

Surface Area Squad

Find the area that covers every outside face.

GRADE 7 • 7.GSR.5.6

7.GSR.5.6 "Solve realistic problems involving surface area of right prisms and cylinders."

NAME _____

DATE _____

COVER EVERY SURFACE

Surface area is the total area of all the outside faces of a solid. For a rectangular prism, use $SA = 2(lw + lh + wh)$. For a closed cylinder, use $SA = 2\pi r^2 + 2\pi rh$, and remember that the radius is half of the diameter.

WORKED EXAMPLE

Find the surface area of a rectangular prism with length 11 cm, width 9 cm, and height 2 cm.

1. $SA = 2(lw + lh + wh)$
2. $SA = 2(11 \times 9 + 11 \times 2 + 9 \times 2)$
3. $SA = 2(99 + 22 + 18) = 278$

Answer: 278 square cm

PRACTICE 6 problems

- 1** Find the surface area of a rectangular prism with length 4 cm, width 6 cm, and height 3 cm.

ANSWER _____

- 2** A right triangular prism has a triangular base with side lengths 4 cm, 4 cm, and 6 cm. The triangle's height to the 6 cm side is 3 cm, and the prism length is 7 cm. Find its surface area.

ANSWER _____

- 3** Find the surface area of a closed cylinder with radius 3 cm and height 4 cm. Use $\pi = 3.14$.

ANSWER _____

- 4** Find the surface area of a closed cylinder with diameter 10 cm and height 6 cm. Use $\pi = 3.14$.

ANSWER _____

- 5** Find the surface area of a rectangular prism with length 12 cm, width 4 cm, and height 7 cm.

ANSWER _____

- 6** A square prism has base edges of 6 cm and a height of 10 cm. Find its surface area.

ANSWER _____

APPLY IT Show your work

- 1** A student is covering a closed cardboard storage box for a gaming setup. The box is 15 cm long, 8 cm wide, and 4 cm high. How many square centimeters of covering material are needed?

WORK SPACE

ANSWER _____

- 2** A student designs a closed reusable water bottle shaped like a cylinder. It has a radius of 4 cm and a height of 12 cm. How much material covers its outside, including both circular ends? Use $\pi = 3.14$.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A closed rectangular prism has length 14 cm, width 6 cm, and an unknown height x . Its surface area is 408 square cm. Find x . Show how the face areas lead to your equation.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Find the surface area of a rectangular prism with length 4 cm, width 6 cm, and height 3 cm.	108 square cm
2	A right triangular prism has a triangular base with side lengths 4 cm, 4 cm, and 6 cm. The triangle's height to the 6 cm side is 3 cm, and the prism length is 7 cm. Find its surface area.	116 square cm
3	Find the surface area of a closed cylinder with radius 3 cm and height 4 cm. Use $\pi = 3.14$.	131.88 square cm
4	Find the surface area of a closed cylinder with diameter 10 cm and height 6 cm. Use $\pi = 3.14$.	345.4 square cm
5	Find the surface area of a rectangular prism with length 12 cm, width 4 cm, and height 7 cm.	320 square cm
6	A square prism has base edges of 6 cm and a height of 10 cm. Find its surface area.	312 square cm

PART 2 • APPLY IT

1. **424 square cm** Use $SA = 2(lw + lh + wh)$. The calculation is $2(15 \times 8 + 15 \times 4 + 8 \times 4) = 424$.

2. **401.92 square cm** Find the areas of the two circular ends and the curved side. $2(3.14)(4 \times 4) + 2(3.14)(4)(12) = 401.92$.

CHALLENGE

$x = 6$ cm. $2(14 \times 6 + 14x + 6x) = 408$, so $168 + 40x = 408$ and $x = 6$.

Accept equivalent numerical forms with correct square units, including 345.40 square cm for the fourth problem. For cylinder problems, accept work that adds the two base areas and lateral area correctly.