Example

4. A floor plan for a home is shown at the left where $\frac{1}{2}$ inch represents 3 feet of the actual home. What is the actual area of bedroom 1?

Length of Bedroom 1.

$\frac{\frac{1}{2}\,\text{in.}}{3\,\text{ft}} = \frac{4\,\text{in.}}{w}$ ← floor plan / ← actual

$\frac{1}{2}w = 12$ Find cross products.

$w = 24$ Divide each side by $\frac{1}{2}$.

Width of Bedroom 1.

$\frac{\frac{1}{2}\,\text{in.}}{3\,\text{ft}} = \frac{1\,\text{in.}}{x}$ ← floor plan / ← actual

$\frac{1}{2}x = 3$ Find cross products.

$x = 6$ Divide each side by $\frac{1}{2}$.

So, the area of bedroom 1 is 24 × 6 or 144 square feet.

d. What is the actual area of bedroom 3?

Got It? Do this problem to find out.

d. _____

[Check]

Guided Practice

1. On a map, the distance from Akron to Cleveland measures 2 centimeters. What is the actual distance if the scale of the map shows that 1 centimeter is equal to 30 kilometers? (Example 1)

2. An engineer makes a model of a bridge using a scale of 1 inch = 3 yards. The length of the actual bridge is 50 yards. What is the length of the model? (Example 2)

3. Julie is constructing a scale model of her room. The rectangular room is $10\frac{1}{4}$ inches by 8 inches. If 1 inch represents 2 feet of the actual room, what is the scale factor and the actual area of the room? (Examples 3 and 4)

4. 🌎 **Building on the Essential Question** Explain how you could use a map to estimate the actual distance between Miami, Florida, and Atlanta, Georgia.

Rate Yourself!
How well do you understand scale drawings? Circle the image that applies.

Clear   Somewhat Clear   Not So Clear

For more help, go online to access a Personal Tutor.
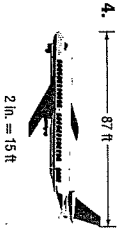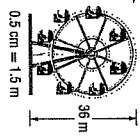[Tutor]

Independent Practice

🌎 **Use Math Tools** Find the actual distance between each pair of locations in South Carolina. Use a ruler to measure. (Example 1)
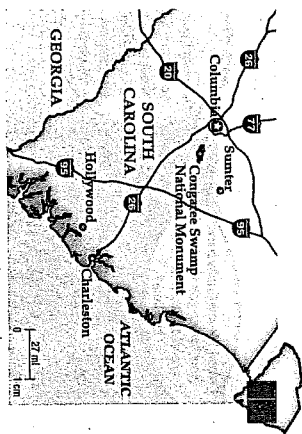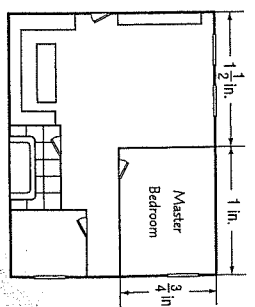

1. Columbia and Charleston _____

2. Hollywood and Sumter _____

Find the length of each model. Then find the scale factor. (Examples 2 and 3)

3.

0.5 cm = 1.5 m   36 m
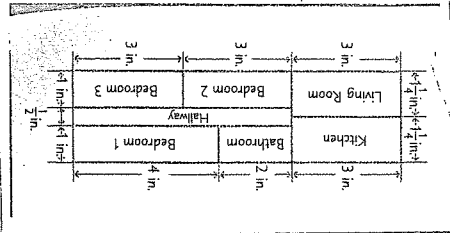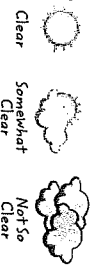
_____

4.

2 in. = 15 ft   87 ft

_____

5. A model of an apartment is shown where $\frac{1}{4}$ inch represents 3 feet in the actual apartment. Find the actual area of the master bedroom. (Example 4)

Master Bedroom
$1\frac{1}{2}$ in.   1 in. $\frac{3}{4}$ in.