

Area of a Circle

The area of a circle is given by this formula: $A = \pi r^2$, where r is the radius of the circle.

Read the formula as: “Area equals pi r squared.” It means that you first multiply the radius by itself and then multiply the result by π .

You can remember the formula by thinking, “Pie are square.” Of course pies are usually round, not square! It is bad English, as well, but the purpose of this silly mnemonic is just to help you remember the formula.

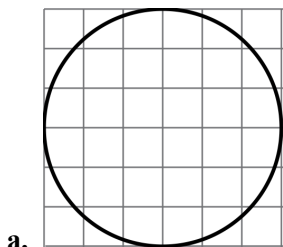
Example 1. The radius of a circle measures 8 cm. What is its area?

We use the formula: $A = \pi r^2 = \pi \cdot 8 \text{ cm} \cdot 8 \text{ cm} \approx 3.14 \cdot 64 \text{ cm}^2 = 200.96 \text{ cm}^2$, or about 200 cm^2 .

Remember to always give your answer for an area in square units, be it square inches, square centimeters, square meters, square feet, *etc.* If no measuring unit is given, use “square units.”

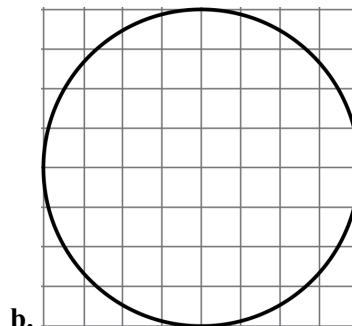
You can use a calculator for all the problems in this lesson.

- Estimate the area of the circles by counting squares and parts of squares. After that, calculate the area to the nearest tenth of a square unit.



Estimation: _____ square units

Calculation: _____ square units



Estimation: _____ square units

Calculation: _____ square units

- Find the areas of these circles.

a. A circle with a radius of 7.0 cm.

Round the answer to the nearest ten square centimeters (to 2 significant digits).

Area =

b. A circle with a radius of $10 \frac{1}{4}$ in.

Round the answer to the nearest square inch (to 3 significant digits).

Area =

c. A circle with a *diameter* of 75.0 cm.

Round the answer to the nearest ten square centimeters (to 3 significant digits).

Area =

d. A circle with a radius of 17 ft 4 in.

Round the answer to the nearest thousand square inches (to 3 significant digits).

Area =