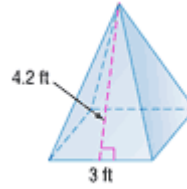


Lesson 11-5

Example 1 Surface Area of a Pyramid Find the surface area of the square pyramid.



Find the lateral area and the base area.

Area of each lateral face		Area of base	
$A = \frac{1}{2}bh$	Area of a triangle	$A = s^2$	Area of a square
$A = \frac{1}{2}(3)(4.2)$	Replace b with 3 and h with 4.2.	$A = 3^2$	Replace s with 3.
$A = 6.3$	Simplify.	$A = 9$	Simplify.

There are 4 faces, so the lateral area is $4(6.3)$ or 25.2.

$$\underbrace{\text{The surface area of a pyramid}}_S \quad \underbrace{\text{equals}}_= \quad \underbrace{\text{the lateral area}}_{25.2} \quad \underbrace{\text{plus}}_+ \quad \underbrace{\text{the area of the base.}}_9$$

The surface area of the pyramid is 34.2 square feet.

Example 2 Use Surface Area to Solve a Problem

PAINTING A pyramid having a square base measuring 12 meters and a slant height of 18 meters needs to be painted. The pyramid sits on the ground so the bottom does not require paint. Find the surface area needing paint.

Find the lateral area only, since the bottom of the pyramid does not need painting.

$$A = \frac{1}{2}bh \quad \text{Formula for area of a triangle}$$

$$A = \frac{1}{2}(12)(18) \quad \text{Replace } b \text{ with 12 and } h \text{ with 18.}$$

$$A = 108 \quad \text{Simplify.}$$

One lateral face has an area of 108 square meters. There are 4 lateral faces, so the lateral area is $4(108)$ or 432 square meters.

The surface area needing paint is 432 square meters.

Example 3 Surface Area of a Cone

Find the surface area of a cone having a radius of 6.5 inches and a slant height of 14.2 inches. Round to the nearest tenth.

$$S = \pi r \ell + \pi r^2$$

Formula for surface area of a cone

$$S = \pi(6.5)(14.2) + \pi(6.5)^2$$

Replace r with 6.5 and ℓ with 14.2.

$$S \approx 422.7$$

Simplify.

The surface area of the cone is about 422.7 square inches.