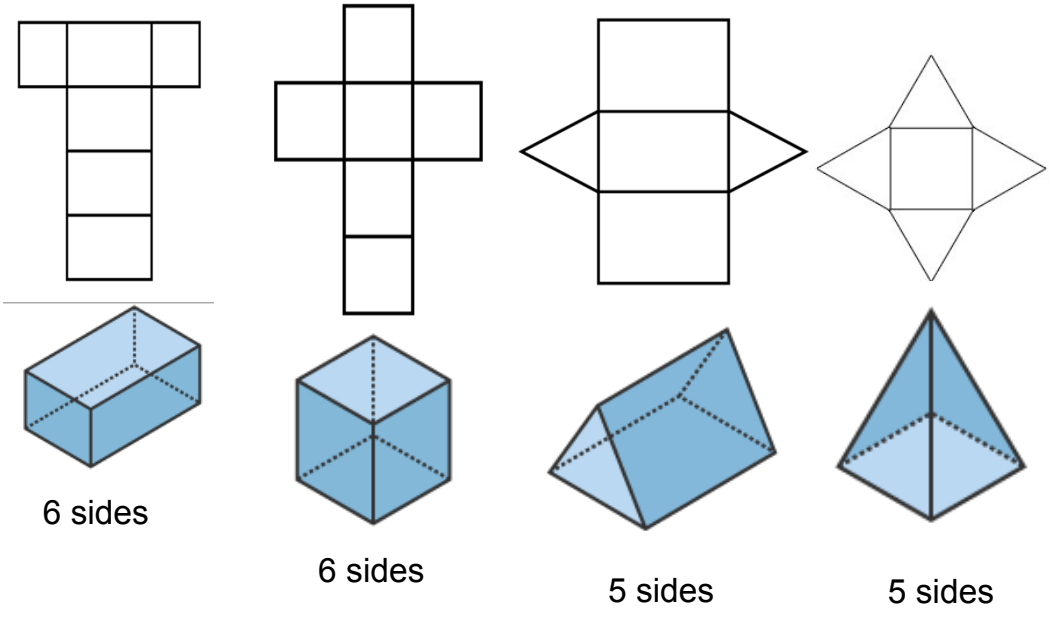
10.4 Surface Area

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*.

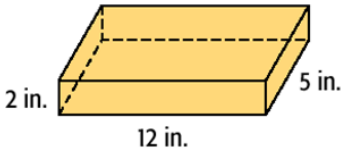
A **net** is the pattern made when the surface of a three-dimensional figure is layed out flat showing each face of the figure.

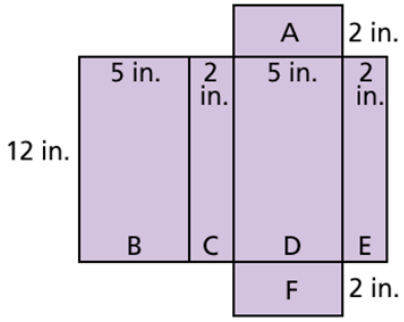
May 27-3:17 PM



May 31-9:15 AM

Method 1: Use a net.





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

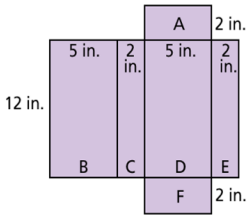
B: $A = 12 \times 5 = 60$

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

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

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

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



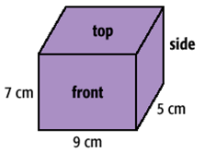
Add the areas of each face.

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

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

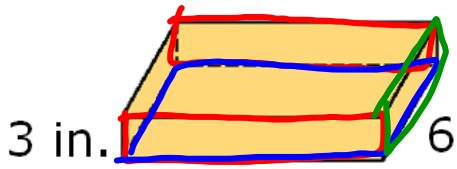
Side: $7 \times 5 = 35 \longrightarrow 35 \times 2 = 70$

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

The surface area is 286 cm^2.

