LESSON MAKER PRO

Unfold the Area

Use the faces of a net to find surface area.

GRADE 6 · MT.6.G.4

MT.6.G.4 "Represent three-dimensional figures using nets made up of rectangles and triangles and use the nets to find the surface area of these figures in problems including problems in context..."

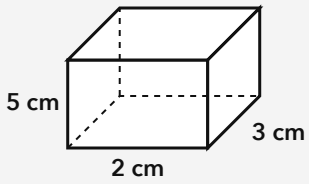
NAME _____ DATE _____

FACES ADD UP

Imagine unfolding a solid into a flat net. Each face keeps its area, so the surface area is the sum of the areas of all the faces. A closed rectangular prism has three pairs of matching rectangles.

WORKED EXAMPLE

Imagine unfolding the solid shown. Find the total area of its six faces.

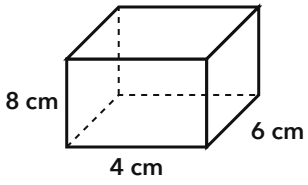


1. Find the areas of the three different faces: $2 \times 3 = 6$, $2 \times 5 = 10$, and $3 \times 5 = 15$ cm^2.
2. Each face has a matching face, so double each area: 12, 20, and 30 cm^2.
3. Add the areas: $12 + 20 + 30 = 62$ cm^2.

Answer: 62 cm^2

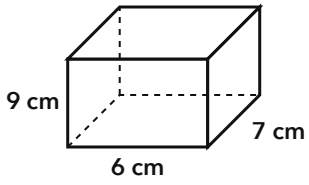
PRACTICE 6 problems

1 Imagine unfolding the solid shown into a net. What is its surface area?



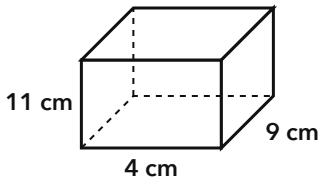
ANSWER _____

2 Find the total area of the faces in a net of this solid.



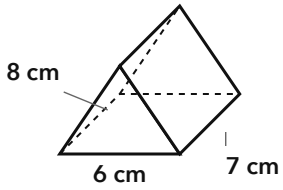
ANSWER _____

3 In a net of this solid, what is the area of one face with sides labeled 4 cm and 9 cm? What is the total surface area?



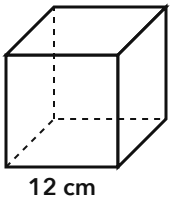
ANSWER _____

4 The triangular ends of this solid are right triangles. Find the total area of the two triangles and three rectangles in its net.



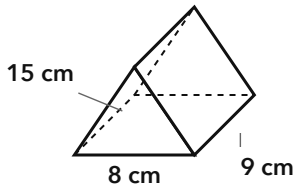
ANSWER _____

5 All edges of this cube have the same length. How much paper covers all its faces with no overlap?



ANSWER _____

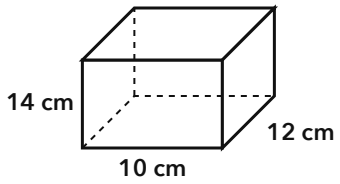
6 The triangular ends of this solid are right triangles. Name the two face shapes in its net, then find its surface area.



ANSWER _____

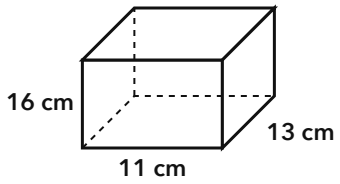
APPLY IT Show your work

1 During a school library event featuring books by Montana Indigenous authors, students cover the outside of a closed display box with colored paper. Using the labeled solid, what area of paper covers the box with no overlap?



ANSWER _____

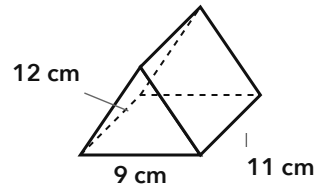
2 At a Montana community sports event, students put a label around the four side faces of a closed equipment box. The label does not cover the top or bottom. Using the labeled solid, what area does the label cover?



ANSWER _____

CHALLENGE One step up

The triangular ends of this solid are right triangles. A student calculates 396 cm^2 for the area of its net. Explain what the student missed and find the correct surface area in one or two sentences.



WORK SPACE AND ANSWER

ANSWER KEY

Unfold the Area

GRADE 6 · MT.6.G.4

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Imagine unfolding the solid shown into a net. What is its surface area?	**208 cm²**
2	Find the total area of the faces in a net of this solid.	**318 cm²**
3	In a net of this solid, what is the area of one face with sides labeled 4 cm and 9 cm? What is the total surface area?	**Face: 36 cm²; total: 358 cm²**
4	The triangular ends of this solid are right triangles. Find the total area of the two triangles and three rectangles in its net.	**216 cm²**
5	All edges of this cube have the same length. How much paper covers all its faces with no overlap?	**864 cm²**
6	The triangular ends of this solid are right triangles. Name the two face shapes in its net, then find its surface area.	**Triangles and rectangles; 480 cm²**

PART 2 · APPLY IT

1. **856 cm²** A net has two of each rectangular face. Add $2(10 \times 12) + 2(10 \times 14) + 2(12 \times 14) = 856$ cm².
2. **768 cm²** Count only the four side rectangles in the net. Their area is $2(11 \times 16) + 2(13 \times 16) = 768$ cm².

CHALLENGE

The student counted the three rectangles but missed the two triangles, which have a total area of 108 cm². The surface area is 396 + 108 = 504 cm².

Accept equivalent calculations that add every required face once. In the second word problem, do not include the top or bottom.