Lesson 3: Examples of Dilations
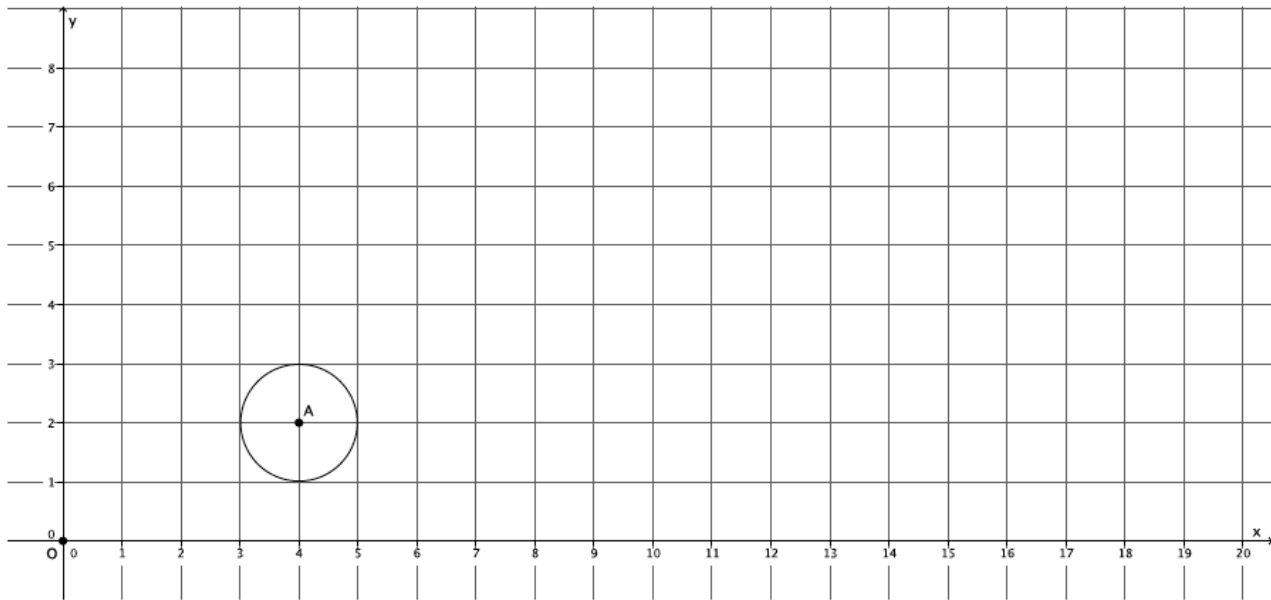
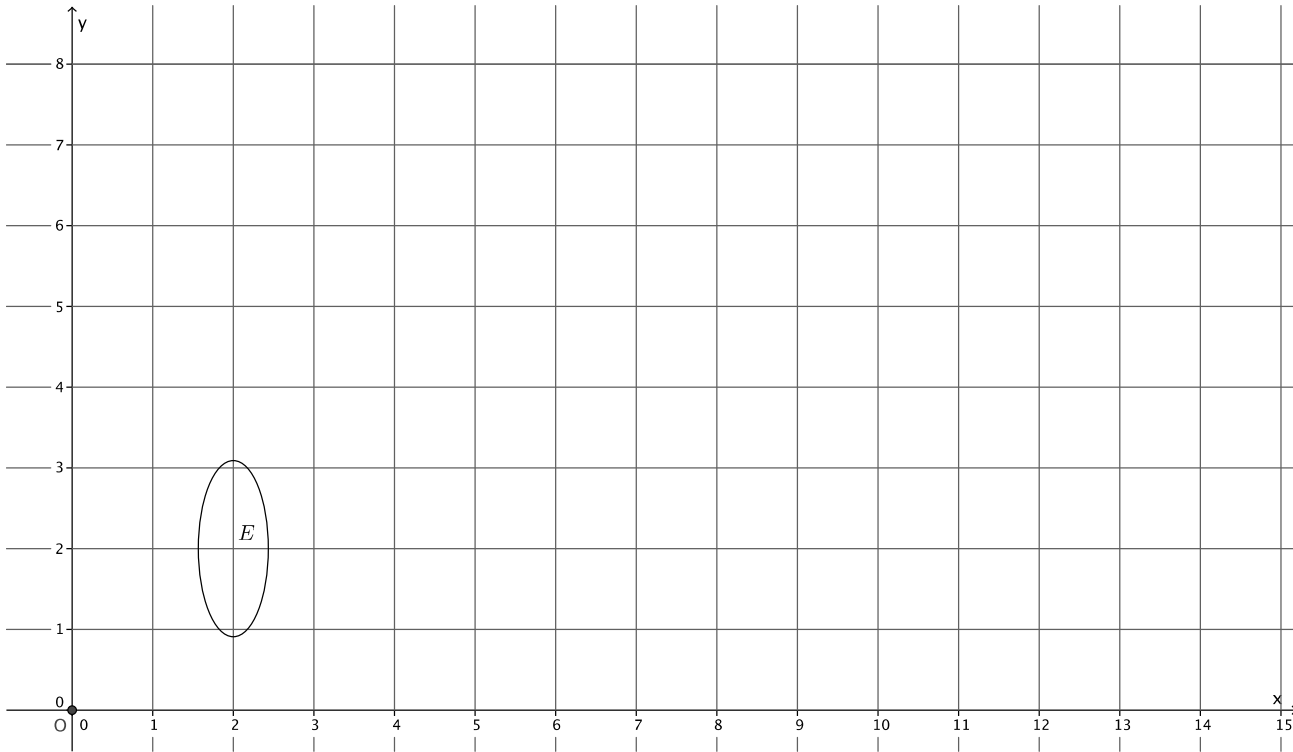## Classwork

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 ruler, verify that it would take a scale factor of $r = 