

Chapter 7 | Circles II: Area and Circular Composite Shapes

Worksheet B | Independent Practice

Name: _____ Grade: _____ Date: _____

Warm-up: Worked Examples

Example 1: Foundational

Problem: Find the area of a circle with radius 5 cm. Use $\pi \approx 3.14$.

Square the radius

$$5^2 = 25$$

Multiply by π

$$3.14 \times 25 = 78.5$$

Example 2: Typical

Problem: A circular rug has diameter 14 m. Find the area of the rug. Use $\pi \approx 3.14$.

Halve for radius

$$14 \div 2 = 7$$

Square, multiply by π

$$3.14 \times 49 = 153.86$$

Example 3: Common-Trap

Problem: A circle has diameter 16 cm. A student writes $A = 3.14 \times 16^2$. Explain the error. Then find the correct area.

Wrong (squares diameter)

$$3.14 \times 16^2 = 803.84$$

Correct (squares radius)

$$3.14 \times 8^2 = 200.96$$

Example 4: Semicircle Area

Problem: A semicircular sign has diameter 12 m. Find the area of the sign. Use $\pi \approx 3.14$.

Full circle

$$3.14 \times 6^2 = 113.04$$

Halve it

$$113.04 \div 2 = 56.52$$

Example 5: Composite Shape With a Circular Cutout

Problem: A square panel is 18 cm by 18 cm. A circular hole with radius 5 cm is cut out. Find the area remaining. Use $\pi \approx 3.14$.

Square minus circle

$$324 - 78.5$$

Answer

$$245.5 \text{ cm}^2$$

Example 6: Working Backward From Area

Problem: A circular tabletop has an area of approximately 200.96 cm^2 . Find its radius and diameter.
Use $\pi \approx 3.14$.

Divide by π

$$200.96 \div 3.14 = 64$$

Un-square, then double

$$r = 8, d = 16$$

Practice

1. Find the area of a circle with radius 7 cm.

2. Find the area of a semicircle with radius 10 cm.

3. Find the area of a circle with radius 9.4 m.

4. Find the area of a quarter circle with radius 12 cm.

5. Find the area of a circle with radius 25 cm.

6. A circular pond has radius 26 m. Find the area of the pond.

7. Find the area of a circle with diameter 27 cm.

8. Find the area of a semicircle with diameter 18 m.

9. Find the area of a circle with diameter 26 m.

10. Find the area of a quarter circle with diameter 30 m.

11. Find the area of a circle with diameter 40 cm.

12. A square lawn is 25 m by 25 m. A circular flower bed with radius 4 m is planted in the middle. Find the area of grass remaining.

13. A circular tabletop has diameter 1.5 m. Find its area.

14. A square tile is 14 cm by 14 cm. A circular pattern with radius 5 cm is painted on it. Find the painted area.

15. A circle has diameter 28 cm. A student writes $A = 3.14 \times 28^2$. What is the error, and what is the correct area?
