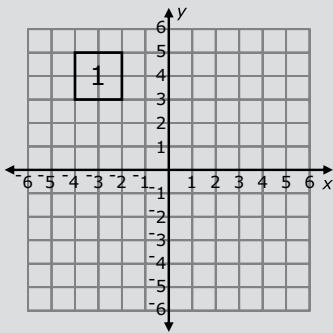


LESSON 27: Transformations and Congruence

Warm-Up

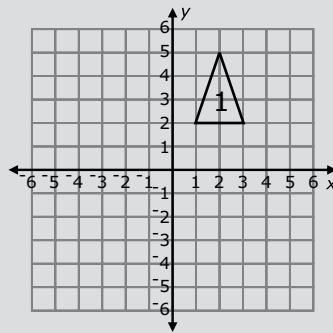
Directions: Transform Figure 1 in Problems 1-6. Identify the transformed Figure as Figure 2.

1.



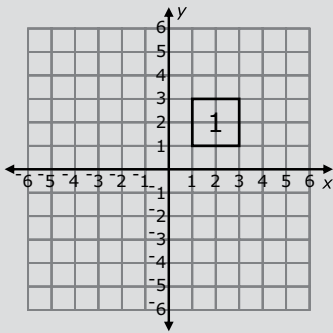
Translate the figure 3 units to the right and 2 units down.

2.



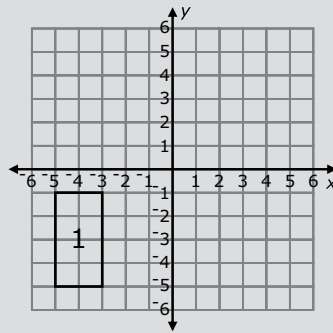
Rotate the figure clockwise 90 degrees about the origin.

3.



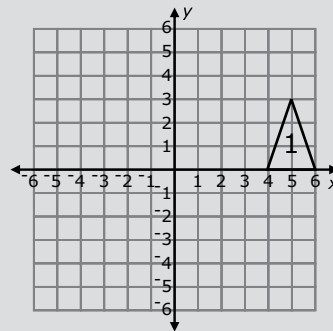
Rotate the figure counter-clockwise 90 degrees about Point (1, 1).

4.



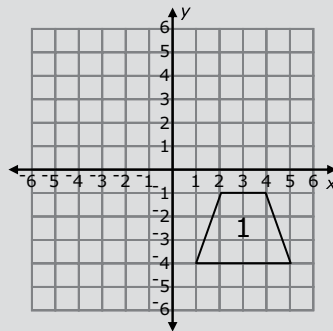
Reflect the figure over the y-axis.

5.



Translate the figure 4 units to the left and 2 units up.

6.

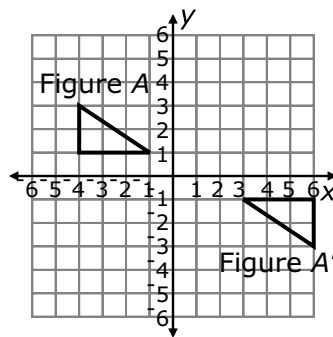


Reflect the figure over the x-axis.

LESSON 27: Transformations and Congruence

Directions: Complete the following SOLVE problem with your teacher. You will only complete the S step.

Barb has been adjusting the placement of some geometric wall decals. She is using a coordinate grid on the wall to assist. She began with Figure A and by the time she completed some transformations, the decal ended in the position represented by Figure A'. What sequence(s) of rigid transformations are possible for the adjustment of the triangular decal?



S Underline the question.

This problem is asking me to find _____.

Directions: Complete this section with your teacher and partner.

