

# Geometry

## Composite of Reflections over Two Parallel Lines

Please take out  
this homework!  
high lighter, red pen +  
straight edge 😊

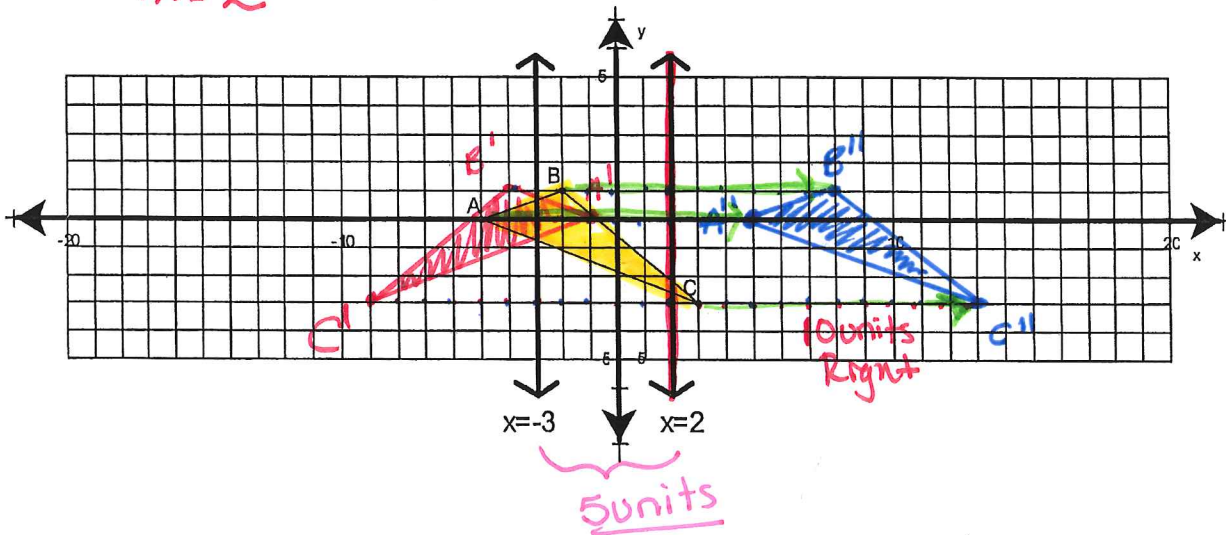
Name Key

Hour \_\_\_\_\_

1. Using a colored pencil, reflect  $\triangle ABC$  over the  $x = -3$  line and label the points  $A'$ ,  $B'$ , and  $C'$  respectively. Draw  $\triangle A'B'C'$ .
2. Using a black pencil, reflect  $\triangle A'B'C'$  over the  $x = 2$  line and label the points  $A''$ ,  $B''$ , and  $C''$  respectively. Draw  $\triangle A''B''C''$ .
3. Draw arrows from  $A$  to  $A''$ , from  $B$  to  $B''$ , from  $C$  to  $C''$  using a different color.
4. What transformation occurred that would map  $\triangle ABC$  onto  $\triangle A''B''C''$ ? translation
5. How far did  $\triangle ABC$  move to become  $\triangle A''B''C''$ ? 10 units In what direction?  
Right
6. Write a composite for this situation that maps the first triangle to the last triangle.

