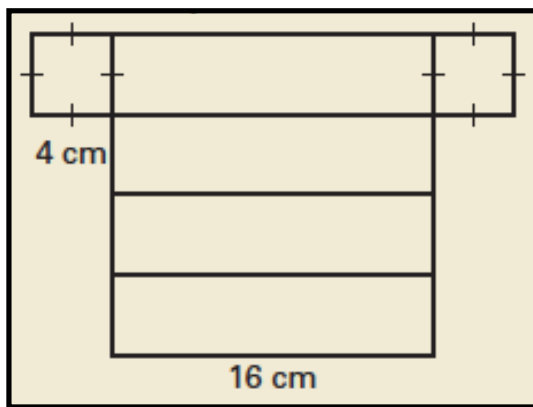


## Bellwork 05/11/12

Find the surface area of the solid formed by the net.

1.



$$SA = 2B + Ph$$

$$B = s^2 = 4^2 = 16$$

$$P = 4(4) = 16$$

$$h = 16$$

$$SA = 2(16) + 16(16)$$

$$= 32 + 256$$

$$SA = 288 \text{ cm}^2$$

**Geometry**  
**12.3 Surface Area of Pyramids and Cones**  
**Standard(s): 4**

**Vocabulary:**

**Pyramid:** A polyhedron in which the base is a polygon and the lateral faces are triangles with a common vertex.

**Lateral Edge:** Intersection of two lateral faces.

**Base Edge:** The intersection of the base and a lateral face.

**Regular Pyramid:** A pyramid with a regular polygon for a base, and the segment joining the vertex and the center of the base is perpendicular to the base.

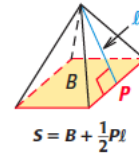
**Slant Height:** The height of a lateral face of the regular pyramid.

**THEOREM***For Your Notebook***THEOREM 12.4** Surface Area of a Regular Pyramid

The surface area  $S$  of a regular pyramid is the sum of the **base area** and the **lateral area**:

$$S = B + \frac{1}{2}Pl,$$

where  $B$  is the area of the base,  $P$  is the perimeter of the base, and  $l$  is the slant height.



**Cone:** A solid with a circular base and a vertex that is not in the same plane as the base.

**Right Cone:** A cone with a segment, joining the vertex and the center of the base, perpendicular to the base and the slant height is the distance between the vertex and a point on the base edge.

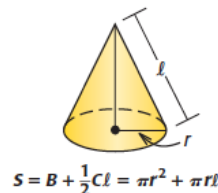
**Lateral Surface:** The surface of a cone that consists of all segments that connect the vertex with points on the base edge.

**THEOREM***For Your Notebook***THEOREM 12.5** Surface Area of a Right Cone

The surface area  $S$  of a right cone is the sum of the **base area** and the **lateral area**:

$$S = B + \frac{1}{2}Cl = \pi r^2 + \pi rl,$$

where  $B$  is the area of the base,  $C$  is the circumference of the base,  $r$  is the radius of the base, and  $l$  is the slant height.



## Lateral Area of Regular Pyramids

Find the area of each lateral face of the regular pyramid.

