

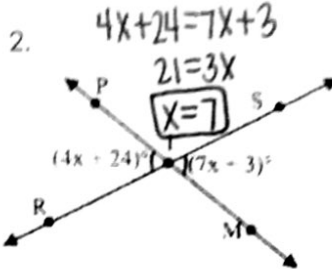
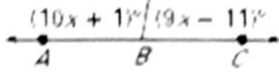
Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Missing Angles: Solve for x.**

1.  $10x + 1 + 9x - 11 = 180$

$19x - 10 = 180$   
 $19x = 190$

$x = 10$

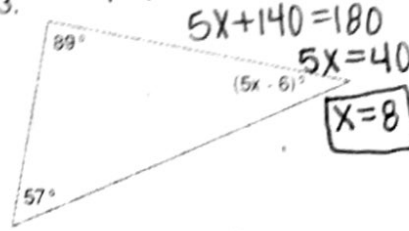


3.  $89 + 57 + 5x - 6 = 180$

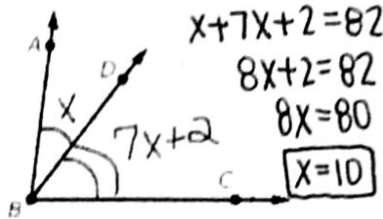
$5x + 140 = 180$

$5x = 40$

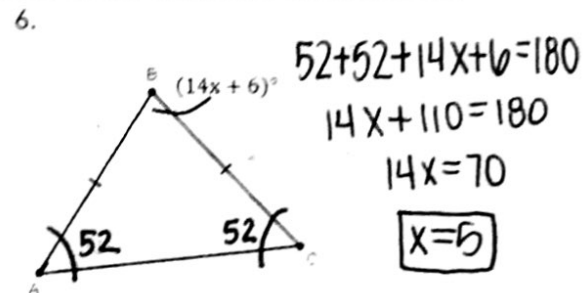
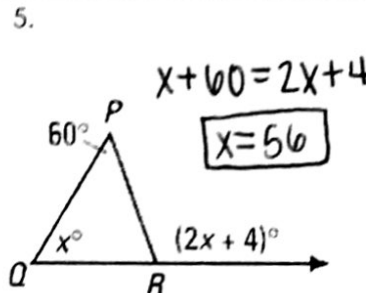
$x = 8$



4.  $\angle ABC$  measures  $82^\circ$



$x + 7x + 2 = 82$   
 $8x + 2 = 82$   
 $8x = 80$   
 $x = 10$



7.  $\angle 1$  and  $\angle 2$  are complementary. Solve for x and the measure of both angles.

$\angle 1 = 12x + 4$   
 $\angle 2 = 9x + 2$

$12x + 4 + 9x + 2 = 90$   
 $21x + 6 = 90$

$21x = 84$   
 $x = 4$

$m\angle 1 = 12(4) + 4 = 52^\circ$   
 $m\angle 2 = 9(4) + 2 = 38^\circ$

8. The measure of one angle is 38 less than the measure of its supplement.

Find the measure of each angle.

$\angle 1 = x$   
 $\angle 2 = x - 38$

$x + x - 38 = 180$   
 $2x - 38 = 180$

$2x = 218$   
 $x = 109$

$\angle 1 = 109^\circ$   
 $\angle 2 = 71^\circ$

9. One of two supplementary angles is  $123^\circ$  less than twice its supplement. Find the measure of both angles.

$\angle 1 = x$   
 $\angle 2 = 2x - 123$

$3x - 123 = 180$

$3x = 303$

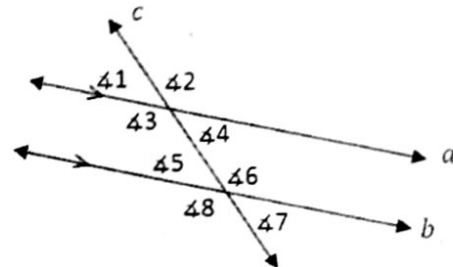
$x = 101$

$\angle 1 = 101^\circ$   
 $\angle 2 = 79^\circ$

**Parallel Lines:**

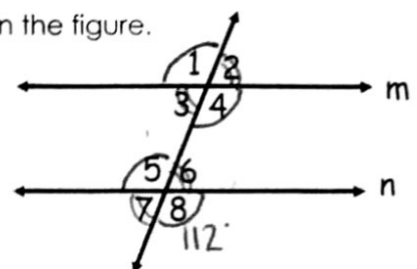
Name the angles listed and the special property.

