

## Lesson 1: Scale Drawings

### Classwork

#### Opening Exercise

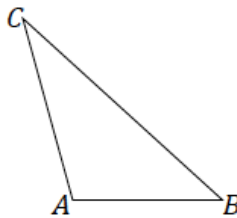


Above is a picture of a bicycle. Which of the images below appears to be a well-scaled image of the original? Why?

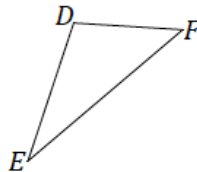


**Example 1**

Use construction tools to create a scale drawing of  $\triangle ABC$  with a scale factor of  $r = 2$ .

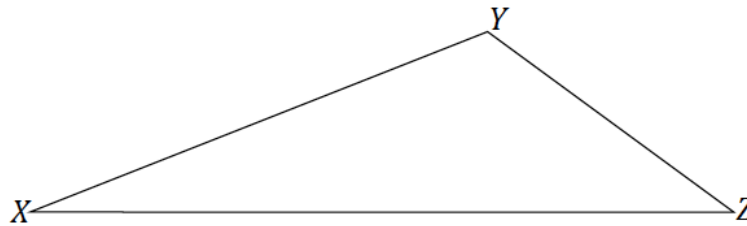
**Exercise 1**

Use construction tools to create a scale drawing of  $\triangle DEF$  with a scale factor of  $r = 3$ . What properties does your scale drawing share with the original figure? Explain how you know.

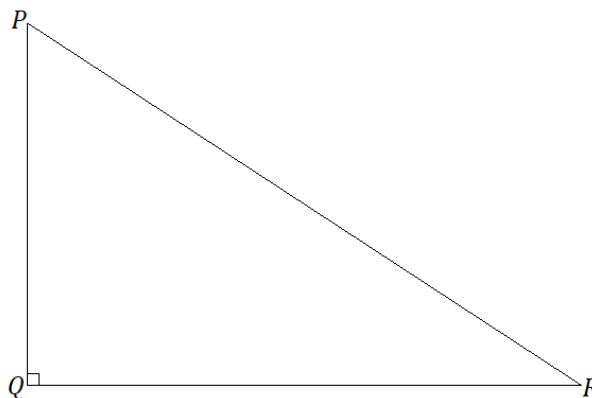


**Example 2**

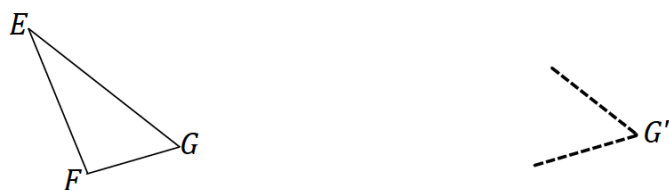
Use construction tools to create a scale drawing of  $\triangle XYZ$  with a scale factor of  $r = \frac{1}{2}$ .

**Exercises 2–4**

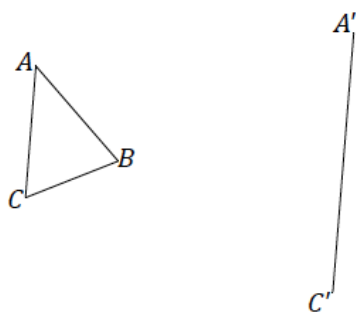
2. Use construction tools to create a scale drawing of  $\triangle PQR$  with a scale factor of  $r = \frac{1}{4}$ . What properties do the scale drawing and the original figure share? Explain how you know.



3. Triangle  $EFG$  is provided below, and one angle of scale drawing  $\triangle E'F'G'$  is also provided. Use construction tools to complete the scale drawing so that the scale factor is  $r = 3$ . What properties do the scale drawing and the original figure share? Explain how you know.



4. Triangle  $ABC$  is provided below, and one side of scale drawing  $\triangle A'B'C'$  is also provided. Use construction tools to complete the scale drawing and determine the scale factor.

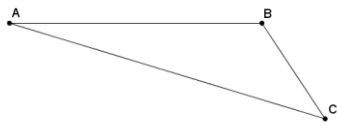


**Lesson Summary**

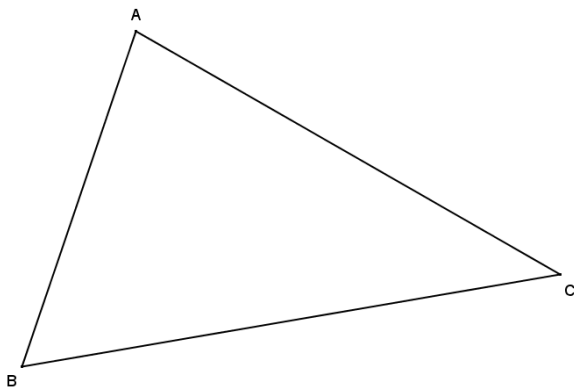
There are two properties of a scale drawing of a figure: corresponding angles are equal in measurement, and corresponding lengths are proportional in measurement.

