordinates of F' are (____, ____).

c. How could you determine the coordinates of the vertices of the image without using a graph?

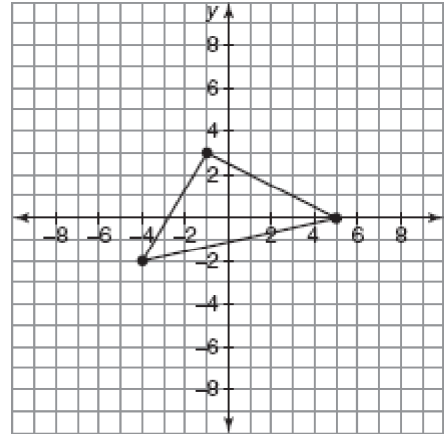
6. Consider the congruence statement $\triangle RAT \cong \triangle HOG$.

a. Identify the congruent sides.

b. Identify the congruent angles.

7. Triangle ABC has vertices $A(-4, -2)$, $B(-1, 3)$, and $C(5, 0)$.

a. Rotate $\triangle ABC$ 180° counterclockwise about the origin to form $\triangle A'B'C'$. Graph $\triangle A'B'C'$ on the same coordinate plane as $\triangle ABC$.



b. What are the coordinates of the vertices of $\triangle A'B'C'$?

The coordinates of A' are (____, ____).

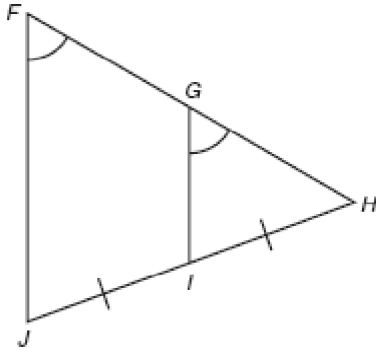
The coordinates of B' are (____, ____).

The coordinates of C' are (____, ____).

c. How could you determine the coordinates of the vertices of the image without using a graph?

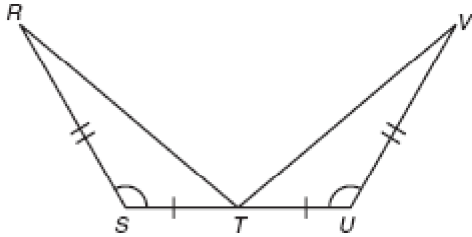
Write the congruence statements represented by the markers in each diagram.

8.



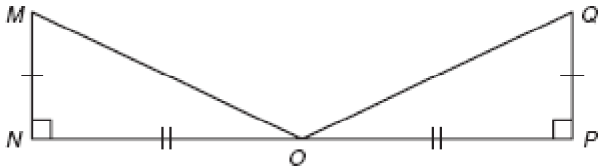
Congruence Statement: _____

9.



Congruence Statement: _____

10. For the figure shown, which is a correct congruence statement?



- a. $\triangle MNO \cong \triangle PQO$
- b. $\triangle NOM \cong \triangle PQO$
- c. $\triangle MNO \cong \triangle QPO$
- d. $\triangle MON \cong \triangle POQ$

11. If $\triangle DEF \cong \triangle LKJ$, which congruence statement is *not* necessarily correct?

- a. $\angle E \cong \angle K$
- b. $\overline{DE} \cong \overline{JK}$
- c. $\angle F \cong \angle J$
- d. $\overline{DF} \cong \overline{LJ}$

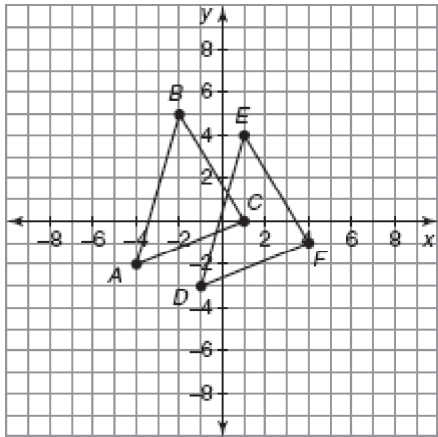
12. Dianne drew a triangle with vertices (1, 3), (3, 2), and (4, 2). She also drew an image of this triangle whose vertices had coordinates (-1, 3), (-3, 2) and (-4, 2). How did she make the image?

- a. She translated the original triangle 2 units down.
- b. She translated the original triangle 6 units down.
- c. She reflected the original triangle over the x -axis.
- d. She reflected the original triangle over the y -axis.

