

Unit 1-3 REVIEW: Compositions and Constructions of RIGID MOTIONS

1. What are the coordinates of point  $A'$ , the image of point  $A(-4, 1)$  after the composite transformation  $R_{90^\circ} \circ r_{y=x}$  where the origin is the center of rotation?  
 $(1, -4) \rightarrow (4, 1)$

2. The coordinates of  $\triangle JRB$  are  $J(1, -2)$ ,  $R(-3, 6)$ , and  $B(4, 5)$ . What are the coordinates of the vertices of its image after the transformation  $T_{2,-1} \circ r_{y=axis}$ ?  
 $J'(-1, -2)$   $R'(3, 6)$   $B'(-4, 5)$   
 $J''(1, -3)$   $R''(5, 5)$   $B''(-2, 4)$

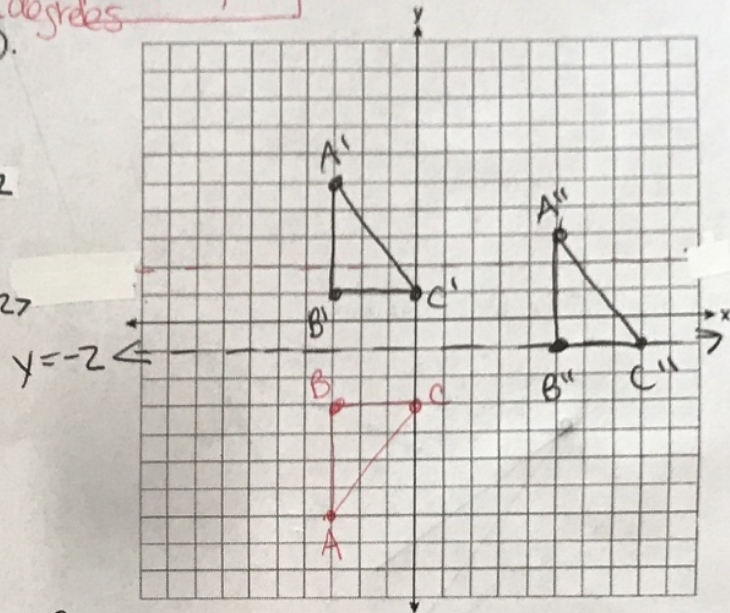
3. Write a single translation that is equivalent to  $T_{3,-1}$  followed by  $T_{-5,5}$ .  
 Translations: add vectors; Rotations: add degrees  
 $T_{\langle -2, 4 \rangle}$

4. Triangle  $ABC$  has coordinates  $A(-3, -7)$ ,  $B(-3, -3)$ , and  $C(0, -3)$ .

a On the graph below, graph and label  $\triangle ABC$ .

b Graph and state the coordinates of  $\triangle A'B'C'$ , the image of  $\triangle ABC$  reflected in the line  $y = -2$ .

c Graph and state the coordinates of  $\triangle A''B''C''$ , the image of  $\triangle A'B'C'$  after translation  $T_{\langle 8, -2 \rangle}$ .



$7 - 11 = -4 \rightarrow 2(-4) = -8$

5. A double reflection over  $x = 11$  followed by  $x = 7$ , translates all points ~~right~~ 8 units.

T or  F

6.  $r_{x=1} \circ r_{x=-2} = T_{\langle 0, 6 \rangle}$   $1 - (-2) = 3$   $T_{\langle 6, 0 \rangle}$

left

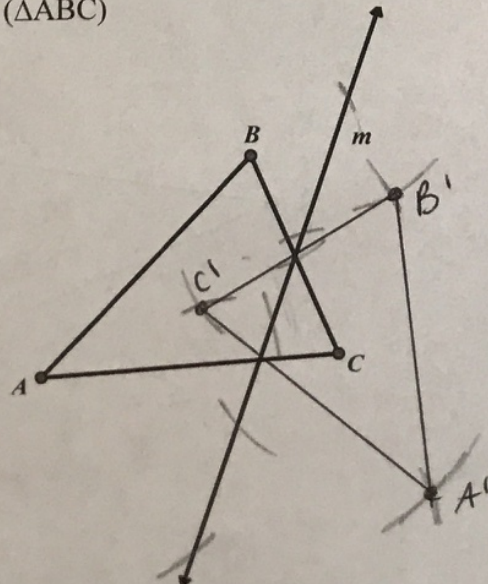
T or  F

7.  $r_{x=2} \circ r_{x=6} = T_{\langle -4, 0 \rangle}$   $2 - 6 = -4$   $T_{\langle -8, 0 \rangle}$

