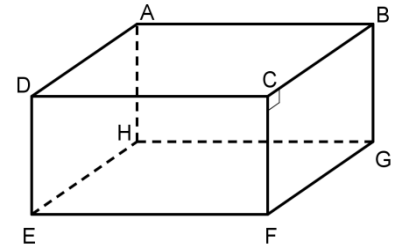


1. In the figure at the right, consider each segment to be part of a line.



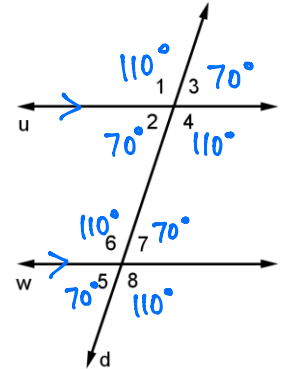
a) Name all segments skew to  $\overline{BG}$ .  $\overline{AC}, \overline{AD}, \overline{AE}, \overline{AF}, \overline{CD}, \overline{CE}, \overline{CH}, \overline{DF}, \overline{DH}, \overline{EF}, \overline{EH}, \overline{FH}$

1b) Name the plane parallel to plane BCF. plane ADE

1c) Name all segments parallel to  $\overline{FG}$ .  $\overline{EH}, \overline{DA}, \overline{CB}$

2. In the figure at the right  $u \parallel w$ .

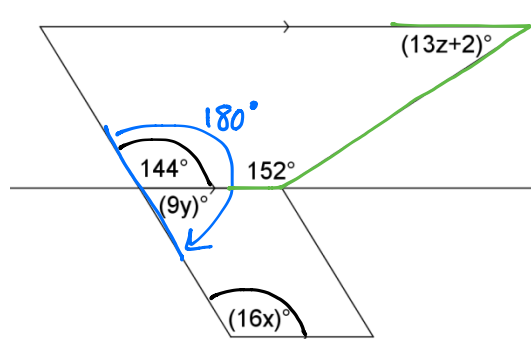
a) Given  $m\angle 1 = 110^\circ$ , find the measure of each marked angle and **write the value** on the diagram.



State the angle relationship between each pair of angles. Determine if the angles are congruent, complementary, or supplementary.

	Angle Relationship: Alternate Interior, Alternate Exterior, Consecutive Interior, Corresponding, Linear Pair, or Vertical	Congruent, Supplementary, Complementary
b) $\angle 1$ and $\angle 6$	Corresponding	Congruent
c) $\angle 2$ and $\angle 3$	Vertical	congruent
d) $\angle 4$ and $\angle 7$	Consecutive interior	Supplementary
e) $\angle 3$ and $\angle 5$	alternate exterior	Congruent
f) $\angle 6$ and $\angle 4$	alternate interior	Congruent
g) $\angle 5$ and $\angle 8$	linear pair	Supplementary

3. Use the angle relationships to write an equation and solve for x, y, and z.



$$\frac{144}{16} = \frac{16x}{16} \text{ (corresponding)}$$

$$9 = x$$

$$152 + 13z + 2 = 180 \text{ (consec. int)}$$

$$13z + 154 = 180$$

$$13z = 26$$

$$z = 2$$

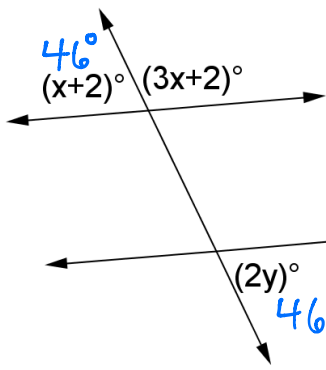
$$144 + 9y = 180 \text{ (linear pair)}$$

$$9y = 36$$

$$y = 4$$

$x = \underline{9}$     $y = \underline{4}$     $z = \underline{2}$

4. Determine the value for x and y that would make the lines parallel.

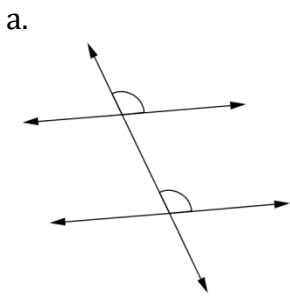


$$\begin{aligned}
 x+2+3x+2 &= 180 \quad (\text{linear pair}) \\
 4x+4 &= 180 \\
 4x &= 176 \\
 x &= 44
 \end{aligned}$$