13. If $\triangle CAT \cong \triangle DOG$, which statement must be true?

- a. $m\angle A = m\angle O$
- b. $\angle C \cong \angle G$
- c. $CA = OG$
- d. $\overline{CT} \cong \overline{DO}$

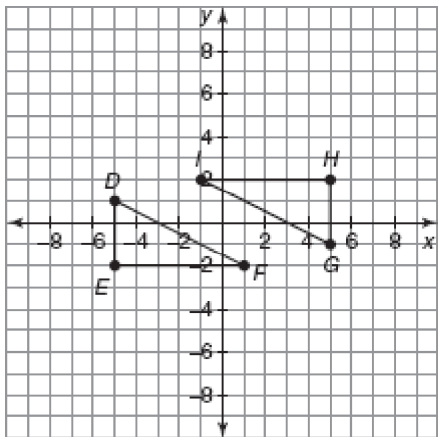
14. Which transformation was used to create $\triangle DEF$ from $\triangle ABC$?



- a. $\triangle ABC$ was reflected over the y -axis.
- b. $\triangle ABC$ was translated to the right 3 units and down 1 unit.
- c. $\triangle ABC$ was rotated 90 clockwise about the origin.
- d. $\triangle ABC$ was translated to the right 1 unit and down 3 units.
15. Regina drew a triangle with vertices $(1, 2)$, $(3, 3)$, and $(4, 1)$. She translated the triangle 2 units down to create an image. What are the vertices of the image?
- a. $(1, 0)$, $(3, 1)$, and $(4, -1)$
- b. $(1, 4)$, $(3, 5)$, and $(4, 3)$
- c. $(-1, 2)$, $(1, 3)$, and $(2, 1)$
- d. $(3, 2)$, $(5, 3)$, and $(6, 1)$

16. Logan drew $\triangle ABC$ on the coordinate plane, and then reflected the triangle over the y -axis to form $\triangle A'B'C'$. Which statement is not true about these two triangles?
- a. $\triangle ABC \cong \triangle A'B'C'$
- b. The two triangles have the same angle measures.
- c. The vertices of $\triangle ABC$ and $\triangle A'B'C'$ have the same coordinates.
- d. The triangles have the same side lengths.
17. Samantha drew $\triangle JKL$ with vertices $(2, 3)$, $(4, 3)$, and $(5, 2)$. She reflected this triangle over the x -axis to create an image. What are the coordinates of the vertices of the image?
- a. $(0, 3)$, $(2, 3)$, and $(3, 2)$
- b. $(2, 0)$, $(4, 0)$, and $(5, -1)$
- c. $(-2, 3)$, $(-4, 3)$, and $(-5, 2)$
- d. $(2, -3)$, $(4, -3)$, and $(5, -2)$
18. Henry draws $\triangle FGH$. Then, he translates that triangle to create $\triangle F'G'H'$. The distance from F to F' is 4 centimeters. What is the length of $\overline{GG'}$?
- a. 2 centimeters
- b. 3 centimeters
- c. 4 centimeters
- d. 6 centimeters

19. Which transformation was used to create $\triangle GHI$ from $\triangle DEF$?



- a. $\triangle DEF$ was rotated 90° counterclockwise about the origin.
- b. $\triangle DEF$ was rotated 180° counterclockwise about the origin.
- c. $\triangle DEF$ was translated over the x -axis.
- d. $\triangle DEF$ was translated over the y -axis.
20. If the point $(-5, 8)$ is rotated 90° counterclockwise about the origin, what will be the coordinates of the rotated point?
- a. $(5, -8)$
- b. $(-8, 5)$
- c. $(5, 8)$
- d. $(-8, -5)$

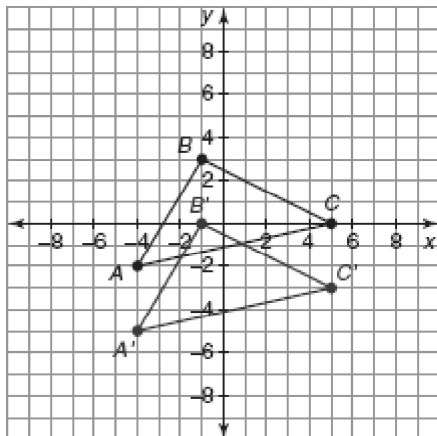
Congruence Through Transformations

ANSWER KEY

Answer Section

1. ANS:

a.



b. The coordinates of A' are $(-4, -5)$.

The coordinates of B' are $(-1, 0)$.

The coordinates of C' are $(5, -3)$.

c. The coordinates of the vertices of the image could be determined by subtracting 3 from each of the y-coordinates of the vertices of the original triangle. The x-coordinates stay the same.

