

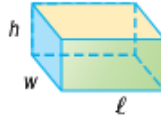
Surface Area of Solid Figures

Prisms and Pyramids

Surface Area of a Rectangular Prism

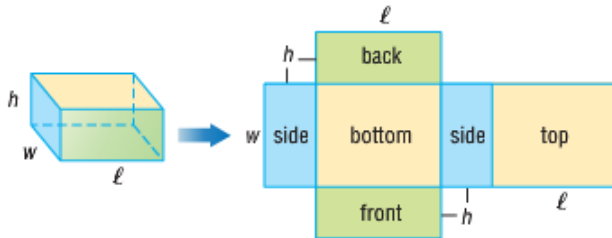
Words The surface area S.A. of a rectangular prism with length ℓ , width w , and height h is the sum of the areas of the faces.

Model



Symbols $S.A. = 2\ell h + 2\ell w + 2hw$

The surface area of a prism is the sum of the areas of its faces.



$$\left. \begin{array}{l} \text{front and back: } \ell h + \ell h = 2\ell h \\ \text{top and bottom: } \ell w + \ell w = 2\ell w \\ \text{two sides: } hw + hw = 2hw \end{array} \right\} 2\ell h + 2\ell w + 2hw$$

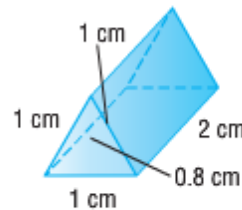
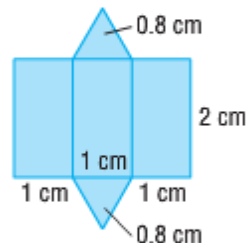
Surface Area of a Triangular Prism

Example



1. Find the surface area of the triangular prism.

To find the surface area of the triangular prism, find the area of each face and add.



$$\text{area of each triangular base: } \frac{1}{2}(1)(0.8) = 0.4$$

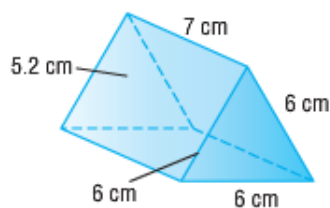
$$\text{area of each rectangular face: } 1(2) = 2$$

Add to find the surface area.

$$0.4 + 0.4 + 2 + 2 + 2 = 6.8 \text{ square centimeters}$$

Got It? Do this problem to find out.

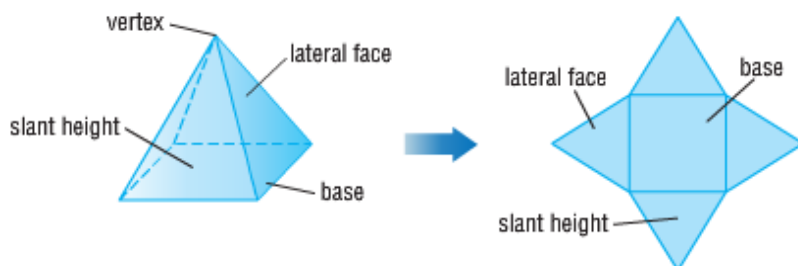
- a. Find the surface area of the triangular prism.



Surface Area of a Pyramid

Words The surface area of a pyramid is the sum of the area of the base and the areas of the lateral faces.

Model



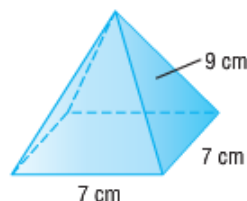
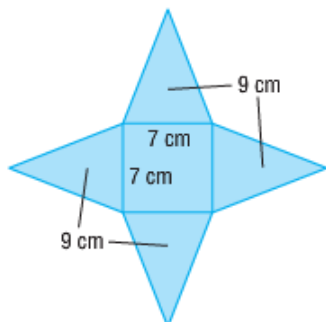
Some pyramids have square or rectangular bases. You can use a net to find the surface area of a pyramid.

Example



- 1. Find the surface area of the pyramid.**

Use a net to find the area of each face and then add.