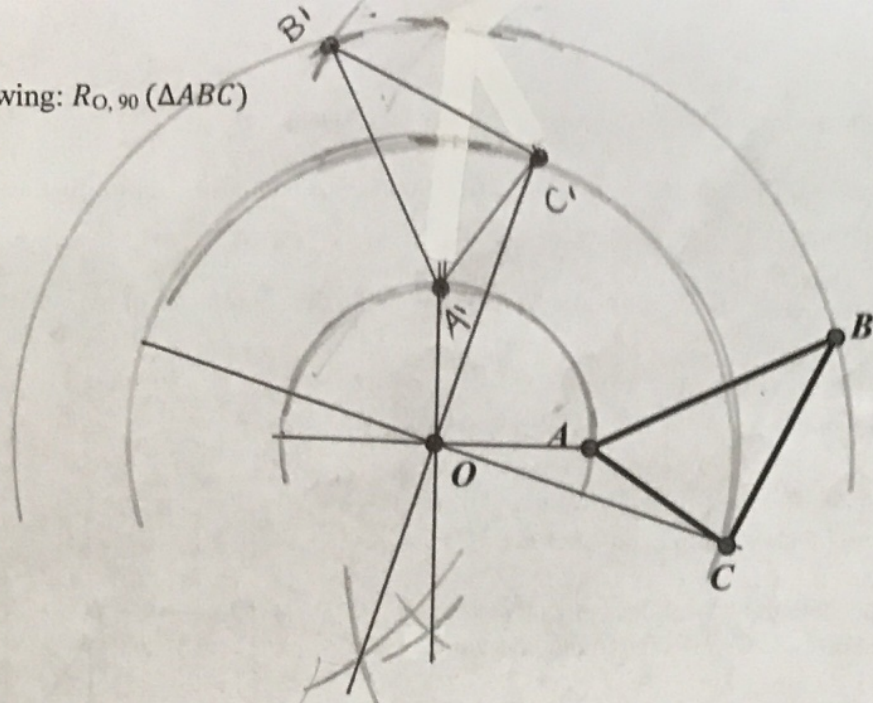
T or  F

8. If you wanted to rotate a shape by  $38^\circ$  by double reflecting it over two intersecting lines, the angle between the two intersecting lines would need to be  $19^\circ$ .

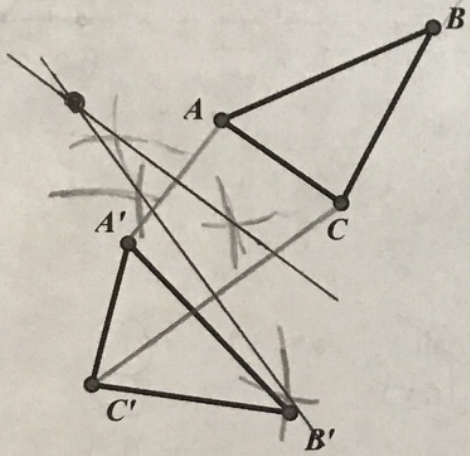
9. Construct the following  $r_m(\triangle ABC)$



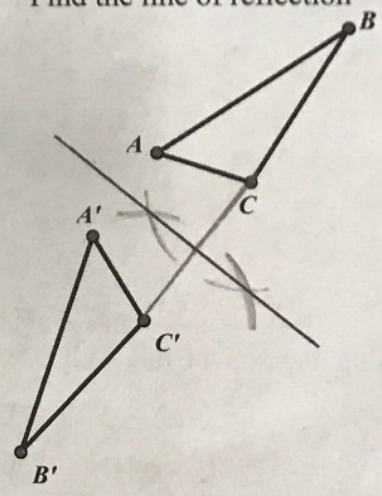
10. Construct the following:  $R_{O, 90}(\Delta ABC)$



11. Find the center of rotation



12. Find the line of reflection



13. Use a compass and straight edge to construct the following translation.