REF: 8.1

2. ANS:

a. $\overline{RU} \cong \overline{CA}$

$\overline{UG} \cong \overline{AR}$

$\overline{RG} \cong \overline{CR}$

b. $\angle R \cong \angle C$

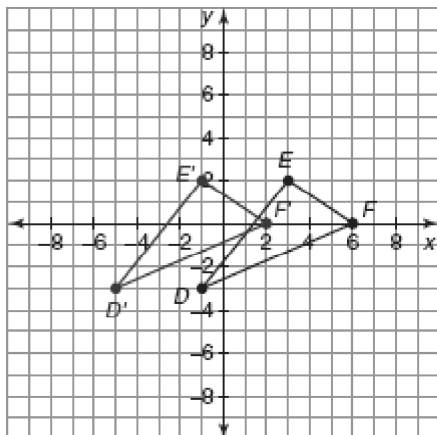
$\angle U \cong \angle A$

$\angle G \cong \angle R$

REF: 8.2

3. ANS:

a.



b. The coordinates of D' are $(-5, -3)$.
 The coordinates of E' are $(-1, 2)$.
 The coordinates of F' are $(2, 0)$.

c. The coordinates of the vertices of the image could be determined by subtracting 4 from each of the x -coordinates of the vertices of the original triangle. The y -coordinates stay the same.

REF: 8.1

4. ANS:

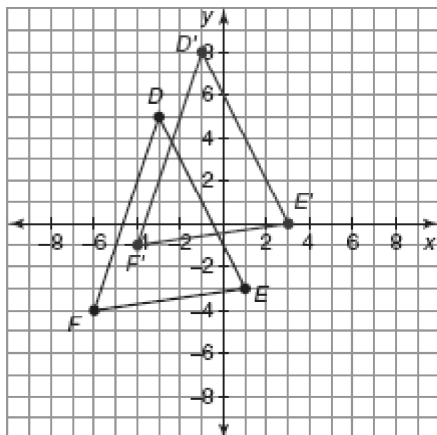
a. $\overline{SU} \cong \overline{FO}$
 $\overline{UN} \cong \overline{OG}$
 $\overline{SN} \cong \overline{FG}$

b. $\angle S \cong \angle F$
 $\angle U \cong \angle O$
 $\angle N \cong \angle G$

REF: 8.2

5. ANS:

a.

b. The coordinates of D' are $(-1, 8)$.The coordinates of E' are $(3, 0)$.The coordinates of F' are $(-4, -1)$.c. The coordinates of the vertices of the image could be determined by adding 2 to each of the x -coordinates and adding 3 to each of the y -coordinates of the original triangle.

REF: 8.1

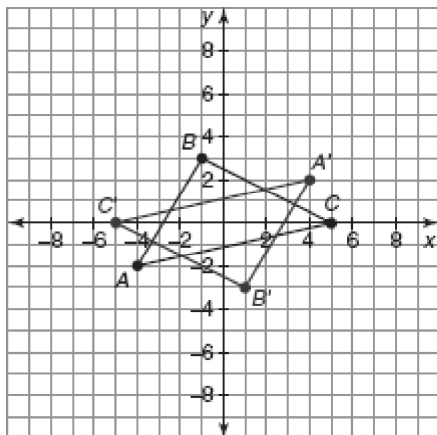
6. ANS:

a. $\overline{RA} \cong \overline{HO}$ $\overline{AT} \cong \overline{OG}$ $\overline{RT} \cong \overline{HG}$ b. $\angle R \cong \angle H$ $\angle A \cong \angle O$ $\angle T \cong \angle G$

REF: 8.2

7. ANS:

a.



- b. The coordinates of A' are (4, 2).
 The coordinates of B' are (1, -3).
 The coordinates of C' are (-5, 0).

c. The coordinates of the vertices of the image could be determined by writing the opposite of each of the x -coordinates and writing the opposite of each of the y -coordinates of the vertices of the original triangle.

REF: 8.1

8. ANS:

$$\angle HGI \cong \angle HFJ \text{ and } \overline{HI} \cong \overline{IJ}$$

REF: 8.2

9. ANS:

$$\overline{RS} \cong \overline{VU}, \overline{ST} \cong \overline{UT}, \text{ and } \angle S \cong \angle U$$

REF: 8.2

- | | |
|------------|----------|
| 10. ANS: C | REF: 8.2 |
| 11. ANS: B | REF: 8.2 |
| 12. ANS: D | REF: 8.1 |
| 13. ANS: A | REF: 8.2 |
| 14. ANS: B | REF: 8.1 |
| 15. ANS: A | REF: 8.1 |
| 16. ANS: C | REF: 8.1 |
| 17. ANS: D | REF: 8.1 |
| 18. ANS: C | REF: 8.1 |
| 19. ANS: B | REF: 8.1 |
| 20. ANS: D | REF: 8.1 |