area of base: $7(7) = 49$

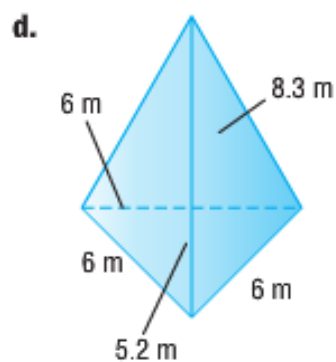
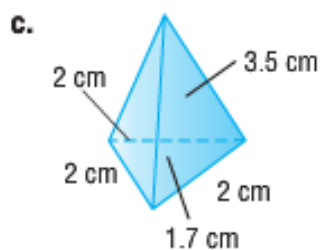
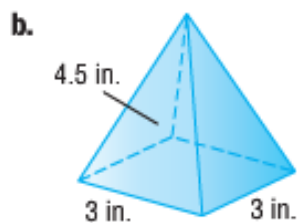
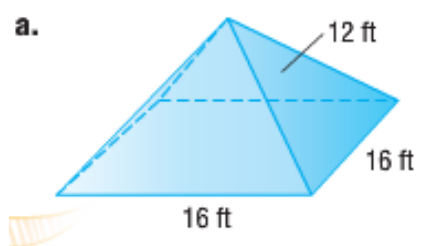
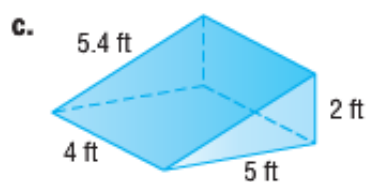
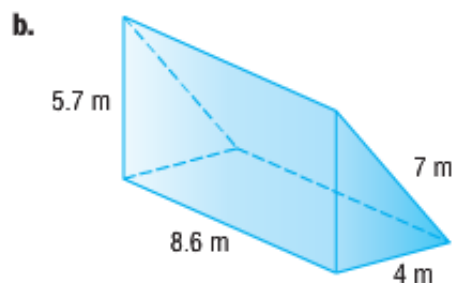
area of each triangular side: $\frac{1}{2}(7)(9) = 31.5$

Add to find the surface area.

$49 + 31.5 + 31.5 + 31.5 + 31.5 = 175$ square centimeters

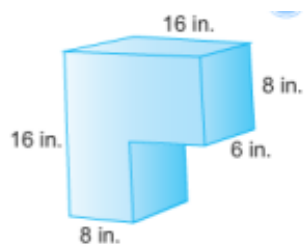
Got It? Do these problems to find out.

Find the surface area of each triangular prism.

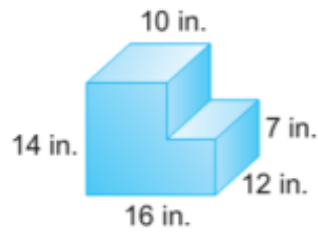


Composite Solid Figures

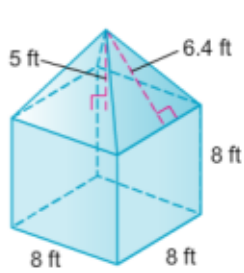
Example 1:



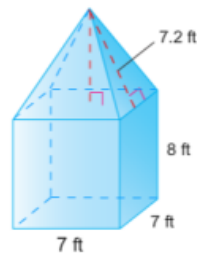
Example 2:



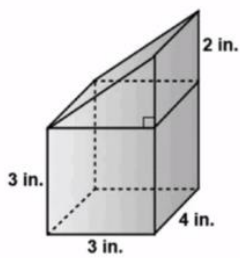
Example 3:



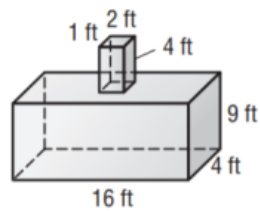
Example 4:



Example 5:



Example 6:

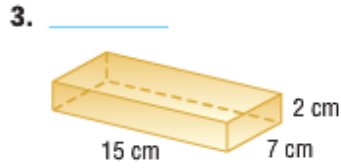
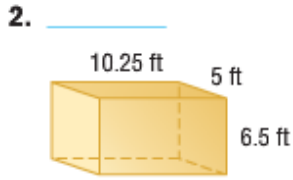


512 ft²

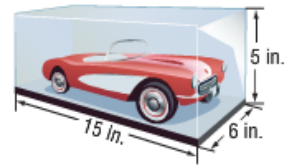
Guided Practice



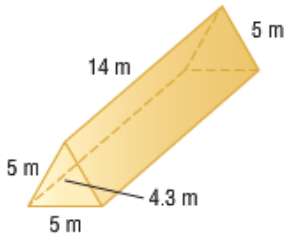
Find the surface area of each rectangular prism. (Examples 1–3)



4. Tomás keeps his diecast car in a glass display case as shown. What is the surface area of the glass, including the bottom? (Example 4)



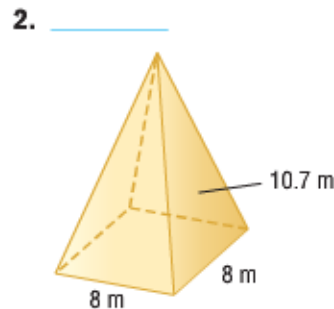
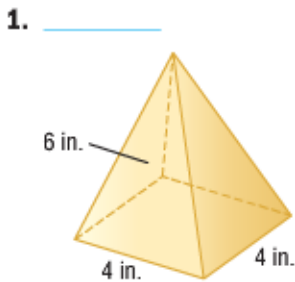
1. Find the surface area of the triangular prism. (Examples 1–2) _____



2. A skateboarding ramp is in the shape of a triangular prism. If the entire ramp is to be painted, what is the surface area to be painted? (Example 3) _____



Find the surface area of each pyramid. (Examples 1–2)



4. Pyramid-shaped gift boxes have square bases that measure 5 inches on each side. The slant height is 6.5 inches. How much cardboard is used to make each box? (Example 3)

o/w
...

o/w
u/r
p/k