MATHEMATICS · GRADES 4-6

Circumference and area of circles

Difficulty level: Intermediate

Mathematics: Grades 4-6

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Overview of the concept

This is how you work out the distance around a round rug or a bicycle wheel, and the surface inside it. The circumference tells you how much edging you need, and the area tells you how much material covers the inside. Both come from the same measurement, the radius, so one number unlocks both answers.



Rule

Circumference: C = 2 × pi × r.

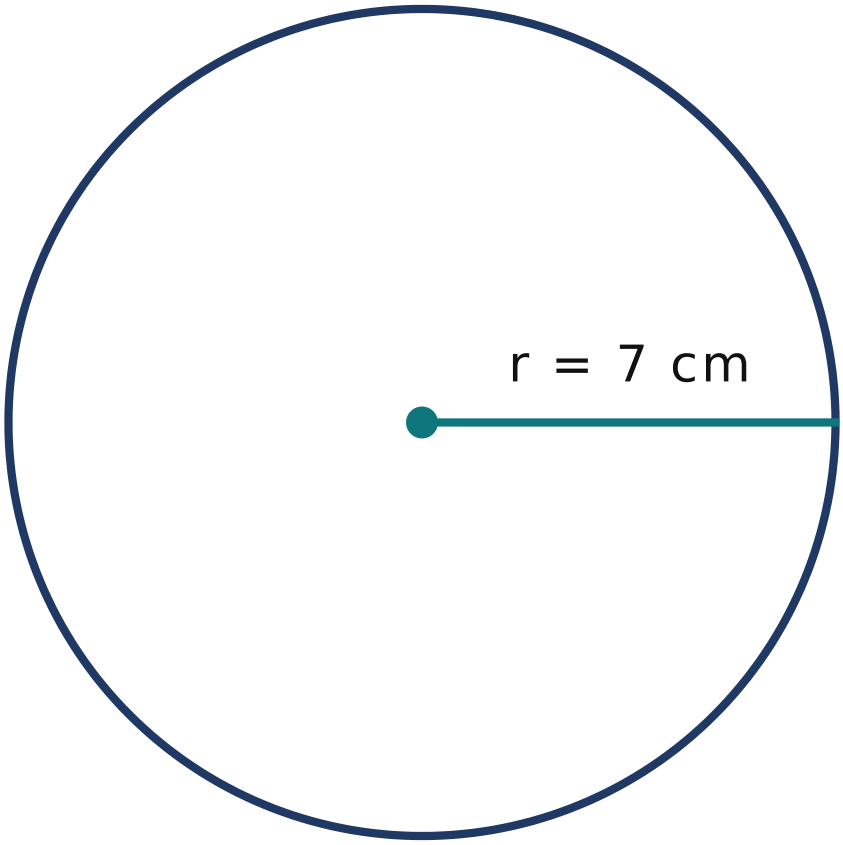
Area: A = pi × r^2. Pi is a special number, about 3.14, that is the same for every circle. The circumference is the distance around the circle and the area is the surface inside it. Both come from the radius, r, and pi.

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Worked examples

EXAMPLE 1

Q What is the circumference of a circle with radius 7 cm (use pi = $\frac{22}{7}$)?



SOLUTION

C = 2 × pi × r

C = 2 × $\frac{22}{7}$ × 7 = 44

Answer: 44 cm

Use the circumference formula: 2 × pi × radius.

