

# Area of Circles Introduction

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 24

## Q Quick Review

A **circle** is measured from its center. The **radius**  $r$  is the distance from the center to the edge, and the **diameter**  $d$  goes all the way across through the center, so  $d = 2r$  and  $r = \frac{d}{2}$ . The **area** of a circle is  $A = \pi \times r^2$ . In this section, use  $\pi \approx 3.14$ . The steps are: if you are given the diameter, first cut it in half to get the radius; then square the radius (multiply it by itself); then multiply by 3.14. Area is always in **square units**.

◇ **Example:** Find the area of a circle with a radius of 6 inches. Use  $\pi \approx 3.14$ .

⇒ Use the formula  $A = \pi \times r^2$ . First square the radius:  $6^2 = 6 \times 6 = 36$ . Now multiply by 3.14:  $3.14 \times 36 = 113.04$ . Since the radius was measured in inches, the area is in square inches. Notice we square the radius *before* multiplying by  $\pi$ .

**Answer:** 113.04 in<sup>2</sup>

## PRACTICE

Find the area of each circle. Use  $\pi = 3.14$ . Answers are in square units.

- |                       |       |                          |       |
|-----------------------|-------|--------------------------|-------|
| 1. Circle: radius 1   | _____ | 11. Circle: diameter 2   | _____ |
| 2. Circle: radius 2   | _____ | 12. Circle: diameter 4   | _____ |
| 3. Circle: radius 3   | _____ | 13. Circle: diameter 6   | _____ |
| 4. Circle: radius 4   | _____ | 14. Circle: diameter 8   | _____ |
| 5. Circle: radius 5   | _____ | 15. Circle: diameter 10  | _____ |
| 6. Circle: radius 6   | _____ | 16. Circle: diameter 12  | _____ |
| 7. Circle: radius 7   | _____ | 17. Circle: diameter 14  | _____ |
| 8. Circle: radius 8   | _____ | 18. Circle: diameter 16  | _____ |
| 9. Circle: radius 9   | _____ | 19. Circle: diameter 20  | _____ |
| 10. Circle: radius 10 | _____ | 20. Circle: diameter 100 | _____ |

## ◆ Word Problems

21. A round pizza has a diameter of 14 inches. What is the area of the top of the pizza? Use  $\pi \approx 3.14$ . \_\_\_\_\_
22. A circular garden has a radius of 5 meters. How many square meters of soil are needed to cover the garden? Use  $\pi \approx 3.14$ . \_\_\_\_\_
23. A clock face is a circle with a diameter of 10 inches. What is the area of the clock face? Use  $\pi \approx 3.14$ . \_\_\_\_\_
24. A round trampoline has a radius of 4 feet. What is the area of its jumping surface? Use  $\pi \approx 3.14$ . \_\_\_\_\_



## Answer Keys

- |                                        |                                             |
|----------------------------------------|---------------------------------------------|
| 1. <input type="text" value="3.14"/>   | 13. <input type="text" value="28.26"/>      |
| 2. <input type="text" value="12.56"/>  | 14. <input type="text" value="50.24"/>      |
| 3. <input type="text" value="28.26"/>  | 15. <input type="text" value="78.5"/>       |
| 4. <input type="text" value="50.24"/>  | 16. <input type="text" value="113.04"/>     |
| 5. <input type="text" value="78.5"/>   | 17. <input type="text" value="153.86"/>     |
| 6. <input type="text" value="113.04"/> | 18. <input type="text" value="200.96"/>     |
| 7. <input type="text" value="153.86"/> | 19. <input type="text" value="314"/>        |
| 8. <input type="text" value="200.96"/> | 20. <input type="text" value="7850"/>       |
| 9. <input type="text" value="254.34"/> | 21. <input type="text" value="153.86 in²"/> |
| 10. <input type="text" value="314"/>   | 22. <input type="text" value="78.5 m²"/>    |
| 11. <input type="text" value="3.14"/>  | 23. <input type="text" value="78.5 in²"/>   |
| 12. <input type="text" value="12.56"/> | 24. <input type="text" value="50.24 ft²"/>  |

### Step-by-Step Explanations

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Square the radius: <math>1^2 = 1</math>. Then <math>3.14 \times 1 = 3.14</math>.</p> <p>2. Square the radius: <math>2^2 = 4</math>. Then <math>3.14 \times 4 = 12.56</math>.</p> <p>3. Square the radius: <math>3^2 = 9</math>. Then <math>3.14 \times 9 = 28.26</math>.</p> <p>4. Square the radius: <math>4^2 = 16</math>. Then <math>3.14 \times 16 = 50.24</math>.</p> <p>5. Square the radius: <math>5^2 = 25</math>. Then <math>3.14 \times 25 = 78.5</math>.</p> <p>6. Square the radius: <math>6^2 = 36</math>. Then <math>3.14 \times 36 = 113.04</math>.</p> <p>7. Square the radius: <math>7^2 = 49</math>. Then <math>3.14 \times 49 = 153.86</math>.</p> <p>8. Square the radius: <math>8^2 = 64</math>. Then <math>3.14 \times 64 = 200.96</math>.</p> <p>9. Square the radius: <math>9^2 = 81</math>. Then <math>3.14 \times 81 = 254.34</math>.</p> <p>10. Square the radius: <math>10^2 = 100</math>. Then <math>3.14 \times 100 = 314</math>.</p> <p>11. Halve the diameter: <math>r = 1</math>. Then <math>3.14 \times 1^2 = 3.14</math>.</p> <p>12. Halve the diameter: <math>r = 2</math>. Then <math>3.14 \times 2^2 = 3.14 \times 4 = 12.56</math>.</p> <p>13. Halve the diameter: <math>r = 3</math>. Then <math>3.14 \times 3^2 = 3.14 \times 9 = 28.26</math>.</p> <p>14. Halve the diameter: <math>r = 4</math>. Then <math>3.14 \times 4^2 = 3.14 \times 16 = 50.24</math>.</p> | <p>15. Halve the diameter: <math>r = 5</math>. Then <math>3.14 \times 5^2 = 3.14 \times 25 = 78.5</math>.</p> <p>16. Halve the diameter: <math>r = 6</math>. Then <math>3.14 \times 6^2 = 3.14 \times 36 = 113.04</math>.</p> <p>17. Halve the diameter: <math>r = 7</math>. Then <math>3.14 \times 7^2 = 3.14 \times 49 = 153.86</math>.</p> <p>18. Halve the diameter: <math>r = 8</math>. Then <math>3.14 \times 8^2 = 3.14 \times 64 = 200.96</math>.</p> <p>19. Halve the diameter: <math>r = 10</math>. Then <math>3.14 \times 10^2 = 3.14 \times 100 = 314</math>.</p> <p>20. Halve the diameter: <math>r = 50</math>. Then <math>3.14 \times 50^2 = 3.14 \times 2500 = 7850</math>.</p> <p>21. First halve the diameter to get the radius: <math>r = 14 \div 2 = 7</math>. Square it: <math>7^2 = 49</math>. Then <math>3.14 \times 49 = 153.86</math> square inches.</p> <p>22. Square the radius: <math>5^2 = 25</math>. Then multiply by <math>\pi</math>: <math>3.14 \times 25 = 78.5</math> square meters.</p> <p>23. Halve the diameter: <math>r = 10 \div 2 = 5</math>. Square it: <math>5^2 = 25</math>. Then <math>3.14 \times 25 = 78.5</math> square inches.</p> <p>24. Square the radius: <math>4^2 = 16</math>. Then multiply by <math>\pi</math>: <math>3.14 \times 16 = 50.24</math> square feet.</p> |
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