See ANSWERS below on PAGE 3.

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

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

3. Point C(-8, 5) is reflected across the line x = -5 and then across the line x = 2. What single transformation will carry C" onto C?

4. Point D(0, -6) is reflected across the line y = 2 and then across the line y = -3. What single transformation will carry D" onto D?

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

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

8. A figure is rotated 180 degrees about the origin and then reflected across the y-axis. What single transformation will return the image to the pre-image?

9. A figure is translated left 2 units and up 5 units. It is then translated right 6 units and up 1 unit. What translation will return the image to its original position?

10. A figure is translated right 4 units and down 12 units. It is then translated right 1 unit and up 3 units. What translation will return the image to its original position?

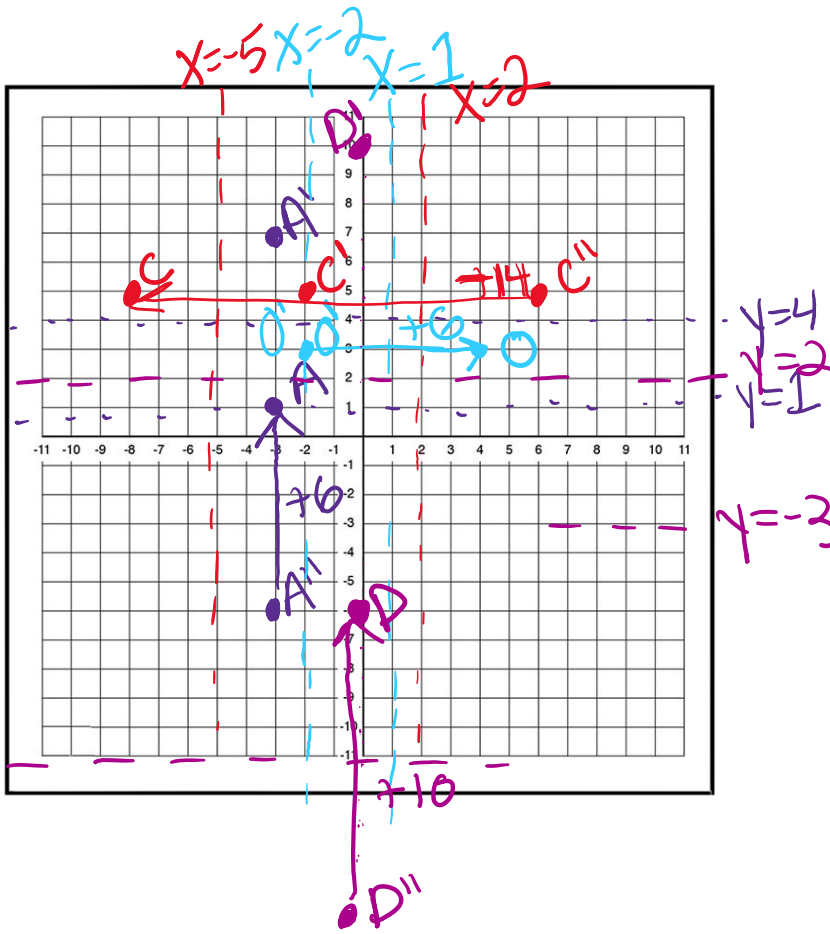
11. A figure is transformed by the rule $f(x, y) \longrightarrow (-x, -y)$. What transformation would return the image to its pre-image?

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

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

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

Answer Key: Graph to help you!



1. translate up 6 units

2. translate right 6 units

3. translate left 14 units

4. translate up 10 units

5. rotate 270 degrees centered at the origin

Reflect y then reflect y=-x

(-x, y) → (-y, x)

6. reflect across the line y = x

Reflect x then rotate 90 degrees

(x, -y) → (y, x)

7. rotate 90 degrees clockwise centered at the origin

Reflect y=x then reflect x

(y, x) → (y, -x)

8. reflect across the x-axis

Rotate 180 then reflect y

(-x, -y) → (x, -y)

9. translate left 4 and down 6

Translate (x-2, y+5) then Translate (x+6, y+1)

(x+4, y+6) (image)

Image to preimage think about working backwards.

10. translate left 5 units and up 9 units

Translate (x+4, y-12) then Translate (x+1, y+3)

(x+5, y-9) (image)

Image to preimage think about working backwards.

11. rotate 180 degrees centered at the origin

12. reflect across the y-axis

13. reflect across the line y = x

14. rotate 270 degrees clockwise centered at the origin