286

May 31-9:11 AM



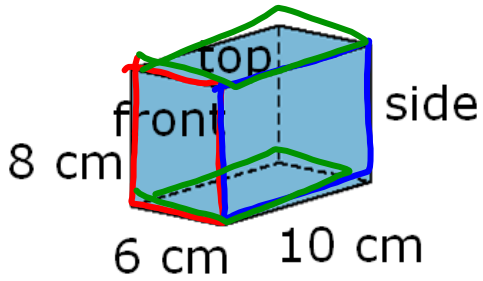
Front: $11 \cdot 3 = 33$ x 2 = 66

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



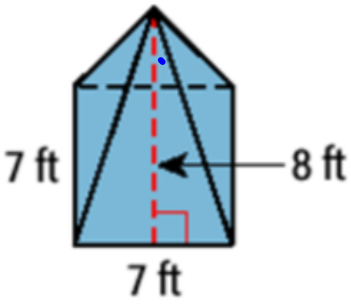
Front: $8 \cdot 10 = 48$ x 2 = 96

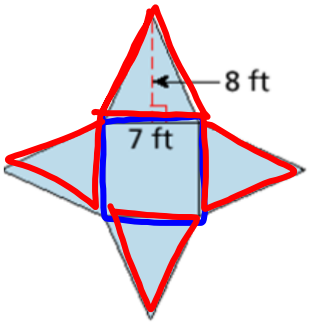
Top: $6 \cdot 10 = 60$ x 2 = 120

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

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

May 31-9:12 AM



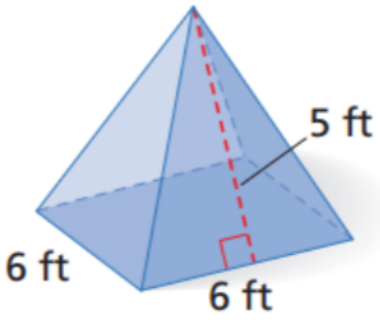


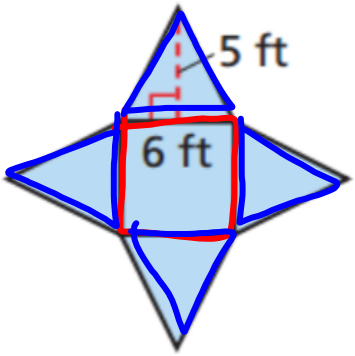
Base: $7 \cdot 7 = 49$ = 49

Side: $7 \cdot 8 = 56 \div 2 = 28$ x 4 = 112

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

May 31-9:12 AM



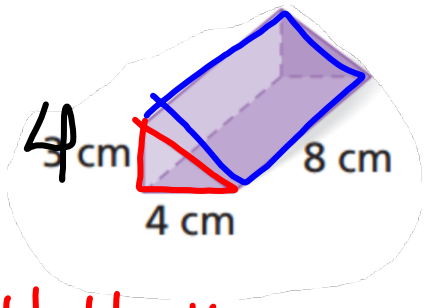


Base: $6 \cdot 6 =$ = 36

Side: $5 \cdot 6 = 30 \div 2 = 15$ x 4 = 60

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

May 31-9:25 AM



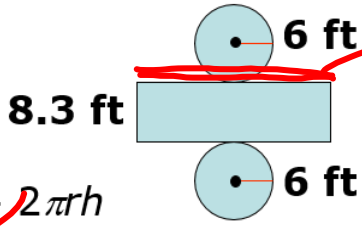
Base: $4 \cdot 4 = 16 \div 2 = 8$ x 2 = 16

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

Surface Area: Total of all areas= $112\ cm^2$

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.



circumference of circle

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

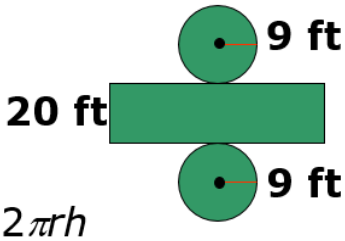
Rectangle: $3.14 \cdot 12 \cdot 8.3$ = 312.7

Circle: $3.14 \cdot 6 \cdot 6 = 113.$ x 2 = 226

Surface Area: Total of all areas= $538.7\ ft^2$

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.



$C = \pi d$

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

Rectangle: $3.14 \cdot 18 \cdot 20$ = $1,130.4$

Circle: $3.14 \cdot 9 \cdot 9 = 254.3$ x 2 = 508.7

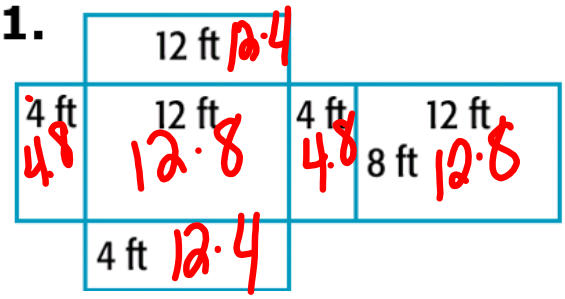
Surface Area: Total of all areas= 1639.1 ft^2

May 22-10:46 AM

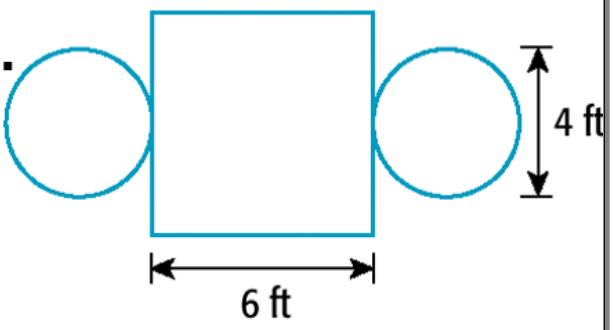
Lesson Quiz

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