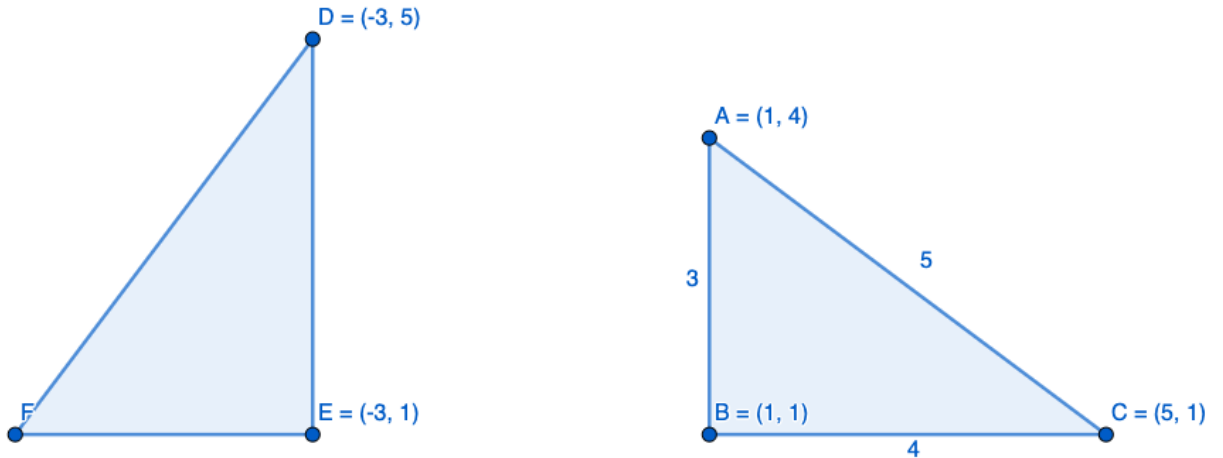
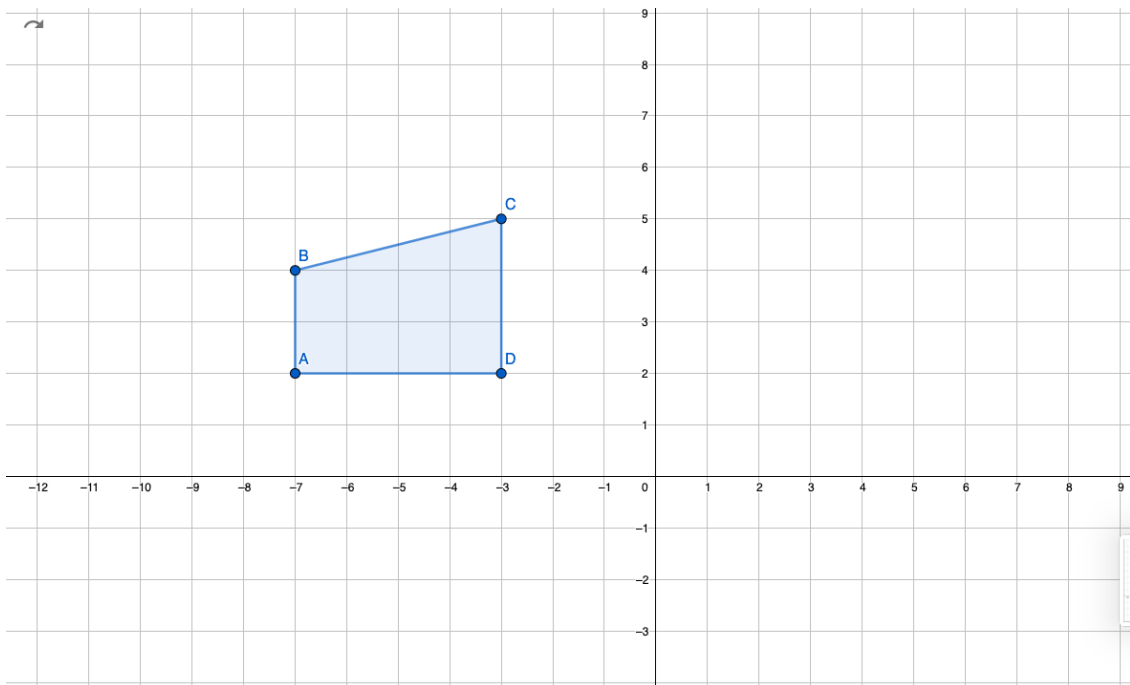


