Geometry
Composite of Reflections over Two Parallel Lines

Please take out this homework! highlighter, red pen + straight edge :)
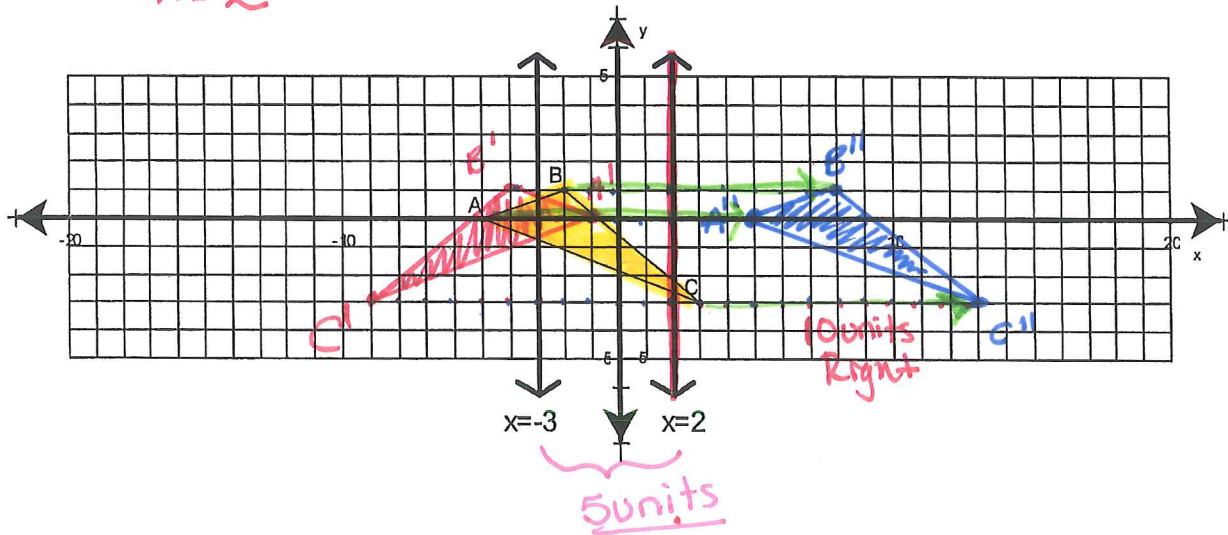
Name __Key__

Hour _____

1. Using a colored pencil, reflect △ABC over the x = -3 line and label the points A', B', and C' respectively. Draw △A'B'C'.
2. Using a black pencil, reflect △A'B'C' over the x = 2 line and label the points A", B", and C" respectively. Draw △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 △ABC onto △A"B"C"? __translation__
5. How far did △ABC move to become △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 →   *Done 1st* ← *- Composite of double reflection over ∥ lines -*

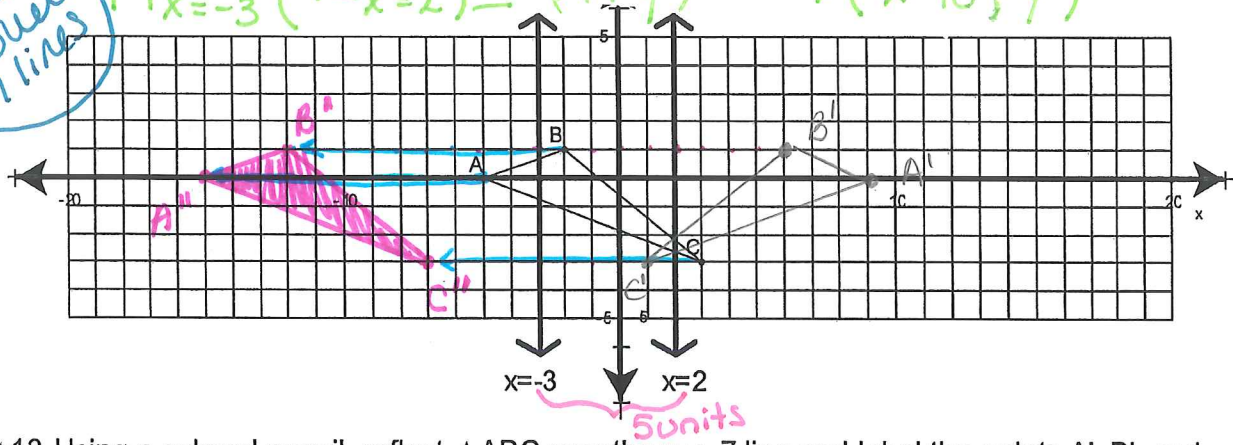$$R_{x=2}(R_{x=-3}) = (x, y) \longrightarrow (x+10, y)$$

x=-3   x=2

5 units

10 units Right

7. Using a colored pencil, reflect △ABC over the x = 2 line and label the points A', B', and C' respectively. Draw △A'B'C'.