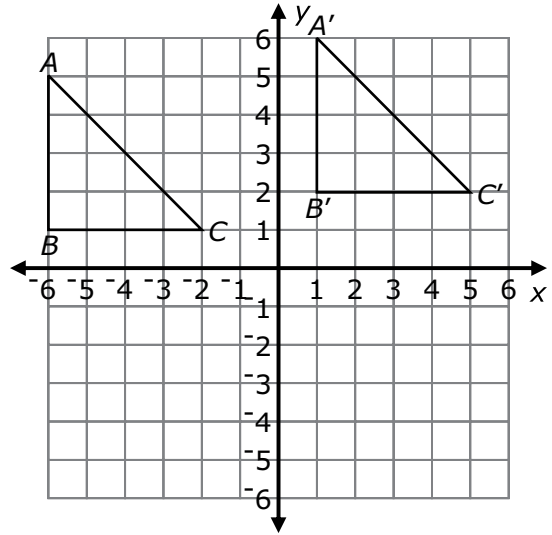
1. The rigid transformation of sliding a figure is a _____.
2. The rigid transformation of turning a figure is a _____.
3. The rigid transformation of flipping a figure over an axis is a _____.
4. When a rigid transformation occurs, the ____ and ____ of the figure remain the same. The original figure and the transformed figure are _____ figures.

In the previous lesson, we learned from measuring line segments and angles of figures that rigid transformations do not change size and shape. Therefore, _____ is maintained when any one of these transformations occur.

LESSON 27: Transformations and Congruence

Directions: Complete this page with your teacher and partner.

1. What transformation appears to have occurred? _____
2. Do the measures of the line segments change with a translation? _____
3. Do the measures of the angles change with a translation? _____
4. Therefore, if we can prove that a translation occurred, we know that the figures are _____.



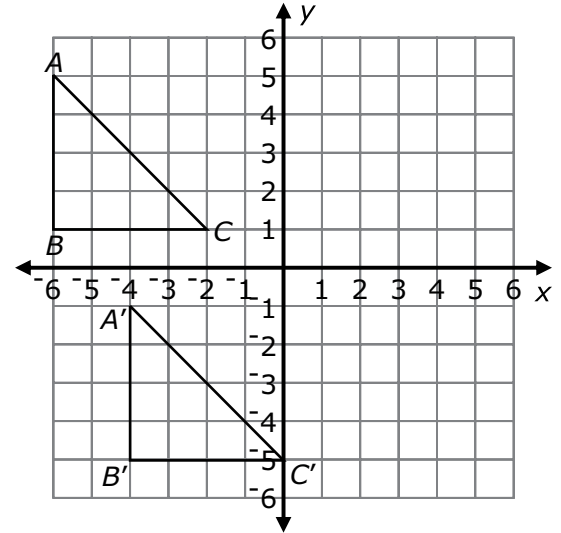
Triangle ABC		Triangle $A'B'C'$		Translation Vertically	Translation Horizontally
Point	Coordinates	Point	Coordinates		
A		A'			
B		B'			
C		C'			

5. What do you notice about the translation vertically for the vertices?
6. What do you notice about the translation horizontally for the vertices?
7. What can you conclude about Triangle ABC and Triangle $A'B'C'$?

LESSON 27: Transformations and Congruence

Directions: Complete the following page with your partner.

1. What transformation appears to have occurred? _____
2. Do the measures of the line segments change with a translation? _____
3. Do the measures of the angles change with a translation? _____
4. Therefore, if we can prove that a translation occurred, we know that the figures are _____.



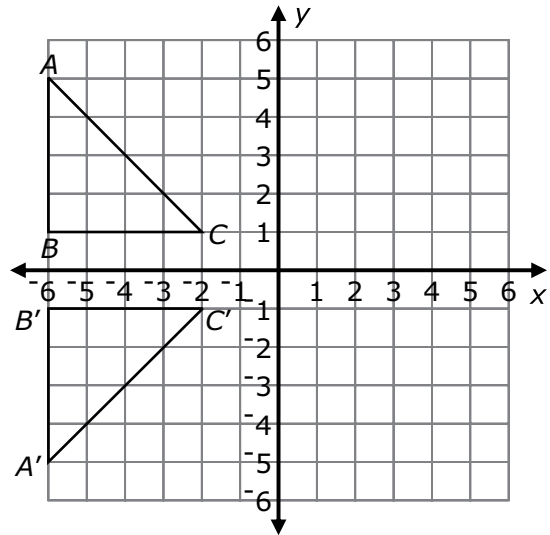
Triangle ABC		Triangle $A'B'C'$		Translation Vertically	Translation Horizontally
Point	Coordinates	Point	Coordinates		
A		A'			
B		B'			
C		C'			

5. What do you notice about the translation vertically for the vertices?
6. What do you notice about the translation horizontally for the vertices?
7. What can you conclude about Triangle ABC and Triangle $A'B'C'$?