- 10.  $\angle 1$  and  $\angle 5$  corresponding
- 11.  $\angle 4$  and  $\angle 6$  consecutive (same side) interior
- 12.  $\angle 2$  and  $\angle 8$  alternate exterior
- 13.  $\angle 4$  and  $\angle 5$  alternate interior



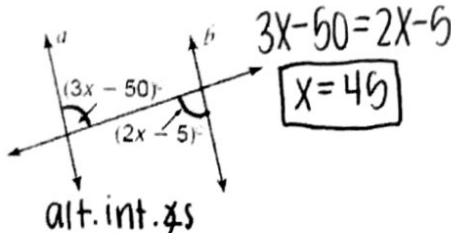
14. Given  $m \parallel n$  and  $m \angle 8$ , find the measures of all the numbered angles in the figure.

- $m \angle 8 = 112^\circ$
- $m \angle 1 = 112^\circ$
- $m \angle 3 = 68^\circ$
- $m \angle 5 = 112^\circ$
- $m \angle 2 = 68^\circ$
- $m \angle 4 = 112^\circ$
- $m \angle 6 = 68^\circ$
- $m \angle 7 = 68^\circ$



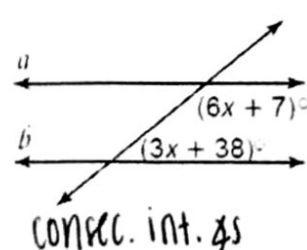
**Solve for x.**

15.



$3x - 50 = 2x - 5$   
 $x = 45$

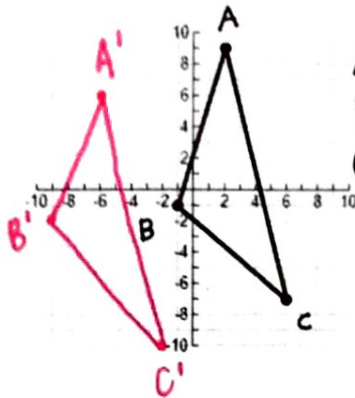
16.



$6x + 7 + 3x + 38 = 180$   
 $9x + 45 = 180$   
 $9x = 135$   
 $x = 15$

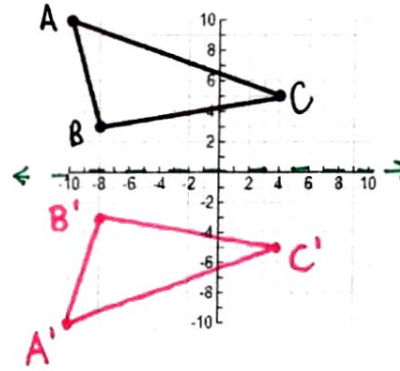
Draw the image of each figure, using the given transformation.

17. Translation  $(x, y) \rightarrow (x - 8, y - 3)$



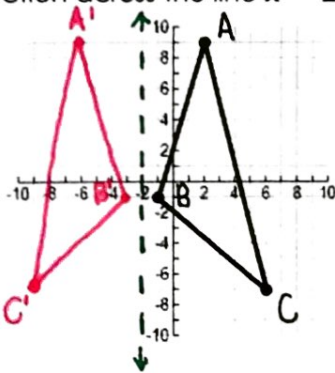
$A(2, 9) \rightarrow A'(-6, 6)$   
 $B(-1, 1) \rightarrow B'(-9, -2)$   
 $C(6, -7) \rightarrow C'(-2, -10)$

