

Surface Area Sprint

Use faces, nets, and formulas to find total outside area.

GRADE 7 • 7.MG.1.b

7.MG.1.b "Develop the formulas for determining the surface area of rectangular prisms and right cylinders and solve problems, including those in contextual situations, using concrete objects, two-dimensional diagrams, nets, and formulas."

NAME _____

DATE _____

BUILD THE TOTAL AREA

A rectangular prism has three pairs of matching faces, so its surface area is $SA = 2lw + 2lh + 2wh$. A right cylinder has two circular bases and one curved side, so its surface area is $SA = 2\pi r^2 + 2\pi rh$.

WORKED EXAMPLE

Find the surface area of a rectangular prism with length 11 cm, width 7 cm, and height 4 cm.

1. Find the three face areas: $11 \times 7 = 77$, $11 \times 4 = 44$, and $7 \times 4 = 28$.
2. Add the three different face areas: $77 + 44 + 28 = 149$.
3. Each face area appears twice: $2 \times 149 = 298$.

Answer: 298 cm²

PRACTICE 6 problems

- 1** Find the surface area of a right cylinder with radius 2 cm and height 9 cm. Leave your answer in terms of π .

ANSWER _____

- 2** A rectangular prism net has face areas of 18 cm², 45 cm², and 30 cm². Each area appears on two faces. What is the surface area?

ANSWER _____

- 3** Find the surface area of a right cylinder with radius 5 cm and height 6 cm. Leave your answer in terms of π .

ANSWER _____

- 4** Find the surface area of a rectangular prism with length 9 m, width 2 m, and height 13 m.

ANSWER _____

- 5** A right cylinder has a diameter of 18 in. and a height of 10 in. Find its surface area. Leave your answer in terms of π .

ANSWER _____

- 6** A rectangular prism net has face areas of 40 cm², 56 cm², and 70 cm². Each area appears on two faces. What is the surface area?

ANSWER _____

APPLY IT Show your work

- 1** A student mails a rectangular prize box to a gaming tournament. The closed box is 15 in. long, 8 in. wide, and 6 in. high. How much cardboard covers the outside of the box?

WORK SPACE

ANSWER _____

- 2** A music club designs a closed cylindrical container for concert wristbands. The container has a radius of 3 cm and a height of 12 cm. How much material is needed to cover its outside, including both circular ends? Leave your answer in terms of π .

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A rectangular prism has a length of 13 cm, a width of 6 cm, and a surface area of 346 cm^2 . What is its height?

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Find the surface area of a right cylinder with radius 2 cm and height 9 cm. Leave your answer in terms of n .	$44n \text{ cm}^2$
2	A rectangular prism net has face areas of 18 cm^2 , 45 cm^2 , and 30 cm^2 . Each area appears on two faces. What is the surface area?	186 cm^2
3	Find the surface area of a right cylinder with radius 5 cm and height 6 cm. Leave your answer in terms of n .	$110n \text{ cm}^2$
4	Find the surface area of a rectangular prism with length 9 m, width 2 m, and height 13 m.	322 m^2
5	A right cylinder has a diameter of 18 in. and a height of 10 in. Find its surface area. Leave your answer in terms of n .	$342n \text{ in.}^2$
6	A rectangular prism net has face areas of 40 cm^2 , 56 cm^2 , and 70 cm^2 . Each area appears on two faces. What is the surface area?	332 cm^2

PART 2 • APPLY IT

- 516 in.^2** Use $SA = 2lw + 2lh + 2wh$. Calculate $2(15 \times 8 + 15 \times 6 + 8 \times 6) = 516$.
- $90n \text{ cm}^2$** Add the two circular ends and the curved side: $2n(3 \times 3) + 2n(3)(12) = 90n$.

CHALLENGE

5 cm

Accept equivalent expressions, such as $2\pi r^2 + 2\pi rh$ before simplifying. For cylinder answers, accept answers left in terms of n .