Chapter 9: Surface Area and Volume

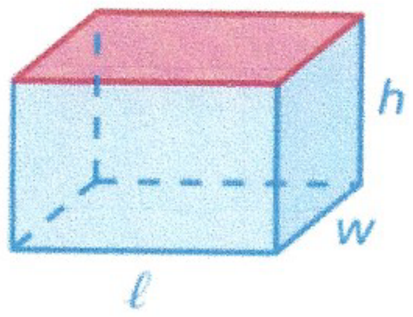
9.1 Surface Area of RECTANGULAR Prisms p.356

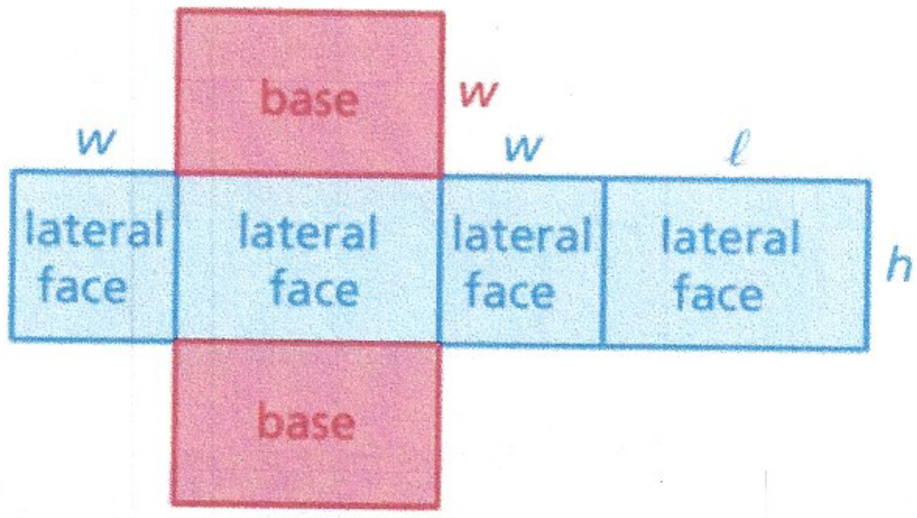
Prism: a 3-dimensional solid figure w/flat surfaces that are polygons

- has 2 congruent, parallel faces called Bases
- the other faces combined are called lateral faces
- the lateral surface area of a 3-dimensional figure is the surface area of the FACES ONLY (excludes the bases)
- The Surface Area of any prism is the sum of the areas of each face and base.

Rectangular Prism: the bases can be any two opposite faces (depends on how it's viewed) example: pizza box vs. cereal box

- in other prisms, the bases are the polygons that is NOT a rectangle ex: pentagonal prism (5)
  hexagonal prism (6)



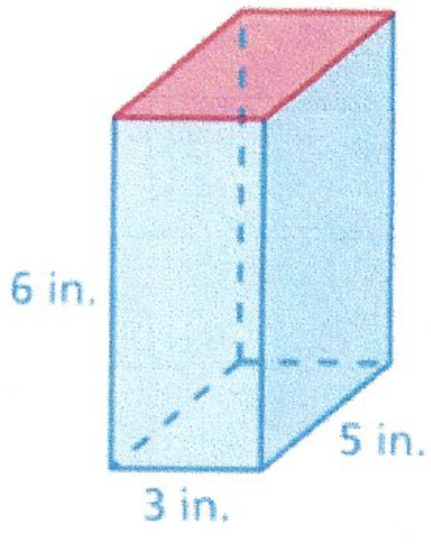


Formula: $SA = 2lw + 2lh + 2wh$

or

$SA = 2(lw + lh + wh)$

Example:

