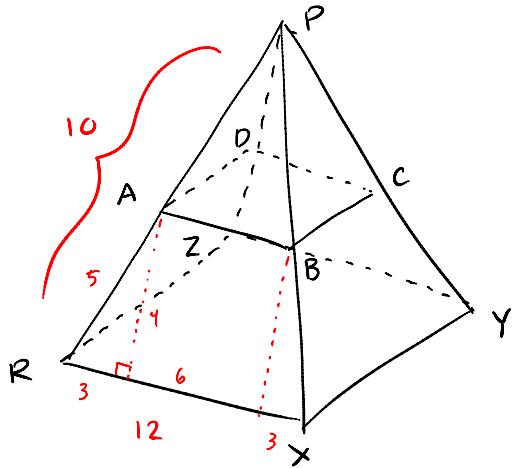


## SECTION 12.2

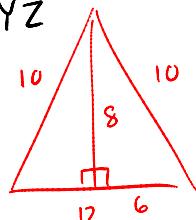
p. 568 #5-12

#5 PRXYZ is a regular pyramid.

The midpts of its lateral edges  
are joined to form a square, ABCD.  
 $PR = 10$  and  $RX = 12$



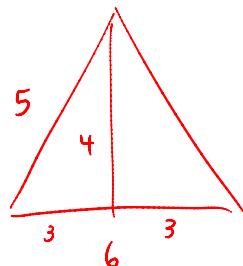
- a. Find the lateral area  
of PRXYZ



$$A_{\Delta} = \frac{12 \cdot 8}{2}$$

$$\text{L.A.} = 48 u^2 \times 4 = \boxed{192 u^2}$$

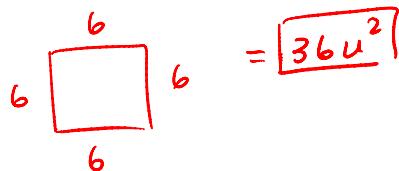
- b. Find the lateral area of  
PABCD



$$A_{\Delta} = \frac{6 \cdot 4}{2} = 12 u^2$$

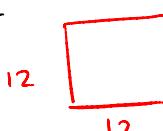
$$\text{L.A.} = 12 \cdot 4 = \boxed{48 u^2}$$

- c. What is the area of square ABCD?



$$= \boxed{36 u^2}$$

- d. What is the area of square RXYZ?

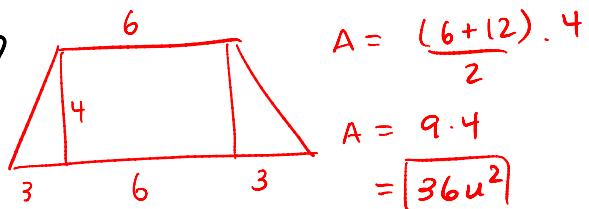


$$= \boxed{144 u^2}$$

- e. Find the ratio of Area ABCD  
to area RXYZ

$$\frac{36}{144} = \boxed{\frac{1}{4}}$$

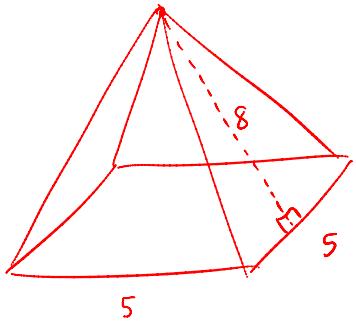
- f. What is the area of trapezoid ABXR?



$$A = \frac{(6+12) \cdot 4}{2}$$

$$A = 9 \cdot 4 = \boxed{36 u^2}$$

- #6 A regular pyramid has a slant height of 8. The area of its square base is 25. Find its total area

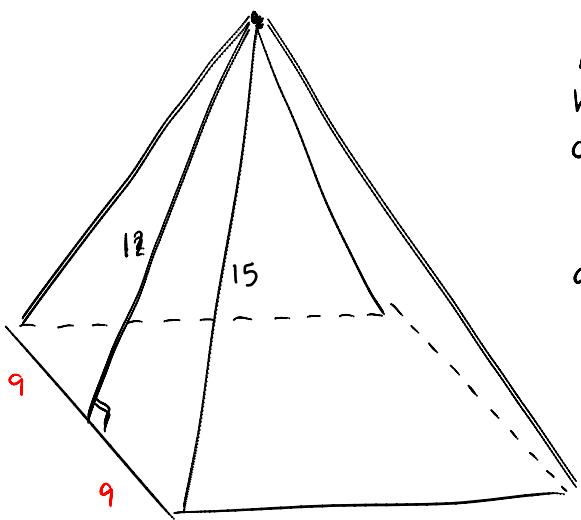


$$A_{\Delta} = \frac{8 \cdot 5}{2} = 20 u^2$$

$$A_{\square} = 5 \cdot 5 = 25 u^2$$

$$A_{\text{total}} = 4(20) + 25 = \boxed{105 u^2}$$

#7



A regular pyramid has a slant height of 12 and a lateral edge of 15.

