See ANSWERS below on PAGE 3.

1. Point W(-6, 4) is reflected across the line y = 2 and then across the line y = -3. What single transformation will carry W" onto W?

2. Point R(1, -5) is reflected across the line x = -4 and then across the line x = 1. What single transformation will carry R" onto R?

3. Point E(3, -2) is reflected across the line x = 4 and then across the line x = -3. What single transformation will carry E" onto E?

4. Point N(4, 0) is reflected across the line y = 1 and then across the line y = -4. What single transformation will carry N" onto N?

5. A figure is reflected across the x-axis and then across the line y = x. What single transformation will return the image to the pre-image?

6. A figure is reflected across the line y = x and then rotated 270 degrees centered at the origin. What single transformation will return the image to the pre-image?

7. A figure is rotated 90 degrees about the origin and then reflected across the x-axis. What single transformation will return the image to the pre-image?

8. A figure is translated right 6 units and down 2 units. It is then translated right 5 units and up 5 units. What translation will return the image to its original position?

9. A figure is translated left 3 units and up 4 units. It is then translated down 5 units and right 6 units. What translation will return the image to its original position?

10. A figure is transformed by the rule $f(x, y) \longrightarrow (y, -x)$. What transformation would return the image to its pre-image?

11. A figure is transformed by the rule $f(x, y) \longrightarrow (x, -y)$. What transformation would return the image to its pre-image?

12. A figure is transformed by the rule $f(x, y) \longrightarrow (-y, -x)$. What transformation would return the image to its pre-image?

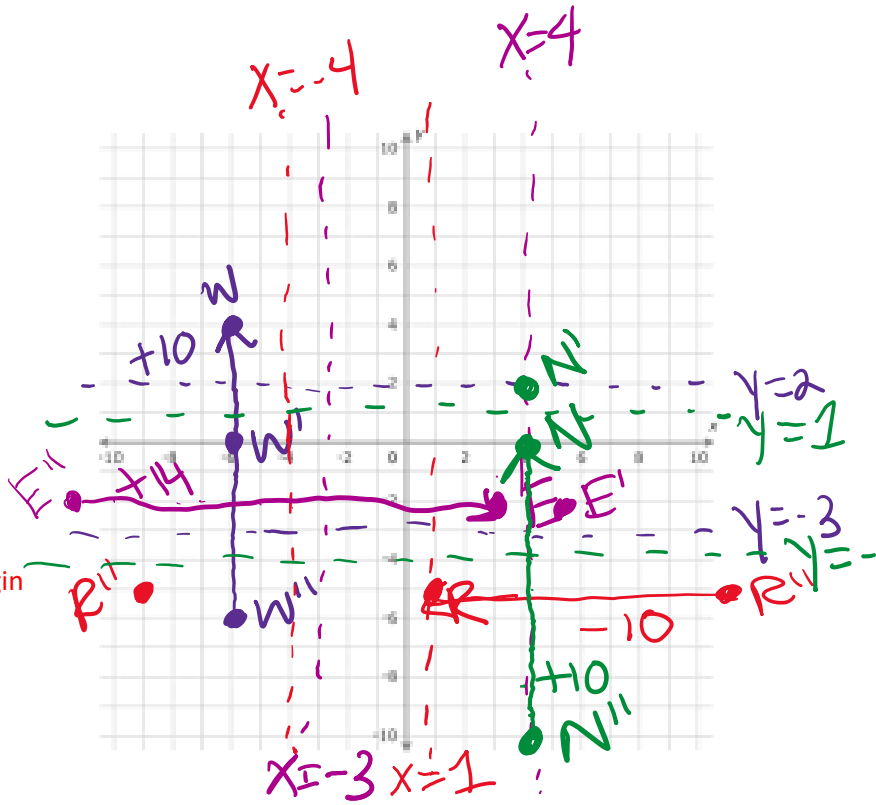
13. Complete the following chart (always start with the original point):

	Rotate 90 degrees	Rotate 180 degrees	Rotate 270 degrees
(2, 7)			

14. Complete the following chart (always start with the original point):

	Reflect over x-axis	Reflect over y-axis	Reflect over y = x	Reflect over y = -x
(-1, -5)				

Answer Key:



1. translate up 10 units
2. translate left 10 units
3. translate right 14 units
4. translate up 10 units
5. rotate 270 degrees centered at the origin
   Reflect x then Reflect y=x
   (x, -y) → (-y, x)
6. reflect across the x-axis
   Reflect y=x then Rotate 270
   (y, x) → (x, -y)
7. reflect across the line y = -x
   Rotate 90 then Reflect x
   (-y, x) → (-y, -x)

8. translate left 11 and down 3 units

Translate (x+6, y-2) then Translate (x+5, y+5)

(x+11, y+3) (we want image to pre-image, so we need to work backwards)

9. translate left 3 and up 1 unit
   Translate (x-3, y+4) then Translate (x+6, y-5)
   (x+3, y-1) (we want image to pre-image, so we need to work backwards)
10. rotate 90 degrees centered at the origin
    We want IMAGE to PREIMAGE
11. reflect across the x-axis
    We want IMAGE to PREIMAGE
12. reflect across the line y = -x
    We want IMAGE to PREIMAGE

13. Complete the following chart (always start with the original point): See answers in red below

	Rotate 90 degrees	Rotate 180 degrees	Rotate 270 degrees
(2, 7)	(-y, x)	(-x, -y)	(y, -x)

14. Complete the following chart (always start with the original point): See answers in red below

	Reflect over x-axis	Reflect over y-axis	Reflect over y = x	Reflect over y = -x
(-1, -5)	(x, -y)	(-x, y)	(y, x)	(-y, -x)

13. (-7, 2) (-2, -7) (7, -2)

14. (-1, 5) (1, -5) (-5, -1) (5, 1)