LESSON 27: Transformations and Congruence

Directions: Complete this page with your teacher and partner.

1. What transformation appears to have occurred? _____
2. Do the measures of the line segments change with a reflection? _____
3. Do the measures of the angles change with a reflection? _____
4. Therefore, if we can prove that a reflection occurred, we know that the figures are _____.



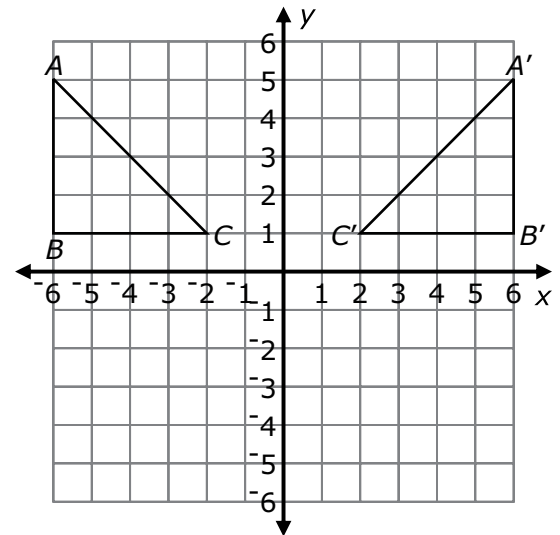
Triangle ABC		Triangle $A'B'C'$	
Point	Coordinates	Point	Coordinates
A		A'	
B		B'	
C		C'	

5. What do you notice about the x -coordinates of the figures?
6. What do you notice about the y -coordinates of the figures?
7. What can you conclude about Triangle ABC and Triangle $A'B'C'$ based on the coordinates?

LESSON 27: Transformations and Congruence

Directions: Complete this page with your partner.

1. What transformation appears to have occurred? _____
2. Do the measures of the line segments change with a reflection? _____
3. Do the measures of the angles change with a reflection? _____
4. Therefore, if we can prove that a reflection occurred, we know that the figures are _____.



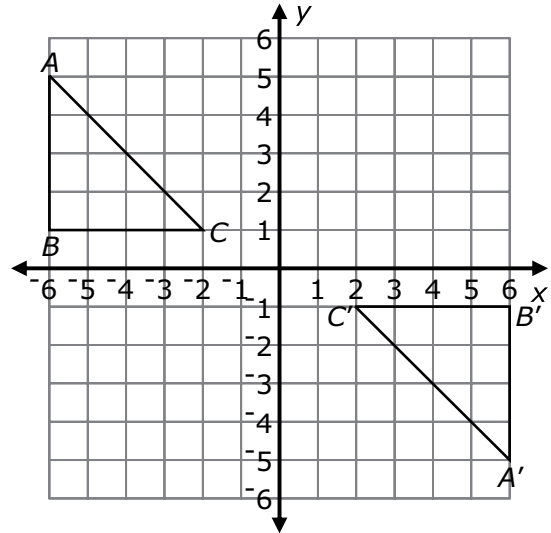
Triangle ABC		Triangle $A'B'C'$	
Point	Coordinates	Point	Coordinates
A		A'	
B		B'	
C		C'	

5. What do you notice about the x -coordinates of the figures?
6. What do you notice about the y -coordinates of the figures?
7. What can you conclude about Triangle ABC and Triangle $A'B'C'$ based on the coordinates?

LESSON 27: Transformations and Congruence

Directions: Complete this page with your teacher and partner.

