

Net It Up

Find a cylinder's surface area from its net.

GRADE 7 • MA.7.GR.2.1

MA.7.GR.2.1 "Given a mathematical or real-world context, find the surface area of a right circular cylinder using the figure's net."

NAME _____

DATE _____

THE BIG IDEA

A cylinder net has two matching circles and one rectangle. Add the areas of all three pieces: surface area = $2\pi r^2 + 2\pi rh$, where r is the circle radius and h is the rectangle's height.

WORKED EXAMPLE

A cylinder net has two circles with radius 3 cm and one rectangle measuring 8 cm by 6π cm. Find the total surface area.

1. Find the area of the two circles: $2 \times \pi \times 3^2 = 18\pi \text{ cm}^2$.
2. Find the area of the rectangle: $8 \times 6\pi = 48\pi \text{ cm}^2$.
3. Add the three net pieces: $18\pi + 48\pi = 66\pi \text{ cm}^2$.

Answer: $66\pi \text{ cm}^2$

PRACTICE 6 problems

- 1** A cylinder net has two circles with radius 2 cm and a rectangle measuring 4π cm by 5 cm. Find the surface area.

ANSWER _____

- 2** A cylinder net has two circles with diameter 10 cm and a rectangle measuring 10π cm by 7 cm. Find the surface area.

ANSWER _____

- 3** A cylinder net has two circles with radius 5 cm and a rectangle measuring 10π cm by 4 cm. Find the surface area.

ANSWER _____

- 4** A cylinder net has two circles with diameter 4 cm and a rectangle measuring 4π cm by 9 cm. Find the surface area.

ANSWER _____

- 5** A cylinder net has two circles with radius 7 cm and a rectangle measuring 14π cm by 1 cm. Find the surface area.

ANSWER _____

- 6** A cylinder net has two circles with diameter 18 cm and a rectangle measuring 18π cm by 5 cm. Find the surface area.

ANSWER _____

APPLY IT Show your work

- 1** A school merch club will cover a cylindrical collection can with a design on every outside surface. Its net has two circles with diameter 14 cm and a rectangle measuring 14π cm by 11 cm. How much paper is needed?

WORK SPACE

ANSWER _____

- 2** An art club is wrapping a cylindrical prize tube completely in patterned paper. The tube has radius 7 cm and height 15 cm. Its net has two circular ends and one rectangle. What area of paper is needed?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A cylinder net has a rectangle with area 120π cm². Each of its two circles has radius 5 cm. Find the total surface area. Explain why you do not need the rectangle's side lengths.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A cylinder net has two circles with radius 2 cm and a rectangle measuring 4π cm by 5 cm. Find the surface area.	$28\pi \text{ cm}^2$
2	A cylinder net has two circles with diameter 10 cm and a rectangle measuring 10π cm by 7 cm. Find the surface area.	$120\pi \text{ cm}^2$
3	A cylinder net has two circles with radius 5 cm and a rectangle measuring 10π cm by 4 cm. Find the surface area.	$90\pi \text{ cm}^2$
4	A cylinder net has two circles with diameter 4 cm and a rectangle measuring 4π cm by 9 cm. Find the surface area.	$44\pi \text{ cm}^2$
5	A cylinder net has two circles with radius 7 cm and a rectangle measuring 14π cm by 1 cm. Find the surface area.	$112\pi \text{ cm}^2$
6	A cylinder net has two circles with diameter 18 cm and a rectangle measuring 18π cm by 5 cm. Find the surface area.	$252\pi \text{ cm}^2$

PART 2 • APPLY IT

- $252\pi \text{ cm}^2$** The two circles have a total area of $98\pi \text{ cm}^2$, and the rectangle has an area of $154\pi \text{ cm}^2$. Add them to get $252\pi \text{ cm}^2$.
- $308\pi \text{ cm}^2$** The rectangle in the net measures 14π cm by 15 cm, so its area is $210\pi \text{ cm}^2$. The two circles total $98\pi \text{ cm}^2$, for $308\pi \text{ cm}^2$ altogether.

CHALLENGE

$170\pi \text{ cm}^2$. The rectangle's area is already $120\pi \text{ cm}^2$, and the two circles have a total area of $50\pi \text{ cm}^2$.

Accept equivalent exact expressions with π , such as an unsimplified sum of the circle and rectangle areas. Require square units in final answers.