LESSON MAKER PRO

Surface Sprint

Find lateral and total surface area.

GRADE 8 · TEKS 8.7.B

8.7.B "use previous knowledge of surface area to make connections to the formulas for lateral and total surface area and determine solutions for problems involving rectangular prisms, triangular prisms, and cylinders;"

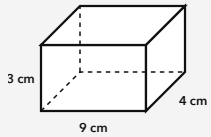
NAME _____ **DATE** _____

COVERING SOLIDS

Lateral surface area covers only the side faces. For a prism, LA = (perimeter of base)(height), and for a cylinder, LA = 2pi rh. Total surface area adds the areas of both bases.

WORKED EXAMPLE

Use the rectangular prism shown. Find its total surface area.



1. TSA = 2lw + 2lh + 2wh.
2. TSA = 2(9)(4) + 2(9)(3) + 2(4)(3).
3. TSA = 72 + 54 + 24 = 150.

Answer: 150 cm²

PRACTICE 4 problems

1 A rectangular prism is 8 cm long, 5 cm wide, and 6 cm high. Find its lateral surface area.

ANSWER _____

2 A triangular prism has a base with side lengths 7 cm, 10 cm, and 11 cm. The prism is 12 cm long. Find its lateral surface area.

ANSWER _____

3 A cylinder has radius 5 cm and height 8 cm. Find its lateral surface area in terms of pi.

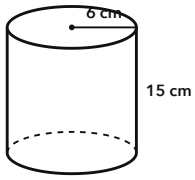
ANSWER _____

4 A rectangular prism is 10 cm long, 7 cm wide, and 2 cm high. Find its total surface area.

ANSWER _____

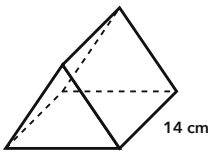
APPLY IT Show your work

1 The closed snack container shown is a cylinder. How much material covers its outside? Use pi = 3.14.



ANSWER _____

2 The art club's display stand shown is a closed triangular prism. Its triangular base is a right triangle with legs 5 cm and 12 cm. Find its total surface area.



ANSWER _____

CHALLENGE One step up

A closed triangular prism has an isosceles triangular base with side lengths 10 cm, 10 cm, and 12 cm. Its total surface area is 336 cm^2. Find the prism's length. Show how you separated the bases from the lateral faces.

WORK SPACE AND ANSWER

ANSWER KEY

Surface Sprint

GRADE 8 · TEKS 8.7.B

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A rectangular prism is 8 cm long, 5 cm wide, and 6 cm high. Find its lateral surface area.	**156 cm^2**
2	A triangular prism has a base with side lengths 7 cm, 10 cm, and 11 cm. The prism is 12 cm long. Find its lateral surface area.	**336 cm^2**
3	A cylinder has radius 5 cm and height 8 cm. Find its lateral surface area in terms of pi.	**80pi cm^2**
4	A rectangular prism is 10 cm long, 7 cm wide, and 2 cm high. Find its total surface area.	**208 cm^2**

PART 2 · APPLY IT

1. **791.28 cm^2** Use TSA = 2pi r^2 + 2pi rh. The two bases have area 226.08 cm^2, and the lateral area is 565.2 cm^2.
2. **480 cm^2** The base area is 30 cm^2 and its perimeter is 30 cm. Add 2(30) to the lateral area, 30(14).

CHALLENGE

15/2 cm; the two bases have area 96 cm^2, so the lateral area is 240 cm^2. Then 240 / 32 = 15/2.

Accept 7.5 cm for the challenge. For cylinder answers in terms of pi, equivalent unsimplified expressions are acceptable.