

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 π .

Answer: 113.04 in²

PRACTICE

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

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

Step-by-Step Explanations

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