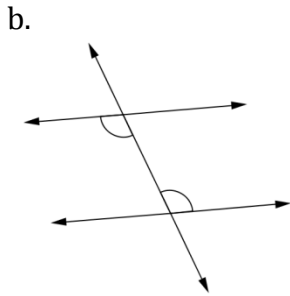
$$\begin{aligned}
 x &= \underline{44} \\
 y &= \underline{23}
 \end{aligned}$$

$$\begin{aligned}
 44+2 &= 46 \\
 3(44)+2 &= 134 \\
 46 &= 2y \quad (\text{alt. ext.}) \\
 23 &= y
 \end{aligned}$$

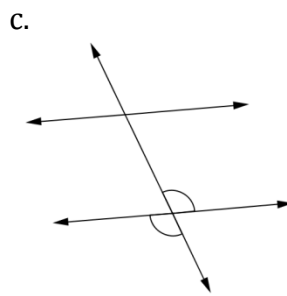
5. Determine whether each diagram could prove lines parallel or not. Explain why or why not.



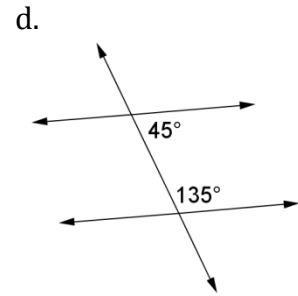
Parallel: Yes or No  
 Explain:  
 Corresponding angles are  $\cong$



Parallel: Yes or No  
 Explain:  
 alt. int. angles are  $\cong$

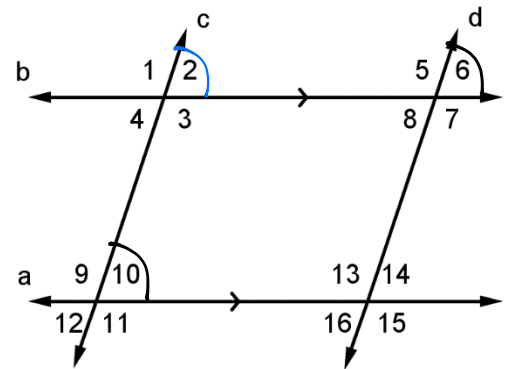
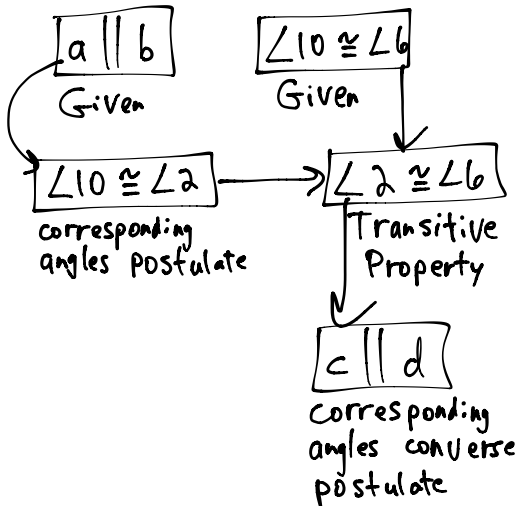


Parallel: Yes or No  
 Explain  
 nothing known about angles of top line



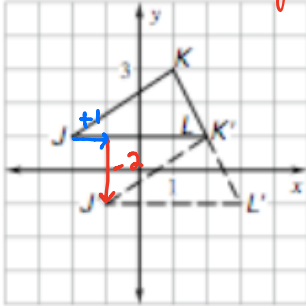
Parallel: Yes or No  
 Explain:  
 $45^\circ + 135^\circ = 180^\circ$   
 Consec. int. angles are Suppl.

