See ANSWERS below on PAGE 3.

1. A figure is reflected across the line y = x. The image is then reflected across the y-axis. Which single transformation is equivalent to the composite transformation?

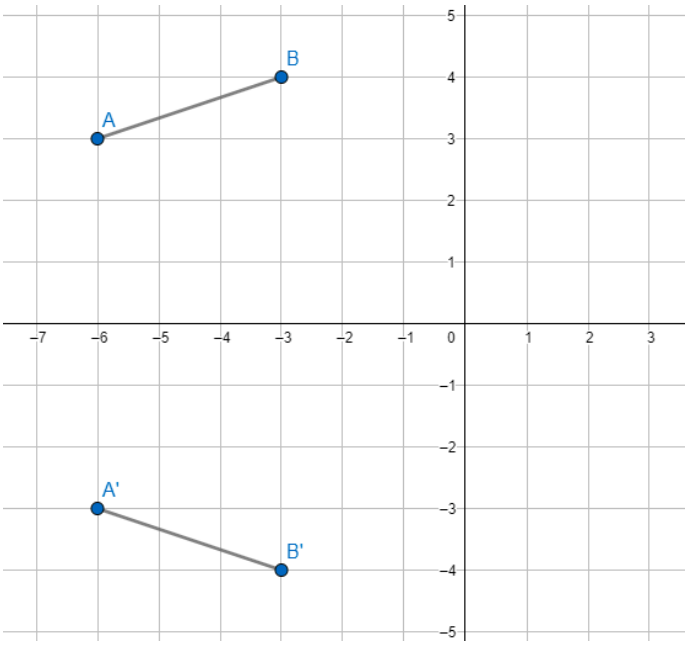
2. A figure is reflected over the x-axis. The image is then reflected across y = -x. Which single transformation is equivalent to the composite transformation?

3. A figure is translated right 4 and down 6. The image is then translated left 2 and up 4. Which single transformation is equivalent to the composite transformation?

4. A figure is translated down 2 and right 6. The image is then translated up 5 units and left 1. Which single transformation is equivalent to the composite transformation?

5. A figure is rotated 270 degrees. The image is then rotated 180 degrees. Which single transformation is equivalent to the composite transformation?

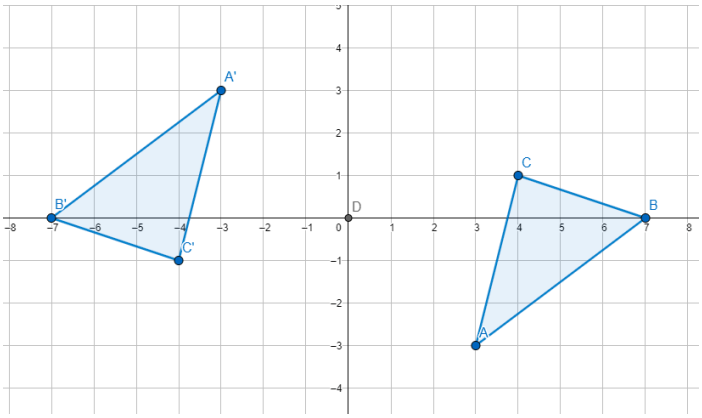
6. A transformation is shown below



Segment A'B' is reflected across the line y = x. What transformation will carry segment AB onto segment A"B"?

7. A figure is transformed by the rule $R_{180^\circ} \circ r_{y-axis}$. What single transformation is equivalent to the composite transformation?

8. A transformation is shown below



Triangle A'B'C' is reflected across the x-axis. Which transformation will carry triangle ABC onto triangle A"B"C"?

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

10. Point P(7, 1) is reflected across the line x = -4 and then across the line x = 1. What are the coordinates of P"? What single transformation is equivalent to the composition transformation?

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

Answer Key (answers in red)

1. rotate 90 degrees centered at the origin
   Reflect y=x then Reflect y
   (y, x) → (-y, x)
2. rotate 270 degrees centered at the origin
   Reflect x then Reflect y=-x
   (x, -y) → (y, -x)
3. translate right 2 and down 2
   Translate (x+4, y-6) then Translate (x-2, y+4)
   (x+2, y-2)
4. translate right 5 and up 3
   Translate (x+6, y-2) then Translate (x-1, y+5)
   (x+5, y+3)
5. rotate 90 degrees centered at the origin
   Rotate 270 then Rotate 180
   (y, -x) → (-y, x)
6. rotate 90 degrees centered at the origin
   Reflect x then Reflect y=x
   (x, -y) → (-y, x)
7. reflect across the x-axis
   Reflect y then Rotate 180
   (-x, y) → (x, -y)

8. reflect across the y-axis

Rotate 180 then Reflect x

(-x, -y) → (-x, y)

9. translate up 12 units

H'' → H

10. translate right units

P'' → P

11. translate up 12 units

T → T''