Math 7 Plus Unit 4  
Rigid Transformations & Congruence  
Additional Practice Problems

1. The two triangles shown are congruent. Given the characteristics of congruent shapes, find the x-coordinate of point F.

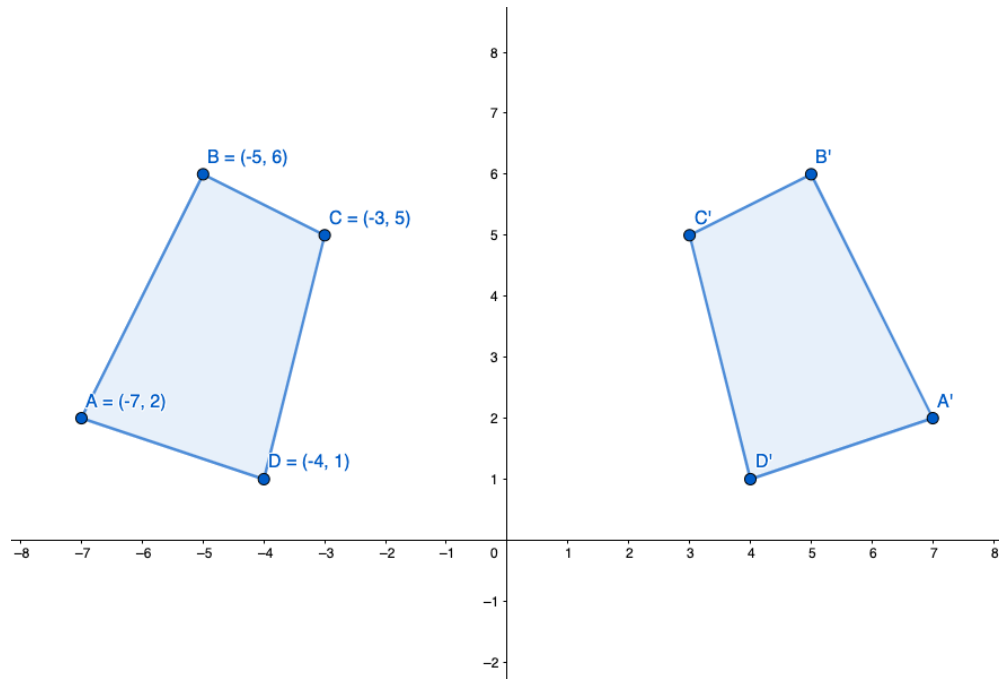


2. Rotate the quadrilateral  $90^\circ$  counterclockwise around point  $A$ . Draw the new figure on the same set of axes.

