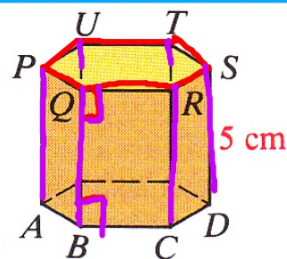


WARMUP #2

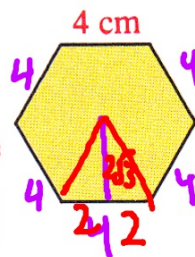
4. [redacted]

Exercises 1–6 refer to the right prism shown.



1. The prism is called a right ___ prism. **hexagonal**
2. How many lateral faces are there? **6**
3. What kind of figure is each lateral face? **rectangle**
4. Name two lateral edges and an altitude. [redacted]
5. The length of an altitude is called the ___ of the prism. **height**
6. Suppose the bases are regular hexagons with 4 cm edges.
 - a. Find the lateral area. **$\frac{1}{2}P \cdot h$**
 - b. Find the base area.
 - c. Find the total area.
 - d. Find the volume.

6. a. 120 cm^2 b. $24\sqrt{3} \text{ cm}^2$ c. $(120 + 48\sqrt{3}) \text{ cm}^2$ d. $120\sqrt{3} \text{ cm}^3$



$4 \cdot 6$
 $24(5)$

Base area $\cdot h$

$\frac{1}{2} \cdot 24 \cdot 2\sqrt{3}$ $9 \cdot 2\sqrt{3}$

SECTION 12.2: PYRAMIDS

Standards:

8.0: Students know, derive, and solve problems involving the perimeter, circumference, area, volume, lateral area, and surface area of common geometric figures.

9.0: Students compute the volumes and surface areas of prisms, pyramids, cylinders, cones, and spheres; and students commit to memory the formulas for prisms, pyramids, and cylinders.

11.0: Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.

PYRAMIDS

Base: **A pyramid has only ONE base.**

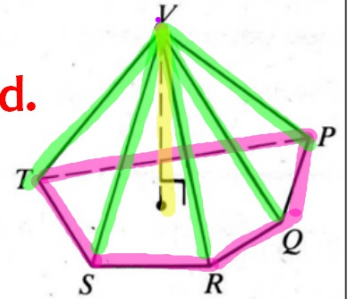
Pentagon PQRST is the base of the pyramid.

Vertex: **Point V is the vertex of V-PQRST**

Lateral Faces & Lateral Edges: _____

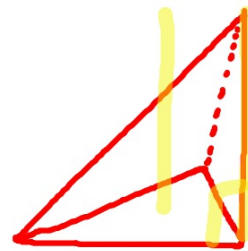
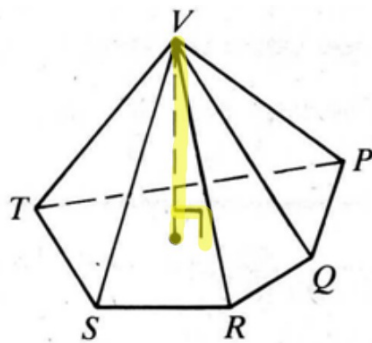
The lateral faces of a pyramid are triangles.

The segments in which the triangles intersect are the lateral edges.



Altitude: The segment from the vertex perpendicular to the base plane is the altitude of the pyramid.

Height: The length of the altitude is the height of the pyramid.

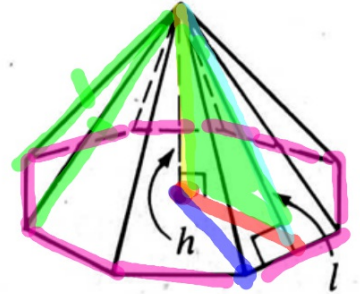


REGULAR PYRAMIDS

Regular Pyramid:

A regular pyramid has a regular polygon at its base.

