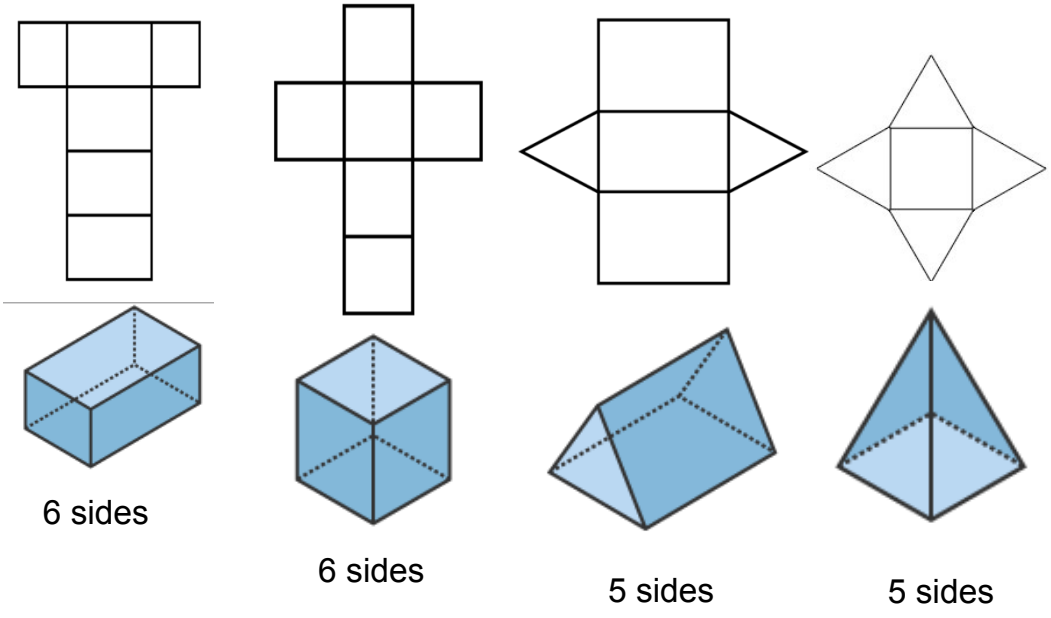
10.9 Surface Area

The **surface area** of a three-dimensional figure is the sum of the areas of its surfaces.

To help you see all the surfaces of a three-dimensional figure, you can use a *net*.

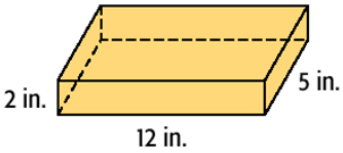
A **net** is the pattern made when the surface of a three-dimensional figure is layed out flat showing each face of the figure.

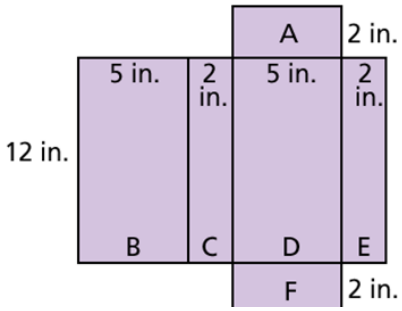
May 27-3:17 PM



May 31-9:15 AM

Method 1: Use a net.





60·2

A: $A = 5 \times 2 = 10$

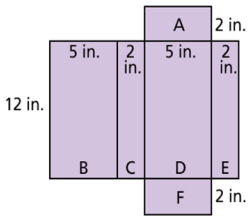
B: $A = 12 \times 5 = 60$

C: $A = 12 \times 2 = 24$

D: $A = 12 \times 5 = 60$

E: $A = 12 \times 2 = 24$

F: $A = 5 \times 2 = 10$



add

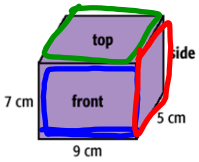
Add the areas of each face.

$S = 10 + 60 + 24 + 60 + 24 + 10 = 188$

The surface area is 188 in^2.

May 31-9:11 AM

Method 2: Use a three-dimensional drawing.



Front: $9 \times 7 = 63 \longrightarrow 63 \times 2 = 126$

Top: $9 \times 5 = 45 \longrightarrow 45 \times 2 = 90$

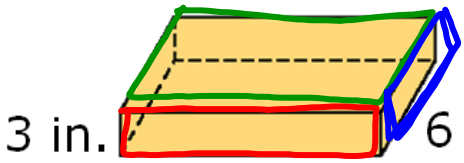
Side: $7 \times 5 = 35 \longrightarrow 35 \times 2 = 70$

$S = 126 + 90 + 70 = 286$ *Add the areas of each face.*

The surface area is 286 cm^2.