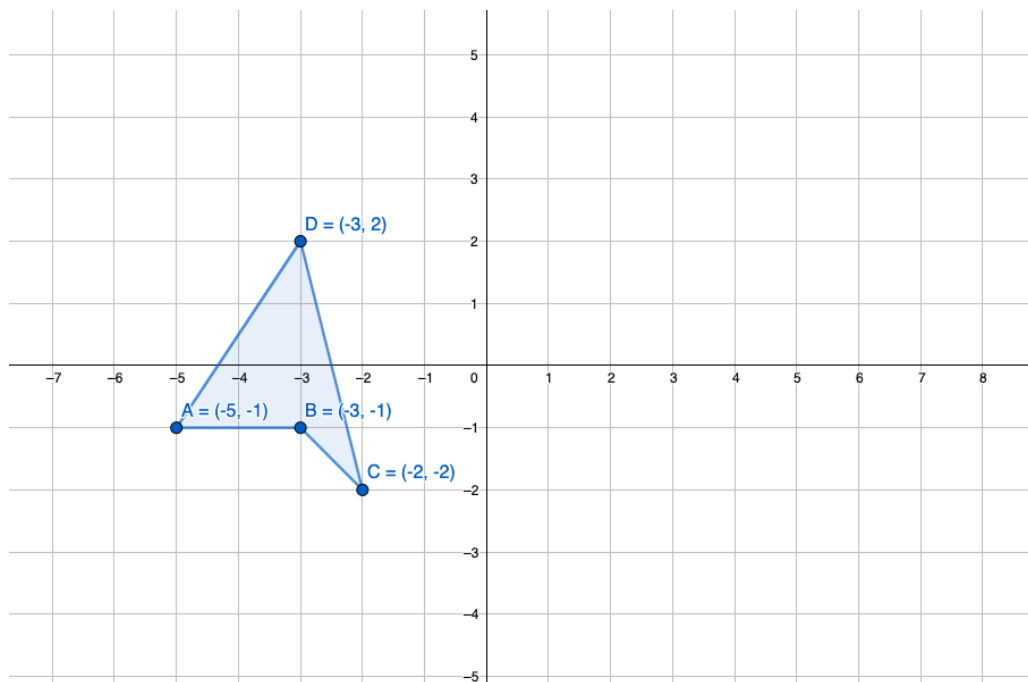


Math 7 Plus Unit 4  
Rigid Transformations & Congruence  
Additional Practice Problems

3. Figure ABCD has been reflected over the y-axis. Give the coordinates of its vertices.

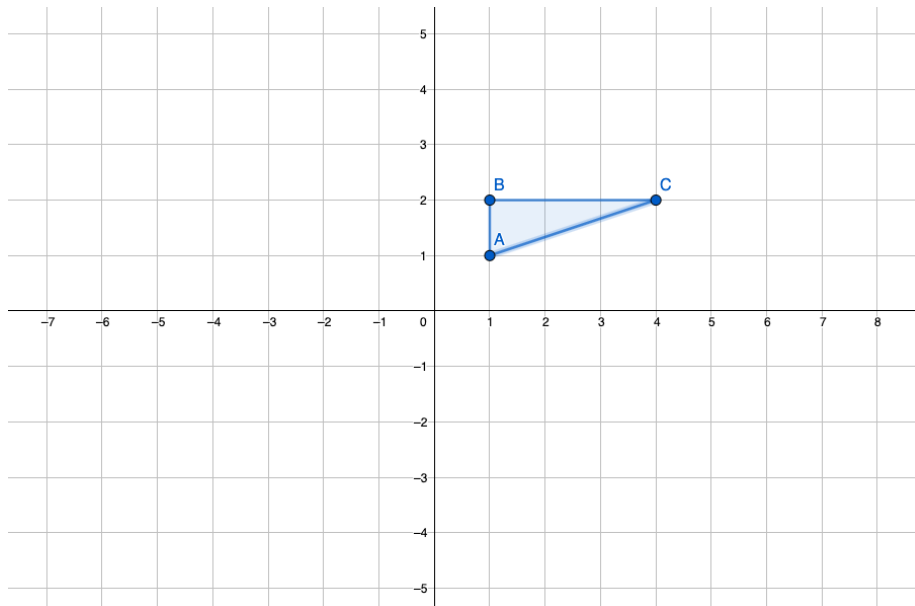


4. Figure ABCD is to be translated up 3 and right 5. Explain how this translation will affect the x- and y-coordinates of the new shape.

