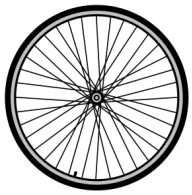
Name & Surname: _____ Class: _____ Date: _____

Circles: Around and Inside

Circumference and area with pi about 3.14

About 45 minutes Level ★★★☆☆



Area and Circumference

For any circle, the **diameter** is twice the radius. Use pi ≈ 3.14.

- **Circumference** (around): C = π × d or C = 2 × π × r. Answer in units like cm.
- **Area** (inside): A = π × r × r. Answer in square units like cm².
- Example: r = 3 cm → C = 2 × 3.14 × 3 = 18.84 cm and A = 3.14 × 3² = 28.26 cm²

Task A

/8

Find the missing circumference values. Use π ≈ 3.14.

1 IN → × 3.14 → OUT

In	Out
10	
7	
	50.24
	28.26

2 IN → × 2 → × 3.14 → OUT

In	Out
5	
8	
	37.68
	75.36

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Practice With Circles

Find circumference and area from radius and diameter.

Key words

circumference: distance around a circle

diameter: distance straight across through the center

radius: distance from center to edge

pi: about 3.14, ratio of circumference to diameter

area: space inside a shape, in square units

Task B /12

Practice finding circumference and area. Use π ≈ 3.14.

WARM UP

1. Find the **circumference** of a circle with diameter 10 cm.

Answer: _____

2. Find the **circumference** of a circle with radius 3 cm.

Answer: _____

3. Find the **area** of a circle with radius 4 cm.

Answer: _____

4. Find the **area** of a circle with radius 5 cm.

Answer: _____

PRACTICE

5. A circle has **diameter** 14 cm. Find its circumference.

Answer: _____

6. A circle has **radius** 6 cm. Find its area.

Answer: _____

7. A student says doubling the **radius** doubles the **area**. Explain how you know they are wrong.

Answer: _____

8. The **circumference** of a circle is 25.12 cm. Find its diameter. Use π ≈ 3.14.

Answer: _____

PROBLEM SOLVING

9. A circular garden has **radius** 7 m. How much fence is needed to go around it?

Answer: _____

10. A round table top has **diameter** 120 cm. Find its area.

Answer: _____

11. A bicycle wheel has **diameter** 60 cm. How far does it travel in one full turn?

Answer: _____

12. Explain how you know whether your answer should be in cm or cm² when you find the **area** of a circle.

Answer: _____

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Spot the Mistake

Find what went wrong and fix it.

Task C /6

Find the wrong step and fix each area or circumference problem.



Student A

Work out the area of a circle with diameter 10 cm. Use $\pi \approx 3.14$.

1. radius = 10 ÷ 2 = 5 cm
2. $A = 3.14 \times 10^2$
3. $= 314$ cm²

The mistake is in step: _____

What went wrong?

.....

Correct answer: _____



Student B

Work out the circumference of a circle with radius 4 cm. Use $\pi \approx 3.14$.

1. $C = 3.14 \times 4^2$
2. $= 3.14 \times 16$
3. $= 50.24$ cm

The mistake is in step: _____

What went wrong?

.....

Correct answer: _____



Student C

Work out the area of a circle with radius 6 cm. Use $\pi \approx 3.14$.

1. $A = 3.14 \times 6^2$
2. $= 3.14 \times 12$
3. $= 37.68$ cm²

The mistake is in step: _____

What went wrong?

.....

Correct answer: _____

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Work Backwards Now

Find missing radius and diameter and solve harder problems.

Task D /12

Work backwards from circumference and area to find missing lengths.

WARM UP

1. A circle has **radius** 11 cm. Find its diameter.

Answer: _____

2. A circle has **diameter** 18 cm. Find its radius.

Answer: _____

3. Find the **circumference** of a circle with diameter 4 cm.

Answer: _____

4. Find the **area** of a circle with radius 2 cm.

Answer: _____

PRACTICE

5. The **circumference** of a circle is 62.8 cm. Find its radius. Use $\pi \approx 3.14$.

Answer: _____

6. The **area** of a circle is 28.26 cm^2. Find its radius. Use $\pi \approx 3.14$.

Answer: _____

7. One circle has **radius** 10 cm. Another has radius 20 cm. How many times larger is the area of the second circle?

Answer: _____

8. A circle has **diameter** 30 cm. Find its area.

Answer: _____

PROBLEM SOLVING

9. A sprinkler waters a circle with **radius** 8 ft. Find the watered area.

Answer: _____

10. A round rug has **diameter** 6 ft. Find its circumference.

Answer: _____

11. A student walks once around a circular pond with **diameter** 50 m. How far do they walk?

Answer: _____

12. Explain how you know $C = 2\pi r$ and $C = \pi d$ give the same **circumference**.

Answer: _____

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Why Area Works

See how circumference leads to area, then practice.

