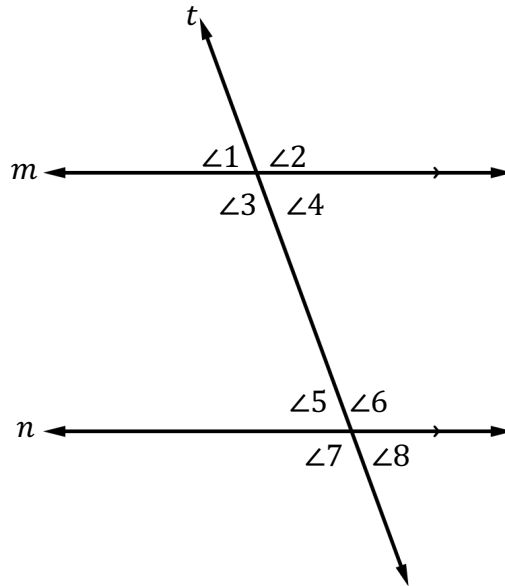


**Angles**  
**Angle-Preserving Transformations**  
**Independent Practice**

1. Consider the figure below in which  $l_1 \parallel l_2$ .

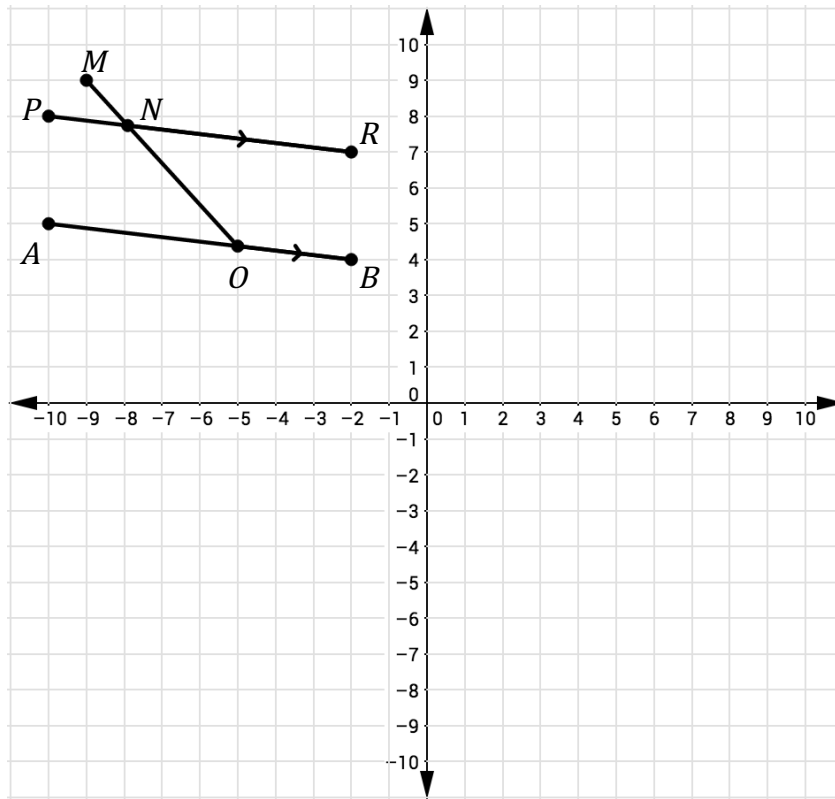


*Part A:* Determine the angles that are congruent with  $\angle 6$  after  $\angle 6$  has been translated eight units to the right and two units down. Justify your answer.

*Part B:* Determine the angles that are supplementary with  $\angle 3$  after  $\angle 3$  has been rotated  $180^\circ$  clockwise.

*Part C:* Explain the effect that reflecting the figure above across the line  $y = x$  may have on  $\angle 1$ ,  $\angle 2$ ,  $\angle 3$ ,  $\angle 4$ ,  $\angle 5$ ,  $\angle 6$ ,  $\angle 7$ , and  $\angle 8$ .

