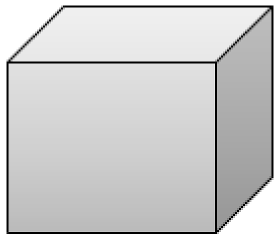
MATATAG K to 10 Curriculum Weekly Lesson Log	School:		Grade Level:	8
	Name of Teacher		Learning Area:	MATHEMATICS
	Teaching Dates and Time:	SEPTEMBER 8 - 12, 2025 (WEEK 3)	Quarter:	Second

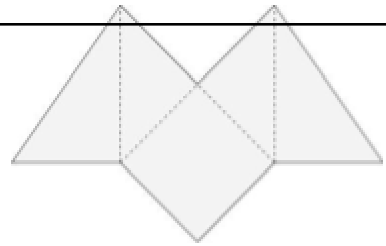
I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	The learners demonstrate knowledge and understanding of the volume of pyramids (other than square and rectangular pyramids), cones, and spheres.
B. Performance Standards	By the end of the quarter, the learners are able to plot points, find the volume of pyramids other than square and rectangular pyramids, and the volumes of cones and spheres. (MG)
C. Learning Competencies and Objectives	***Learning Competency*** At the end of the lesson, the learners are able to: **4. explore inductively the volume of pyramids other than square and rectangular pyramids.** *Lesson Objective 1: Derive the formula in finding the volume of a pyramid from the volume of a cube.* *Lesson Objective 2: Calculate the volume of a pyramid from the volume of a square pyramid and rectangular pyramid. Lesson Objective 3: Inductively identify the relationship between the areas of the base of the pyramid to its volume.* *Lesson Objective 4: Describe the characteristics of the sides and angles of regular polygons and find its area. Lesson Objective 5: Derive the formulas in finding the volume of some regular pyramids.* *Lesson Objective 6: Accurately solve problems involving volume of regular pyramids. Lesson Objective 7: Describe the sides of some irregular polygons and calculate their area. Lesson Objective 8: Derive the formula in finding the volume of some irregular pyramids.* *Lesson Objective 9: Solve problems involving volume of some irregular pyramids.*
D. Content	4.1 Finding the volume of square and rectangular pyramids. 4.2 Identify the relationship between the areas of the base of the pyramid to its volume. 4.3 Finding the area of regular polygons. 4.4 Derive the formula for the volume of pyramids with regular polygons as the base. 4.5 Solve problems involving volume of pyramids with regular polygons as the base. 4.6 Finding the area of irregular polygons.* 4.7 Derive the formula for the volume of pyramids with irregular polygons as the base. 4.8 Solve problems involving volume of pyramids with irregular polygons as the base.*

E. Integration	History

II. LEARNING RESOURCES

Area of equilateral triangle - formula, derivation, examples. (2013.). Cuemath. https://www.cuemath.com/measurement/area-of-equilateral- triangle/
Area of Polygons - formula, Area of regular polygons examples. (2013.). Cuemath. https://www.cuemath.com/geometry/area-of-polygons/ Holliday, J., et al. (2007). *Texas Algebra 2*. Columbus, Ohio, USA
Math Monks. (2023, August 3). *Trapezoidal Pyramid – Formulas, Examples & Diagrams*. https://mathmonks.com/pyramid/trapezoidal- pyramid
mathematicsonline. (2021, August 29). *Complete explanation for volume of a tetrahedron* [Video]. YouTube. https://www.youtube.com/watch?v=SxuwLnWgkfk
Pierce, Rod. (19 Apr 2024). "Math is Fun". https://www.mathsisfun.com/geometry/pyramid-vs-cube.html#:~:text=So%20three%20of%20those%20pyramids%20exactly%20make%20one,Volume%20%3D%201%203%20%C3%97%20%5BBase%20Area%5D%C3%97%20height
Wikipedia contributors. (2024, May 22). *Great Pyramid of Giza*. Wikipedia. https://en.wikipedia.org/wiki/Great_Pyramid_of_Giza

