

Find Areas Using Scale Drawings

You can use a scale drawing to determine the actual area of an object.

Let's try it!

Find the actual area of the room using the scale drawing.

First, find the actual length and width of the room. Write and solve two proportions each made up of the scale written as a ratio and the ratio of the actual dimension of the room to the drawing dimension.

Length:

$$\frac{4}{1} = \frac{\ell}{3.5} \quad \leftarrow \begin{array}{l} \text{actual length (ft.)} \\ \text{drawing length (in.)} \end{array}$$

$$\frac{4}{1} \cdot 3.5 = \frac{\ell}{3.5} \cdot 3.5$$

$$14 = \ell$$

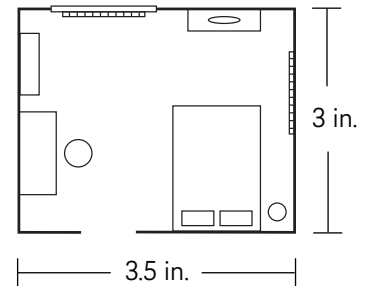
Width:

$$\frac{4}{1} = \frac{w}{3} \quad \leftarrow \begin{array}{l} \text{actual width (ft.)} \\ \text{drawing width (in.)} \end{array}$$

$$\frac{4}{1} \cdot 3 = \frac{w}{3} \cdot 3$$

$$12 = w$$

Scale: 1 in. = 4 ft.

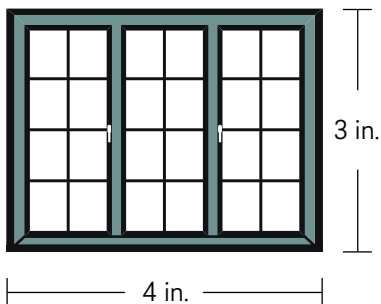


Now, find the actual area of the room. Multiply length times width. The area of the room is $14 \cdot 12 = 168$ square feet!

Try it yourself! Answer each question using the scale.

1. What is the actual area of the window?

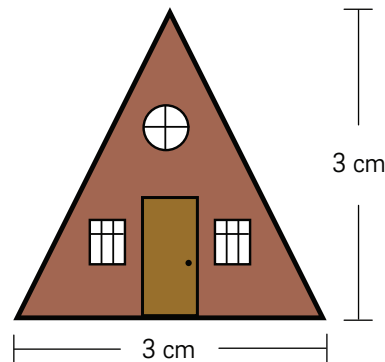
Scale: 1 in. = 2 ft.



$$48 \text{ ft.}^2$$

2. What is the actual area of the front wall of the house?

Scale: 1 cm = 3 m



$$40.5 \text{ m}^2$$

3. On a floor plan, Bella's rectangular basement measures 3 centimeters by 5 centimeters. If the floor plan has a scale of 1 centimeter = 2 meters, what is the actual area of Bella's basement?

$$60 \text{ m}^2$$

4. Dimitri made a scale drawing of a mural he is going to paint. There is a triangular region on the drawing with a base of 2 inches and a height of 3 inches. If the drawing has a scale of 1 inch = 4 feet, what is the actual area of the triangular region?

$$48 \text{ ft.}^2$$