do 2nd  $\rightarrow$  Done 1st  $\rightarrow$

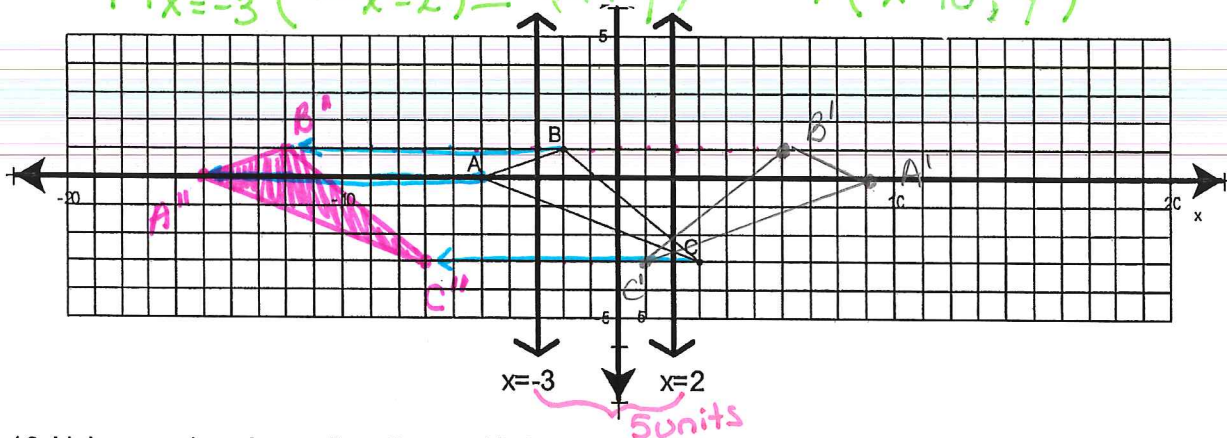
$$R_{x=2} (R_{x=-3}) = (x, y) \rightarrow (x+10, y)$$



- 7. Using a colored pencil, reflect  $\triangle ABC$  over the  $x = 2$  line and label the points  $A'$ ,  $B'$ , and  $C'$  respectively. Draw  $\triangle A'B'C'$ .
- 8. Using a black pencil, reflect  $\triangle A'B'C'$  over the  $x = -3$  line and label the points  $A''$ ,  $B''$ , and  $C''$  respectively. Draw  $\triangle A''B''C''$ .
- 9. Draw arrows from  $A$  to  $A''$ , from  $B$  to  $B''$ , from  $C$  to  $C''$  using a different color.
- 10. What transformation occurred from  $\triangle ABC$  to become  $\triangle A''B''C''$ ? translation
- 11. How far did  $\triangle ABC$  move to become  $\triangle A''B''C''$ ? 10 units In what direction?  
left

12. Write a composite for this situation that maps the first triangle to the last triangle.

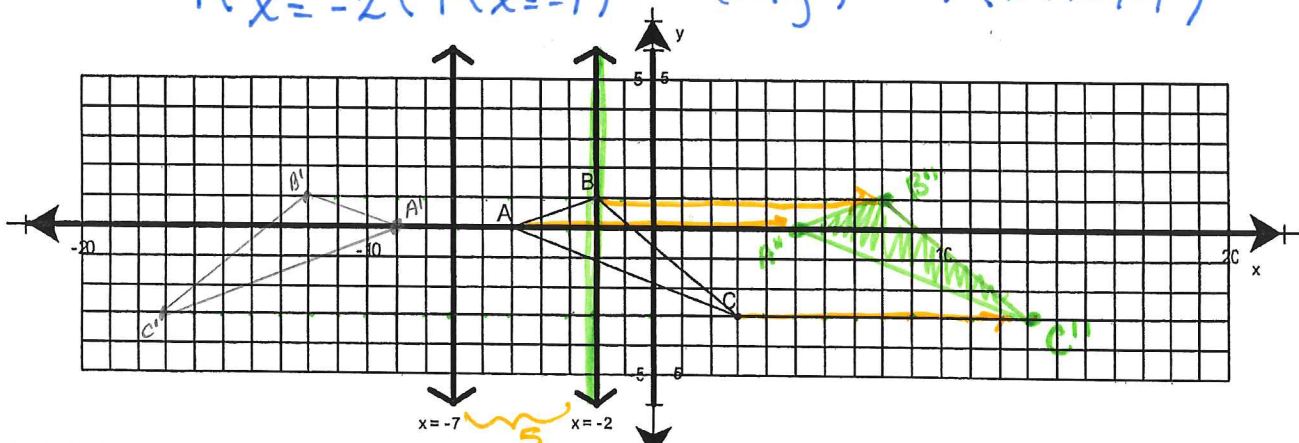
$$R_{x=-3}(R_{x=2}) = (x, y) \rightarrow (x-10, y)$$



