

Warm-Up

(This problem is in your notes from Friday)

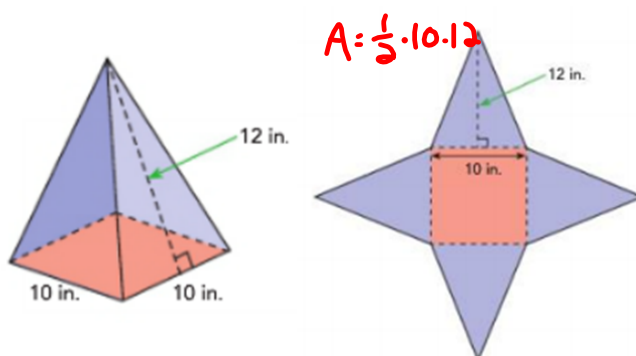
Quiz on Surface Area
this Wednesday!

Lobster fishers in Maine often use spherical buoys to mark their lobster traps. Every year the buoys must be repainted. An average buoy has a 12 in. diameter, and an average fisher has about 500 buoys. A quart of marine paint covers 175 ft^2 . How many quarts of paint does an average fisher need each year?

8.5 Day 2 – Surface Area of Pyramids and Cones-NOTES

Learning Targets:

- a. I can apply the surface area formulas to solve problems involving pyramids and cones.
- 1.) The following pyramid can be unfolded as follows:



Area of one triangle: 60 in^2

Area of the square: 100 in^2

Total Area: 340 in^2

$$100 + 4 \cdot 60$$

SURFACE AREA OF A PYRAMID The surface area S of a regular pyramid is the sum of the area of the base and the lateral faces.

Formulas:

$S = LA + B$, where:

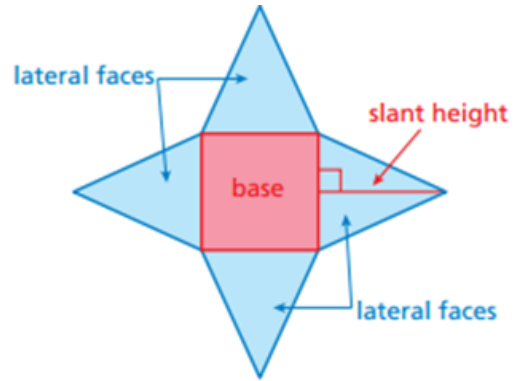
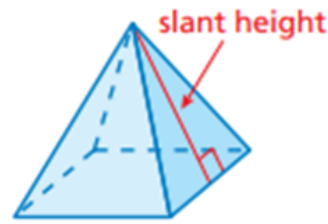
$LA = \frac{Pl}{2}$

$B = \text{Area of Base}$

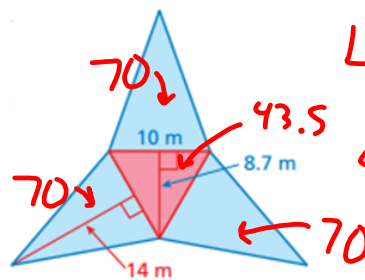
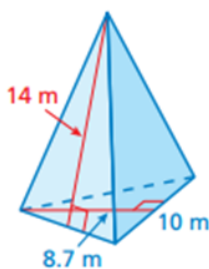
$S = \frac{Pl}{2} + B$, where:

$P = \text{Perimeter of Base}$

$l = \text{Slant height}$



2.) Find the surface area of the regular pyramid. Use the net to find the area of the base and the area of a lateral face or use one of the formulas. Show all your work and round to the nearest tenth if necessary.



$SA = LA + B$

$LA = \frac{Pl}{2} = \frac{30 \cdot 14}{2} = 210 \text{ m}^2$

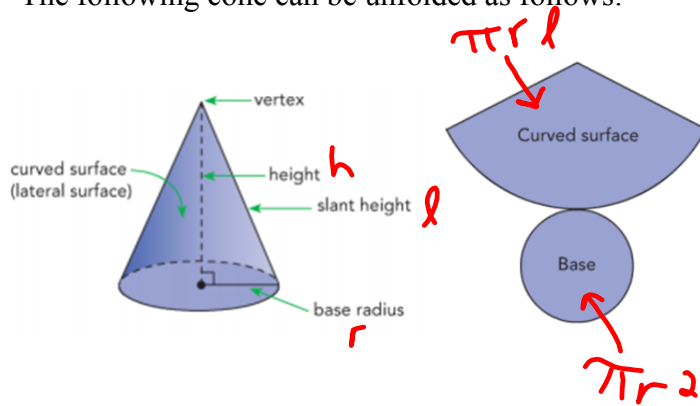
$SA = 210 + 43.5 = 253.5 \text{ m}^2$

$P = 30$

$l = 14$

$B = \frac{10 \cdot 8.7}{2} = 43.5$

The following cone can be unfolded as follows:



SURFACE AREA OF A CONE:

The surface area (S) of a CONE is the sum of the area of the base and the lateral surface (LA) area.

Formulas:

$$LA = \pi r l$$

$$S = LA + B \quad \text{or}$$

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

Formulas:

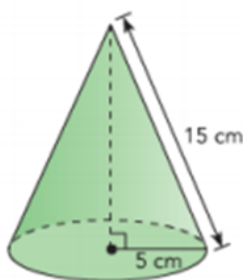
$$LA = \pi r l$$

$$S = LA + B \quad \text{or}$$

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

3.) Find the lateral area and the surface area of the following cones.

Show all your work and round to the nearest tenth if necessary.



LATERAL AREA:

$$LA = \pi r l$$

$$LA = \pi \cdot 5 \cdot 15$$

$$LA \approx 235.6 \text{ cm}^2$$

SURFACE AREA:

$$SA = \pi r l + \pi r^2$$

$$SA = 235.6 + \pi \cdot 5^2$$

$$SA \approx 314.2 \text{ cm}^2$$

Formulas:

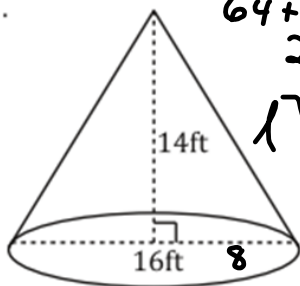
$$LA = \pi r l$$

$$S = LA + B \quad \text{or}$$

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

3.) Find the lateral area and the surface area of the following cones.

Show all your work and round to the nearest tenth if necessary.



LATERAL AREA:

SURFACE AREA:

$$8^2 + 14^2 = l^2$$

$$64 + 196 = l^2$$

$$260 = l^2$$

$$\sqrt{260} = l$$

$$LA = \pi r l$$

$$LA = \pi \cdot 8 \cdot \sqrt{260}$$

$$LA \approx 405.3 \text{ ft}^2$$

$$SA = LA + \pi r^2$$

$$SA = 405.3 + \pi \cdot 8^2$$

$$SA \approx 606.3 \text{ ft}^2$$

Formulas:

$$LA = \pi r l$$

$$S = LA + B \quad \text{or}$$

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

4.) Find the slant height of the cone.

$$SA = \pi r l + \pi r^2 \quad S = 60\pi \text{ ft}^2$$

$$\pi r l + \pi r^2 = 60\pi$$

$$5\pi l + 25\pi = 60\pi$$

$$5l + 25 = 60$$

$$5l = 35$$

$$l = 7$$



Assignment: SA of Pyramids and Cones

(Round to the nearest tenths)

Just do 1, 4, 7