Find:

a. Perimeter of base  $18 \cdot 4 = \boxed{72}$

b. Lateral area  $A_{\Delta} = \frac{18 \cdot 12}{2} = 108$

$$\text{L.A.} = 108 \cdot 4 = \boxed{432 u^2}$$

c. area of base  $= \boxed{324 u^2}$

d. total area  $= 432 + 324 = \boxed{756 u^2}$

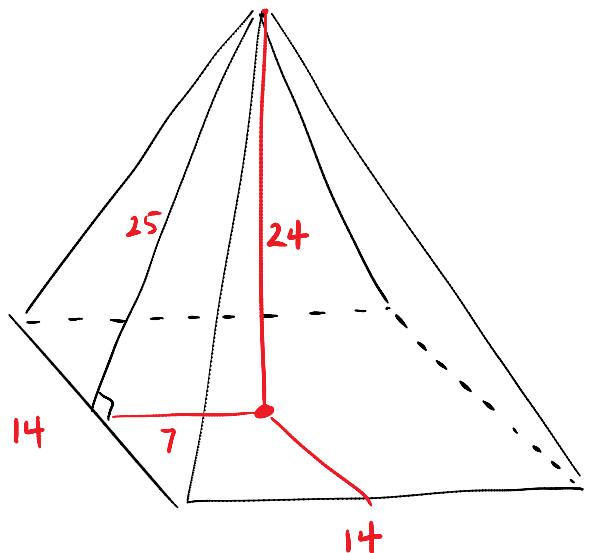
- #8 PABCD is a regular square pyramid.

- a If each side of the base has a length of 14 and alt. is 24.

Find: LSA  $A_{\text{face}} = \frac{14 \cdot 25}{2} = 175$

$$\begin{aligned} \text{L.S.A.} &= 4(175) \\ &= \boxed{700} \end{aligned}$$

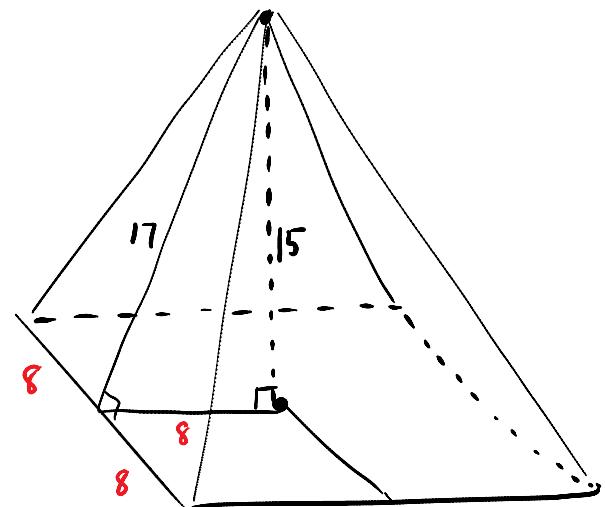
$$\text{T.S.A.} = 700 + 196 = \boxed{896}$$