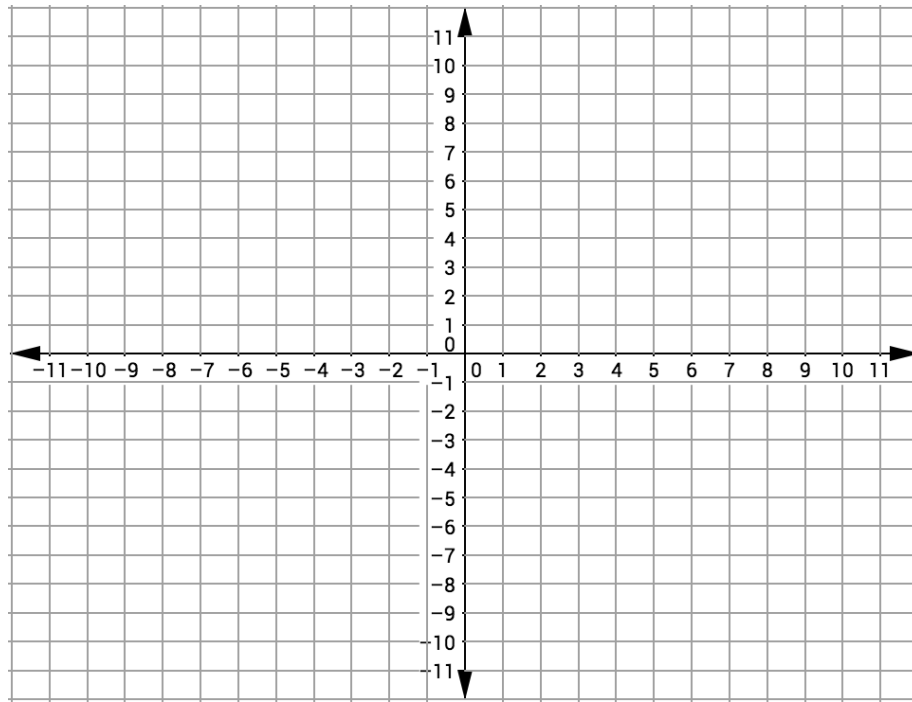
2. Consider the following figure.



Part A: Reflect the above image across the  $y$ -axis and sketch it on the coordinate plane.

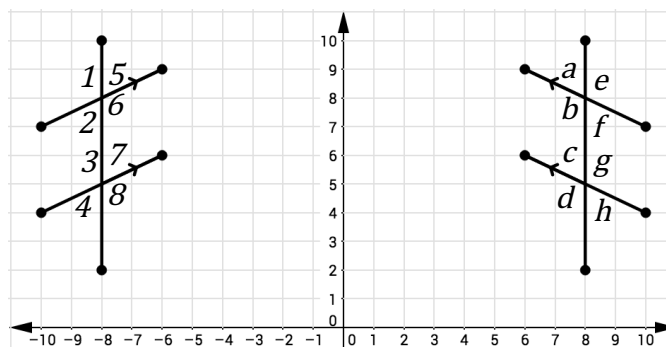
Part B: Write a paragraph proof to prove that after the reflection,  $m\angle NOA = m\angle N'O'A'$ .

3. Consider the transformation that you did in exercise #2 and dilate the image centered at the origin with a scale factor of  $\frac{1}{2}$ . Sketch the new image in the coordinate plane below.



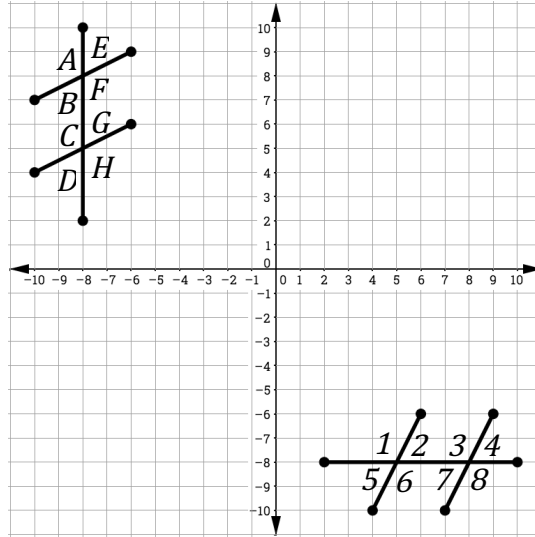
Explain the angle measures after the dilation.

