

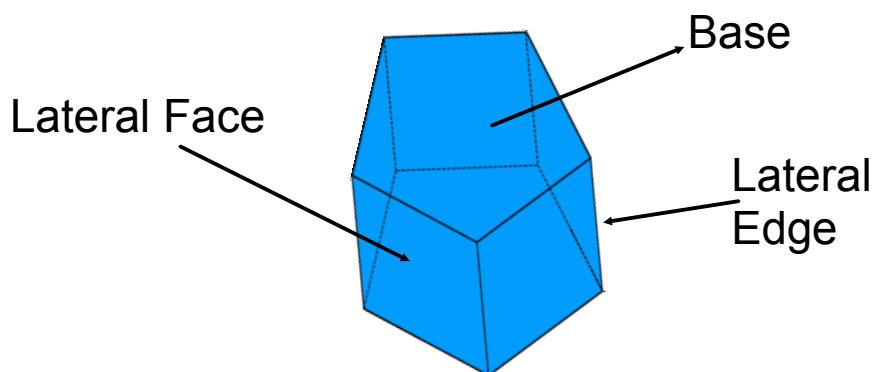
12-3 Surface Area of Prisms

Lateral Faces:

* The rectangular faces that are not bases.

Lateral Edges:

* The edges that connect bases.

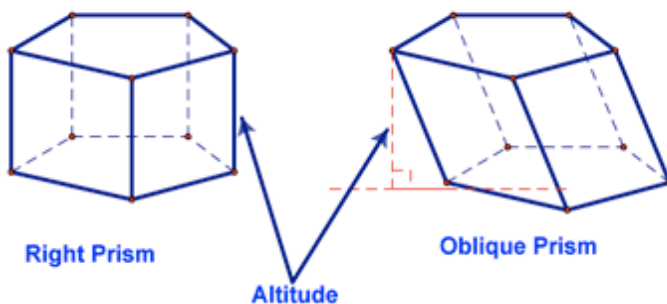


Right Prism:

* A prism with the altitude as a lateral edge.

Oblique Prism:

* When the lateral edges are not perpendicular to the bases.

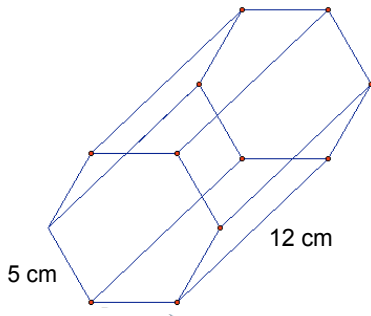


Lateral Area:

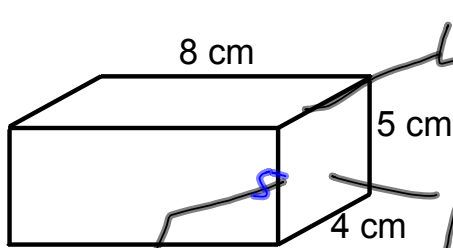
- * The sum of the areas of the lateral faces.
- * Indicated by L.A. or just L

$$LA = ph$$

p = perimeter of **base**
 h = height of prism



1. Find the lateral area.



$$\begin{array}{r} 226 \\ \underline{104} \\ 122 \end{array}$$

$$18 \cdot 8 = 144 \text{ cm}^2$$

$$\begin{array}{l} L.A. = ph \\ p = 4 + 5 + 4 + 5 \\ p = 18 \\ h = 8 \end{array}$$

Surface Area:

- * The area of the whole figure (lateral faces and the bases).
- * Indicated by S.A. or T (Total Area).

$$T = L + 2B$$

or

$$(SA = LA + 2B)$$

B = Area of Base

L = Lateral Area

$$SA = ph + 2B \text{ or } SA = LA + 2B$$

Things to remember:

Cube: A prism with all 6 faces congruent.
 (4 lateral faces of squares)
 (2 bases shaped as squares)

$$LA = 4x^2$$

$$SA = 6x^2$$

Box:

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

2. Find the surface area of the square prism.

$$S.A. = ph + 2B$$

$$p = 6 + 6 + 6 + 6 = 24$$

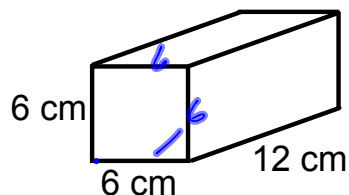
$$h = 12$$

$$B = 6 * 6 = 36$$

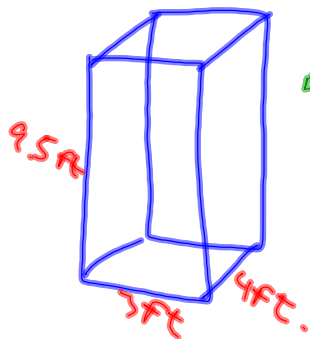
$$S.A. = (24)(12) + 2(36)$$

$$S.A. = 288 + 72$$

$$S.A. = 360 \text{ cm}^2$$



3. A solid block of marble will be used for a sculpture. If the block is 3 feet wide, 4 feet long, and 9.5 feet high, find the surface area of the block.



$$S.A. = ph + 2B$$

$$\begin{matrix} \text{Top} \\ \text{Bottom} \end{matrix} p = 3 + 4 + 3 + 4 = 14$$

$$h = 9.5$$

$$B = 3 * 4 = 12$$

$$S.A. = (14)(9.5) + 2(12)$$

$$S.A. = 133 + 24$$

$$S.A. = 157 \text{ ft}^2$$