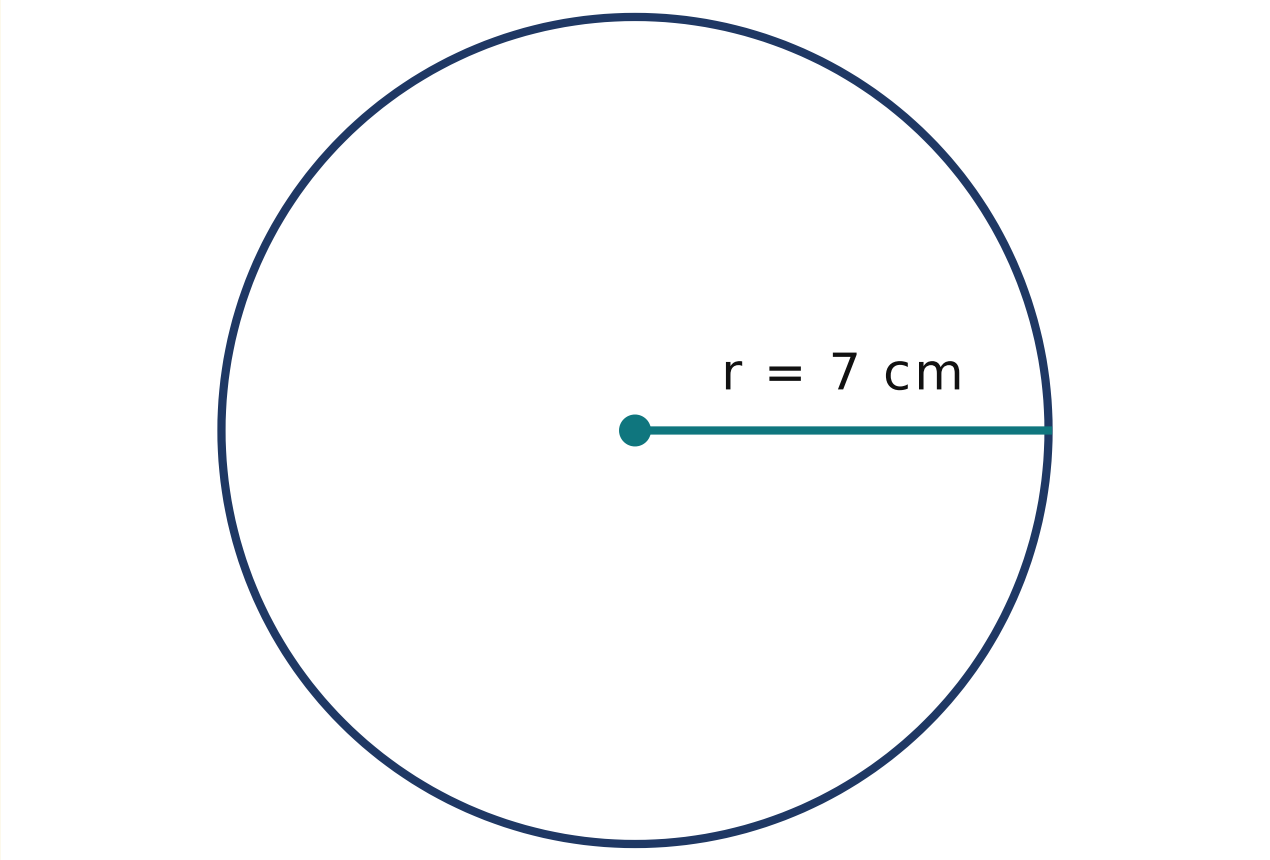
Substitute: 2 × $\frac{22}{7}$ × 7.

The 7s cancel: 2 × 22 = 44 cm

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EXAMPLE 2

Q What is the area of a circle with radius 7 cm (use pi = $\frac{22}{7}$)?



SOLUTION

A = pi × r × r

A = $\frac{22}{7}$ × 7 × 7 = 154

Answer: 154 cm^2

Use the area formula: pi × radius × radius.

Substitute: $\frac{22}{7}$ × 7 × 7.

One 7 cancels: 22 × 7 = 154 cm^2

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Practice questions

1 What is the circumference of a circle with radius 21 cm? (use pi = $\frac{22}{7}$)

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2 What is the area of a circle with radius 21 cm? (use pi = $\frac{22}{7}$)

A. 616 cm²

B. 1386 cm²

C. 2772 cm²

D. 924 cm²

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3 What is the circumference of a circle with radius 14 cm? (use pi = $\frac{22}{7}$)

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4 What is the area of a circle with radius 14 cm? (use pi = $\frac{22}{7}$)

A 88 cm^2

B 154 cm^2

C 616 cm^2

D 44 cm^2

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5 What is the circumference of a circle with a diameter of 14 cm? (use pi = $\frac{22}{7}$)

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6 What is the area of a circle with radius 10 cm? (use pi = 3.14)

A 62.8 cm^2

B 314 cm^2

C 31.4 cm^2

D 1256 cm^2

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7 What is the circumference of a circle with radius 10 cm? (use pi = 3.14)

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8 What is the area of a circle with radius 2 cm? (use pi = 3.14)

A 6.28 cm^2

B 12.56 cm^2

C 25.12 cm^2

D 50.24 cm^2

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9 What is the circumference of a circle with a diameter of 20 cm? (use pi = 3.14)

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10 **What is the area of a circle with radius 5 cm? (use pi = 3.14)**

A 31.4 cm^2

B 15.7 cm^2

C 78.5 cm^2

D 314 cm^2

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ANSWER KEY

1. 132 cm

2. 1386 cm^2

3. 88 cm

4. 616 cm^2

5. 44 cm

6. 314 cm^2

7. 62.8 cm

8. 12.56 cm^2

9. 62.8 cm

10. 78.5 cm^2

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