**Problem Set**

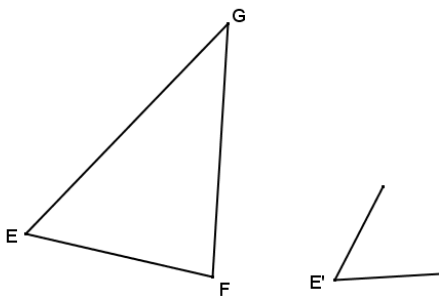
1. Use construction tools to create a scale drawing of  $\triangle ABC$  with a scale factor of  $r = 3$ .



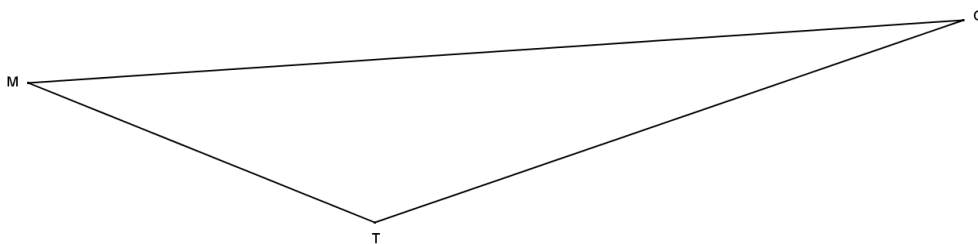
2. Use construction tools to create a scale drawing of  $\triangle ABC$  with a scale factor of  $r = \frac{1}{2}$ .



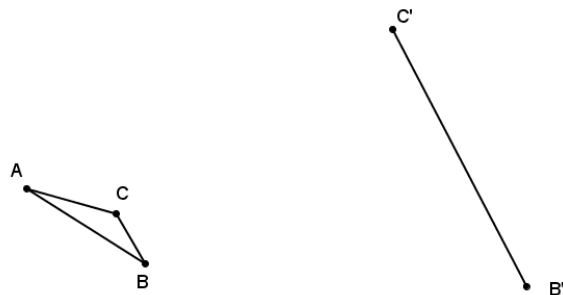
3. Triangle  $EFG$  is provided below, and one angle of scale drawing  $\triangle E'F'G'$  is also provided. Use construction tools to complete a scale drawing so that the scale factor is  $r = 2$ .



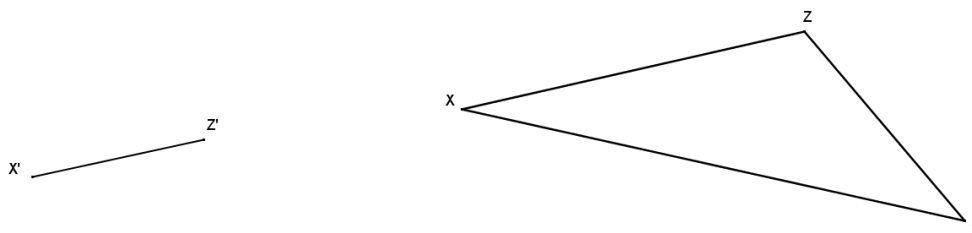
4. Triangle  $MTC$  is provided below, and one angle of scale drawing  $\triangle M'T'C'$  is also provided. Use construction tools to complete a scale drawing so that the scale factor is  $\frac{1}{4}$ .



5. Triangle  $ABC$  is provided below, and one side of scale drawing  $\triangle A'B'C'$  is also provided. Use construction tools to complete the scale drawing and determine the scale factor.



6. Triangle  $XYZ$  is provided below, and one side of scale drawing  $\triangle X'Y'Z'$  is also provided. Use construction tools to complete the scale drawing and determine the scale factor.



7. Quadrilateral  $GHIJ$  is a scale drawing of quadrilateral  $ABCD$  with scale factor  $r$ . Describe each of the following statements as always true, sometimes true, or never true, and justify your answer.
- $AB = GH$
  - $m\angle ABC = m\angle GHI$
  - $\frac{AB}{GH} = \frac{BC}{HI}$
  - $\text{Perimeter}(GHIJ) = r \cdot \text{Perimeter}(ABCD)$
  - $\text{Area}(GHIJ) = r \cdot \text{Area}(ABCD)$  where  $r \neq 1$
  - $r < 0$