Area of Circles Introduction

Name: _____	Date: _____	Score: _____ / 24

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 in^2

PRACTICE

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

1. Circle: radius 1 _____
2. Circle: radius 2 _____
3. Circle: radius 3 _____
4. Circle: radius 4 _____
5. Circle: radius 5 _____
6. Circle: radius 6 _____
7. Circle: radius 7 _____
8. Circle: radius 8 _____
9. Circle: radius 9 _____
10. Circle: radius 10 _____
11. Circle: diameter 2 _____
12. Circle: diameter 4 _____
13. Circle: diameter 6 _____
14. Circle: diameter 8 _____
15. Circle: diameter 10 _____
16. Circle: diameter 12 _____
17. Circle: diameter 14 _____
18. Circle: diameter 16 _____
19. Circle: diameter 20 _____
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
2. 12.56
3. 28.26
4. 50.24
5. 78.5
6. 113.04
7. 153.86
8. 200.96
9. 254.34
10. 314
11. 3.14
12. 12.56
13. 28.26
14. 50.24
15. 78.5
16. 113.04
17. 153.86
18. 200.96
19. 314
20. 7850
21. $153.86\ \text{in}^2$
22. $78.5\ \text{m}^2$
23. $78.5\ \text{in}^2$
24. $50.24\ \text{ft}^2$

Step-by-Step Explanations

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

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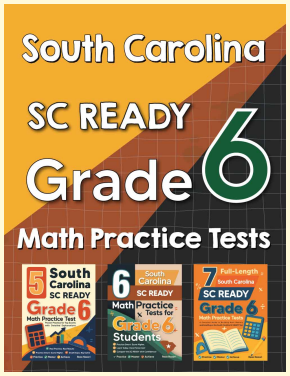

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