8. Using a black pencil, reflect △A'B'C' over the x = -3 line and label the points A", B", and C" respectively. Draw △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 △ABC to become △A"B"C"? _translation_

11. How far did △ABC move to become △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.

Refl. over ∥ lines

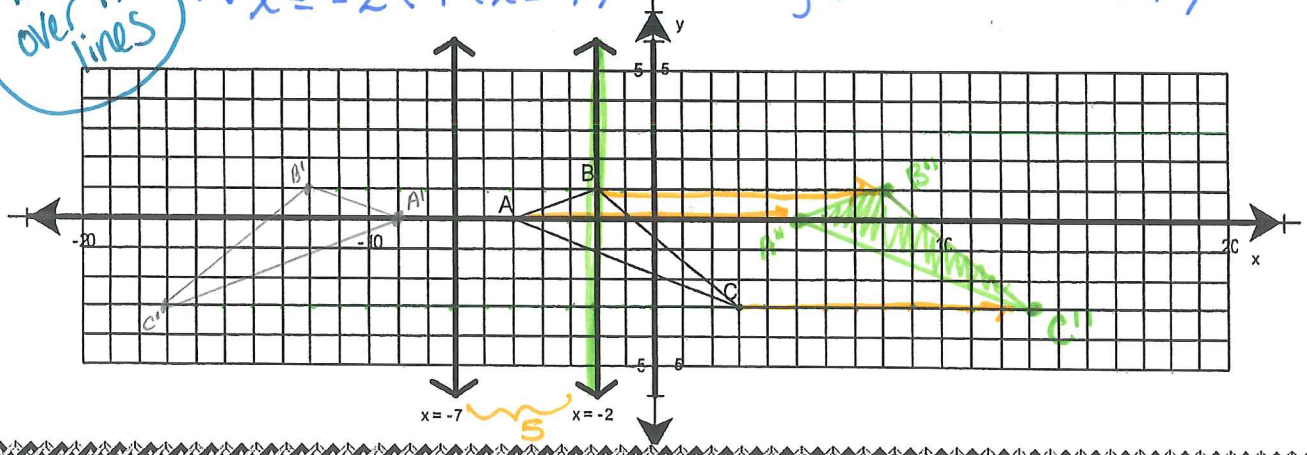$$R_{x=-3}(R_{x=2}) = (x, y) \longrightarrow (x-10, y)$$

x=-3   x=2
                5 units

13. Using a colored pencil, reflect △ABC over the x = -7 line and label the points A', B', and C' respectively. Draw △A'B'C'.

14. Using a black pencil, reflect △A'B'C' over the x = -2 line and label the points A", B", and C" respectively. Draw △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 △ABC to become △A"B"C"? _translation_

17. How far did △ABC move to become △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.
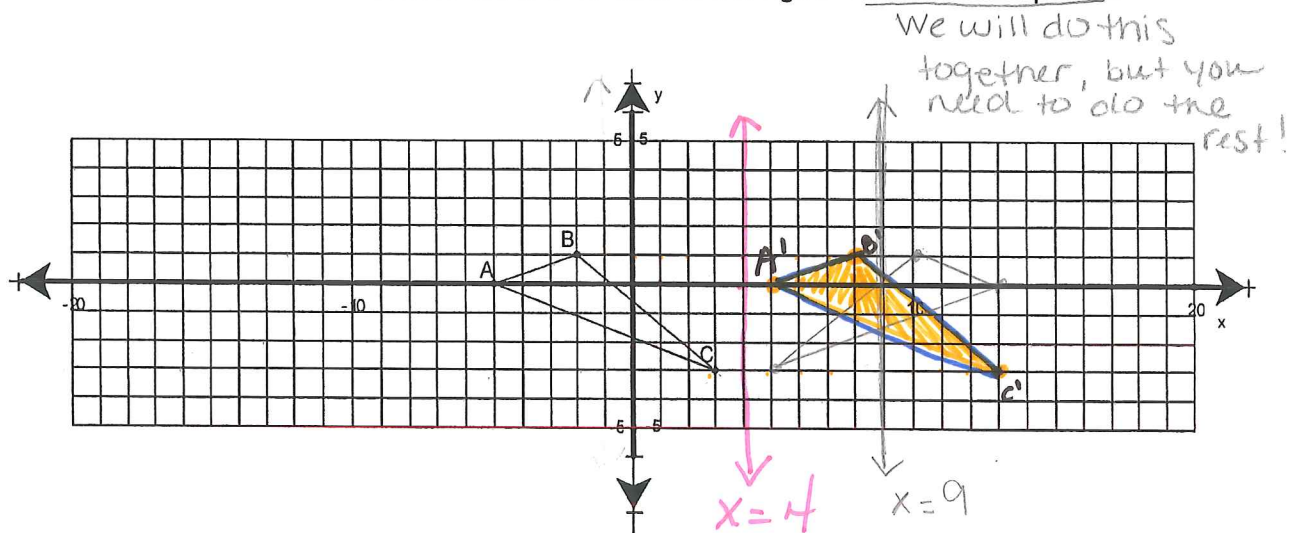
Refl. over ∥ lines

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

x = -7   5   x = -2

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 △ ABC 10 units to the right. Write the composite.

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

$x = 4$ $X = 9$

$$R_{x=\,?}\left(R_{x=4}\right) = (x, y) \longrightarrow (x+10, y)$$

$$R_{x=9}\left(R_{x=4}\right) = (x, y) \longrightarrow (x+10, y)$$

21. Graph the lines y = 3 and y = -2.
22. Using a colored pencil, reflect △ABC over the y = 3 line and label the points A', B', and C 'respectively. Draw △A'B'C'.
23. Using a black pencil, reflect △A'B'C' over the y = -2 line and label the points A", B", and C" respectively. Draw △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 △ABC to become △A"B"C"? *translation*
26. How far did △ABC move to become △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.

Alg

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

Reflection over ∥ lines