When you calculate the circumference and area of a circle, leave your answers in terms of π unless you are told to replace π by an approximation.

Example 1 Find the circumference and area of a circle with radius 6 cm.

Solution $C = 2\pi r = 2\pi \cdot 6 = 12\pi$ (cm)
$A = \pi r^2 = \pi \cdot 6^2 = 36\pi$ (cm^2)

Example 2 The photograph shows land that is supplied with water by an irrigation system. This system consists of a moving arm that sprinkles water over a circular region. If the arm is 430 m long, what is the area, correct to the nearest thousand square meters, of the irrigated region? (Use $\pi \approx 3.14$.)

Solution $A = \pi r^2 = \pi \cdot 430^2$
$A \approx 3.14 \cdot 184{,}900 = 580{,}586$
$A \approx 581{,}000$ m^2 (to the nearest 1000 m^2)

Example 3 Find the circumference of a circle if the area is 25π.

Solution Since $\pi r^2 = 25\pi$, $r^2 = 25$ and $r = 5$.
Then $C = 2\pi r = 2\pi \cdot 5 = 10\pi$.

Classroom Exercises

Complete the table. Leave answers in terms of π.

	1.	2.	3.	4.	5.	6.	7.	8.
Radius	3	4	0.8	?	?	?	?	?
Circumference	?	?	?	10π	18π	?	?	?
Area	?	?	?	?	?	36π	49π	144π

Find the circumference and area to the nearest tenth. Use $\pi \approx 3.14$.

9. $r = 2$ **10.** $r = 6$ **11.** $r = \frac{3}{2}$ **12.** $r = 1.2$