Area of Circles Introduction

Introduction to circle area: Models and calculations

Name _____ **Date** _____ **Score** _____ / 6

QUICK REVIEW

Circle area is $A = \pi r^2$. The radius goes from center to edge; diameter $d = 2r$. Use $\pi \approx 3.14$ here. Doubling radius multiplies area by 4, not 2. A length times a length gives square units. Sketches are not to scale.

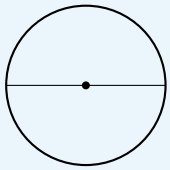
Worked example

Find the area of the circle. Use 3.14 for π.

1. Radius is half the diameter: $r = 7/2 = \frac{7}{2}$ cm.

2. $A \approx 3.14 \times \frac{7}{2}^2 = 3.14 \times \frac{49}{4} = \frac{7693}{200}$ cm^2.

Answer: Approximately 38.465 cm^2.

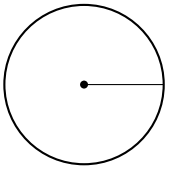


$d = 7$ cm

Practice Problems

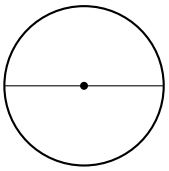
Show your thinking.

1. Find circle area from the radius. Use 3.14 for π.



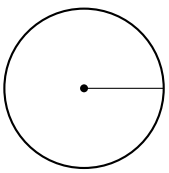
$r = 3$ cm

2. Find area from the diameter. Use 3.14 for π.



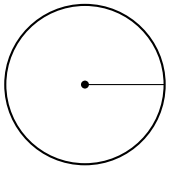
$d = 8$ cm

3. Find area and explain why the units are squared. Use 3.14 for π.



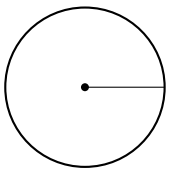
$r = 6$ cm

4. A round label has this radius. Find its area. Use 3.14 for π.



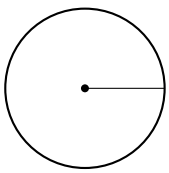
$r = \frac{5}{2}$ cm

5. Recover the radius from the area. Area is approximately $\frac{7693}{50}$ cm^2 using 3.14 for π; find radius. Use 3.14 for π.



r cm

6. A student multiplies 3.14 by $2r$ for area. Correct it. Use 3.14 for π.



$r = 2$ cm

Answer Key

1. Approximately 28.26 cm^2.
2. Approximately 50.24 cm^2.
3. Approximately 113.04 cm^2.
4. Approximately 19.625 cm^2.
5. 7 cm.
6. Approximately 12.56 cm^2.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Square the radius: $3^2 = 9$ cm^2.
2. $A \approx 3.14 \times 9 = \frac{1413}{50}$ cm^2.

Problem 2

1. Radius is half the diameter: $r = 8/2 = 4$ cm.
2. $A \approx 3.14 \times 4^2 = 3.14 \times 16 = \frac{1256}{25}$ cm^2.

Problem 3

1. Square the radius: $6^2 = 36$ cm^2.
2. $A \approx 3.14 \times 36 = \frac{2826}{25}$ cm^2.
3. The squared radius multiplies centimeters by centimeters, giving cm^2. The factor 3.14 has no unit, so the area stays in square centimeters.

Problem 4

1. Square the radius: $\frac{5}{2}^2 = \frac{25}{4}$ cm^2.
2. $A \approx 3.14 \times \frac{25}{4} = \frac{157}{8}$ cm^2.

Problem 5

1. $r^2 = \frac{7693}{50}/3.14 = 49$.
2. The nonnegative radius is 7 cm because $7 \times 7 = 49$.

Problem 6

1. Square the radius: $2^2 = 4$ cm^2.
2. $A \approx 3.14 \times 4 = \frac{314}{25}$ cm^2.

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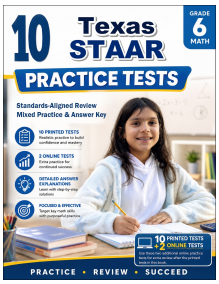

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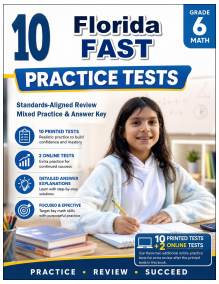

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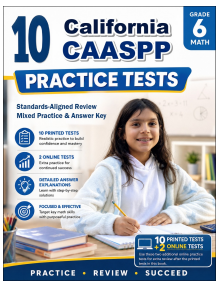

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