

# Acc Geometry

## Surface Area of Prisms- Notes

Key

Prior to lesson:

Pages: 5-8 Cut out and find the area

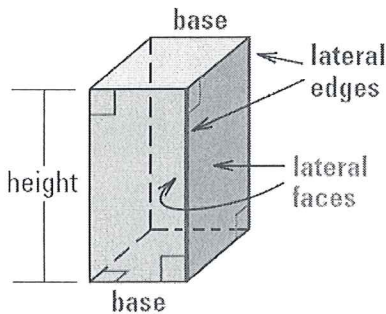
<http://www.misd.net/mathematics/ImplementingGeometryUnits/3Dimensional/Netspyramidsandprisms.pdf>

Put all work on the work sheet:

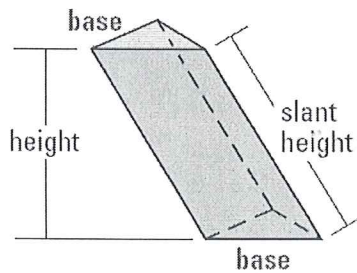
<http://www.misd.net/mathematics/ImplementingGeometryUnits/3Dimensional/Prisms.pdf>

A **prism** is a polyhedron with two congruent faces, called **bases**, that lie in parallel planes. The other faces, called **lateral faces**, are parallelograms formed by connecting the corresponding vertices of the bases. The segments connecting these vertices are *lateral edges*.

The *altitude* or *height* of a prism is the perpendicular distance between its bases. In a **right prism**, each lateral edge is perpendicular to both bases. Prisms that have lateral edges that are not perpendicular to the bases are **oblique prisms**. The length of the oblique lateral edges is the *slant height* of the prism.



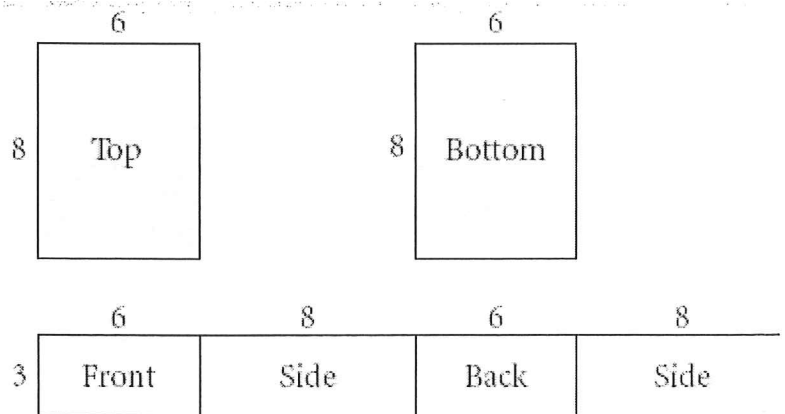
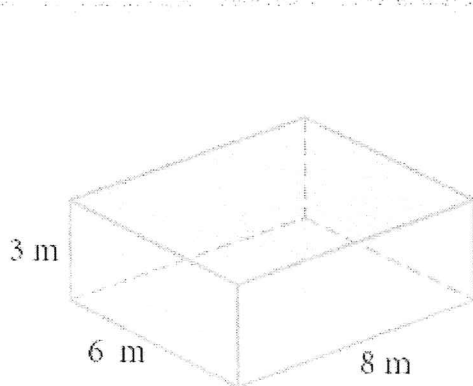
Right rectangular prism



Oblique triangular prism

Example1:

Find the lateral area and surface area of the prism.



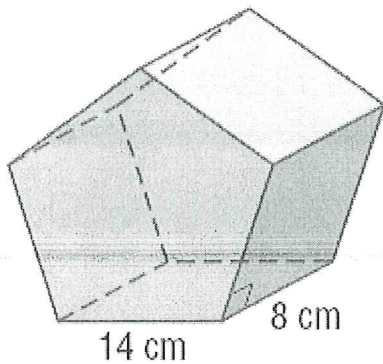
Lateral Area

$$\begin{array}{r}
 LA = 3 \times 6 \\
 3 \times 8 \\
 3 \times 6 \\
 3 \times 8 \\
 \hline
 LA = 84m^2
 \end{array}$$

Surface Area

$$\begin{array}{l}
 SA = 3 \times 6 + 3 \times 8 + 3 \times 6 + 3 \times 8 + 8 \times 6 + 8 \times 6 \\
 \boxed{SA = 180m^2}
 \end{array}$$

Find the lateral area and the surface area of the following solids.  
Round your answers to the nearest hundredth.  
Example 2:



Lateral SA

$$LA = 5(14 \times 8)$$

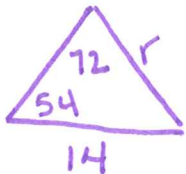
$$LA = 560 \text{ cm}^2$$

Find area of Base:

$$SA = 5(14 \times 8)$$

$$2\left(5 \frac{1}{2} (11.9)^2 \sin 72^\circ\right) \approx 673.39566$$

$$SA \approx 1233.40 \text{ cm}^2$$



$$\frac{\sin 72^\circ}{14} = \frac{\sin 54^\circ}{r}$$

$$r = 11.9 \text{ cm}$$

Example 3:

The United States Postal Service offers a mailer for posters or artwork that is a triangular prism. The base is an equilateral triangle with sides that measure 6 inches. Find the surface area of the mailer to the nearest tenth.

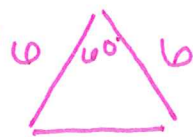


$$SA = 3(6 \times 38) = 684$$

$$+ 2\left(\frac{1}{2} 6 \cdot 6 \sin 60^\circ\right) \approx 31.1769$$

$$SA \approx 715.18 \text{ in}^2$$

Area of Base



$$A = \frac{1}{2} 6 \cdot 6 \sin 60^\circ$$