SKILL 14: Area of Circles

The circumference and the diameter of a circle are related by the number π. The radius and the area of a circle are also related by the number π. If you know the radius of a circle, you can use π to find the area.
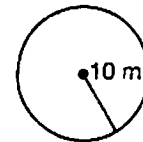
Area = $\pi \times r^2$, where r is the radius.

Example 1

Find the area of this circle. Use 3.14 for π.

Use the formula $A = \pi \times r^2$.

Substitute 10 for r, the radius, and 3.14 for π.

The area is 314 square meters, or 314 m^2.

$3.14 \times 10^2 = 3.14 \times 100 = 314$

Example 2

Given the area of a circle, find its radius.

$A = 200.96$ m^2

Use the formula $A = \pi \times r^2$.

Substitute 200.96 for the area, A, and 3.14 for π.

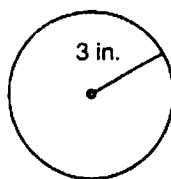$$200.96 = 3.14 \times r^2$$
$$\frac{200.96}{3.14} = r^2$$
$$64 = r^2$$

The radius is 8 m.

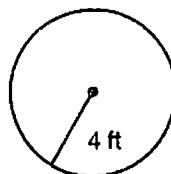$$8 = r$$

Guided Practice

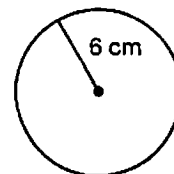Find the area of each circle. Use 3.14 for π.

1. 3 in.

2. 4 ft

3. 6 cm

_____   _____   _____

Given the area of a circle, find its radius or diameter. Use 3.14 for π.

4. $A = 153.86$ in^2

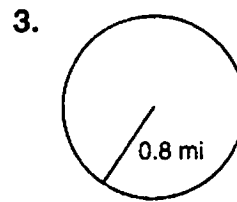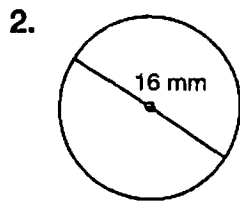Think: $r^2 = 153.86 \div 3.14 =$ _____

$r =$ _____ in.

5. $A = 452.16$ m^2

Think: $r^2 = 452.16 \div 3.14 =$ _____
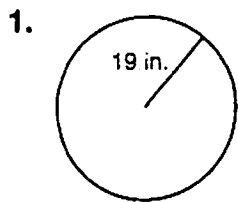
$r =$ _____ m;

$d =$ _____ m
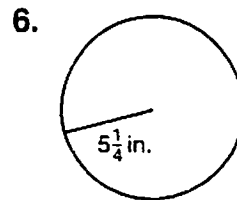
SKILL 14: Practice

Find the area of each circle given its diameter or radius. Use 3.14 for π.

1.

19 in.

_____

2.

16 mm

_____

3.

0.8 mi

_____

Find the area of each circle given its diameter or radius. Use $\pi \approx \frac{22}{7}$.
Express answers in simplest form.

4.

$8\frac{1}{2}$ ft

_____

5.

$4\frac{2}{3}$ m

_____

6.

$5\frac{1}{4}$ in.

_____

Given the area of a circle, find its radius or diameter.
Use $\pi \approx 3.14$. Round answers to the nearest tenth.

7. $A \approx 31{,}400$ in^2

$r \approx$ _____

8. $A \approx 113.04$ cm^2

$d \approx$ _____

9. $A \approx 379.94$ mi^2

$r \approx$ _____

Solve. Round answers to the nearest tenth.

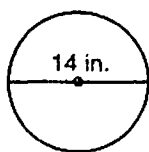**10.** Find the area of a pizza if the diameter is 15 in.   _____

11. The radius of a U.S. quarter is about 12 mm.
Find the area of a quarter.   _____

TEST PREP

12. The diameter of a pizza is 14 in.
Find the area of the pizza rounded
to the nearest tenth.

Skill 14

14 in.

  A 21.9 in^2
  B 43.9 in^2
  C 153.9 in^2
  D 615.4 in^2

13. Which parallelogram has the
greatest area?

Skill 10

  F $h = 3.4$ m, $b = 2.8$ m
  G $h = 2.8$ m, $b = 3.4$ m
  H $h = 4$ m, $b = 3$ m
  J $h = 5$ m, $b = 2$ m