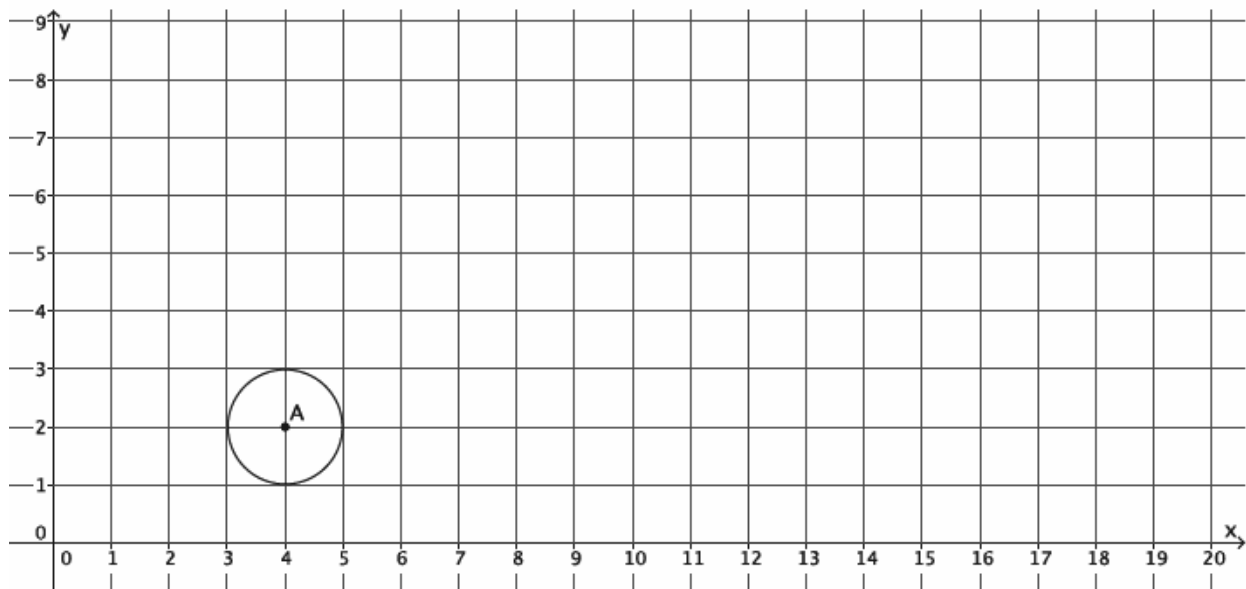


## Lesson 3: Examples of Dilations

### Classwork

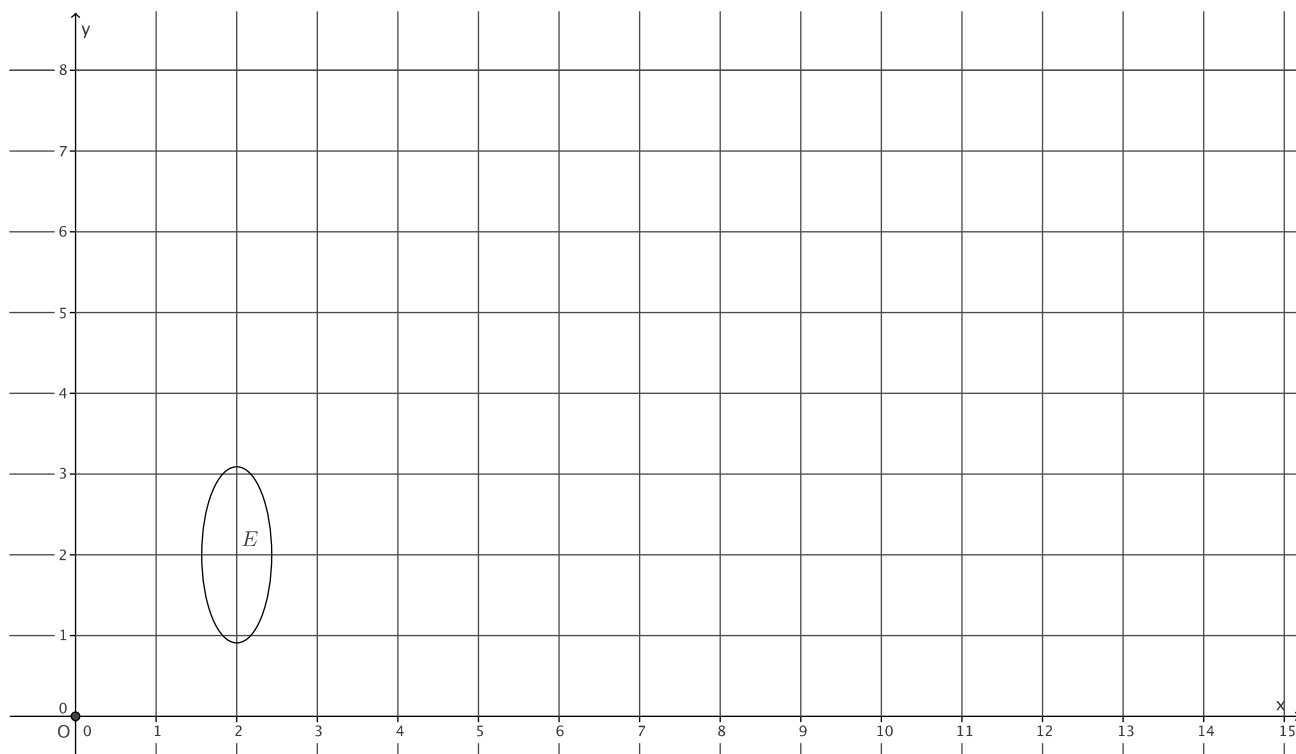
#### Example 1

Dilate circle  $A$  from center  $O$  at the origin by scale factor  $r = 3$ .



## Exercises 1–2

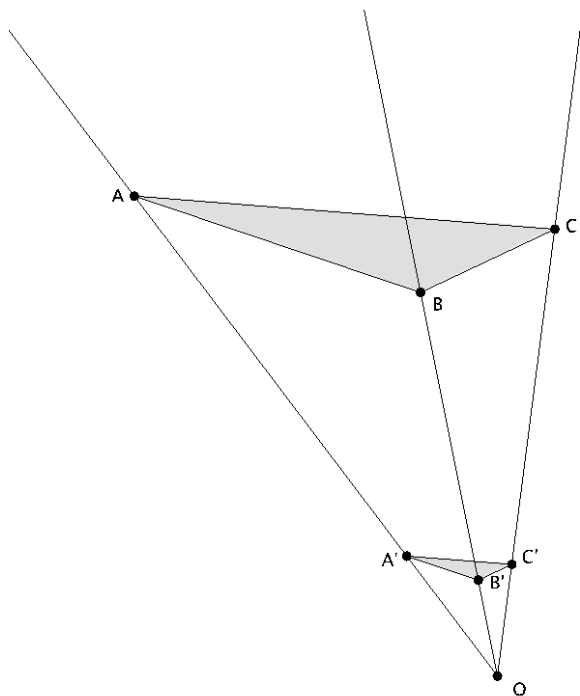
1. Dilate ellipse  $E$ , from center  $O$  at the origin of the graph, with scale factor  $r = 2$ . Use as many points as necessary to develop the dilated image of ellipse  $E$ .



2. What shape was the dilated image?

**Exercise 3**

3. Triangle  $ABC$  has been dilated from center  $O$  by a scale factor of  $r = \frac{1}{4}$  denoted by triangle  $A'B'C'$ . Using a centimeter ruler, verify that it would take a scale factor of  $r = 4$  from center  $O$  to map triangle  $A'B'C'$  onto triangle  $ABC$ .



**Lesson Summary**

Dilations map circles to circles and ellipses to ellipses.

If a figure is dilated by scale factor  $r$ , we must dilate it by a scale factor of  $\frac{1}{r}$  to bring the dilated figure back to the original size. For example, if a scale factor is  $r = 4$ , then to bring a dilated figure back to the original size, we must dilate it by a scale factor  $r = \frac{1}{4}$ .

**Problem Set**

1. Dilate the figure from center  $O$  by a scale factor  $r = 2$ . Make sure to use enough points to make a good image of the original figure.



2. Describe the process for selecting points when dilating a curved figure.
3. A figure was dilated from center  $O$  by a scale factor of  $r = 5$ . What scale factor would shrink the dilated figure back to the original size?
4. A figure has been dilated from center  $O$  by a scale factor of  $r = \frac{7}{6}$ . What scale factor would shrink the dilated figure back to the original size?
5. A figure has been dilated from center  $O$  by a scale factor of  $r = \frac{3}{10}$ . What scale factor would magnify the dilated figure back to the original size?