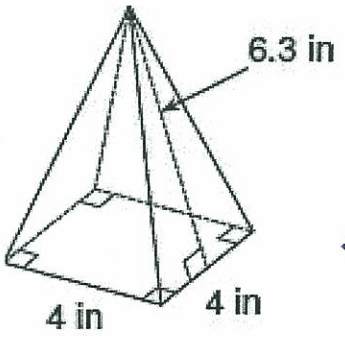
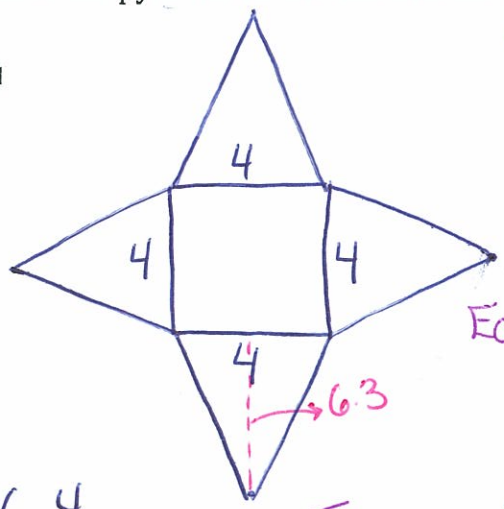
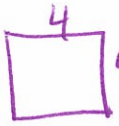
A&W Math 11 **Ch. 3.2 Surface Area of Pyramids** Notes

PYRAMID: A 3-Dimensional shape with a base that is usually a rectangle or square and sides that are triangles that meet at a point.

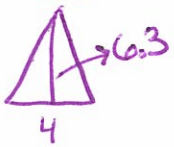
Example 1: Draw the net of the pyramid below and find the surface area.





Bottom: 

Area = length x width
$= 4 \times 4 = 16\ in^2$

Each Triangle: 

$A = \frac{b \times h}{2} = \frac{4 \times 6.3}{2} = 12.6\ in^2$

There a 4 equal Triangles:

$A = 4 \times 12.6 = 50.4\ in^2$

Total SA:

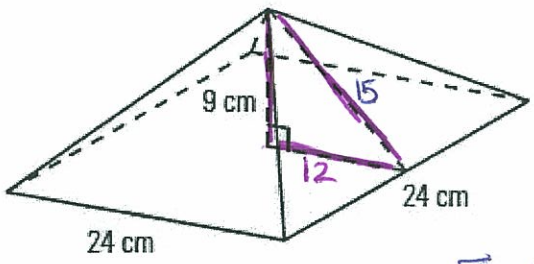
$50.4 + 16 = 66.4$

Area = $66.4\ in^2$

What do you do when you aren't given the slant height?

USE PYTHAGORAS! $a^2 + b^2 = c^2$

Example 2: Find the surface area of the square-based pyramid below.



Bottom: 

$A = 24 \times 24 = 576\ cm^2$

Find the Slant Height:

$a^2 + b^2 = c^2$

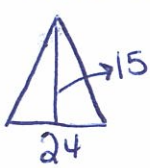
$12^2 + 9^2 = c^2$

$144 + 81 = c^2$

$\sqrt{225} = c$

$15 = c$

Each Triangle:



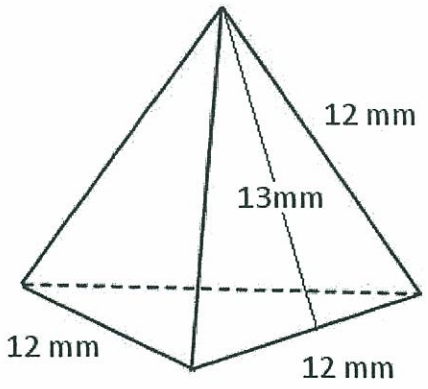
$A = \frac{b \times h}{2} = \frac{24 \times 15}{2} = 180\ cm^2$

There are 4 equal Triangles:

$A = 4 \times 180 = 720\ cm^2$

Total SA $= 576 + 720 =$ **$1296\ cm^2$**

Example 3: Find the surface area of the tetrahedron (Triangular based Pyramid) below. (All 4 sides are the same size)



Each Triangle:

$A = \frac{b \times h}{2} = \frac{12 \times 13}{2}$

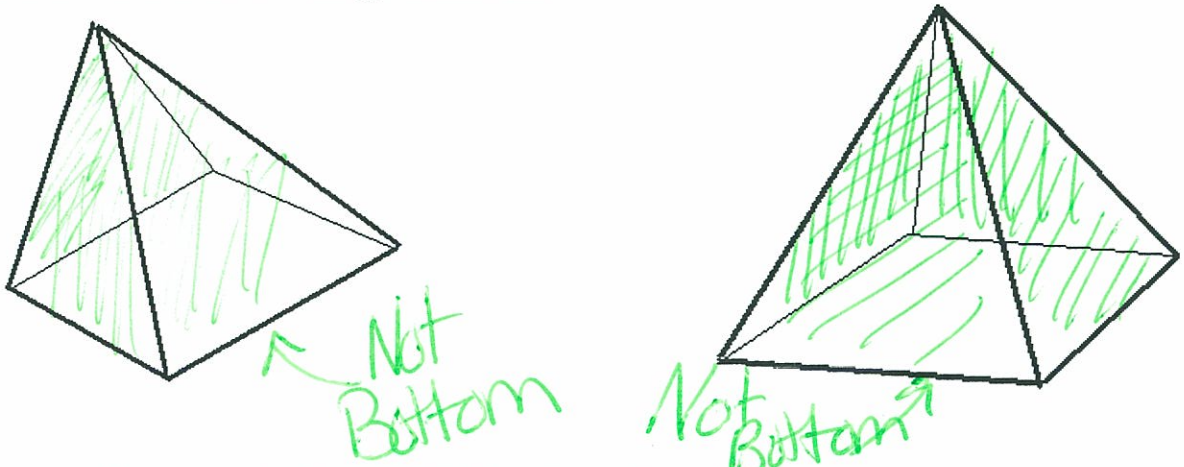
$A = 78 mm^2$

There are 4 Identical Triangles: (3 sides & 1 bottom)

Total SA = $4 \times 78 = \boxed{312 mm^2}$

LATERAL AREA:

Shade the lateral area of the pyramids below



Homework: Pg. 155 #7-9 Pg. 158 #10,11