1. What transformation appears to have occurred? _____
2. Do the measures of the line segments change with a rotation? _____
3. Do the measures of the angles change with a rotation? _____
4. Therefore, if we can prove that a rotation about the origin occurred, we know that the figures are _____.



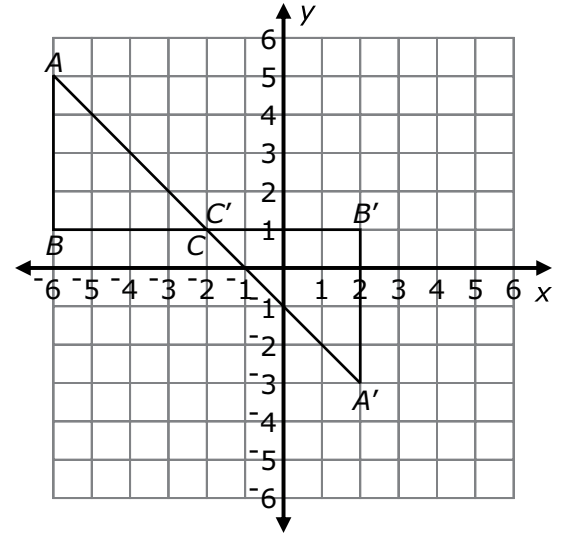
Rotated Triangle ABC		Triangle $A'B'C'$	
Point	Coordinates	Point	Coordinates
A		A'	
B		B'	
C		C'	

5. What do you notice about the x -coordinates of the figures?
6. What do you notice about the y -coordinates of the figures?
7. What can you conclude about Triangle ABC and Triangle $A'B'C'$ based on the coordinates?

LESSON 27: Transformations and Congruence

Directions: Complete this page with your teacher and partner.

1. What transformation appears to have occurred? _____
2. Do the measures of the line segments change with a rotation? _____
3. Do the measures of the angles change with a rotation? _____
4. Therefore, if we can prove that a rotation about Point C occurred, we know that the figures are _____.



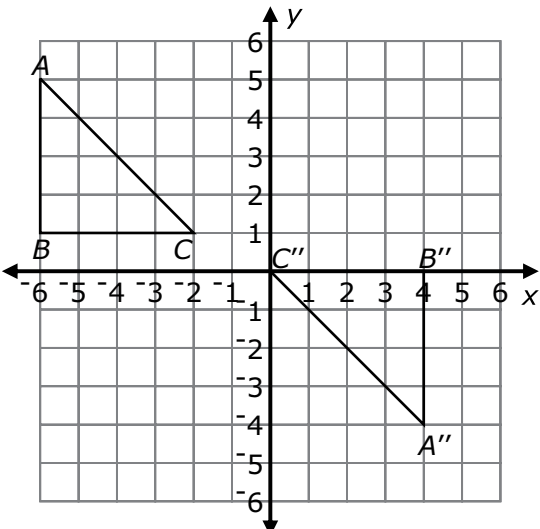
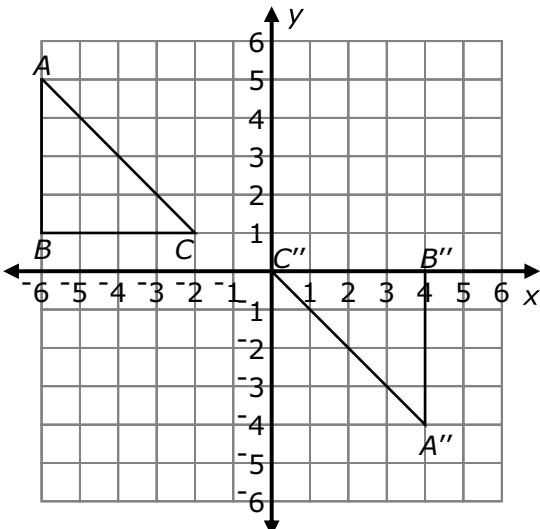
Triangle ABC		Triangle $A'B'C'$	
Point	Coordinates	Point	Coordinates
A		A'	
B		B'	
C		C'	

5. What do you notice about the x -coordinates of the figures?
6. What do you notice about the y -coordinates of the figures?
7. What can you conclude about Triangle ABC and Triangle $A'B'C'$ based on the coordinates?