III. TEACHING AND LEARNING PROCEDURE		**NOTES TO TEACHERS**
A. Activating Prior Knowledge	**DAY 1** 1. **Short Review** **Activity 1: How Much Do You Know?** During your Grade 6, you learned about finding the volume of a cube. What is the formula in finding the volume of a cube?  Find the volume of a cube given the following side: 1) 4 cm. 3) 6 dm. 5) 8 in. 2) 5 in. 4) 7 cm. 2. **Feedback (Optional)**	**Short Review Answers:** $V = s^3$, where s is the side or the edge of a cube. 1) 64cm^3. 2) 125in^3. 3) 216 dm^3. 4) 343 cm^3. 5) 512 in^3.

B. Establishing Lesson Purpose	1. **Lesson Purpose** **Activity 2: The Cube From Pyramids** Materials: activity sheet, scissors, glue or tape Directions: 1. Using the given template, cut the figure. Make sure not to cut the broken lines. 2. Join the edges using glue or tape. 	Note: You can print 3 templates on paper to consume less time for the activity.

3. Make two more of the same patterns.
4. Join these three pieces and form a cube.

Questions:
1. What three-dimensional shape was formed from the template that you cut?
2. How many of these figures can form a cube?
3. What can you say about the volume of a pyramid as compared to the volume of a cube?

Observe the given illustration.
- What three-dimensional shape does it represent?
- Which ancient seven wonders of the world is it?
- Where is this ancient wonder of the world located?

The Great Pyramid of Giza

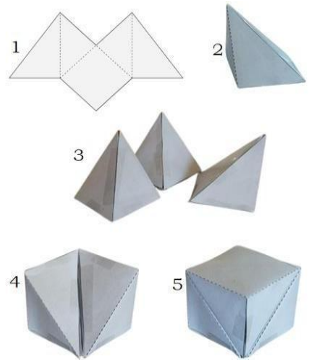
Image Source: https://stock.adobe.com/au/images/pyramid-of-khufu-giza/82190431

If you have read article about this pyramid, what is the volume of the Great Pyramid of Giza?

In ancient Egypt, high social status was considered absolutely positive, and the monumental social inequalities were symbolized by gigantic pyramids versus smaller mastaba or a type of ancient Egyptian tomb in the form of a flat- roofed, rectangular structure with inward sloping sides, constructed out of mudbricks or limestone. The sizes of tombs were regulated officially, with their allowed dimensions written down in royal decrees.

The **Great Pyramid of Giza** is the largest Egyptian pyramid. It served as the tomb of pharaoh Khufu, who ruled during the Fourth Dynasty of the Old Kingdom. Built c. 2600 BC, for about 27 years, the pyramid is the oldest of the Seven Wonders of the Ancient World. It is the only wonder that has remained largely intact. It is the most famous monument of the Giza pyramid complex, which is part of the UNESCO World Heritage Site "Memphis and its Necropolis". It is situated at the northeastern end of the line of the three main pyramids at Giza.

Initially standing at 146.6 meters (481 feet), the Great Pyramid was the world's tallest human-made structure for more than 3,800 years. Over time,



Answer to Questions:
1. Pyramid
2. 3
3. The volume of a pyramid is one-third the volume of a cube since three pyramids can form a cube.

- Pyramid
- The Great Pyramid of Giza
- Egypt

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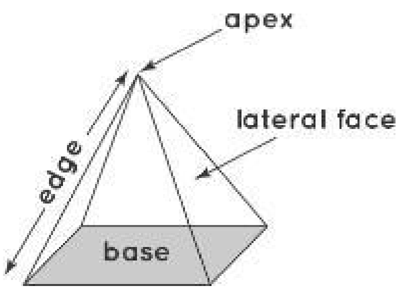
most of the smooth white limestone casing was removed, which lowered the pyramid's height to the current 138.5 meters (454.4 ft); what is seen today is the underlying core structure. The base was measured to be about 230.3 meters (755.6 ft) square, giving a volume of roughly 2.6 million cubic meters (92 million cubic feet), which includes an internal hillock. The dimensions of the pyramid were 280 royal cubits (146.7 m; 481.4 ft) high, a base length of 440 cubits (230.6 m; 756.4 ft), with a seked of 5+1/2 palms (a slope of 51°50'40").