$$\# 8b \quad A_{\text{face}} = \frac{16 \cdot 17}{2} = 136$$

$$L.S.A. = 4(136) = \boxed{544 u^2}$$

$$T.S.A. = 544 + 256 \\ = \boxed{800 u^2}$$



#9 find

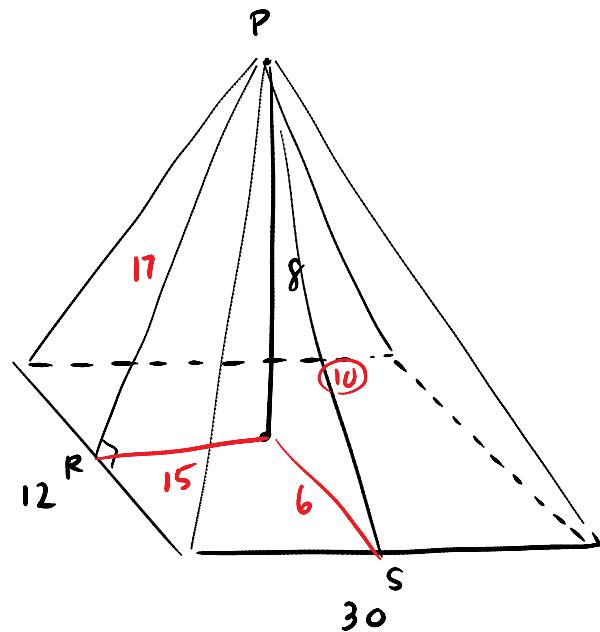
\* PR 17

\* PS 10

\* L.S.A.  $A_{\text{face}_1} = \frac{30(10)}{2} = 150$

$$A_{\text{face}_2} = \frac{12(17)}{2} = 102$$

$$2(150) + 2(102) = \boxed{504 u^2}$$



\* T.S.A.  $= 504 + 360$

$$= \boxed{864}$$

b.  $12^2 + 15^2 = x^2$

$$4^2 + 5^2 = x^2$$

$$16 + 25 = x^2$$

$$41 = x^2$$

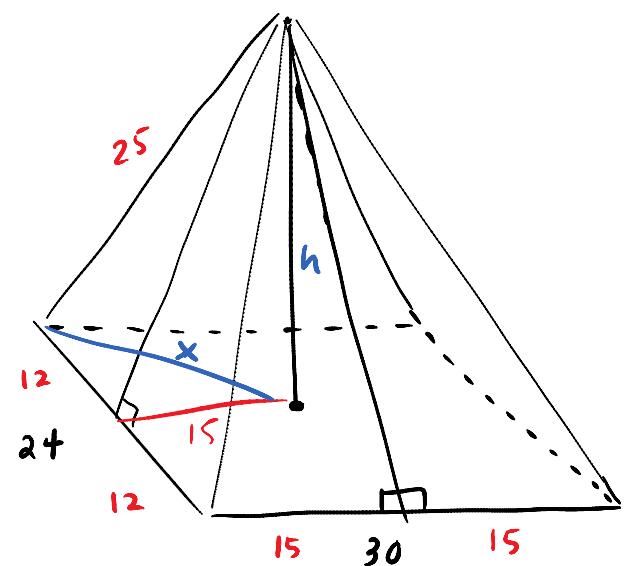
$$x = 3\sqrt{41}$$

$$(3\sqrt{41})^2 + h^2 = 25^2$$

$$9 \cdot 41 + h^2 = 625$$

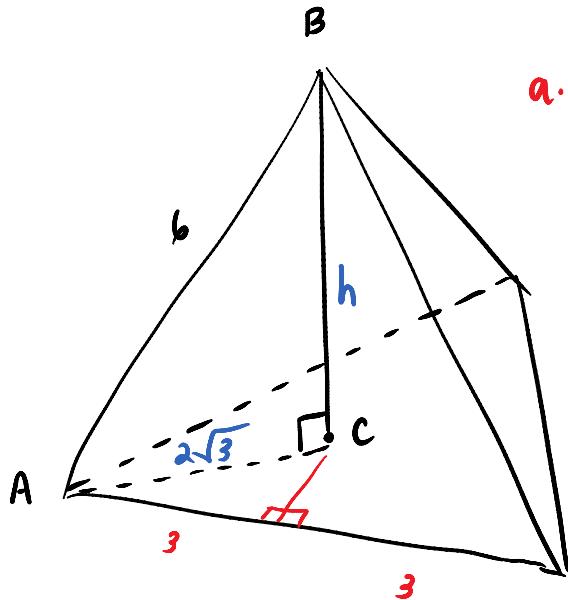
$$h^2 = 256$$

$$h = 16$$



#10 (See Below)