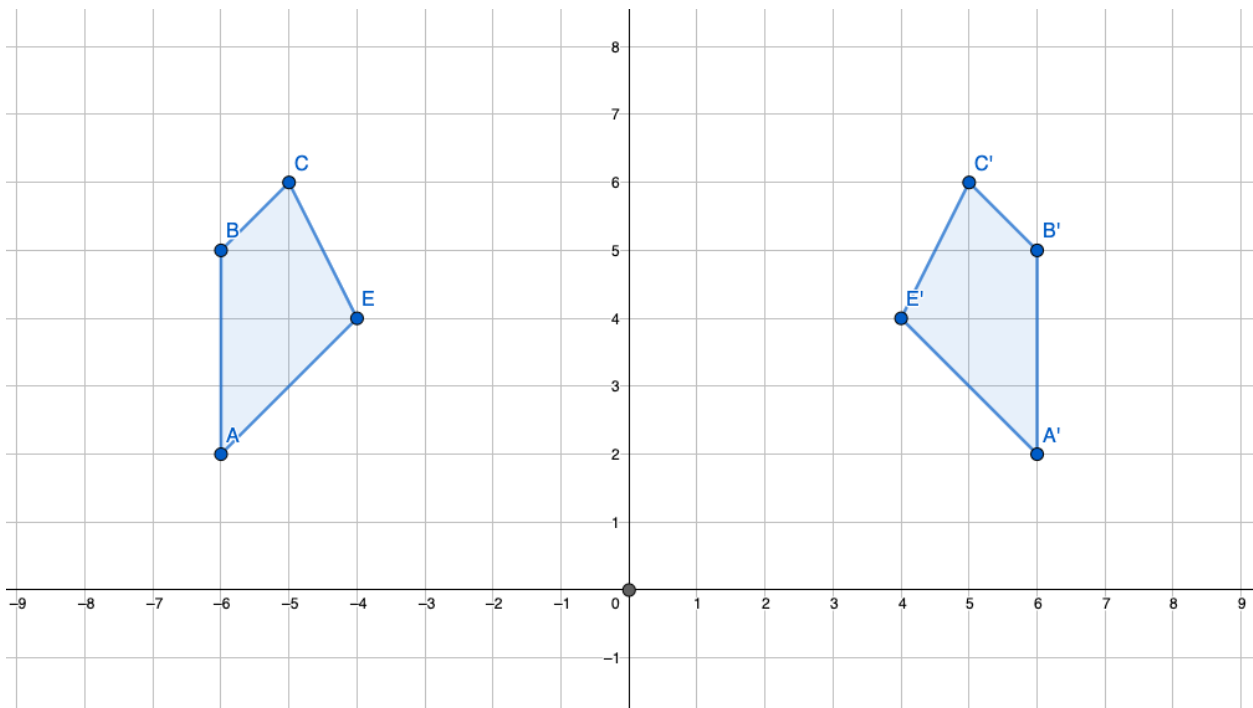


Math 7 Plus Unit 4  
Rigid Transformations & Congruence  
Additional Practice Problems

