Warm Up

1. Find the area of a circle with radius 4 in.
   \[ \pi r^2 = 16\pi \]

2. Find the circumference of a circle with radius 6 in.
   \[ 2\pi r = 12\pi \]

3. Find the area of a regular hexagon with radius 8 cm.
   \[ A = \frac{1}{2} a \cdot P = \frac{1}{2} \cdot 8 \cdot 48 \]

12-3 Surface Area of Pyramids and Cones

Regular Pyramid - regular polygon as a base, segment connecting vertex and center of base is perpendicular to the base
Surface area of a Regular Pyramid -

$$S.A. = B + \frac{1}{2} \cdot P \cdot l$$

Surface area of a Right Cone -

$$S.A. = B + \frac{1}{2} \cdot C \cdot l$$

Ex. 1 Find the area of each lateral face of the regular pyramid.

$$h = 12 \text{ ft}$$
$$b = 10 \text{ ft}$$
$$\text{slant height, } l$$

$$A = \frac{1}{2} \cdot b \cdot h$$
$$= \frac{1}{2} \cdot 10 \cdot 13$$
$$= 65 \text{ ft}^2$$
Ex 2  Find the surface area of the regular square pyramid.

\[
5. A. = 100 + 4(65) \\
= 360 \text{ ft}^2
\]

Ex. 3  Find the surface area of the regular pyramid.
Ex 4    Find the surface area of the right cone.

\[
S.A. = B + \frac{1}{2} \cdot c \cdot l
\]

\[
100\pi + \frac{1}{2} \cdot 20\pi \cdot 26
\]

\[
100\pi + 260\pi
\]

\[
360\pi
\]

\[
\approx 1131
\]

Ex. 5    Find the surface area of the right cone.

\[
S.A. = B + \frac{1}{2} \cdot c \cdot l
\]

\[
36\pi + \frac{1}{2} \cdot 12\pi \cdot 10
\]

\[
36\pi + 60\pi
\]

\[
96\pi \text{ m}^2
\]

\[
301.5 \text{ m}^2
\]
Ex 6  A right cone with a base of radius 4 inches and a regular pyramid with a square base both have a slant height of 5 inches. Both solids have the same surface area. Find the length of a base edge of the pyramid.