

Using Ratios and Scale with House Plans (Review Unit)

Sequence of Activities:

Day 1

Pre-Assessment
Introduction to ratios and ratio expressions
Writing ratios in simplest form
Using rates and proportions to solve for an unknown value.

Day 2

In teams, create a scale drawing of an assigned area.

Day 3

Explore home plans at <http://www.houseplans.com>
Students will select a single story home and determine the scale of the drawing.
Begin development of their plan ideas.

Day 4

Students will use <http://www.gliffy.com> to draw their house, bookcase or other construction trades related item to scale.

Assessments:

Pre-Assessment:

You have determined the following ratios. Find the unknown value.

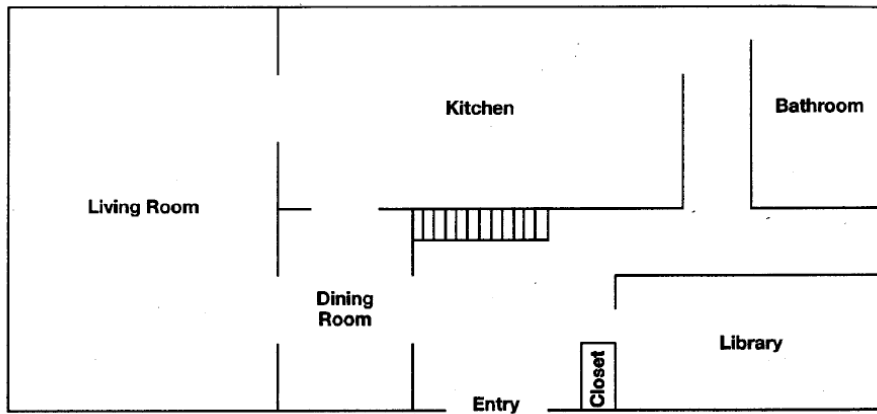
1. $\frac{.25}{1} = \frac{7}{n}$

2. $\frac{.25}{4} = \frac{7}{n}$

3. $\frac{1.25}{n} = \frac{5}{24}$

4. A garage measures 2 inches on the blueprint and is 26 feet wide. What is the scale?
5. Use the following simple house plan to determine the actual dimensions of the kitchen? Note the following drawing has been resized to fit in the lesson plan.

Scale Drawings



Ratios, Rates & Proportions Practice

1. Find the ratio, as a fraction in simplest form, of the number of board feet of cedar to board feet of ash.

<i>Board Feet of Wood at a Lumber Store</i>			
<i>Pine</i>	<i>Ash</i>	<i>Oak</i>	<i>Cedar</i>
<i>20,000</i>	<i>18,000</i>	<i>10,000</i>	<i>12,000</i>

2. The cost of building a patio cover was \$250 for labor and \$350 for materials. What is the ratio, as a fraction in simplest form, of the cost of materials to the total cost of the project?
3. A decorator bought one box of ceramic floor tile for \$21 and a box of wood flooring for \$33. What is the ratio of wood flooring cost to the total cost?
4. A painter estimates that 5 gallons of paint will cover 1200 ft^2 of wall service. How many gallons are required to cover 1680 ft^2 ?
5. The lighting for a billboard is provided by solar energy. If three panels generate 10 watts of power, how many panels are needed to provide 600 watts of power?

10. The scale on a building plan is 1 inch to 3 feet. Find the length and width of a room that measures 5 inches by 8 inches on the drawing.
11. Solve.
- a. $\frac{n}{11} = \frac{32}{4}$
- b. $\frac{18}{11} = \frac{16}{n}$
- c. $\frac{n}{21} = \frac{-15}{7}$
- d. $\frac{5}{12} = \frac{60}{w}$
12. If y varies **inversely** as x , and $y = 8$ when $x = 2$, find y when $x = 4$.
13. If t varies inversely as q and $t = 240$ when $q = 0.01$, then find the value of t when $q = 8$.

14. The time to complete a project is inversely proportional to number of people who are working on the project. The remodeling project can be completed by 5 workers in 24 days. In order to finish the project sooner, the company plans to hire additional workers. How many workers are needed to finish the project in 15 days?

15. *If w is directly proportional to m and $w = 42$ when $m = 6$, then find the value of m when $w = 140$*

Create a scale drawing of your assigned area.

Instructions: Work together as a team to accurately measure your designated area. Once you have all the measurements, including placement of windows and doors return to class and create a scale drawing using $\frac{1}{4}$ " to 4'. Hint: As you're taking measurements sketch the area below, it will serve as your notes for the scale drawing.

Group 1: Measure & Draw to scale the Math Room

Group 2: Measure & Draw to scale the REMC Teacher Work Room

Group 3: Measure & Draw to scale Main Entrance Area by the Front Office

Group 4: Measure & Draw to scale the Commons Area

Group 5: Measure & Draw to scale the hall from the Math Room down to the Main Entrance Area