Scale Drawings

Name:

Date:

Hour/Period:



1. Go to the following website:

* Harcourt, Inc. (Publisher). (n.d.). *Harcourt multimedia math glossary*. Retrieved May 9, 2007 from www.harcourtschool.com/glossary/math\_advantage/glossary6.html

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1. Define the following terms and provide an example of each.

Ratio –

Proportion –

Scale –

Scale Drawing –

1. Using the definition of ratio that you found on the website and the picture below, write the following ratios. Be sure to express your answer as X:X.

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a. Ratio of black squares to the total number of squares: \_\_\_\_\_\_\_\_\_\_4:6

b. Ratio of black squares to white squares: \_\_\_\_\_\_\_\_\_\_\_\_4:2

1. Using the definition of proportion, answer the following questions based upon your ratios from Question 3. Keep in mind that the number of squares will increase or decrease proportionally.

a. If there were eight black squares, how many total squares would there be? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 12 (The total was 6 and since the number of black squares  
double, so would the total)  4:6 as 8:12

b. If there were two black squares, how many white squares would there be?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 1  (The number of black squares was cut in half, so the number of white squares should be cut in half)  4:2 as 2:1

1. Ratio and proportion enable us to make drawings of large objects that fit on a piece of paper or computer monitor. For example, suppose we wanted to draw a picture of a large city park that was 5 miles long and 2 miles wide. We wouldn’t have enough paper to draw the park full-size. Describe how you would draw a picture to represent the park so that everyone would know how big the park actually was without actually making a drawing 5 miles long and two miles wide. Make a scale drawing of the park. When you are finished, compare your description and picture to another person’s work. (Hint: Don’t forget to indicate the scale you used!)
2. This last exercise will test to see how much you know about scale drawings. Follow the directions carefully.
   1. Draw a triangle in the space below.
   2. Make a scale drawing of your triangle on another piece of paper. Your scale drawing should be bigger than your original triangle. Make certain that you have enough information on the paper so that one of your friends would be able to take your drawing and draw your original triangle.
   3. When you have finished your scale drawing, trade scale drawings with a friend.
   4. Using your friend’s scale drawing, draw his or her original triangle.
   5. When you are finished, hand your papers back and see if your drawings matched your original triangles.

If your drawings matched the original triangles you did an excellent job!

If your drawings did not match the original triangles, try this exercise again until you can do it well.

1. Why do you think that engineers want to make scale drawings of their invention ideas?
2. Go to the school’s website. Find Mr. Kush’s webpage. Open the “Inventions & Innovations 7th Grade”. Open the folder for “Engineering Design Journal Unit”. Open the Scale of Reference document.
3. What structures are being compared?
4. Write a definition for the term “Scale of Reference”.
5. What is the current tallest structure in the **world** and how tall is it**?** Use the Internet to find this answer
6. What is the current tallest structure in the **United States** and how tall is it**?** Use the Internet to find this answer.