LESSON MAKER PRO

Cover Every Face

Find the area around rectangular prisms.

GRADE 8 · PA.GM.2.1

PA.GM.2.1 "Calculate the surface area of a rectangular prism using decomposition or nets. Use appropriate units (e.g., cm²)."

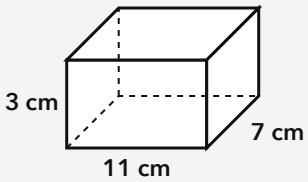
NAME _____ DATE _____

THE BIG IDEA

A rectangular prism has three pairs of matching faces. Find the area of one face in each pair, double each area, and add the results. Write surface area in square units, such as cm^2.

WORKED EXAMPLE

Find the surface area of the rectangular prism shown.

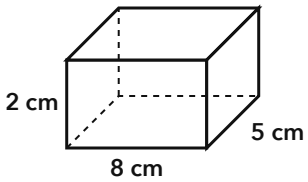


1. Find one area for each pair of faces: 11 × 7 = 77, 11 × 3 = 33, and 7 × 3 = 21.
2. Double each area: 154, 66, and 42.
3. Add the six faces: 154 + 66 + 42 = 262.

Answer: 262 cm^2

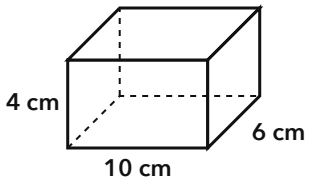
PRACTICE 6 problems

1 Find the surface area of the prism shown.



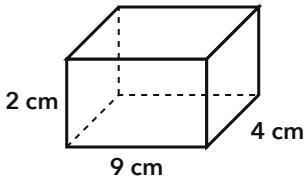
ANSWER _____

2 Find the surface area of the prism shown.



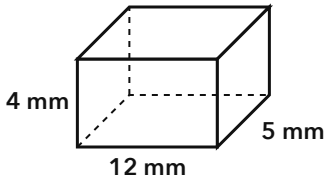
ANSWER _____

3 Find the surface area of the prism shown by adding the areas of its six faces.



ANSWER _____

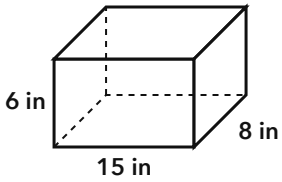
4 Find the combined area of the two faces with side lengths l and w. Then find the prism's total surface area.



ANSWER _____

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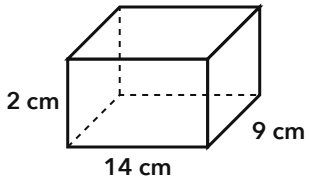
5 A student says the surface area of this prism is 258 in^2. Is the student correct? Give the correct surface area.



ANSWER _____

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6 Find the combined area of the four side faces. Then find the area of all six faces.

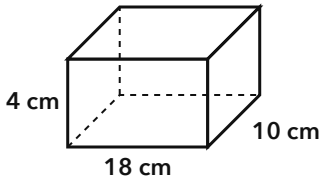


ANSWER _____

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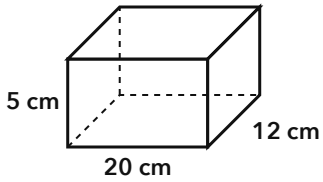
APPLY IT Show your work

1 A streamer covers every face of a storage box with patterned paper. The box has the dimensions shown. How much paper is needed if there is no overlap?



ANSWER _____

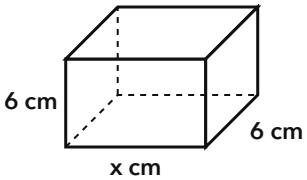
2 An art club paints a rectangular display block but leaves its bottom unpainted because it rests on a table. The block has the dimensions shown. How many square centimeters does the club paint?



ANSWER _____

CHALLENGE One step up

The prism shown has a surface area of 264 cm^2. What is x? Explain how you used the face areas.



WORK SPACE AND ANSWER

ANSWER KEY

Cover Every Face

GRADE 8 · PA.GM.2.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find the surface area of the prism shown.	**132 cm²**
2	Find the surface area of the prism shown.	**248 cm²**
3	Find the surface area of the prism shown by adding the areas of its six faces.	**124 cm²**
4	Find the combined area of the two faces with side lengths l and w. Then find the prism's total surface area.	**Two l-by-w faces: 120 mm²; total surface area: 256 mm²**
5	A student says the surface area of this prism is 258 in^2. Is the student correct? Give the correct surface area.	**No. The surface area is 516 in².**
6	Find the combined area of the four side faces. Then find the area of all six faces.	**Four side faces: 92 cm²; all six faces: 344 cm²**

PART 2 · APPLY IT

1. **584 cm²** Add the areas of the three pairs of faces: 2(18 × 10) + 2(18 × 4) + 2(10 × 4) = 584 cm^2.
2. **560 cm²** Add the top and four side faces: (20 × 12) + 2(20 × 5) + 2(12 × 5) = 560 cm^2.

CHALLENGE

x = 8 cm. The two square faces have a combined area of 72 cm², leaving 192 cm² for four faces that each have area 6x. Thus 24x = 192, so x = 8.

Accept equivalent sums of face areas or 2(lw + lh + wh) for total surface area. For the challenge, accept any correct explanation that accounts for all six faces.