6. Complete the proof.  
 Given:  $a \parallel b$ ,  $\angle 10 \cong \angle 6$   
 Prove:  $c \parallel d$

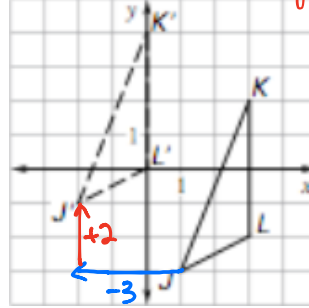


7. Describe the translation using coordinate notation.

a.  $(x, y) \rightarrow (x+1, y-2)$

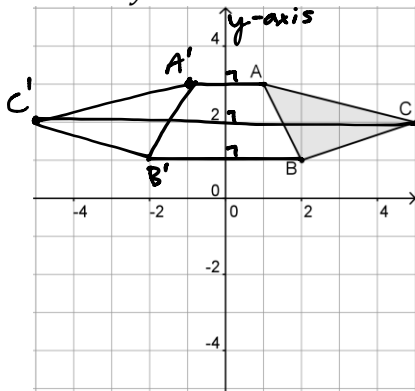


b.  $(x, y) \rightarrow (x-3, y+2)$



8. Draw the reflection of  $\triangle ABC$  in the given line. List the coordinates of the vertices  $A'$ ,  $B'$ , and  $C'$ .