5. Describe a rotation that would take figure ABC into the third quadrant using the origin as the center of rotation.

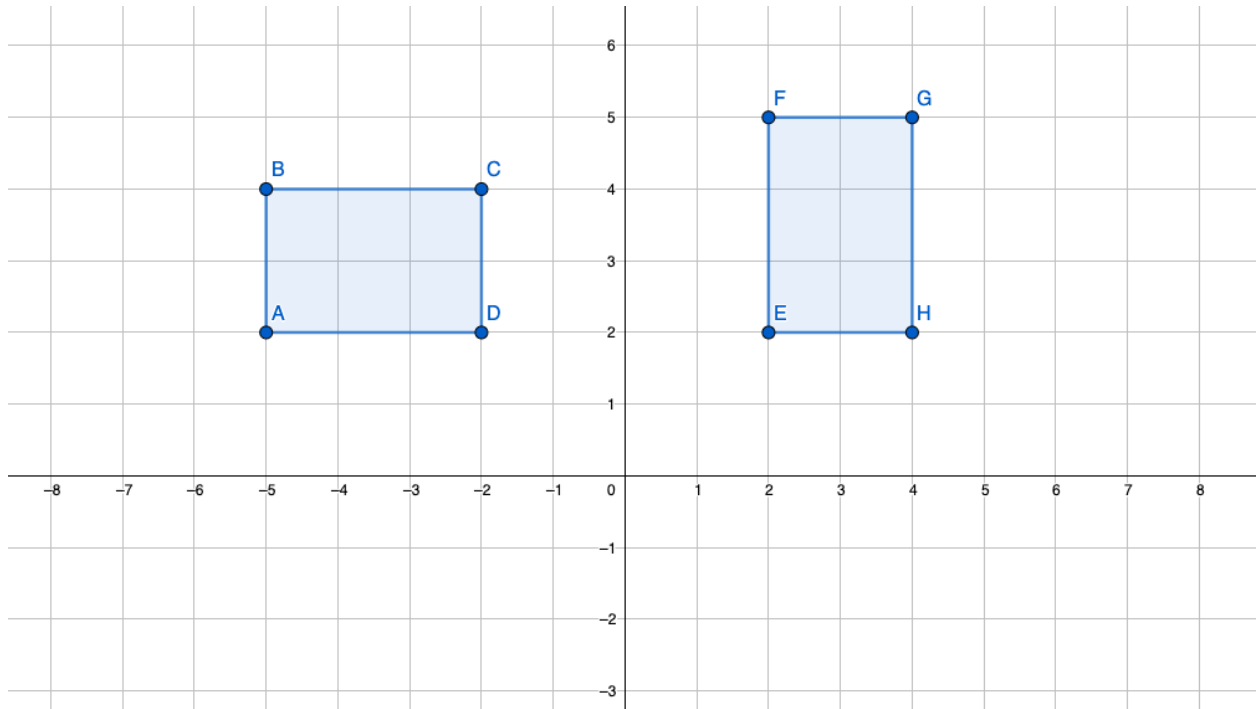


6. Describe the transformation that takes figure ABCE to figure A'B'C'E'.



Math 7 Plus Unit 4  
Rigid Transformations & Congruence  
Additional Practice Problems

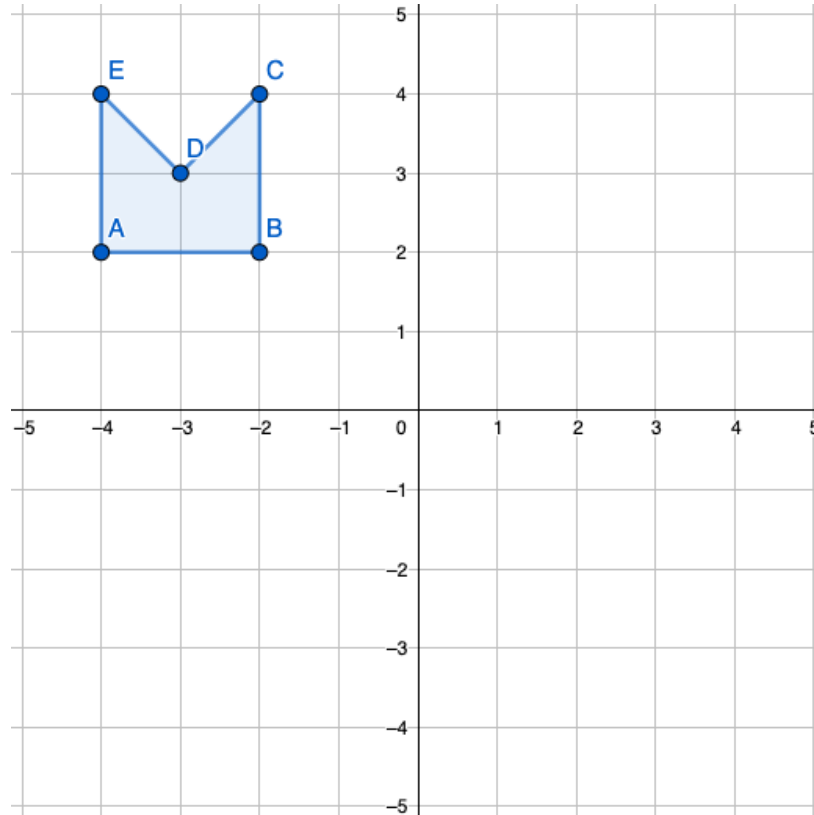
Use the diagram below for #7 through #9.