The "Great Pyramid of Giza" is a real-life example of a king of three- dimensional shape. This lesson will let you dig deeper on the different kinds of pyramid and their volumes.

2. Unlocking Content Vocabulary
● VOLUME – the amount of space occupied by a three-dimensional object.
● PYRAMID – a three-dimensional figure with a flat polygon as its base. All the other faces of a pyramid are triangles which are called LATERAL FACES.
● REGULAR POLYGON – a polygon in which all the sides are equal and all the interior angles are congruent.
● IRREGULAR POLYGON – a polygon with unequal sides and unequal angles
● REGULAR PYRAMID – a pyramid whose base is a regular polygon
● IRREGULAR PYRAMID – a pyramid whose base is an irregular polygon
● APOTHEM – a line segment from the center of the regular polygon base of a pyramid to the midpoint of one of its sides.
● APEX – the highest point in a pyramid.
● TETRAHEDRON – also known as a triangular pyramid. It has four triangular bases, six straight edges, and four vertex corners.

Parts of a Pyramid:


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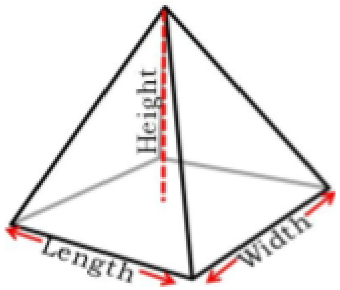
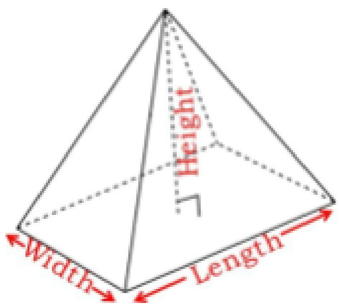
C. Developing and Deepening Understanding	**SUB-TOPICS: 4.1: Volume of a Square Pyramid and Rectangular Pyramid;** **4.2: Relationship between the area of the base of the pyramid to its volume.** **1. Explicitation** In Activity 1, you learned that the volume of a pyramid is one-third the volume of a cube. To get the volume of the cube, you need to multiply the length, the width, and the height. **Volume = length · width · height** In a cube, all sides are equal, so the volume is $V = s^3$. Using the formula for volume, what comes to your mind when you multiply the length and the width? **Volume = length width height** Since the volume of a pyramid is one-third of the volume of a cube, how will you find the volume of a pyramid in terms of l, w, and h? Using the shape of the "Great Pyramid of Giza", what can you say about its base? If the base of the "Great Pyramid of Giza" is a square, what do you think is the formula for finding its volume?  Since the base of the Great Pyramid of Giza has a square base, then the formula for finding its volume is: $V = \frac{s \cdot s \cdot h}{3}$ or $V = \frac{s^2 \cdot h}{3}$ What can you say about s^2 from the formula? What if the base of a pyramid is a rectangle, how will you find its volume? $V = \frac{l \cdot w \cdot h}{3}$  What can you say about l·w from the formula? Can you now generalize the formula in finding the volume of a pyramid?	It is the formula for finding the area of a polygon. $V = \frac{l \cdot w \cdot h}{3}$ Square. It is the formula for the area of a square. It is the formula for the area of a rectangle. In solving for the volume of a pyramid, you need to find the area of the base, and then multiply it by the height of the pyramid. Since the volume of the pyramid is one-third of the volume of a cube, so you need to divide the product of the area of the base by three.

