What if you were given the area of a shape and, at most, one of its dimensions? Could you find the unknown dimension?
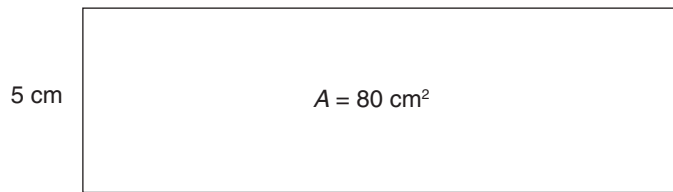
▶▶ **Multimedia**

A video demonstration of the solution for *Example 3* is provided.

Example 3

The area of the rectangle below is 80 cm². If the width of the rectangle is 5 cm, what is its length?

5 cm

$A = 80 \text{ cm}^2$

$A_{\text{rectangle}} = lw$

$80 \text{ cm}^2 = lw$

$80 \text{ cm}^2 = l \cdot 5 \text{ cm}$

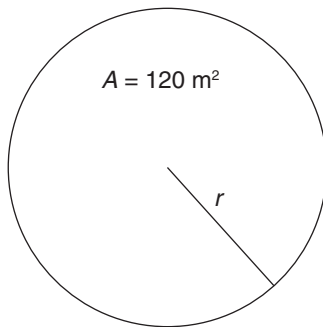$\dfrac{80 \text{ cm}^2}{5 \text{ cm}} = \dfrac{l \cdot 5 \text{ cm}}{5 \text{ cm}}$

$16 \text{ cm} = l$

Check Up

1. Determine the area of a circle with a radius of 24 inches, to the nearest hundredth of a square foot.

2. What is the area of a square with a side length of 9 feet?

3. Determine the radius of the circle shown below. Round your answer to the tenth of a metre.

$A = 120$ m²

r

✔ Compare your answers.

1. Determine the area of a circle with a radius of 24 inches, to the nearest hundredth of a square foot.

$r = 24 \text{ in} = 2 \text{ ft}$

$A_{\text{circle}} = \pi r^2$
$A_{\text{circle}} = \pi (2 \text{ ft})^2$
$A_{\text{circle}} = \pi \cdot 4 \text{ ft}^2$
$A_{\text{circle}} \doteq 12.57 \text{ ft}^2$

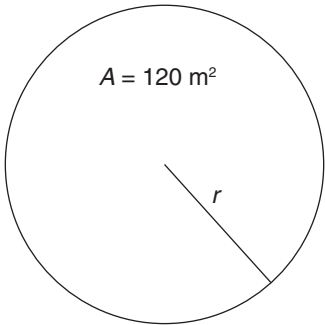2. What is the area of a square with a side length of 9 feet?
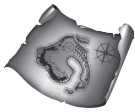
$s = 9 \text{ ft}$

$A_{\text{square}} = s^2$
$A_{\text{square}} = (9 \text{ ft})^2$
$A_{\text{square}} = 81 \text{ ft}^2$

3. Determine the radius of the circle shown below. Round your answer to the tenth of a metre.

$$A_{circle} = \pi r^2$$
$$120 \text{ m}^2 = \pi r^2$$
$$120 \text{ m}^2 = \pi \cdot r^2$$
$$\frac{120 \text{ m}^2}{\pi} = \frac{\cancel{\pi} \cdot r^2}{\cancel{\pi}}$$
$$38.197... \text{ m}^2 = r^2$$
$$\sqrt{38.197... \text{ m}^2} = \sqrt{r^2}$$
$$6.180... \text{ m} = r$$
$$6.2 \text{ m} \doteq r$$

A = 120 m²

r

Explore the Lesson

C. 3-D Objects

Some familiar three-dimensional objects are shown and labeled below.

cube (face)	right rectangular prism	right triangular prism	right cone
right cylinder (base)	right rectangular pyramid	right triangular pyramid (apex)	sphere

Right prism
A prism whose bases (top and bottom) are directly one above the other and whose faces are rectangular and meet the bases at right angles

Right pyramid
A pyramid with its apex (highest point) directly above the center of its base and whose faces are triangles