

Chapter 7 | Circles II: Area and Circular Composite Shapes

Worksheet C | Mixed Practice & Application

Name: _____ Grade: _____ Date: _____

Warm-up: Worked Examples

Example 1: Foundational

Problem: Find the area of a circle with radius 7 cm. Use $\pi \approx 3.14$.

Square the radius

$$7^2 = 49$$

Multiply by π

$$3.14 \times 49 = 153.86$$

Example 2: Typical

Problem: A circular patio has diameter 18 m. Find the area. Use $\pi \approx 3.14$.

Halve for radius

$$18 \div 2 = 9$$

Square, multiply by π

$$3.14 \times 81 = 254.34$$

Example 3: Common-Trap

Problem: A circle has diameter 20 cm. A student uses 20 as the radius and calculates $A = 3.14 \times 20^2$. Explain the error and find the correct area.

Wrong (uses diameter as radius)

$$3.14 \times 20^2 = 1256$$

Correct (halve first)

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

Example 4: Semicircle Area

Problem: A semicircular window has diameter 16 m. Find its area. Use $\pi \approx 3.14$.

Full circle

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

Halve it

$$200.96 \div 2 = 100.48$$

Example 5: Composite Shape With a Circular Cutout

Problem: A rectangular sheet is 24 cm by 18 cm. A circular hole with radius 7 cm is cut out. Find the area remaining. Use $\pi \approx 3.14$.

Rectangle minus circle

$$432 - 153.86$$

Answer

$$278.14 \text{ cm}^2$$

Example 6: Working Backward From Area

Problem: A circular plate has an area of approximately 78.5 cm^2 . Find its radius and diameter. Use $\pi \approx 3.14$.

Divide by π

$$78.5 \div 3.14 = 25$$

Un-square, then double

$$r = 5, d = 10$$

Practice

1. Find the area of a circle with radius 11 cm.

2. Find the area of a circle with diameter 34 m.

3. Find the area of a semicircle with radius 9 cm.

4. A circular rug has radius 2.5 m. Find its area.

5. A square patio is 8 m by 8 m. A circular firepit with radius 1.5 m is built into the middle and is not usable patio space. Find the usable patio area.

6. A round mirror has diameter 60 cm. Find the area of the mirror's surface.

7. Find the area of a quarter circle with diameter 38 m.

8. A circular pizza has diameter 34.6 cm. Find the area of the pizza.

9. A circular pool cover has radius 3.6 m. Find the area of the cover.

10. A square garden is 12 m by 12 m. A circular pond with diameter 6 m sits inside it. Find the area of the garden not covered by the pond.

11. Non-Routine: A circular trampoline has a diameter of 4.2 m. The trampoline is surrounded by a safety net that is 1 m tall and attached at 8 points around the edge. Find the area of the trampoline's surface.

12. A semicircular table has diameter 1.4 m. Find its area.

13. A circular clock face has diameter 22.4 cm. Find its area.

14. A student says that a circle with diameter 18 cm has an area of $3.14 \times 18^2 = 1017.36 \text{ cm}^2$. Is the student correct? Explain and find the correct area.

15. Non-Routine: A circular object has an area of approximately 120.70 cm^2 . Describe one possible real object that could have this area. Then state its radius and diameter. Explain how the measurements are connected.