(all sides \cong)
(all \angle \cong)

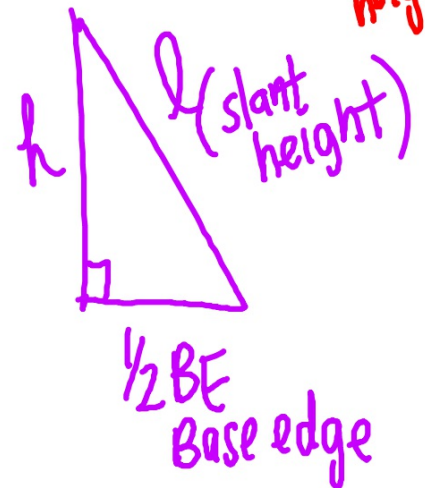
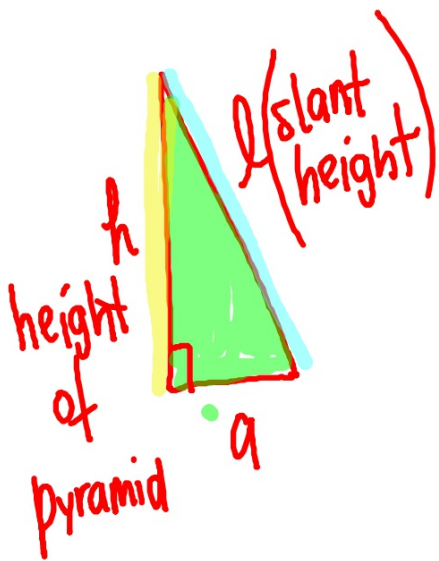


- 1) All lateral faces are isosceles triangles.
The slant height, l , of the pyramid is the height of a Δ that is a lateral face.

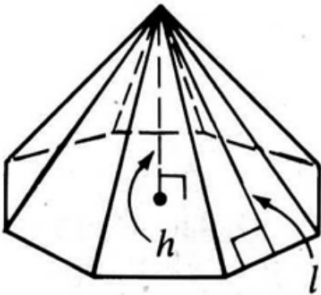


II) All lateral edges are congruent.

III) The altitude of the pyramid meets the base at the center of the base polygon.



REGULAR PYRAMIDS



LATERAL AREA

LA of a regular pyramid with n lateral faces is n times the area of one lateral face (F) or half the perimeter (p) of the base times the slant height (l) .

$$LA = n F$$

$$LA = \frac{1}{2} p l$$

$$\left(\frac{1}{2} \cdot B \cdot h \right) \cdot \# \text{ sides}$$

TOTAL AREA

TA of a pyramid is its LA + area of its base

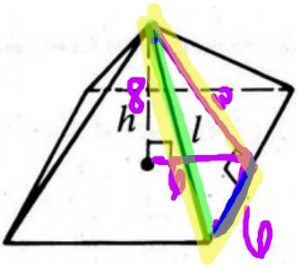
$$TA = LA + B$$

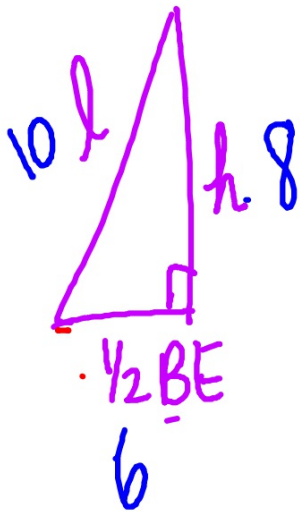
VOLUME

The volume of a pyramid = $\frac{1}{3}$ area of the base times the height of the pyramid

$$V = \frac{1}{3} B h$$



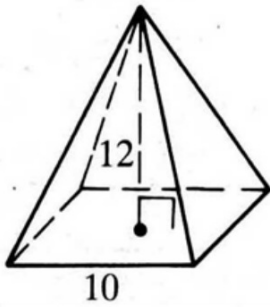
	1)	2)	3)	4)
				
Height	8	15	✦	✦
Slant height, l	10	✦ 17	15	✦
Base edge	✦ 12	16	12	10
Lateral edge	✦ $2\sqrt{34}$	✦ $\sqrt{353}$	✦	13



$$\sqrt{36 + 100}$$

5-7: Find the lateral area and the total area of each regular pyramid.

