LESSON MAKER PRO

Face by Face

Find surface area and compare rectangular prisms.

GRADE 7 · 7.GM.1.1

7.GM.1.1 "Recognize that the surface area of a rectangular prism can be found by finding the area of each component of the net of that figure. Know that rectangular prisms of different dimensions can have the same surface area."

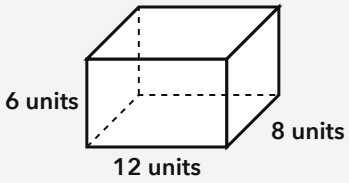
NAME _____ DATE _____

ADD THE FACES

A rectangular prism has six faces arranged in three matching pairs. Find the area of one face in each pair, double each area, and add the results. Prisms with different edge lengths can have the same surface area.

WORKED EXAMPLE

Find the surface area of the rectangular prism shown.

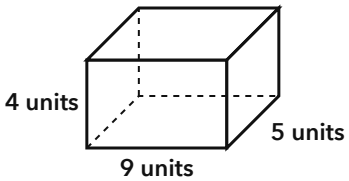


1. One pair has faces of area 6 × 8 = 48 square units each.
2. One pair has faces of area 6 × 12 = 72 square units each.
3. One pair has faces of area 8 × 12 = 96 square units each.
4. Add both of each face: 2(48 + 72 + 96) = 432 square units.

Answer: 432 square units

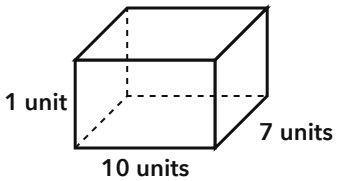
PRACTICE 6 problems

1 Find the surface area of the prism shown.



ANSWER _____

2 Find the surface area of the prism shown.

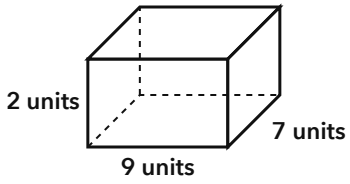


ANSWER _____

3 A rectangular prism has edge lengths of 1/2 unit, 4 units, and 10 units. Find its surface area.

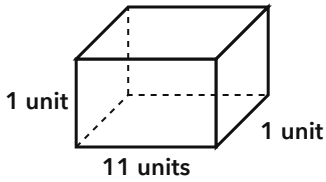
ANSWER _____

4 Find the surface area of the prism shown.



ANSWER _____

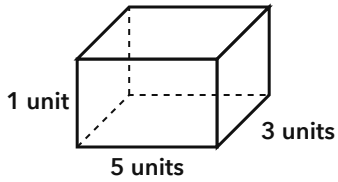
5 Find the area of each pair of matching faces on the prism shown. Then find its total surface area.



ANSWER _____

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6 Find the surface area of the prism shown. Does it match the surface area in problem 5?

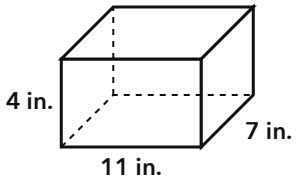


ANSWER _____

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APPLY IT Show your work

1 A school club covers every outside face of the storage box shown with sticker paper. How many square inches of paper does the club need if the paper does not overlap?



ANSWER _____

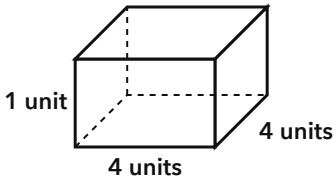
2 A student paints every outside face of a rectangular prop for a gaming display. The prop measures 1/2 foot by 4 feet by 9 feet. How many square feet will the student paint?

WORK SPACE

ANSWER _____

CHALLENGE One step up

The prism shown and a second prism have the same surface area. The second prism has edge lengths of 2 units, 2 units, and x units. Find x. Explain how the face areas show that the surface areas match.



WORK SPACE AND ANSWER

ANSWER KEY # Face by Face

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find the surface area of the prism shown.	**202 square units**
2	Find the surface area of the prism shown.	**174 square units**
3	A rectangular prism has edge lengths of 1/2 unit, 4 units, and 10 units. Find its surface area.	**94 square units**
4	Find the surface area of the prism shown.	**190 square units**
5	Find the area of each pair of matching faces on the prism shown. Then find its total surface area.	**The three pairs have areas of 2, 22, and 22 square units. The total surface area is 46 square units.**
6	Find the surface area of the prism shown. Does it match the surface area in problem 5?	**46 square units; yes, it matches.**

PART 2 · APPLY IT

1. **298 square inches** The three face areas are 11 × 7 = 77, 11 × 4 = 44, and 7 × 4 = 28 square inches. Double their sum: 2(77 + 44 + 28) = 298 square inches.
2. **85 square feet** The three face areas are 2, 4 1/2, and 36 square feet. Double their sum: 2(2 + 4 1/2 + 36) = 85 square feet.

CHALLENGE

x = 5 units. The shown prism has surface area 2(4 × 4 + 4 × 1 + 4 × 1) = 48 square units. With x = 5, the second prism has surface area 2(2 × 2 + 2 × 5 + 2 × 5) = 48 square units.

Accept any order for the three pair areas in problem 5. In the challenge, accept an equivalent explanation that accounts for all six faces of each prism.