- 13. Using a colored pencil, reflect  $\triangle ABC$  over the  $x = -7$  line and label the points  $A'$ ,  $B'$ , and  $C'$  respectively. Draw  $\triangle A'B'C'$ .
- 14. Using a black pencil, reflect  $\triangle A'B'C'$  over the  $x = -2$  line and label the points  $A''$ ,  $B''$ , and  $C''$  respectively. Draw  $\triangle A''B''C''$ .
- 15. Draw arrows from  $A$  to  $A''$ , from  $B$  to  $B''$ , from  $C$  to  $C''$  using a different color.
- 16. What transformation occurred from  $\triangle ABC$  to become  $\triangle A''B''C''$ ? translation
- 17. How far did  $\triangle ABC$  move to become  $\triangle A''B''C''$ ? 10 units In what direction?  
Right

18. Write a composite for this situation that maps the first triangle to the last triangle.

$$R_{x=-2}(R_{x=-7}) = (x, y) \rightarrow (x+10, y)$$



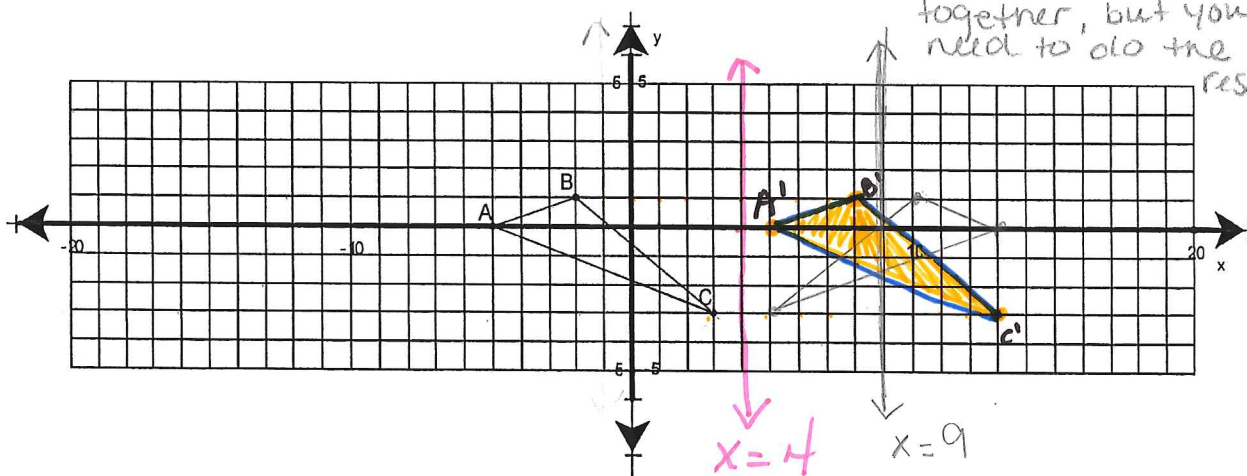


19. Conjecture on any relationship there might be between the distance between the lines and the distance the original triangle moves to reach the ending triangle.

The distance between the two // lines will double to give you the distance of the translation ∴ Answers will/MUST be different than this example answer.

20. Graph the line  $x = 4$ . Find a second line of reflection so that the composite of the two reflections will translate  $\triangle ABC$  10 units to the right. Write the composite.

We will do this together, but you need to do the rest!



$$R_{x=?} (R_{x=4}) = (x, y) \rightarrow (x+10, y)$$

$$R_{x=9} (R_{x=4}) = (x, y) \rightarrow (x+10, y)$$

- 21. Graph the lines  $y = 3$  and  $y = -2$ .
- 22. Using a colored pencil, reflect  $\triangle ABC$  over the  $y = 3$  line and label the points  $A'$ ,  $B'$ , and  $C'$  respectively. Draw  $\triangle A'B'C'$ .
- 23. Using a black pencil, reflect  $\triangle A'B'C'$  over the  $y = -2$  line and label the points  $A''$ ,  $B''$ , and  $C''$  respectively. Draw  $\triangle A''B''C''$ .
- 24. Draw arrows from  $A$  to  $A''$ , from  $B$  to  $B''$ , from  $C$  to  $C''$  using a different color.
- 25. What transformation occurred from  $\triangle ABC$  to become  $\triangle A''B''C''$ ? translation
- 26. How far did  $\triangle ABC$  move to become  $\triangle A''B''C''$ ? 10 units In what direction? down
- 27. Write a composite for this situation that maps the first triangle to the last triangle.

$$R_{y=-2} (R_{y=3}) = (x, y) \longrightarrow (x, y - 10)$$

