Lesson 1: Scale Drawings

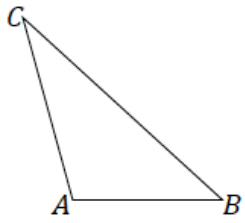
Classwork

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?

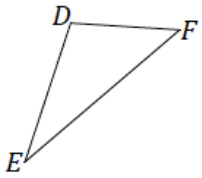
Example 1

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



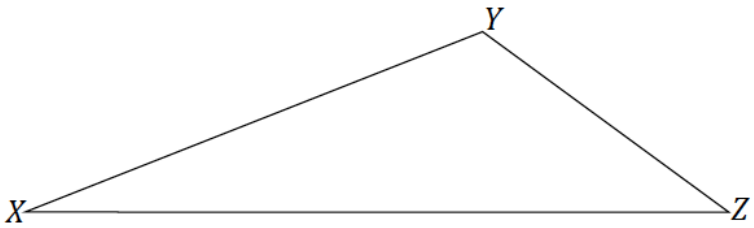
Exercise 1

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.



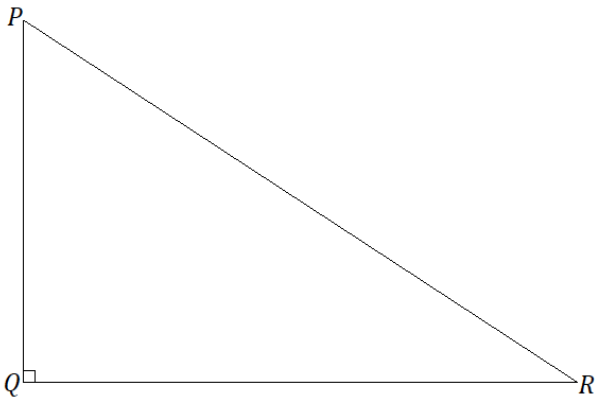
Example 2

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



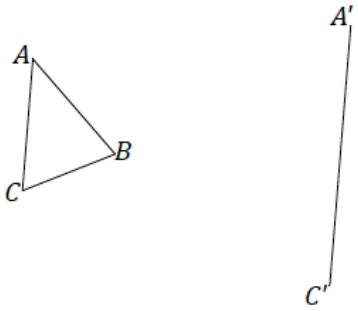
Exercises 2–4

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.



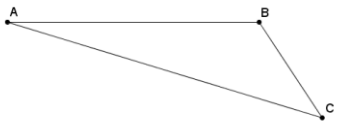
3. Triangle EFG is provided below, and one angle of scale drawing $\triangle E'F'G'$ is also provided. Use construction tools to complete the scale drawing so that the scale factor is $r = 3$. What properties do the scale drawing and the original figure share? Explain how you know.

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.

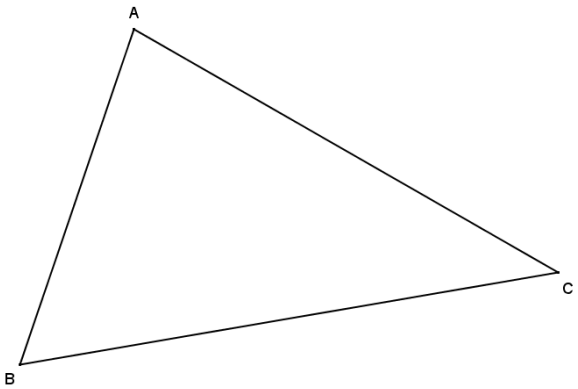


Problem Set

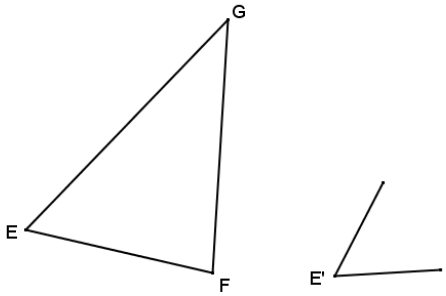
1. Use construction tools to create a scale drawing of $\triangle ABC$ with a scale factor of $r = 3$.