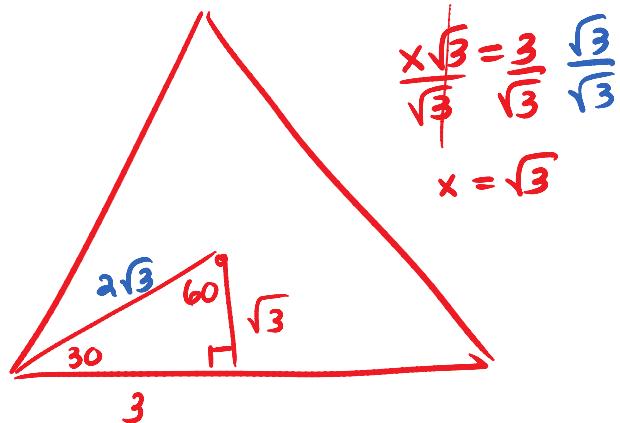
#11



$$a. \quad A_{\text{face}} = \frac{6^2 \sqrt{3}}{4} = \frac{36\sqrt{3}}{4} = 9\sqrt{3}$$

$$\begin{aligned} T.A &= 4(9\sqrt{3}) \\ &= \boxed{36\sqrt{3}} \end{aligned}$$

b.



$$\frac{x\sqrt{3}}{\sqrt{3}} = \frac{3}{\sqrt{3}} \quad \frac{\sqrt{3}}{\sqrt{3}}$$

$$x = \sqrt{3}$$

$$(2\sqrt{3})^2 + h^2 = 6^2$$

$$12 + h^2 = 36$$

$$h^2 = 24$$

$$h = \boxed{2\sqrt{6}}$$

#10 Each lateral edge of a regular square pyramid is 3, and the height of the pyramid is 1. What is

1. diagonal of base

$$\boxed{4\sqrt{2}}$$

$$\begin{aligned} x^2 + 1^2 &= 3^2 \\ x^2 + 1 &= 9 \\ x^2 &= 8 \\ x &= 2\sqrt{2} \end{aligned}$$

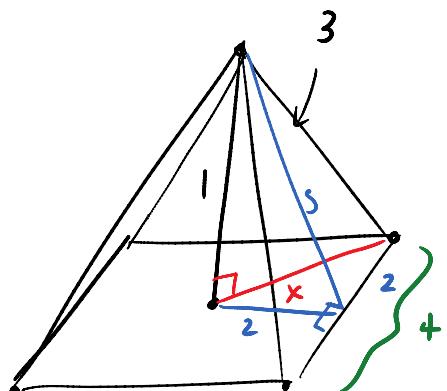
2. slant height

$$1^2 + 2^2 = s^2$$

$$\boxed{\sqrt{5} = s}$$

3. Area of base =  $\boxed{16}$

4. Lateral area =  $4\left(\frac{4\sqrt{5}}{2}\right) = \boxed{8\sqrt{5}}$



$$A_{\text{face}} = \boxed{\frac{4\sqrt{5}}{2}}$$

#12 A regular octahedron:  
each face is an equilateral triangle.  
Each edge is 6mm long.

a. T.S.A.  $\frac{6^2 \sqrt{3}}{4} = 9\sqrt{3}$

$$\hookrightarrow 8(9\sqrt{3}) = \boxed{72\sqrt{3}}$$

b. distance from C to E :  $6\sqrt{2}$

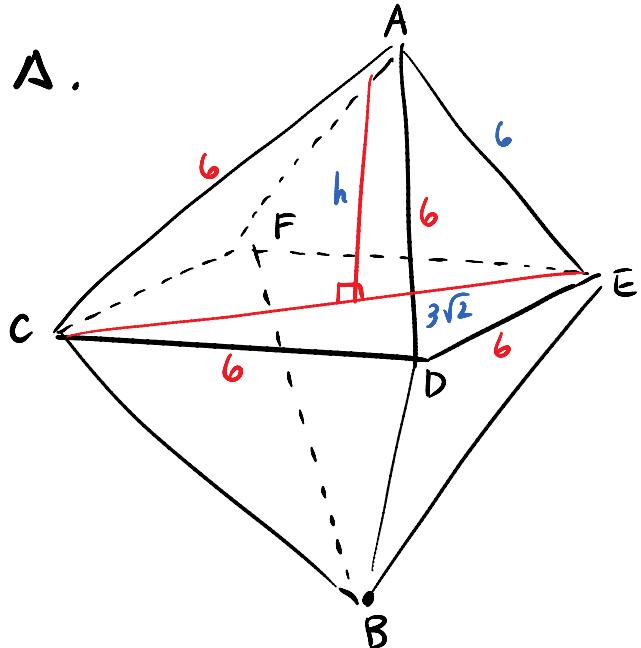
c. distance from A to B

$$h^2 + (3\sqrt{2})^2 = 6^2$$

$$h^2 + 18 = 36$$

$$h^2 = 18$$

$$h = 3\sqrt{2}$$



$$\boxed{AB = 6\sqrt{2}}$$

d. ACBE is a square !