2. Worked Example

From the "Explicitation" you were able to derive the formula in finding the volume of a pyramid.

$$V = \frac{1}{3}\boldsymbol{Bh}$$

where: B = area of the base of the pyramid
h = height of the pyramid

Example 1: What will be the volume of a rectangular pyramid with base sides 6 in and 8 in, and a height of 16 in?

Solution: Area of the Base = (6)(8) or $(8)^2$

$$B = 48\ in^2$$

$$V = \frac{1}{3}Bh$$

$$V = \frac{1}{3}(48)(16)$$

$$\mathbf{V = 256\ in^3}$$

Therefore, the volume of the rectangular pyramid is 256 in^3.

Example 2: A square pyramid has a height of 15 meters and its base with 8- meter side lengths. Find its volume.

Solution: Area of the Base = (8)(8) or $(8)^2$

$$B = 64\ m^2$$

$$V = \frac{1}{3}Bh$$

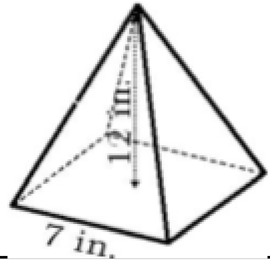
$$V = \frac{1}{3}(64)(15)$$

$$\mathbf{V = 320\ m^3}$$

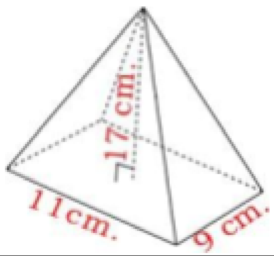
Therefore, the volume of the rectangular pyramid is 320 m^3.

Example 3: Find the volume of the following:

a.



b.



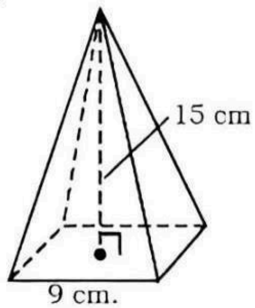
Solution:
Area of the Base = (7)(7) or $(7)^2$
$= 49\ in^2$
$V = \frac{1}{3}Bh$
$V = \frac{1}{3}(49)(12)$
$V = 196\ in^3$
Therefore, the volume of the square pyramid is $196\ in^3$.

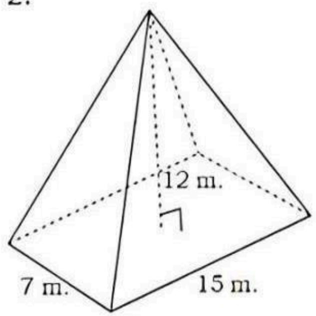
Solution:
Area of the Base = (9)(11) B
$B = 99\ cm^2$
$V = \frac{1}{3}Bh$
$V = \frac{1}{3}(99)(17)$
$V = 561\ cm^3$
Therefore, the volume of the rectangular pyramid is $561\ cm^3$.

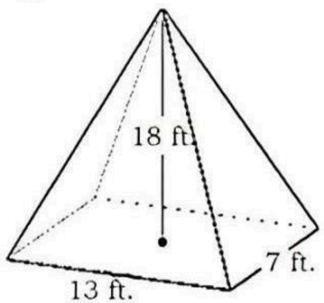
3. **Lesson Activity**
Activity 3

A. Solve for the following problem:
1. Find the volume of a pyramid with a rectangular base measuring 6 cm by 9 cm and height 19 cm.
2. A square pyramid has a height of 17 m and a base that measures 12 m on each side. Find the volume of the pyramid.
3. A rectangular pyramid has a base with dimensions of 9 meters and 13 meters respectively and its height measures 15 meters. Find the volume of the pyramid.
4. What is the volume of a pyramid whose square base has a length of 15 inches and a height of 21 inches?
5. Find the volume of a pyramid whose base dimensions are 11 and 15 inches and whose height is 21 inches.

B. Find the volume of the following figures.

1.


2.


3.


