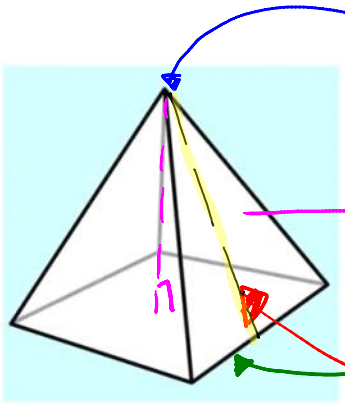
Section 1.4

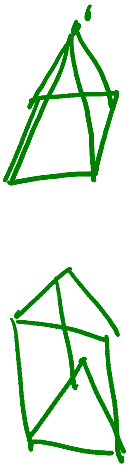
September 25, 2012
9:12 AM

Math 10 N Douglas

Section 1.4
Surface Areas of Right Pyramids and Right Cones

RIGHT PYRAMID: Area of base + 4 (Area of triangular)





APEX Top point where all faces meet.

HEIGHT Perpendicular line from the apex to the base

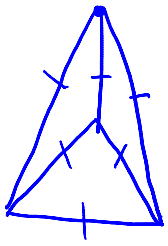
BASE Bottom or different shaped side

TRIANGULAR FACE Sides that connect at the apex.

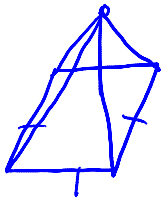
SLANT HEIGHT: Height of the triangular face.

Let's practice drawing some of these:

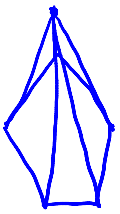
Regular Tetrahedron



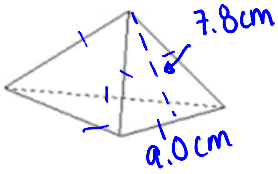
Regular
Square Pyramid



Regular
Regular Pentagonal



Example 1: Simon measured then recorded lengths of the edges and the slant height of this regular tetrahedron. What is its surface area to the nearest square centimetre?

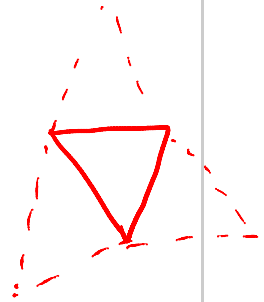


$SA = 4\left(\frac{bh}{2}\right)$

$= 4\left(\frac{9.0 \times 7.8}{2}\right)$

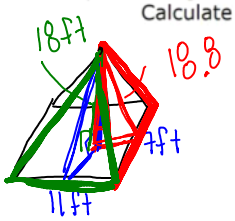
$= 4(35.1\,cm^2)$

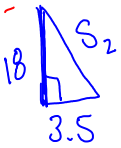
$= 140.4\,cm^2$



4 sides are equal.

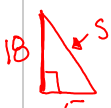
Example 2: A right rectangular pyramid has the base dimensions 7ft. by 11ft., and a height of 18ft. Calculate the surface area of the pyramid tot the nearest square foot.





$S_2 = 18.3$

SLANT HEIGHT



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

$18^2 + 5.5^2 = c^2$

$324 + 30.25 = c^2$

$354.25 = c^2$

$c = 18.8\,ft$

Surface Area

Left & Right $A = \frac{bh}{2} = \frac{(7)(18.8)}{2} = 65.8\,ft^2$

$2 \times 65.8 = \boxed{131.6\,ft^2}$

Front & Back $A = \frac{bh}{2} = \frac{(11)(18.3)}{2} = 100.7\,ft^2$

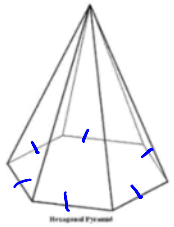
$2 \times 100.7 = \boxed{201.4\,ft^2}$

Base $A = bh = (11)(7) = \boxed{77\,ft^2}$

$SA = 131.6\,ft^2 + 201.4\,ft^2 + 77\,ft^2$

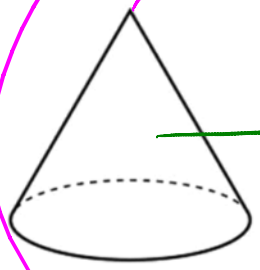
$\boxed{= 410\,ft^2}$

SURFACE AREA OF A RIGHT PYRAMID WITH A REGULAR POLYGON BASE:



$\boxed{SA = \frac{1}{2}s(\text{perimeter of base}) + (\text{base area})}$

s = slant height



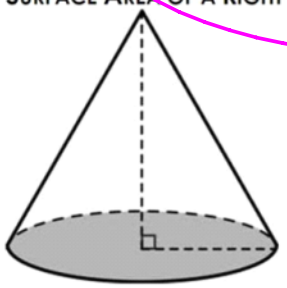
APEX Point at top

HEIGHT Perpendicular distance from apex to the base

BASE circular bottom

RADIUS Distance from centre of circle to the circumference.

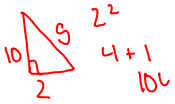
SURFACE AREA OF A RIGHT CONE :



Example 3: A right cone has a base radius of 2ft. and a height of 10ft. Calcualte the surface area of this cone to the nearest square foot.

2

SLANT



2^2

$4+1$

$10L$

2

HW: p. 34 – 35
4 – 8, 10, 12, 14, 16, 17.