a.  $y$ -axis

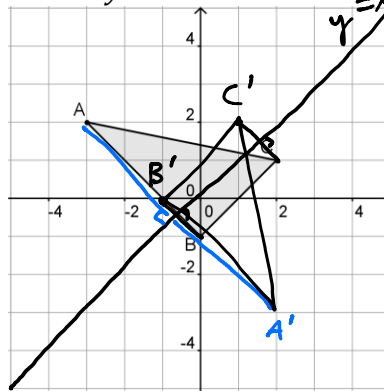


$A' = (-1, 3)$

$B' = (-2, 1)$

$C' = (-5, 2)$

b.  $y = x$

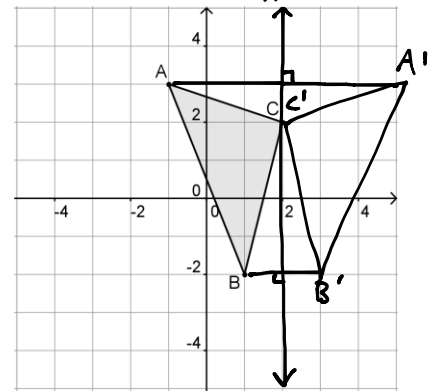


$A' = (2, -3)$

$B' = (-1, 0)$

$C' = (1, 2)$

c.  $x = 2$



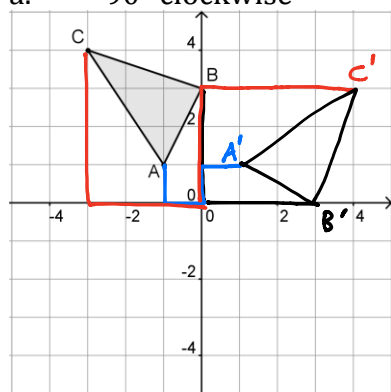
$A' = (5, 3)$

$B' = (3, -2)$

$C' = (2, 2)$

9. Rotate the figure about the origin. List the coordinates of  $A'$ ,  $B'$ , and  $C'$ .

a.  $90^\circ$  clockwise

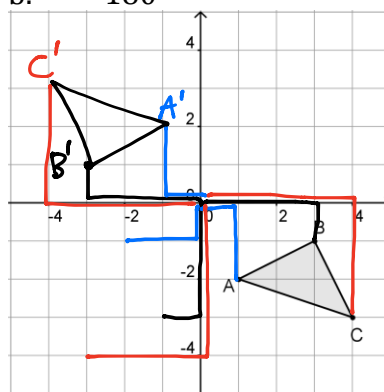


$A' = (1, 1)$

$B' = (3, 0)$

$C' = (4, 3)$

b.  $180^\circ$

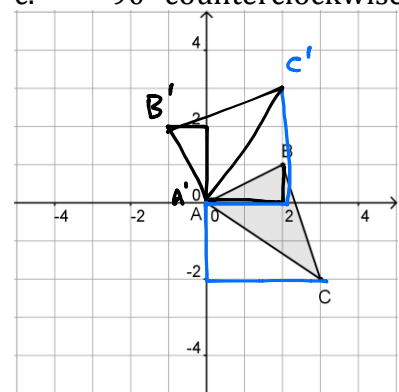


$A' = (-1, 2)$

$B' = (-3, 1)$

$C' = (-4, 3)$

c.  $90^\circ$  counterclockwise

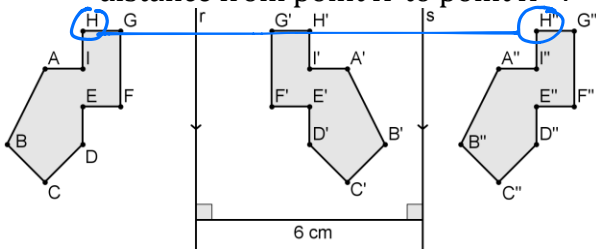


$A' = (0, 0)$

$B' = (-1, 2)$

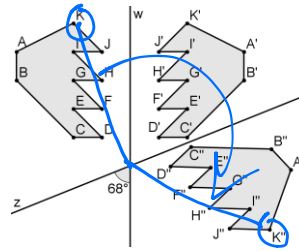
$C' = (2, 3)$

10. Below is an example of a double reflection over parallel lines  $r$  and  $s$ . The distance between lines  $r$  and  $s$  is 6 cm, what is the distance from point  $H$  to point  $H''$ ?



$$6\text{ cm} \cdot 2 = 12\text{ cm}$$

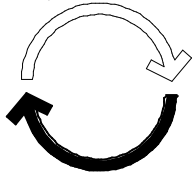
11. Below is an example of a double reflection over intersecting lines  $w$  and  $z$ . The angle between  $w$  and  $z$  is  $68^\circ$ . What is the angle of rotation between  $K$  and  $K''$ ?



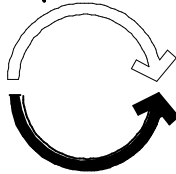
$$68^\circ \cdot 2 = 136^\circ$$

12. Determine the type of that maps the unshaded figure (preimage) onto the shaded figure (image).

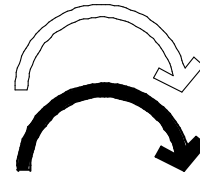
a. rotation



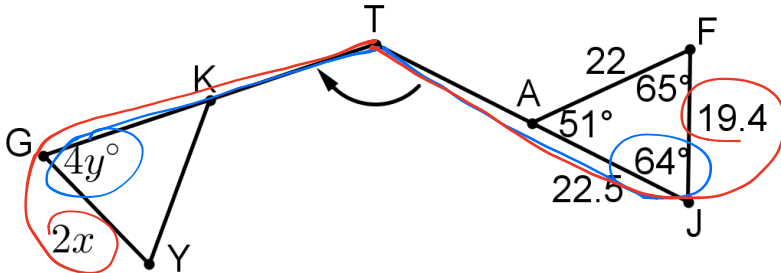
b. reflection



c. translation



13. Determine the value of each variable given that the transformation is an isometry.



$$4y = 64$$

$$y = 16$$

$$2x = 19.4$$

$$x = 9.7$$

14. The vertices of  $\Delta ABC$  are  $A = (1, 4)$ ,  $B = (2, 1)$ , and  $C = (5, 2)$ . Graph the composition of  $\Delta ABC$  using the transformations listed below. Write the coordinates of the points  $A''$ ,  $B''$ , and  $C''$

Reflection in the  $y$ -axis maps  $\Delta ABC$  to  $\Delta A'B'C'$

Translation  $(x, y) \rightarrow (x + 5, y - 4)$  maps  $\Delta A'B'C'$  to  $\Delta A''B''C''$

Coordinates:

$$A'' = (4, 0)$$

$$B'' = (3, -3)$$

$$C'' = (0, -2)$$