Activity 3
Answers: A.
1. $342\ cm^3$.
2. $816\ m^3$.
3. $585\ m^3$.
4. $1575\ in^3$.
5. $1155 cm^3$.

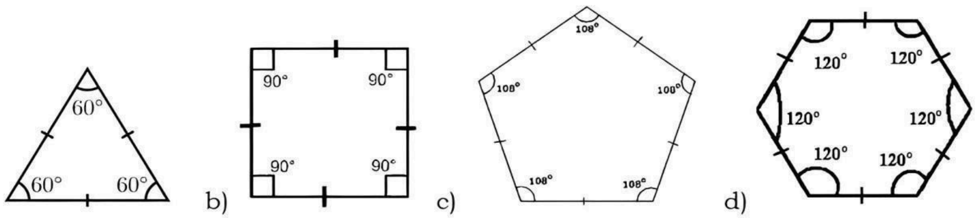
B.
1. $405\ cm^3$.
2. $420\ m^3$.
3. $546\ ft^3$.

DAY 2

SUB-TOPICS: 4.3 Finding the area of regular polygons; 4.4 Derive the formula for the volume of pyramids with regular polygons as the base; 4.5 Solve problems involving volume of pyramids with regular polygons as the base.

1. **Explicitation**

Observe the following figures:



Questions:

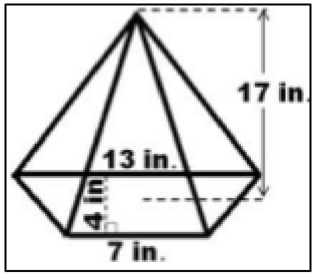
1. What shape is in a? b? c? d?
2. What can you say about the sides of the:
   a) triangle? c) pentagon?
   b) square? d) hexagon?
3. What can you about each angle of the:
   a) triangle? c) pentagon?
   b) square? d) hexagon?

Since you learned that in finding the volume of a pyramid, it is important to know the area of its base, how do you find the area of these regular polygons if they become the base of your pyramid? The square pyramid has been discussed in the previous lesson, your focus now is finding the area of a regular triangle, pentagon, and hexagon.

a) Area of a Regular Triangle

To derive the area of a regular triangle, you will use the Pythagorean Theorem $c^2 = a^2 + b^2$.

Using the figure at the right and applying the Pythagorean Theorem:



$a = h$, $b = \frac{a}{2}$, $c = a$.

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

$a^2 = h^2 + (\frac{a}{2})^2$

$a^2 = h^2 + \frac{a^2}{4}$

Answer:

1. a) Triangle
   b) Square
   c) Pentagon
   d) Hexagon
2. a) with 3 equal sides
   b) with 4 equal sides
   c) with 5 equal sides
   d) with 6 equal sides
3. a) Each of the 3 angles are congruent.
   b) Each of the 4 angles are congruent.
   c) Each of the 5 angles are congruent.
   d) Each of the 6 angles are congruent.

Solving for h,

$$h^2 = a^2 - \frac{a^2}{4}$$

Extracting the roots:

$$\sqrt{h^2} = \sqrt{a^2 - \frac{a^2}{4}}$$

$$h = \sqrt{\frac{4a^2 - a^2}{4}}$$

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

Applying the formula of finding the area of a triangle $A = \frac{(base)(height)}{2}$, where base = a, and height = $\frac{a\sqrt{3}}{2}$

$$A = \frac{(a)\left(\frac{a\sqrt{3}}{2}\right)}{2}$$

$$A = \left(\frac{a^2\sqrt{3}}{2}\right)\left(\frac{1}{2}\right)$$

$$A = \frac{a^2\sqrt{3}}{4}$$

So, the formula for finding the area of a regular triangle is **$A = \frac{a^2\sqrt{3}}{4}$**.