LESSON 27: Transformations and Congruence

Directions: Complete this page with your teacher and partner.

Discuss the sequence of transformations used to create the Triangle $A''B''C''$ from the original Triangle ABC . Label the missing step with Triangle $A'B'C'$ on the graph.

<p>Route 1:</p> 	<p>Route 2:</p> 
<p>Step 1:</p>	<p>Step 1:</p>
<p>Step 2:</p>	<p>Step 2:</p>

1. What did you discover from these two routes?

2. What does this mean?

LESSON 27: Transformations and Congruence

Directions: Complete this page with your partner.

Discuss the sequence of transformations used to create the Triangle $A''B''C''$ or $A'''B'''C'''$ from the original Triangle ABC . Label the missing step with Triangle $A'B'C'$ on the graph.

<p>Route 1:</p>	<p>Route 2:</p>
<p>Step 1:</p>	<p>Step 1:</p>
<p>Step 2:</p>	<p>Step 2:</p>
<p>Step 3:</p>	<p>Step 3:</p>

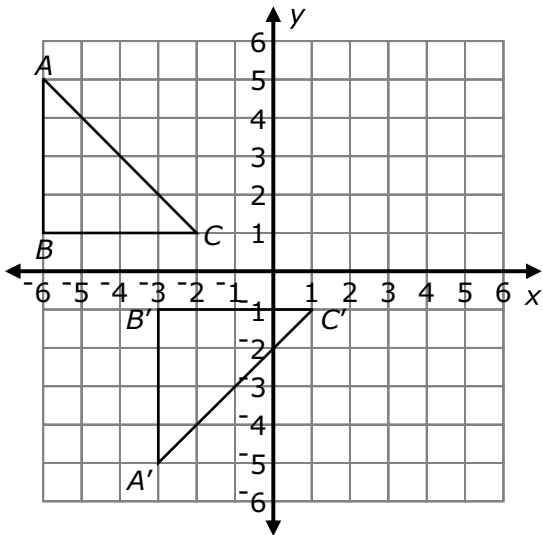
What did you discover from these two routes?

LESSON 27: Transformations and Congruence

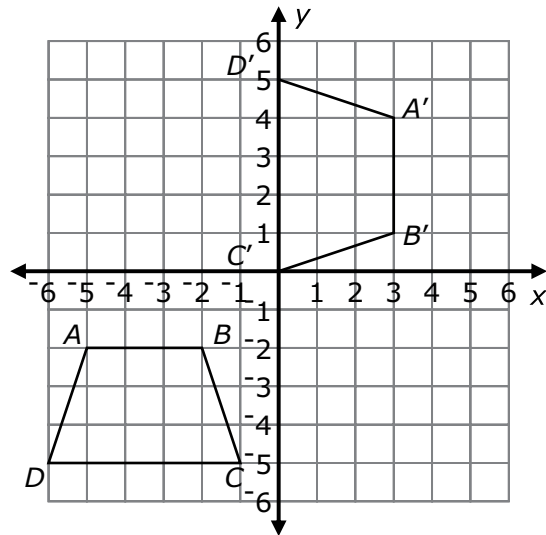
Directions: Complete this page with your partner.

Identify two different sequences of transformations necessary to arrive at the final figure with prime notation.

1.



2.



Route 1:

Route 2:

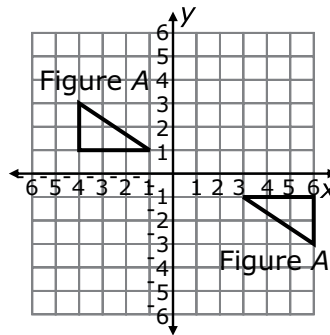
Route 1:

Route 2:

LESSON 27: Transformations and Congruence

Directions: Complete the following SOLVE problem with your teacher.

