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 $△ABC$ with a scale factor of $r=2$.



Exercise 1

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



Exercises 2–4

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

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1. Triangle $EFG$ is provided below, and one angle of scale drawing $△E'F'G'$ 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.



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



Problem Set

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.

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



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



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



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



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



1. 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.
	1. $AB=GH$
	2. $m∠ABC=m∠GHI$
	3. $\frac{AB}{GH}=\frac{BC}{HI}$
	4. $Perimeter\left(GHIJ\right)=r∙Perimeter(ABCD)$
	5. $Area\left(GHIJ\right)=r∙Area\left(ABCD\right)$ where $r\ne 1$
	6. $r<0$