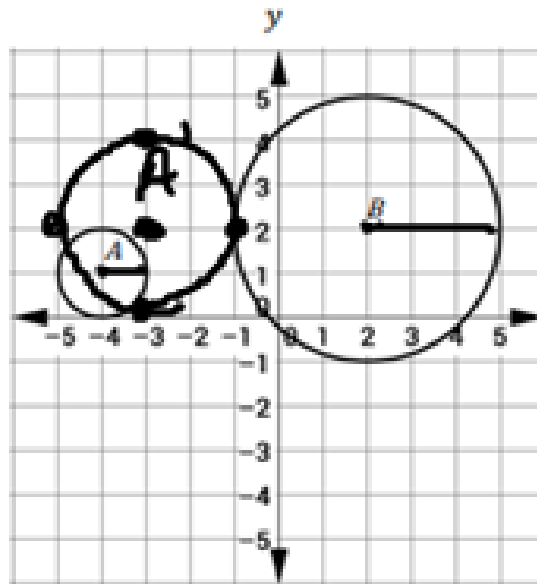


Transformations of Circles:

What transformation(s) will map circle A onto circle B?



$$(x, y) \rightarrow (x + 6, y + 1)$$

$$(x, y) \rightarrow (3x, 3y)$$

Centered at A

Graph the result of a transformation of circle A using the rule  $(x, y) \rightarrow (x + 1, y + 1)$  followed by a dilation of scale factor two centered at point A

Describe where  $A''$  will be located if circle  $A'$  is dilated by scale factor two centered at the origin instead of centered at point  $A'$ .

$$A'(-3, 2)$$

$$\times 2 \times 2$$

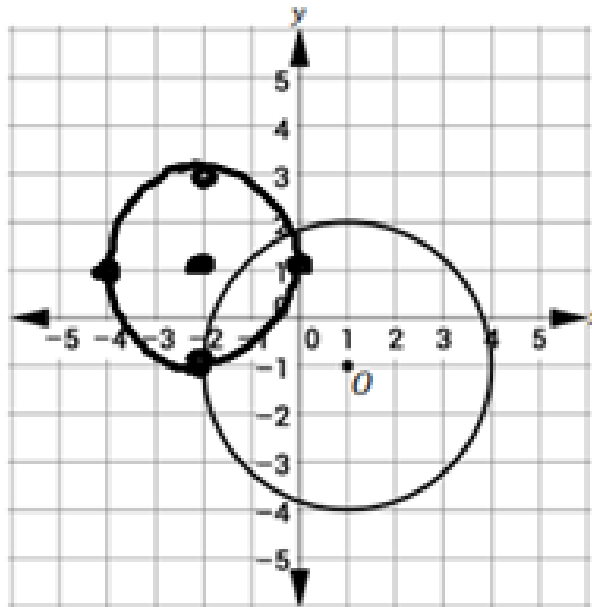

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$$A''(-4, 4)$$

**Your turn:**

Graph the result of a transformation using the rule  $(x, y) \rightarrow (x - 3, y + 2)$  followed by a dilation of scale factor  $\frac{2}{3}$  centered on point  $O'$  on the coordinate plane below.

$$\left( \frac{2}{3} \right)$$

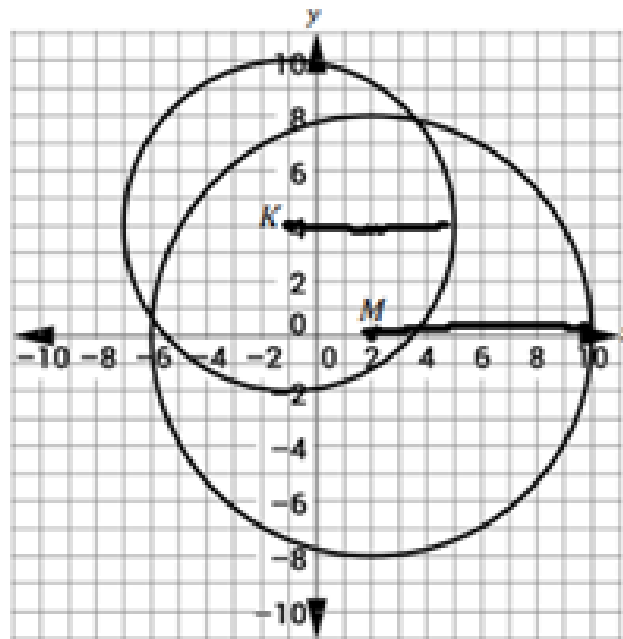


Consider the following diagram.

$$K_r = 6$$

$$M_r = 8$$

$$\frac{8}{6} = \frac{4}{3}$$



$$(x, y) \Rightarrow (x - 3, y - 4)$$

$$(x, y) \Rightarrow \left(\frac{4}{3}x, \frac{4}{3}y\right)$$

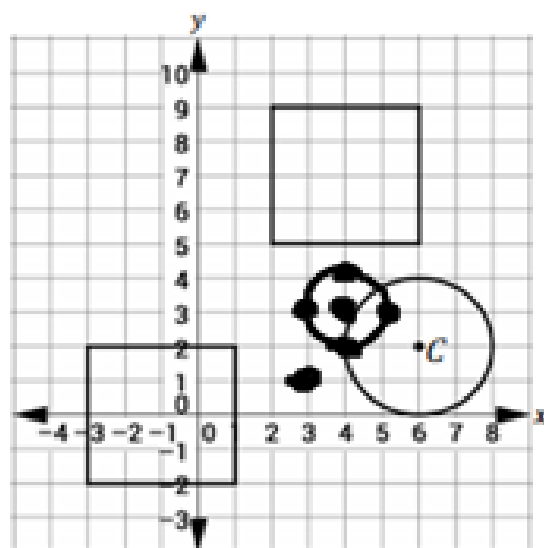
center at K

Describe the sequence of transformations that carry circle K onto circle M.

### Informal Assessment:

Tom is building a new corral for his horse farm. He wants a corral with half the diameter of his current one. The schematic of his land is shown below. Circle  $C$  is the current corral. The rectangles represent barns. Select the series of transformations that would result in a corral that has the dimensions that Tom wants but would not interfere with any other structures.

$$\begin{pmatrix} 6, 2 \\ \frac{1}{2} & \frac{1}{2} \\ 3, 1 \end{pmatrix}$$



- A First, dilate the circle centered at point  $C$ . Then,  $(x, y) \rightarrow (x - 9, y)$ .
- B First,  $(x, y) \rightarrow (x - 6, y + 1)$ . Then,  $(x, y) \rightarrow \left(\frac{1}{2}x, \frac{1}{2}y\right)$ .
- C First,  $(x, y) \rightarrow \left(\frac{1}{2}x, \frac{1}{2}y\right)$ . Then,  $(x, y) \rightarrow (x + 2, y + 5)$ .
- D First,  $(x - 2, y + 1)$ . Then,  $(x, y) \rightarrow \left(\frac{1}{2}x, \frac{1}{2}y\right)$  centered at point  $C'$ .