18. Reflection across the **x-axis**.  $(x, -y)$

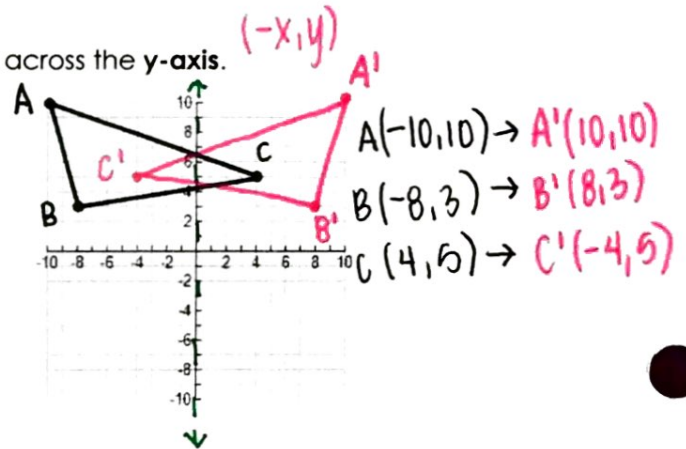


$A(-10, 10) \rightarrow A'(-10, -10)$   
 $B(-8, 3) \rightarrow B'(-8, -3)$   
 $C(4, 5) \rightarrow C'(4, -5)$

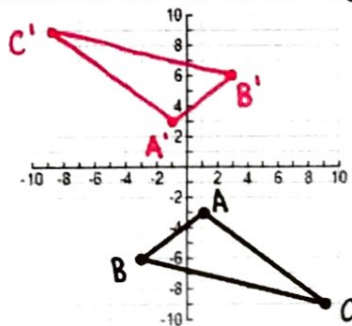
19. Reflection across the line **x = -2**



20. Reflection across the **y-axis**.  $(-x, y)$

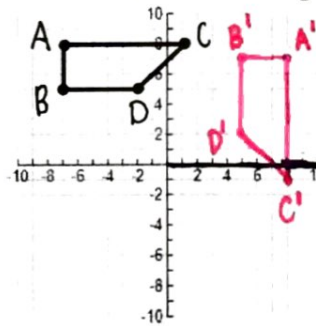


21. Rotation **180°** about the origin  $(-x, -y)$



$A(1, -3) \rightarrow A'(-1, 3)$   
 $B(-3, -6) \rightarrow B'(3, 6)$   
 $C(9, -9) \rightarrow C'(-9, 9)$

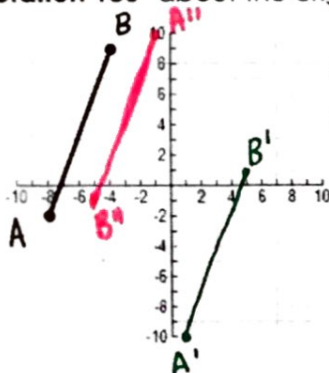
22. Rotation **90° clockwise** about the origin.  $(y, -x)$



$A(-7, 8) \rightarrow A'(8, 7)$   
 $B(-7, 5) \rightarrow B'(5, 7)$   
 $C(1, 8) \rightarrow C'(8, -1)$   
 $D(-2, 5) \rightarrow D'(5, -2)$

23. Translation  $(x, y) \rightarrow (x + 9, y - 8)$

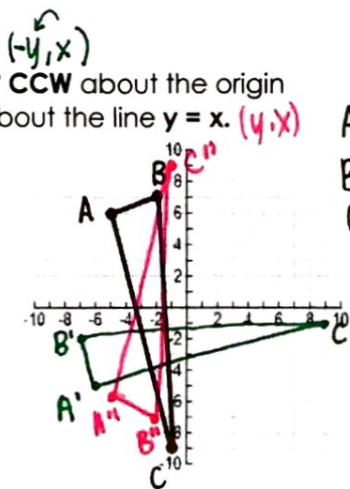
Rotation **180°** about the origin.  $(-x, -y)$



$A(-8, -2) \rightarrow A'(-1, -10)$   
 $B(-4, 9) \rightarrow B'(5, 1)$   
 $A'(-1, -10) \rightarrow A''(-1, 10)$   
 $B'(5, 1) \rightarrow B''(-5, -1)$

24. Rotation **90° CCW** about the origin

Reflection about the line **y = x**.  $(y, x)$



$A(-5, 6) \rightarrow (-6, -5) \rightarrow (-5, -6)$   
 $B(-2, 7) \rightarrow (-7, -2) \rightarrow (-2, -7)$   
 $C(-1, 9) \rightarrow (9, -1) \rightarrow (-1, 9)$