5)



LA

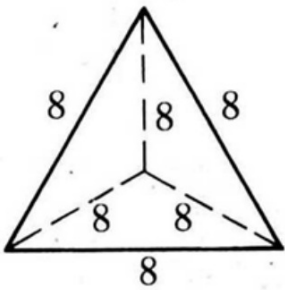


TA



5-7: Find the lateral area and the total area of each regular pyramid.

6)



LA

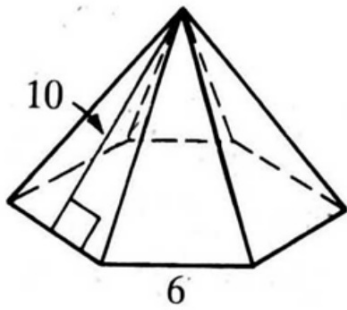


TA



5-7: Find the lateral area and the total area of each regular pyramid.

7)



LA

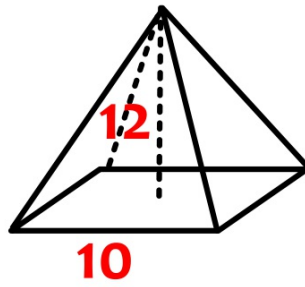


TA



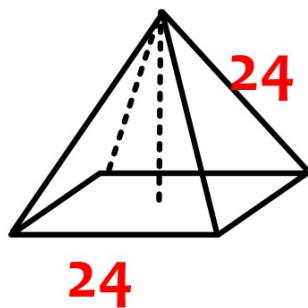
8-10: Find the volume of each of the following.

- 8) The regular square pyramid
in Exercise 5.



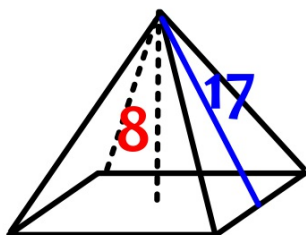
8-10: Find the volume of each of the following.

- 9) A regular square pyramid with base edge 24 and lateral edge 24.



8-10: Find the volume of each of the following.

- 10) A regular square pyramid with height 8 and slant height 17.



HOMEWORK

Assignment #12.2a

- Page 485 #1-16



****THURSDAY - QUIZ 12.1-12.2****

Copy and complete the table below for the regular square pyramid shown.

	1.	2.	3.	4.	5.	6.
height, h	4	12	24	?	?	6
slant height, l	5	13	?	12	5	?
base edge	?	?	14	?	8	?
lateral edge	?	?	?	15	?	10

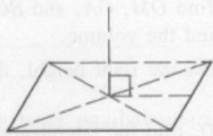


HW 12.2a
Page 485 1-16

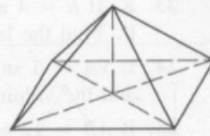
You can use the following three steps to sketch a square pyramid.



(1) Draw a parallelogram for the base and sketch the diagonals.



(2) Draw a vertical segment at the point where the diagonals intersect.



(3) Join the vertex to the base vertices.

Sketch each pyramid, as shown above. Then find its lateral area.

7. A regular triangular pyramid with base edge 4 and slant height 6
8. A regular pentagonal pyramid with base edge 1.5 and slant height 9
9. A regular square pyramid with base edge 12 and lateral edge 10
10. A regular hexagonal pyramid with base edge 10 and lateral edge 13

For Exercises 11–14 sketch each square pyramid described. Then find its lateral area, total area, and volume.

11. base edge = 6, height = 4
12. base edge = 16, slant height = 10
13. height = 12, slant height = 13
14. base edge = 16, lateral edge = 17
15. A pyramid has a base area of 16 cm^2 and a volume of 32 cm^3 . Find its height.
16. A regular octagonal pyramid has base edge 3 m and lateral area 60 m^2 . Find its slant height.