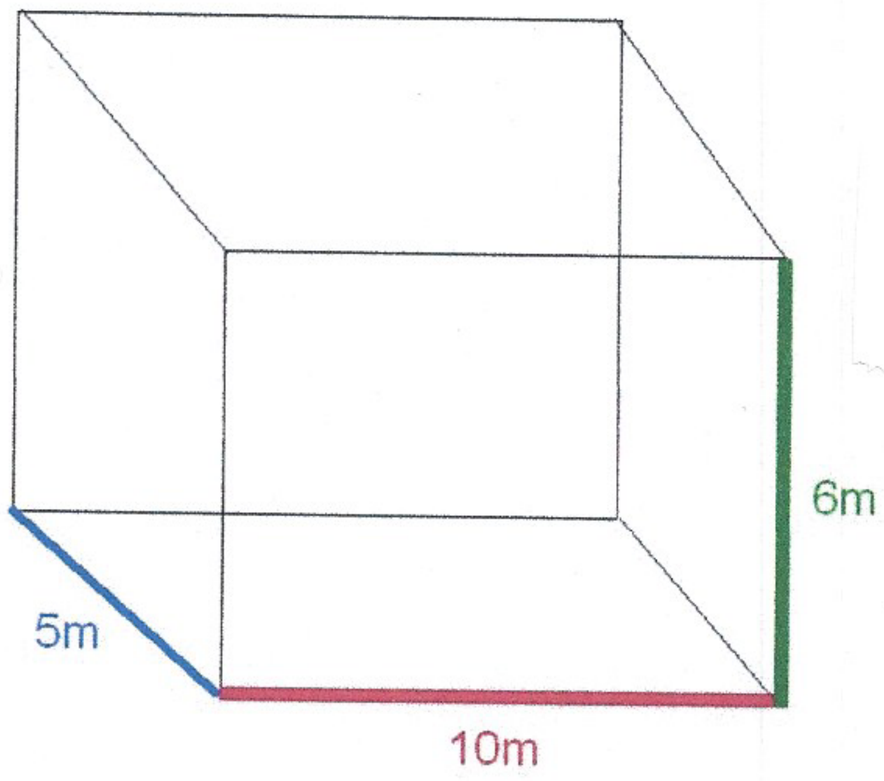


3·5·6

3·5·2 = 30
3·6·2 = 36
5·6·2 = +60

126 in²

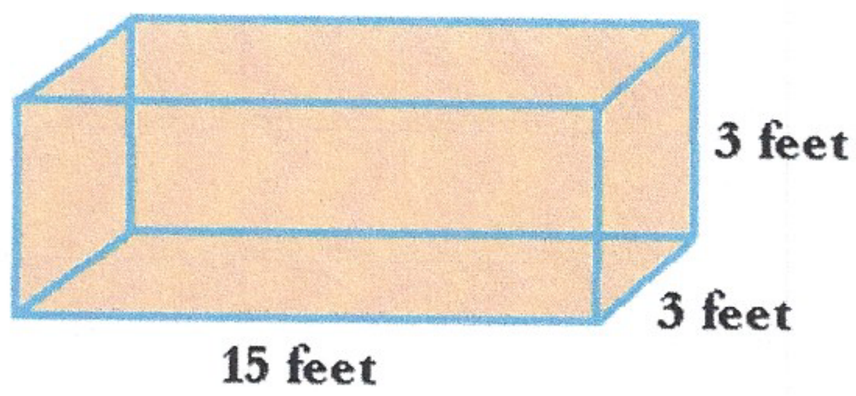
1.



$5 \cdot 6 \cdot 10$

$5 \cdot 6 \cdot 2 = 60$
$5 \cdot 10 \cdot 2 = 100$
$6 \cdot 10 \cdot 2 = +120$
$280\ m^2$

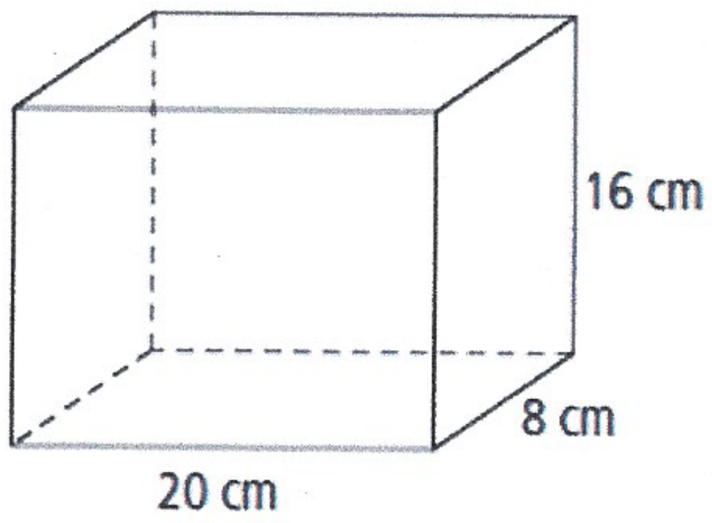
2.