Task E Example done for you /5

Put the steps that show where the area formula comes from in order.

- [ ] So the area is length × width = π × r × r = πr².
- [ ] Rearrange the wedges tip to tail to make a shape like a parallelogram.
- [ ] Cut one end wedge in half to make the shape look like a rectangle.
- [1] Cut the circle into many thin equal wedges.
- [ ] The width of the rectangle is the radius, r.
- [ ] The length of the rectangle is half the circumference, or π × r.

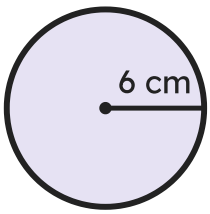
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Circles: Around and Inside

Task F /4

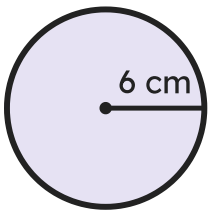
Find the circumference or area of each circle. Use the π key on a calculator and round to 1 decimal place.

1



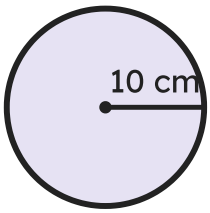
Circumference: _____ **cm**

2



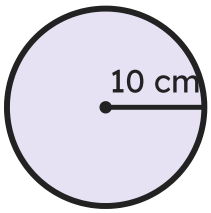
Area: _____ **cm²**

3



Circumference: _____ **cm**

4



Area: _____ **cm²**

How did I do?

Circle a face for each line.

I can find the circumference of a circle from its radius or diameter.	☹	😐	☺
I can find the area of a circle from its radius or diameter.	☹	😐	☺
I can explain how circumference and area are connected.	☹	😐	☺

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Answer sheet: Circles: Around and Inside

Task A

1. 10 → 31.40; 7 → 21.98; 16 → 50.24; 9 → 28.26
2. 5 → 31.40; 8 → 50.24; 6 → 37.68; 12 → 75.36

Task B

1. 31.4 cm
2. 18.84 cm
3. 50.24 cm²
4. 78.5 cm²
5. 43.96 cm
6. 113.04 cm²
7. Doubling the radius makes the area 4 times as large, because area uses r squared.
8. 8 cm
9. 43.96 m
10. 11304 cm²
11. 188.4 cm
12. Area measures surface covered, so it is always in square units like cm².

Task C

1. Step 2 is wrong: They used the diameter instead of the radius. Area needs r^2, so use 5^2. Correct answer: 78.5 cm²
2. Step 1 is wrong: They used the area formula. Circumference is $2 \times \pi \times r$, not $\pi \times r^2$. Correct answer: 25.12 cm
3. Step 2 is wrong: They multiplied by 2 instead of squaring. $6^2 = 6 \times 6 = 36$. Correct answer: 113.04 cm²

Task D

1. 22 cm
2. 9 cm
3. 12.56 cm
4. 12.56 cm²
5. 10 cm
6. 3 cm
7. 4 times
8. 706.5 cm²
9. 200.96 ft²
10. 18.84 ft
11. 157 m
12. Because $d = 2r$, so $\pi \times d = \pi \times 2 \times r = 2\pi r$.

Task E

1. Cut the circle into many thin equal wedges. 2. Rearrange the wedges tip to tail to make a shape like a parallelogram. 3. Cut one end wedge in half to make the shape look like a rectangle. 4. The length of the rectangle is half the circumference, or $\pi \times r$. 5. The width of the rectangle is the radius, r. 6. So the area is length × width = $\pi \times r \times r = \pi r^2$.

Task F

1. circumference = 37.7 cm (12π)
2. area = 113.1 cm² (36π)
3. circumference = 62.8 cm (20π)
4. area = 314.2 cm² (100π)

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