4$ from center O to map triangle $A'B'C'$ onto triangle ABC.
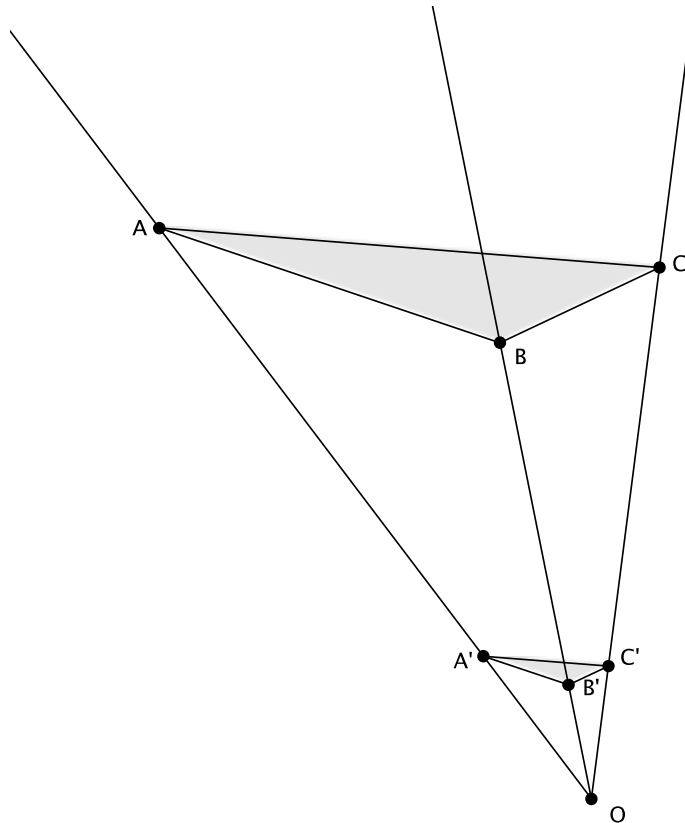
Lesson Summary

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 triangle ABC 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?