

Grade 7 - Circumference and Area of Circles - Lesson

Common Core 7.G.B.4 · maths-pdf.fr/en/

The circumference of a circle is the distance around it, and the area is the space inside. Both depend on pi, the ratio of circumference to diameter, which is about 3.14. The formulas are $C = 2\pi r$ and $A = \pi r^2$, where r is the radius. Area uses square units.

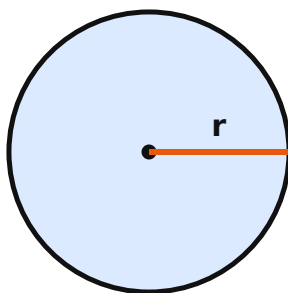
Grade 7 · Common Core State Standards: **7.G.B.4**

Key facts

- Diameter $d = 2r$; radius is half the diameter.
- Circumference $C = \pi d = 2\pi r$.
- Area $A = \pi r^2$ (square the radius first).
- π is about 3.14 or $\frac{22}{7}$; leave answers in terms of pi to be exact.
- A semicircle has half the area of the circle; its perimeter adds the diameter.

What are the parts of a circle?

The **radius** r is the distance from the center to the circle. The **diameter** d goes through the center from one side to the other, so $d = 2r$.



The radius r goes from the center to the edge. The diameter d goes all the way across, so $d = 2r$.

What is pi?

For every circle, the **circumference** (distance around) divided by the diameter is the same number. This number is called π , and it is about 3.14 or $\frac{22}{7}$.

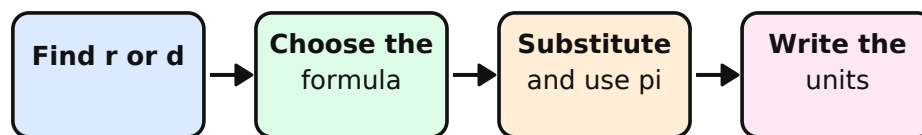
Circle	d (in)	C (in)	C / d
Coaster	4	12.6	3.15
Plate	10	31.4	3.14
Pizza	16	50.2	3.14

C divided by d is always about 3.14, which is the number pi.

Circle formulas

$C = \pi d = 2\pi r$ and $A = \pi r^2$. Circumference is a length (units); area is measured in square units.

How do you find circumference and area?



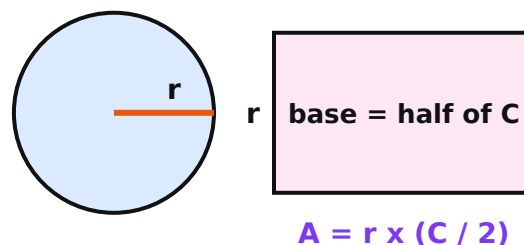
Area uses square units; circumference uses units of length.

1. Find the radius. If you are given the diameter, divide it by 2.
2. For circumference, multiply $2 \times \pi \times r$.
3. For area, square the radius first, then multiply by π .

Example. A circle has a radius of 5 in. The circumference is $2 \times 3.14 \times 5 = 31.4$ in. The area is $3.14 \times 5^2 = 78.5$ square inches. In terms of pi, the answers are 10π in and 25π square inches.

Where do the formulas come from?

Cutting a circle into thin slices and rearranging them forms a shape close to a rectangle with height r and base half the circumference. So $A = r \times (\pi r) = \pi r^2$.



Cut a circle into thin slices and rearrange them: the area is about r times half the circumference, which gives $A = \pi r^2$.

For a semicircle, find half of the circle's area, and add the diameter to half the circumference when you need the perimeter. For a composite figure, split it into rectangles and circle parts and add or subtract the areas.

Questions about circumference and area of circles

What is pi?

Pi is the number you get when you divide the circumference of any circle by its diameter. It is about 3.14 and never ends or repeats.

What is the formula for the area of a circle?

The area is $A = \pi r^2$. Square the radius first, then multiply by pi. A circle with radius 5 has area 25π , about 78.5.

What is the difference between circumference and area?

Circumference is the distance around the circle, measured in units of length. Area is the amount of surface inside, measured in square units.

How do I find the radius if I know the circumference?

Divide the circumference by 2π . If $C = 18.84$, then $r = 18.84 \div (2 \times 3.14) = 3$.

How do I find the area of a semicircle?

Find the area of the whole circle and take half. A semicircle with diameter 10 has $r = 5$, so its area is $(\frac{1}{2})(25\pi) = 12.5\pi$.