$$LA = \frac{1}{2} P \ell$$

$$P = 12(6) = 72$$

$$\ell = 14$$

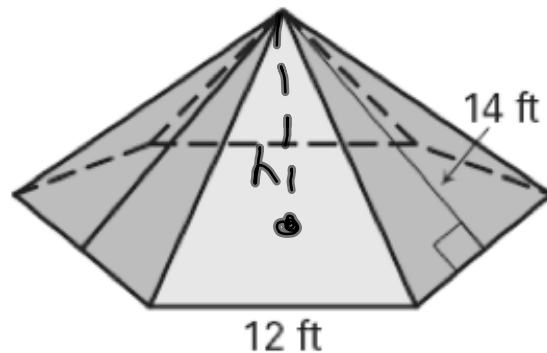
$$LA = \frac{1}{2}(72)(14)$$

$$LA = 504 \text{ ft}^2$$

$$\underline{504}$$

$$\begin{array}{c} 6 \\ \boxed{84 \text{ ft}^2} \end{array}$$

$$\text{Lateral Area} = \frac{1}{2} P \ell$$



## Surface Area of a Regular Pyramid

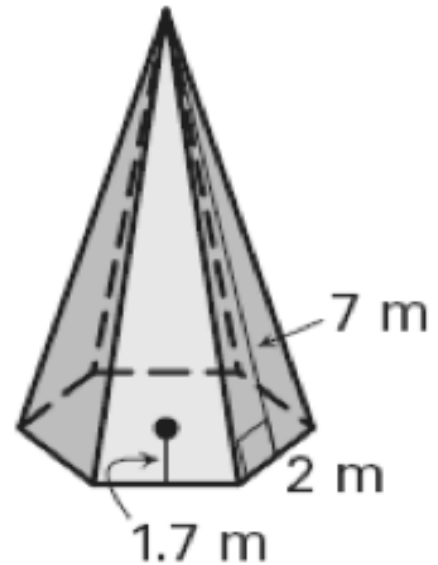
Find the surface area of the regular pyramid. Round your answer to the nearest hundredth.

$$SA = B + \frac{1}{2}Pl$$

$$\begin{aligned} B &= \frac{1}{2}ap \\ &= \frac{1}{2}(1.7)(12) \\ &= \boxed{10.2} \end{aligned}$$

$$P = 6(2) = \boxed{12}$$

$$l = \boxed{7}$$



$$\begin{aligned} SA &= 10.2 + \frac{1}{2}(12)(7) \\ &= 10.2 + 42 \\ &= \boxed{SA = 52.2 \text{ m}^2} \end{aligned}$$

## Lateral and Surface Area of a Right Cone

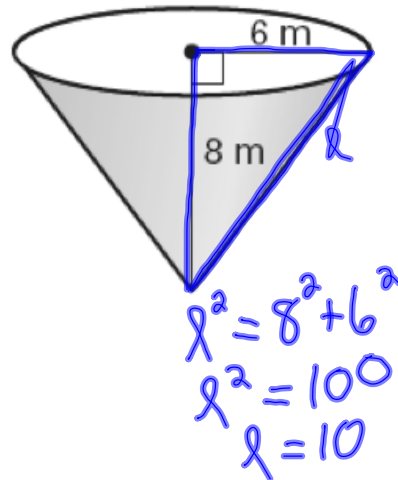
Find the lateral area of the right cone. Round your answer to the nearest hundredth.

$$\begin{aligned} C &= 2\pi r \\ &= 2(6)\pi \\ &= \boxed{12\pi} \end{aligned}$$

$$l = \boxed{10}$$

$$\begin{aligned} LA &= \frac{1}{2}(12\pi)(10) \\ &= 6\pi \cdot 10 \\ &= 60\pi \\ &= \boxed{LA = 188.5 \text{ m}^2} \end{aligned}$$

$$\text{Lateral Area} = \frac{1}{2}Cl$$



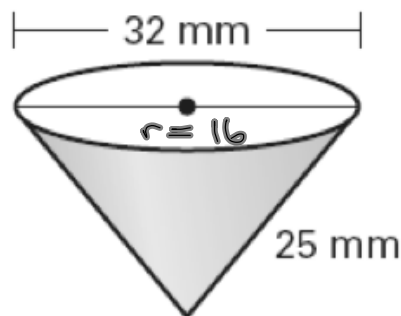
Find the surface area of the right cone. Round your answer to the nearest hundredth.

$$SA = B + \frac{1}{2}Cl$$

$$\begin{aligned} B &= r^2 \pi \\ &= 16^2 \pi \\ &= \boxed{256\pi} \end{aligned}$$

$$\begin{aligned} C &= 2r\pi \\ &= 2(16)\pi \\ &= \boxed{32\pi} \end{aligned}$$

$$l = \boxed{25}$$



$$\begin{aligned} SA &= 256\pi + \frac{1}{2}(32\pi)(25) \\ &= 256\pi + 400\pi \\ &= 656\pi \end{aligned}$$

$$SA = \boxed{2060.88 \text{ mm}^2}$$

## Homework Assignment

**Pg. 814-815**  
**#3-15, 18**

## Multiple Solids

Find the surface area of the solid.