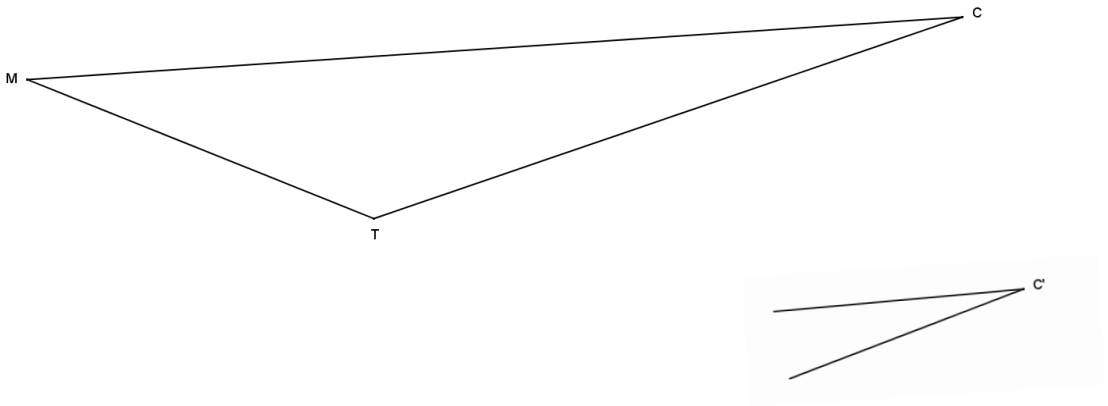
2. Use construction tools to create a scale drawing of $\triangle ABC$ with a scale factor of $r = \frac{1}{2}$.



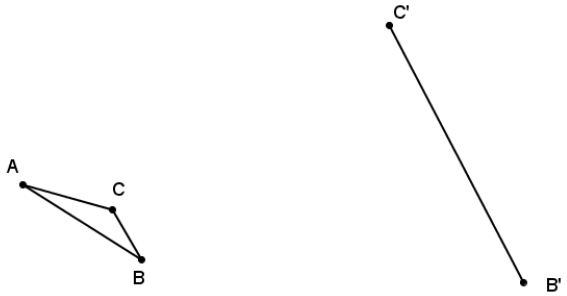
3. Triangle EFG is provided below, and one angle of scale drawing $\triangle E'F'G'$ is also provided. Use construction tools to complete a scale drawing so that the scale factor is $r = 2$.



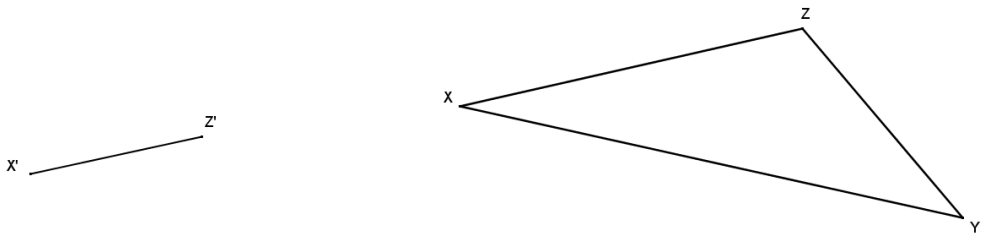
4. Triangle MTC is provided below, and one angle of scale drawing $\triangle M'T'C'$ is also provided. Use construction tools to complete a scale drawing so that the scale factor is $r = \frac{1}{4}$.



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.
   a. $AB = GH$
   b. $m\angle ABC = m\angle GHI$
   c. $\frac{AB}{GH} = \frac{BC}{HI}$
   d. $\text{Perimeter}(GHIJ) = r \cdot \text{Perimeter}(ABCD)$
   e. $\text{Area}(GHIJ) = r \cdot \text{Area}(ABCD)$ where $r \neq 1$
   f. $r < 0$