286

May 31-9:11 AM



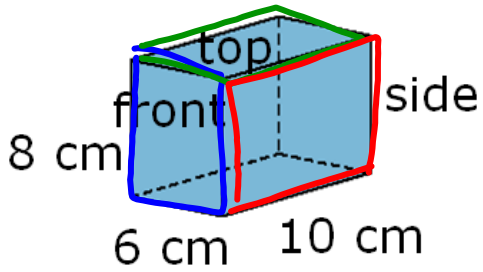
Front: $11 \cdot 3 = 33$ x 2 = 66

Top: $11 \cdot 6 = 66$ x 2 = 132

Side: $3 \cdot 6 = 18$ x 2 = 36

Surface Area: Total of all areas= 234 in^2

May 31-9:12 AM



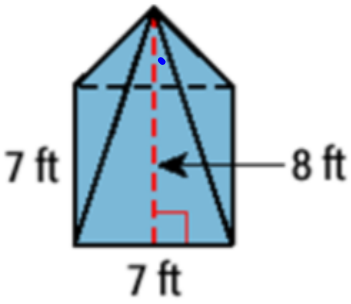
Front: $8 \cdot 6 = 48$ x 2 = 96

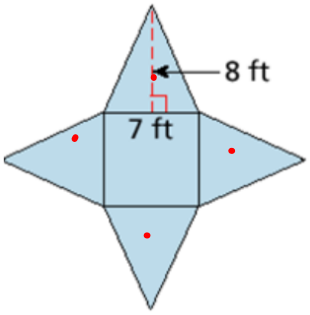
Top: $10 \cdot 6 = 60$ x 2 = 120

Side: $8 \cdot 10 = 80$ x 2 = 160

Surface Area: Total of all areas= 376 cm^2

May 31-9:12 AM



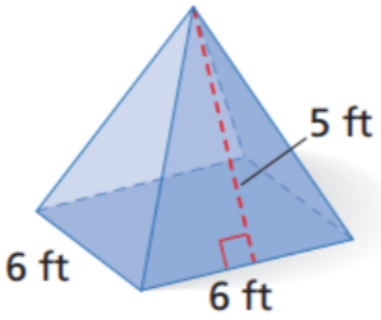


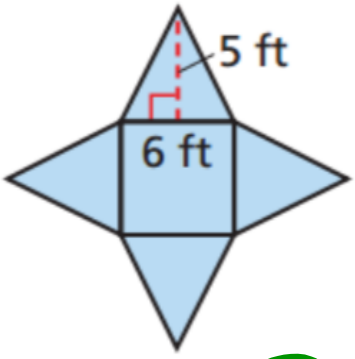
Base: $7 \cdot 7$ = 49

Side: $7 \cdot 8 \div 2 = 28$ x 4 = 112

Surface Area: Total of all areas= $161\ ft^2$

May 31-9:12 AM



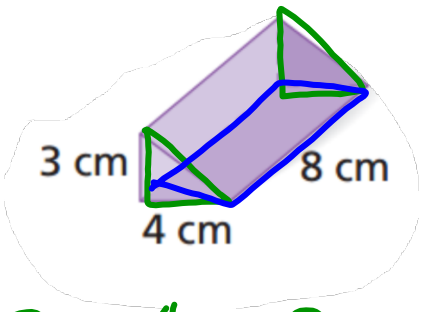


Base: $6 \cdot 6$ = 36

Side: $6 \cdot 5 \div 2 = 15$ x 4 = 60

Surface Area: Total of all areas= $96\ ft^2$

May 31-9:25 AM



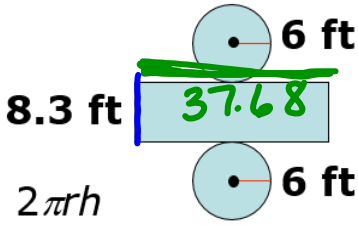
Base: $3 \cdot 4 \div 2 = 6$ x 2 = 12

Side: $4 \cdot 8 = 32$ x 3 = 96

Surface Area: Total of all areas= $108\ cm^2$

May 31-9:26 AM

Find the surface area of the cylinder formed by the net to the nearest tenth. Use 3.14 for π.



$S = 2\pi r^2 + 2\pi rh$

$C = \pi d$

$3.14 \cdot 12 = 37.68$

Use the formula.

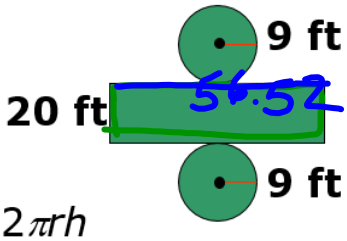
Rectangle: $37.68 \cdot 8.3 = 312.7$ = 312.744

Circle: $3.14 \cdot 6^2 = 113.04$ x 2 = 226.08

Surface Area: Total of all areas= $538.8\ ft^2$

May 22-10:46 AM

Find the surface area of the cylinder formed by the net to the nearest tenth. Use 3.14 for π.



$C = \pi d$

$3.14 \cdot 18$

$S = 2\pi r^2 + 2\pi rh$ *Use the formula.*

Rectangle: $56.52 \cdot 20$ = $1,130.4$

Circle: $9^2 \cdot 3.14 = 254$ x 2 = 508

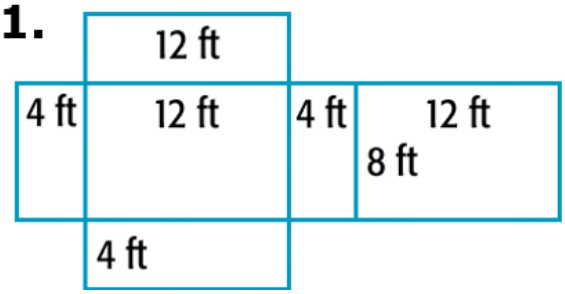
Surface Area: Total of all areas= $1,136 ft^2$

May 22-10:46 AM

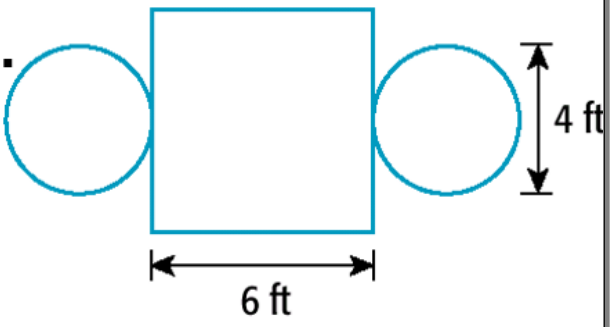
Lesson Quiz

Find the surface area of each figure to the nearest tenth.

1.



2.



3. A drum is cylindrical, and its 14 in. width fits into a drum stand. What percent of the total surface area of the drum is covered by the 3 in. red stripe? Use 3.14 for π.

May 22-10:46 AM