

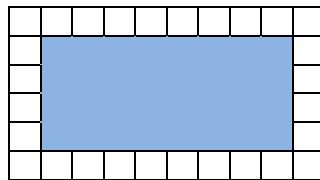
Lesson Summary

Given the scale factor, r , representing the relationship between scale drawing length and actual length, the square of this scale factor, r^2 , represents the relationship between the scale drawing area and the actual area.

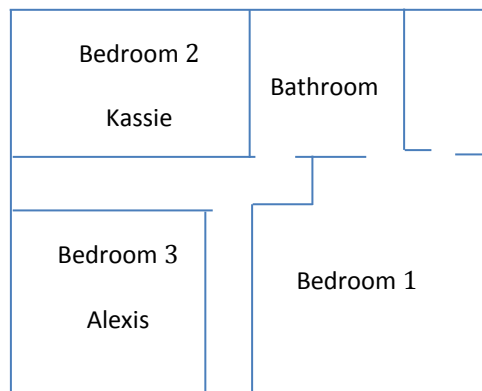
For example, if 1 inch on the scale drawing represents 4 inches of actual length, then the scale factor, r , is $\frac{1}{4}$. On this same drawing, 1 square inch of scale drawing area would represent 16 square inches of actual area since r^2 is $\frac{1}{16}$.

Problem Set

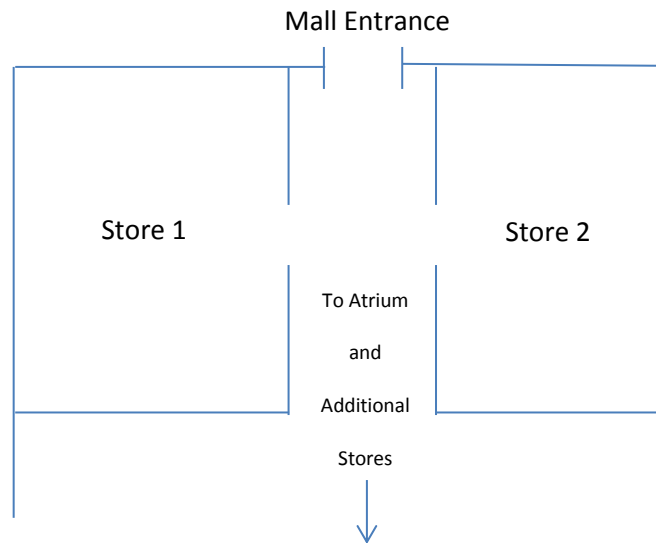
- The shaded rectangle shown below is a scale drawing of a rectangle whose area is 288 square feet. What is the scale factor of the drawing? (Note: Each square on the grid has a length of 1 unit.)



- A floor plan for a home is shown below where $\frac{1}{2}$ inch corresponds to 6 feet of the actual home. Bedroom 2 belongs to 13-year-old Kassie, and Bedroom 3 belongs to 9-year-old Alexis. Kassie claims that her younger sister, Alexis, got the bigger bedroom. Is she right? Explain.



3. On the mall floor plan, $\frac{1}{4}$ inch represents 3 feet in the actual store.
- Find the actual area of Store 1 and Store 2.
 - In the center of the atrium, there is a large circular water feature that has an area of $\left(\frac{9}{64}\right)\pi$ square inches on the drawing. Find the actual area in square feet.



4. The greenhouse club is purchasing seed for the lawn in the school courtyard. The club needs to determine how much to buy. Unfortunately, the club meets after school, and students are unable to find a custodian to unlock the door. Anthony suggests they just use his school map to calculate the area that will need to be covered in seed. He measures the rectangular area on the map and finds the length to be 10 inches and the width to be 6 inches. The map notes the scale of 1 inch representing 7 feet in the actual courtyard. What is the actual area in square feet?
5. The company installing the new in-ground pool in your backyard has provided you with the scale drawing shown below. If the drawing uses a scale of 1 inch to $1\frac{3}{4}$ feet, calculate the total amount of two-dimensional space needed for the pool and its surrounding patio.