7. Explain why figure EFGH cannot be the reflection of figure ABCD.
  
8. Describe a transformation or series of transformations that would take figure ABCD to figure EFGH.
  
9. Imagine figure ABCD and figure EFGH are two canvases a museum wishes to hang on their wall. Wooden frames are created for each of the shapes. Would the wooden frames be identical? Explain your answer using what you know about the characteristics of rigid transformations.
  
10. Explain why **any** rigid transformation results in a congruent figure.

Math 7 Plus Unit 4  
Rigid Transformations & Congruence  
Additional Practice Problems

Use the graph below for #11 through #13.



11. What are the coordinates of point D after the figure is reflected over the x-axis?
  - a. (-3, -3)
  - b. (3, 3)
  - c. (3, -3)
  - d. (-3, 3)
  
12. If the measure of angle BCD =  $45^\circ$ , what is the measure of angle B'C'D' ?
  - a.  $90^\circ$
  - b.  $35^\circ$
  - c.  $45^\circ$
  - d.  $55^\circ$
  
13. What transformation would result in A' (0, 0)?
  - a. a translation of down 2, right 4
  - b. a translation of up 4, right 2
  - c. a reflection over the y-axis
  - d. a rotation about the origin of  $180^\circ$

Math 7 Plus Unit 4  
Rigid Transformations & Congruence  
Additional Practice Problems

Figures FGHI and RSTU are congruent. The following text box shows facts about the figures.

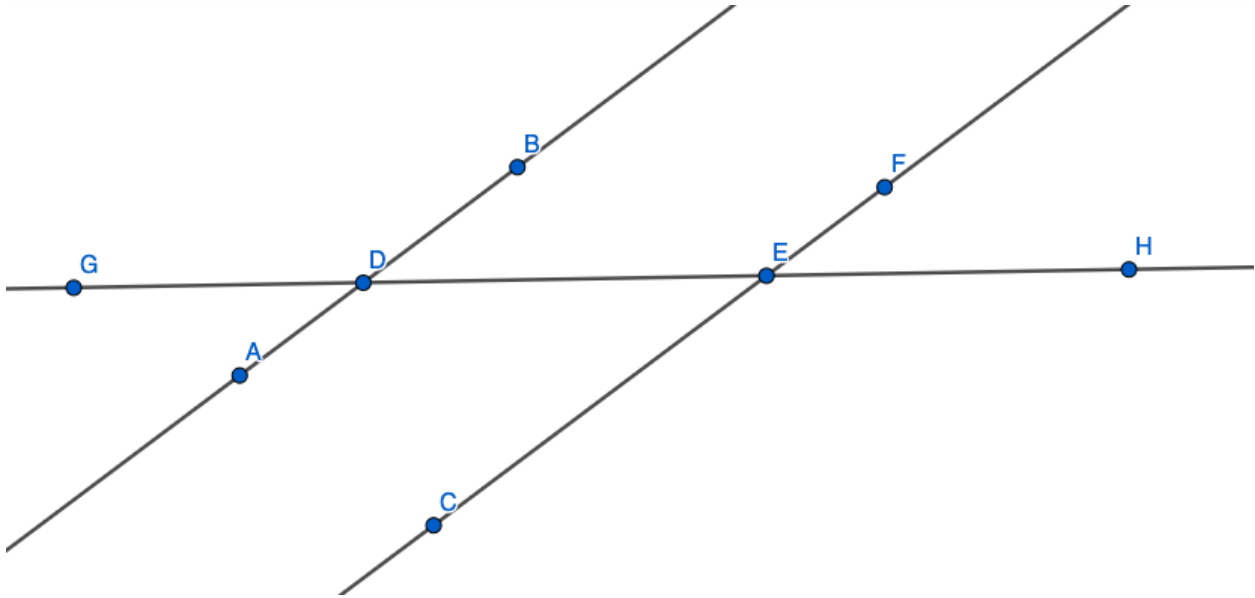
length of FG = 4  
length of GH = 7  
length of HJ = 11.5  
length of FJ = 2.5

