LESSON MAKER PRO

Cover Every Face

Find surface area from the faces of a solid.

GRADE 6 · 6.GR.A.4

6.GR.A.4 "Represent three-dimensional figures (triangular prism, rectangular prism, pyramid) using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures to solve problems."

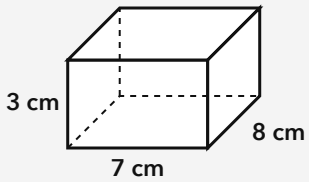
NAME _____ DATE _____

THE BIG IDEA

A net shows all the faces of a solid laid flat. To find surface area, add the area of every face once. For a rectangle, multiply length by width. For a triangle, multiply base by height, then divide by 2.

WORKED EXAMPLE

Find the surface area of the rectangular prism shown.



1. Its net has two of each rectangular face.
2. Face areas: $7 \times 8 = 56$, $7 \times 3 = 21$, and $8 \times 3 = 24$ cm^2.
3. Add: $2 \times (56 + 21 + 24) = 202$ cm^2.

Answer: 202 cm^2

PRACTICE 4 problems

1 A rectangular prism measures 4 cm by 5 cm by 6 cm. Find its surface area.

ANSWER _____

2 A triangular prism has two right-triangle faces with side lengths 5 cm, 12 cm, and 13 cm. The prism is 4 cm long. Find its surface area.

ANSWER _____

3 A square pyramid has a base edge of 4 cm and a slant height of 5 cm. Find its surface area, including the base.

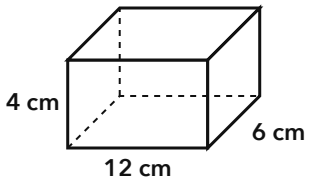
ANSWER _____

4 A triangular prism has two triangular faces of 12 cm^2 each. Its rectangular faces have areas of 18, 24, and 30 cm^2. Find its surface area.

ANSWER _____

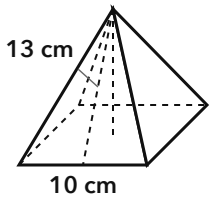
APPLY IT Show your work

1 You wrap the prize box shown. How many square centimeters of paper cover it with no overlap?



ANSWER _____

2 For the school fair, you paint the square pyramid display shown, including its bottom. How many square centimeters do you paint?



ANSWER _____

CHALLENGE One step up

A square pyramid has a base edge of 6 cm and a total surface area of 84 cm^2, including the base. What is its slant height? Show how you know.

WORK SPACE AND ANSWER

ANSWER KEY

Cover Every Face

GRADE 6 · 6.GR.A.4

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A rectangular prism measures 4 cm by 5 cm by 6 cm. Find its surface area.	**148 cm²**
2	A triangular prism has two right-triangle faces with side lengths 5 cm, 12 cm, and 13 cm. The prism is 4 cm long. Find its surface area.	**180 cm²**
3	A square pyramid has a base edge of 4 cm and a slant height of 5 cm. Find its surface area, including the base.	**56 cm²**
4	A triangular prism has two triangular faces of 12 cm^2 each. Its rectangular faces have areas of 18, 24, and 30 cm^2. Find its surface area.	**96 cm²**

PART 2 · APPLY IT

1. **288 cm²** The box has two faces of each size. Its surface area is $2 \times (12 \times 6 + 12 \times 4 + 6 \times 4) = 288$ cm^2.
2. **360 cm²** The square bottom is 100 cm^2. Each of the four triangles is $10 \times 13 \div 2 = 65$ cm^2, so the total is $100 + 4 \times 65 = 360$ cm^2.

CHALLENGE

4 cm. The base area is 36 cm², leaving 48 cm² for four triangles. Each triangle has area 12 cm², so 6 × 4 ÷ 2 = 12.

Surface area includes all faces unless a problem says otherwise. Accept any correct method that counts each face once.