$3 \cdot 3 \cdot 15$

$3 \cdot 3 \cdot 2 = 18$
$3 \cdot 15 \cdot 2 = 90$
$3 \cdot 15 \cdot 2 = +90$
$198\ ft^2$

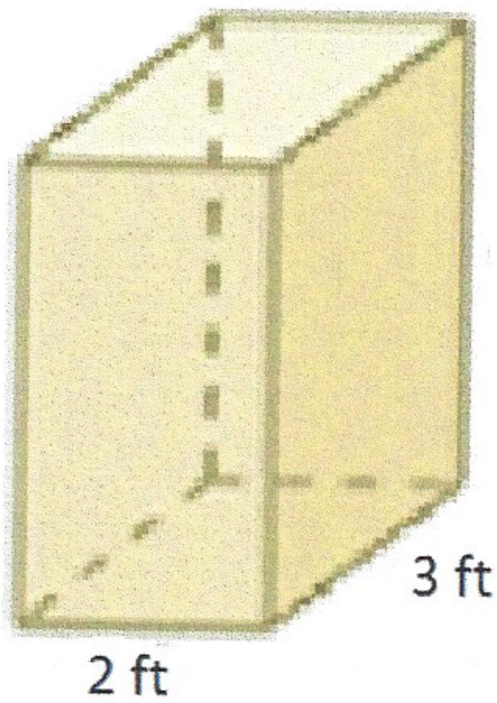
3.



$8 \cdot 16 \cdot 20$

$8 \cdot 16 \cdot 2 = 256$
$8 \cdot 20 \cdot 2 = 320$
$16 \cdot 20 \cdot 2 = +640$
$1216\ cm^2$

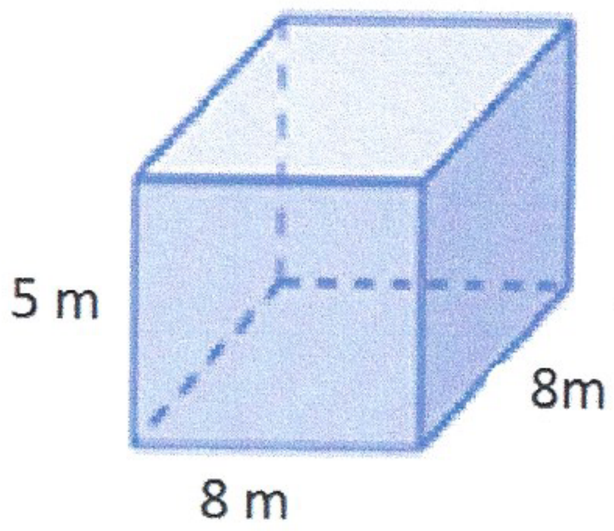
4.



$2 \cdot 3 \cdot 4$

$2 \cdot 3 \cdot 2 = 12$
$2 \cdot 4 \cdot 2 = 16$
$3 \cdot 4 \cdot 2 = 24$
$52\ ft^2$

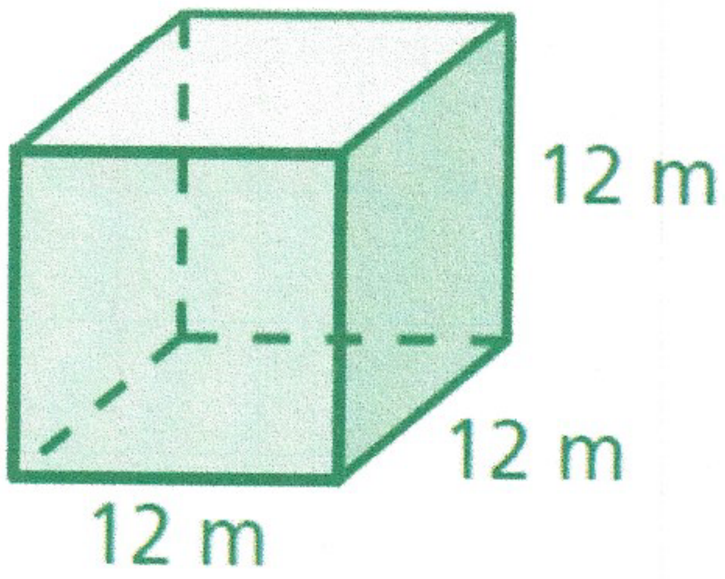
5.



$5 \cdot 8 \cdot 8$

$5 \cdot 8 \cdot 2 = 80$
$5 \cdot 8 \cdot 2 = 80$
$8 \cdot 8 \cdot 2 = 128$
$288\ m^2$

Find the surface area of the cube:



$12 \cdot 12 \cdot 12$

$12 \cdot 12 \cdot 2 = 288$
$12 \cdot 12 \cdot 2 = 288$
$12 \cdot 12 \cdot 2 = 288$
$+\ 288$
$864\ m^2$

Is there another way to find the surface area of a cube?

$12 \cdot 12 \cdot 6 = 864\ m^2$

1 side is $12 \cdot 12 = 144$ and a cube has 6 sides so $144(6) = 864\ m^2$