angle R =  $45^\circ$   
angle S =  $125^\circ$   
angle T =  $15^\circ$   
angle U =  $175^\circ$

14. Which statement is **true**?
- a. We do not have enough information to determine the lengths of the sides of Figure RSTU.
  - b. We do not have enough information to determine the measures of the angles of Figure FGHI.
  - c. The areas of the two figures are equal.
  - d. Both figures are rectangles.
15. Triangle ABD has vertices A (-5, 2), B (-3, 6), and D (-2, 2). After rotating  $90^\circ$  counterclockwise about the origin, what are the coordinates of B'?
- a. (6, 3)
  - b. (6, -3)
  - c. (-6, -3)
  - d. (-3, -6)

Math 7 Plus Unit 4  
Rigid Transformations & Congruence  
Additional Practice Problems

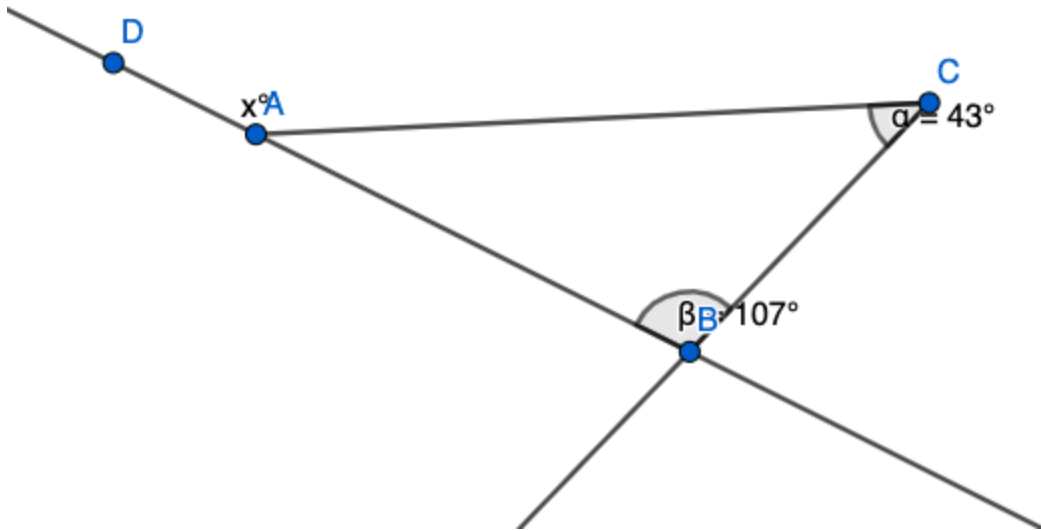
Line AB is parallel to line CF. Use the angle diagram below to answer question #6 and #7.



16. Which statement is false?
- Angles BDE and DEF are supplementary.
  - There are four sets of vertical angles shown in the diagram.
  - The measure of angle ADG is smaller than the measure of angle CED.
  - The sum of angles BDG, ADG, ADE, and BDE is  $360^\circ$ .
17. If the measure of angle ADG is  $42^\circ$ , what is the measure of the sum of angles CED and BDE?
- $42^\circ$
  - $138^\circ$
  - $180^\circ$
  - $84^\circ$

Math 7 Plus Unit 4  
Rigid Transformations & Congruence  
Additional Practice Problems

