INQUIRY-BASED LESSON

1. Lesson Title: Discovering similar figures.
2. Lesson Summary: Students will use proportions to find similarities in figures and to use scale drawings.
3. Key Words: Similar figures  
   Proportions  
   Scale Drawings
4. Background Knowledge: How to set up proportions.
5. NCTM Standard(s) Addressed:
   Geometry
   Benchmarks 5-7):
   7EJ1. Use proportional reasoning to describe and express relationships between parts and attributes of similar and congruent figures.
   7EJ6. Determine and use scale factors for similar figures to solve problems using proportions reasoning.
   Measurement
   Benchmarks (5-7)
   7E4. Solve problems involving proportional relationships and scale factors.
6. Learning Objective:
   Discover the properties of similar figures.
   Use proportions to find missing lengths in similar figures.
   Solve problems that involve scales.
7. Materials: Drawing paper (graphing paper if you prefer)  
   Ruler  
   Pencil
8. Suggested Procedures:
   Have students draw two triangle people freehand that are proportional.
   Students can work in groups of two or by themselves (teacher preference).
9. Assessment:
   Inquiry worksheet  
   Final proportional drawings of triangular people.
Goals:

Introduction: On a separate sheet of paper, draw to guys that are proportional.

1. Write the ratio of width to height for triangles A & B.
   
   A.  
   
   ![Diagram of Triangle A]

   Ratio A ________

   B.  
   
   ![Diagram of Triangle B]

   Ratio B ________

2. Write the ratio of width to height for triangles C & D.
   
   C.  
   
   ![Diagram of Triangle C]

   Ratio C ________
3. Write the ratio of width to height for the triangles E & F.

E. 

\[
\text{Ratio E ________}
\]

F. 

\[
\text{Ratio F ________}
\]

4. Write each ratio in simplest form.

<table>
<thead>
<tr>
<th>A.</th>
<th>B.</th>
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<tbody>
<tr>
<td>C.</td>
<td>D.</td>
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<td>E.</td>
<td>F.</td>
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</table>
5. What can you generalize about each pair of ratios (ex. A&B; C&D; E&F)?
___________________________________________________________________
_____________________________________________________________________

Go back to your picture that you drew in the beginning of the activity and measure the width and height of each guy.

6. Write the ratio of width to height for both guys.

Ratio Guy 1 ________    Ratio Guy 2 _________

7. Simplify each ratio.

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<table>
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<tbody>
<tr>
<td>Guy 1</td>
<td>Guy 2</td>
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8. Generalize about the two guys that you drew.
________________________________________________________________________
________________________________________________________________________

9. Do the ratios follow the pattern of the other sets? Why or Why not? _______________
________________________________________________________________________
________________________________________________________________________

10. What must be done to make them like the other pairs of ratios? ________________
________________________________________________________________________
________________________________________________________________________

11. Now draw them following the pattern that you have discovered and write the fractions in simplest form.

Extension: Do the activity using proportional rectangles, and other similar figures.