Barb has been adjusting the placement of some geometric wall decals. She is using a coordinate grid on the wall to assist. She began with Figure A and by the time she completed some transformations, the decal ended in the position represented by Figure A'. What sequence (s) of rigid transformations are possible for the adjustment of the triangular decal?



S Underline the question.
 This problem is asking me to find _____
 _____.

O Identify the facts.
 Eliminate the unnecessary facts.
 List the necessary facts.

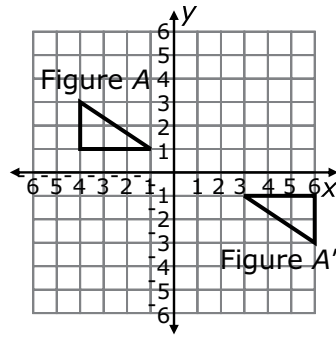
L Write in words what your plan of action will be.

Choose an operation or operations.

LESSON 27: Transformations and Congruence

Directions: Complete the following SOLVE problem with your teacher.

- V** Estimate your answer.
Carry out your plan.



- E** Does your answer make sense? (Compare your answer to the question.)

Is your answer reasonable? (Compare your answer to the estimate.)

Is your answer accurate? (Check your work.)

Write your answer in a complete sentence.

LESSON 27: Transformations and Congruence

Directions: Complete this section with your partner.

Identify two different sequences of transformations necessary to arrive at the final figure with prime notation.

<p>1.</p>	<p>2.</p>
<p>Route 1:</p> <p>Route 2:</p>	<p>Route 1:</p> <p>Route 2:</p>

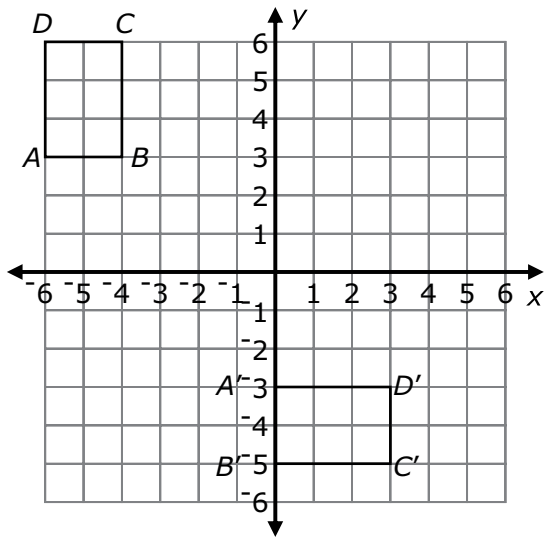
LESSON 27: Transformations and Congruence

Homework

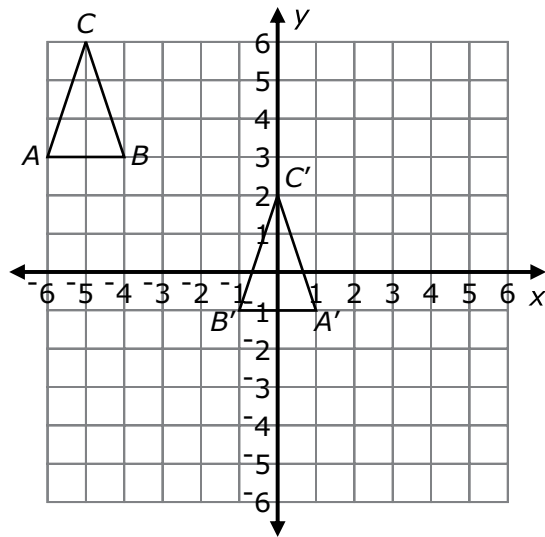
Name _____ Date _____

Identify two different sequences of transformations necessary to arrive at the final figure with prime notation.

1.



2.



Route 1:

Route 2:

Route 1:

Route 2:

9. Rotations, reflections and translations are all examples of _____.

10. If we can prove that a rigid transformation occurred to identify the new figure, then the original figure and the new figure are _____.