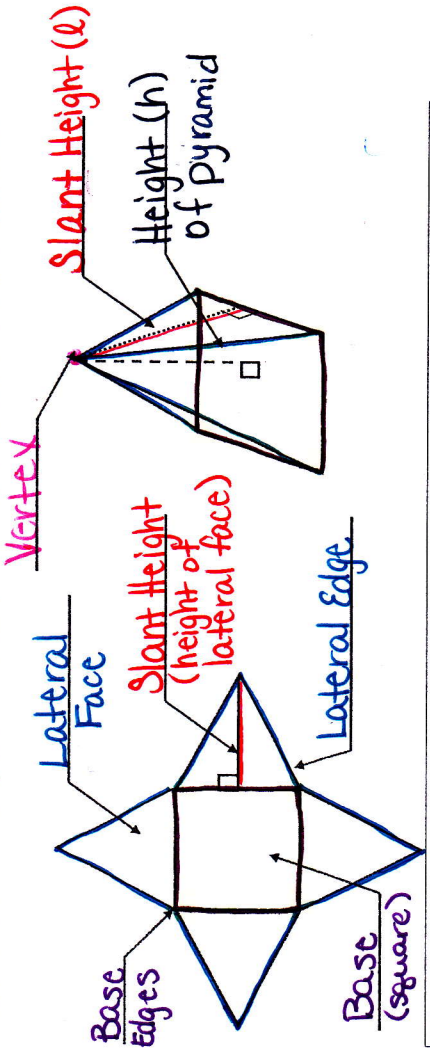


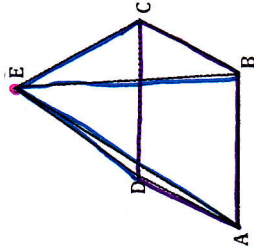
NOTES 12.3/12.5

LATERAL AREA, SURFACE AREA & VOLUME OF PYRAMIDS



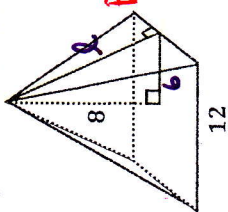
EXAMPLE 1: Name each of the following.

Vertex: E Base: □ABCD
 Lateral Faces: △DEA, △DEC, △CEB, △BEA
 Lateral Edges: DE, CE, BE, AE
 Base Edges: AD, DC, CB, AB



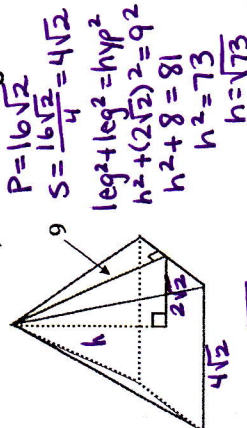
EXAMPLE 2: Find the indicated values.

a) Find the slant height.



$l = 10$

b) If the perimeter of the base is $16\sqrt{2}$ units, find the height.

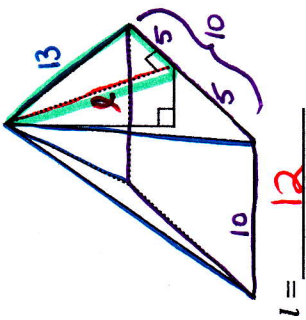


$h = \sqrt{13}$

Triple -
Use Pythagorean Theorem if you don't know.

EXAMPLE 3: A square pyramid has base edges of 10 and lateral edges of 13. Find its slant height.

$$\begin{aligned} \text{leg}^2 + \text{leg}^2 &= \text{hyp}^2 \\ l^2 + 5^2 &= 13^2 \\ l^2 + 25 &= 169 \\ l^2 &= 144 \\ l &= 12 \end{aligned}$$



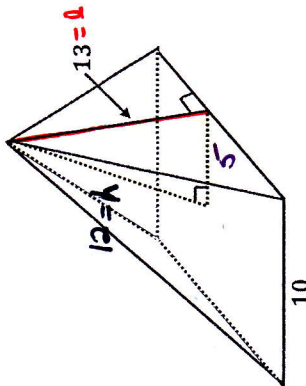
$l = 12$

FORMULAS:

$$\begin{aligned} \text{LATERAL AREA} &= \frac{1}{2}Pl \\ \text{SURFACE AREA} &= LA + B \\ \text{VOLUME} &= \frac{1}{3}Bh \end{aligned}$$

P = perimeter of the base
 l = slant height
 B = area of the base
 h = height of the pyramid

EXAMPLE 4: Find the Lateral Area, Surface Area, and Volume of the square pyramid below.



$$\begin{aligned} P &= 10(4) = 40 \\ B &= 5^2 = 10^2 = 100 \\ l &= 13 \\ h &= 12 \end{aligned}$$

$$\begin{aligned} LA &= 260 \\ SA &= 360 \\ V &= 400 \end{aligned}$$

$$\begin{aligned} LA &= \frac{1}{2}Pl \\ &= \frac{1}{2}(40)(13) \\ SA &= LA + B \\ &= 260 + 100 \\ V &= \frac{1}{3}Bh \\ &= \frac{1}{3}(100)(12) \end{aligned}$$