

Name: _____ Date: _____

Nidy Gridy – Relative Sizes Worksheet

To make an accurate map, you need to draw objects to scale. What does that mean? Well, a map is obviously not the same size as a room, or a city, or the world. It is much smaller. So every object on the map must be smaller, including the border, which is what we will focus on here. Pretend you have a room with the following wall lengths:

Wall #1: 12 feet Wall #2: 15 feet Wall #3: 12 feet Wall #4: 15 feet

The walls on our map will be smaller (our paper is less than 1 foot by 1 foot). We must *convert* the walls to a smaller size that fits on our paper.

For Wall 1, you could choose each square to be 1 foot. This is an easy conversion: one foot in real life is equal to one square on the grid. Draw a horizontal line 12 squares long in the upper left corner.

Alternatively, you could choose two squares to be one foot. One foot in real life is equal to 2 squares on the grid. How many squares do you need to represent 12 feet? _____
Draw a horizontal line the length answered, just below the 12-square line in the upper left corner.

Which line fits our paper the best (one square *or* two square per foot?) _____
What would happen if you chose three squares to be 1 foot? _____

Now use two squares equal to 1 foot as the conversion for wall #2. How many squares will it be? _____
Draw a vertical line the length answered, starting from the right end of Wall 1.

What would happen if you changed the number of squares equal to 1 foot for the other two walls? _____

Continue clockwise and draw the other two walls, using two squares equal to 1 foot as the conversion. Your room is done.

How do you know it is to scale? Relative sizes can be compared when written as fractions. For the real room, the comparison of Wall 1 to Wall 2 could be shown as:

$$\frac{12 \text{ feet}}{15 \text{ feet}}, \text{ which is the same as } \frac{2 * 2 * 3 \text{ feet}}{3 * 5 \text{ feet}}.$$

In this fraction, you can cancel out the 3 from the top and bottom. That gives you a real world fraction equal to $\frac{4}{5}$.

On your graph paper, Wall 1 is 24 squares long and Wall 2 is 30 squares long. The length of Wall 1 compared to the length of Wall 2 is: $\frac{24}{30}$, which is the same as $\frac{2 * 2 * 2 * 3 \text{ feet}}{2 * 3 * 5 \text{ feet}}$ (multiply

