

14-6**Real-Life Career Activity*****Interior Designer***

Interior designers create living and working spaces that are attractive and useful. An interior designer must know all about decorating materials, the psychological effects of colors and textures, and how to calculate the amount and price of the necessary materials. A designer can use a formula to calculate the surface area of the walls and ceiling of a room.

$$A = 2(\ell \times h) + 2(w \times h) + (\ell \times w)$$

In this formula, A is the area of the room in square feet, ℓ is the length of the room in feet, w is the width in feet, and h is the height in feet.

Suppose a designer plans to cover the walls and ceiling of a sound studio with sound-absorbent tiles. Each tile is 1 square foot. The studio is 20 feet long, 15 feet wide, and 10 feet high. How many tiles should the designer order?

$$\begin{aligned} A &= 2(\ell \times h) + 2(w \times h) + (\ell \times w) \\ &= 2(20 \times 10) + 2(15 \times 10) + (20 \times 15) \\ &= 1,000 \end{aligned}$$

The designer should order 1,000 tiles.

Solve.

1. Calculate the number of tiles the designer will need to cover the walls and ceiling of a studio that is 15 feet long, 12 feet wide, and 10 feet high.
2. A studio is 15 feet long, 15 feet wide, and 12 feet high. A designer orders 1,000 tiles. Does the designer have enough tiles?
3. A designer has 650 tiles to cover the walls and ceiling of a studio that is 20 feet long, 16 feet wide, and 9 feet high. How many more tiles will the designer need?