18. Find the measure of angle  $x$ .

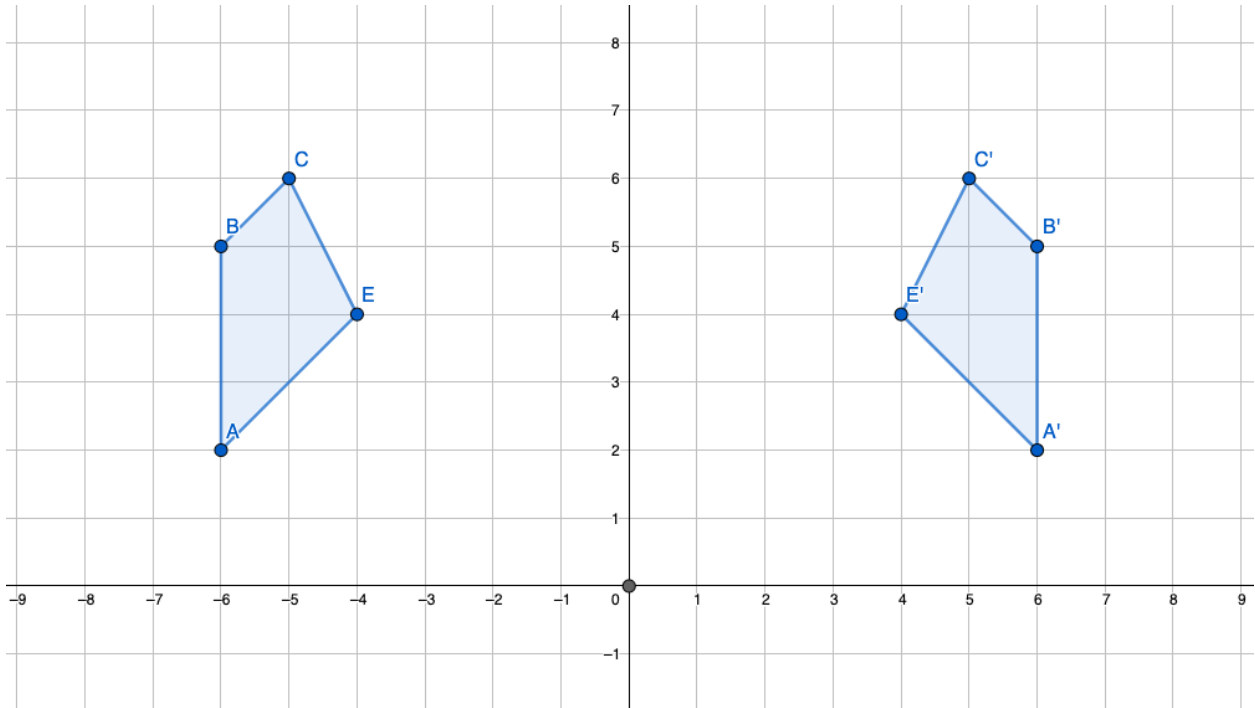


- a.  $30^\circ$
- b.  $150^\circ$
- c.  $157^\circ$
- d.  $143^\circ$



Math 7 Plus Unit 4  
Rigid Transformations & Congruence  
Additional Practice Problems

19. Which transformation takes figure ABCE to figure A'B'C'E'?



- a. a translation of left 10
  - b. a rotation of  $90^\circ$  clockwise about the origin
  - c. a reflection over the y-axis
  - d. a rotation of  $90^\circ$  counterclockwise about the origin
20. Figure WEST is to be translated up 3 and right 5. Explain how this translation will affect the x- and y-coordinates of the new shape.
- a. add 3 to each x-coordinate and add 5 to each y-coordinate
  - b. add 5 to each x-coordinate and add 3 to each y-coordinate
  - c. subtract 3 from each x-coordinate and subtract 5 from each y-coordinate
  - d. subtract 5 from each x-coordinate and subtract 3 from each y-coordinate