4. Consider the image in Quadrant *I* and the pre-image in Quadrant *II*.



If  $m\angle 4 = 5x + 14$  and  $m\angle e = 7x - 2$ , then  $m\angle 1 = \underline{\hspace{2cm}}$  and  $m\angle c = \underline{\hspace{2cm}}$ .

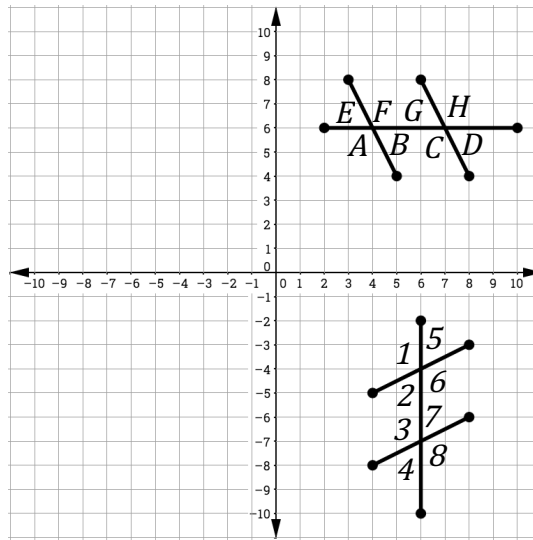
5. The figure in Quadrant *IV* of the coordinate plane below is a transformation of the figure in Quadrant *II*.



*Part A:* What type of transformation is shown above? Justify your answer.

*Part B:* Write a paragraph proof to prove that  $\angle 3 \cong \angle C$  and that  $\angle 3$  is a supplement angle to  $\angle E$ .

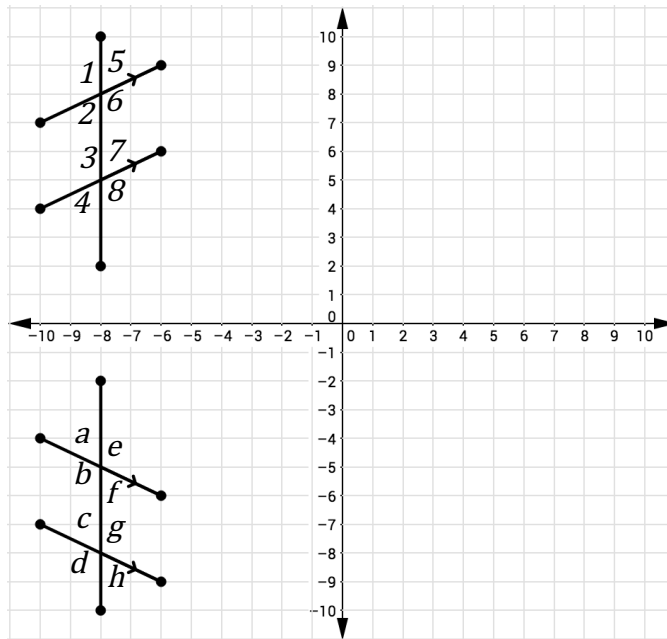
6. The figure in Quadrant *I* of the coordinate plane below is a transformation of the figure in Quadrant *IV*.



*Part A:* What type of transformation is shown above? Justify your answer.

*Part B:* Write a paragraph proof to prove that  $\angle H$  and  $\angle 1$  are congruent.

7. The figure in Quadrant III of the coordinate plane below is a transformation of the figure in Quadrant II.



Part A: What type of transformation is shown above? Justify your answer.

Part B: If  $m\angle c = 5x - 1$ ,  $m\angle f = 11y + 3$ ,  $m\angle 1 = 8x - 1$ , and  $m\angle 8 = 17y + 9$ , then determine:

$$x =$$

$$y =$$

$$m\angle 6 =$$

$$m\angle a =$$