LESSON MAKER PRO

Net Area Detective

Add the faces in a solid's net.

GRADE 7 · TEKS 7.9.D

7.9.D "solve problems involving the lateral and total surface area of a rectangular prism, rectangular pyramid, triangular prism, and triangular pyramid by determining the area of the shape's net."

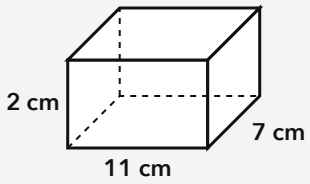
NAME _____ DATE _____

ADD THE NET FACES

A net opens a solid into its flat faces. For lateral surface area, add every face except the base or bases. For total surface area, add every face, including the base or bases.

WORKED EXAMPLE

Find the total surface area of the rectangular prism shown: length 11 cm, width 7 cm and height 2 cm.

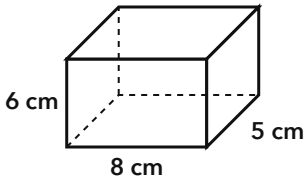


1. Two faces are 11 cm by 7 cm: 2(77) = 154.
2. Two faces are 11 cm by 2 cm: 2(22) = 44.
3. Two faces are 7 cm by 2 cm: 2(14) = 28. Add: 154 + 44 + 28 = 226.

Answer: 226 cm^2

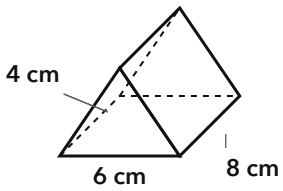
PRACTICE 4 problems

1 Find the lateral surface area of the rectangular prism shown: length 8 cm, width 5 cm and height 6 cm. The two 8 cm by 5 cm bases are excluded.



ANSWER _____

2 Find the total surface area of the triangular prism shown. Its isosceles triangular base has base 6 cm, perpendicular height 4 cm and two equal 5 cm sides. The prism length is 8 cm.



ANSWER _____

3 A right rectangular pyramid has an 18 cm by 10 cm base and vertical height 12 cm, with its apex above the base center. In its net, the two triangles on 18 cm edges have perpendicular face height 13 cm; those on 10 cm edges have face height 15 cm. Sketch and label the five-face net, then find total surface area. Use separate paper for the net if needed.

ANSWER _____

_____

4 A triangular pyramid net has 4 congruent triangles. Each triangle has a base of 12 cm and a height of 5 cm. Find the total surface area.

ANSWER _____

APPLY IT Show your work

1 A student covers every face of a rectangular-prism game box with design paper. The box is 13 cm long, 8 cm wide, and 4 cm high. How much paper is needed?

WORK SPACE

ANSWER _____

2 A music club wraps only the three side faces of a triangular-prism display. Each triangular end has side lengths 8 cm, 8 cm, and 10 cm. The display is 9 cm long. How much wrap is needed?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A right rectangular pyramid has a 32 cm by 10 cm base and vertical height 12 cm, with its apex above the base center. Its two triangles on 32 cm edges have perpendicular face height 13 cm; those on 10 cm edges have face height 20 cm. Sketch and label its net, find total surface area, and explain why the base is added only once. Use separate paper for your complete net if needed.

WORK SPACE AND ANSWER

ANSWER KEY # Net Area Detective

GRADE 7 · TEKS 7.9.D

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find the lateral surface area of the rectangular prism shown: length 8 cm, width 5 cm and height 6 cm. The two 8 cm by 5 cm bases are excluded.	**156 cm^2**
2	Find the total surface area of the triangular prism shown. Its isosceles triangular base has base 6 cm, perpendicular height 4 cm and two equal 5 cm sides. The prism length is 8 cm.	**152 cm^2**
3	A right rectangular pyramid has an 18 cm by 10 cm base and vertical height 12 cm, with its apex above the base center. In its net, the two triangles on 18 cm edges have perpendicular face height 13 cm; those on 10 cm edges have face height 15 cm. Sketch and label the five-face net, then find total surface area. Use separate paper for the net if needed.	**564 cm^2; 18×10 + 2(18×13/2) + 2(10×15/2) = 180 + 234 + 150.**
4	A triangular pyramid net has 4 congruent triangles. Each triangle has a base of 12 cm and a height of 5 cm. Find the total surface area.	**120 cm^2**

PART 2 · APPLY IT

1. **376 cm^2** Add the areas of all six faces: 2(13 x 8 + 13 x 4 + 8 x 4) = 376.
2. **234 cm^2** The triangular base perimeter is 26 cm. Multiply 26 by the prism length, 9 cm, for 234 cm^2.

CHALLENGE

936 cm^2: 32×10 + 2(32×13/2) + 2(10×20/2) = 320 + 416 + 200. The net contains one rectangular base and four triangular faces, so count the base once.

Accept equivalent addition expressions and correct area units. For lateral area, do not include the base or bases. For the repaired right pyramids, verify five labeled net faces and correct face-height associations. Their geometry is consistent: Practice 3 face heights satisfy $13^2-5^2 = 15^2-9^2 = 12^2$; challenge heights satisfy $13^2-5^2 = 20^2-16^2 = 12^2$. These checks support the models, not an additional student prerequisite.