b) Area of a Regular Pentagon

$$A = \frac{\sqrt{25+10\sqrt{5}}}{4}a^2$$

where: a = side length of a regular hexagon

c) Area of a Regular Hexagon

$$A = \frac{3\sqrt{3}}{2}a^2$$

where: a = side length of a regular hexagon

2. Worked Example

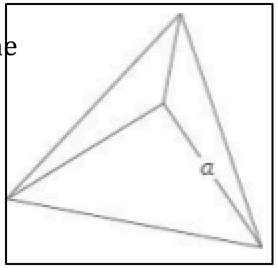
Now that you have learned the formula for the area of a regular polygon. You will use this to find the volume of a pyramid with a base that is a regular polygon. Since the volume of a pyramid can be obtained by the formula

$$V = \frac{1}{3}Bh$$

where: B = area of the base of the pyramid

	h = height of the pyramid	

To derive the volume for an Equilateral Triangular Pyramid or a Tetrahedron, watch the video in the link: https://www.youtube.com/watch?v=SxuwLnWgkfk

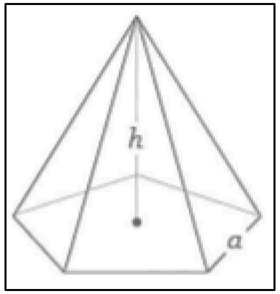


Therefore, the volume of a regular triangular pyramid based on the YouTube video you have watched is:

$$\mathbf{V} = \frac{a^3}{6\sqrt{2}}$$

where: a = side of a tetrahedron or regular triangular pyramid

When the base is a regular pentagon, you first need to calculate the area of the pentagonal base. The formula for the area A of a regular pentagon with side length a is:



$$A = \frac{\sqrt{25+10\sqrt{5}}}{4}a^2$$

Combining this with the volume formula for the pyramid, we get:

$$V = \frac{1}{3}Bh$$

$$V = \frac{1}{3}\left(\frac{\sqrt{25+10\sqrt{5}}}{4}a^2\right)(h)$$

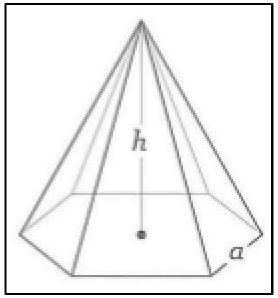
Simplifying the volume V of the pyramid with a regular pentagon base is:

$$V = \left(\frac{\sqrt{25+10\sqrt{5}}}{12}a^2\right)(h)$$

where: a = side length of the hexagonal base
h = height of the pyramid

When the base is a regular hexagon, you first need to calculate the area of the hexagonal base. The formula for the area A of a regular hexagon with side length a is: $A = \frac{3\sqrt{3}}{2}a^2$

Combining this with the volume formula for the pyramid, we get: $V = \frac{1}{3}\left(\frac{3\sqrt{3}}{2}a^2\right)(h)$



Simplifying the volume V of the pyramid with a regular hexagon base is $V = \frac{3\sqrt{3}}{2}a^2h$

where: a = side length of the hexagonal base h = height of the pyramid

Example 1: What is the volume of a regular triangular pyramid whose side is 3 ft. long?
Solution: Given: a = 3

$$V = \frac{a^3}{6\sqrt{2}}$$

$$V = \frac{3^3}{6\sqrt{2}}$$

$$V = \frac{27}{6\sqrt{2}}$$

$$\mathbf{V = 3.18ft^3}$$

Therefore, the volume of a regular triangular pyramid is 3.18ft^3.

Example 2: Find the volume of a pyramid that has a pentagonal base of side length is 1 meter and a height of 3 meters?
Solution:

$$V = (0.57)(1)^2(3)$$

$$\mathbf{V = 1.72\ m^3}$$

Therefore, the volume is 1.72 m^3.

Example 3: What is the volume of a regular hexagonal pyramid whose side length is 6 cm. and the height is 10 cm,
Solution:

$$V = \frac{3\sqrt{3}}{2}a^2h$$

$$V = \frac{3\sqrt{3}}{2}(6)^2(10)$$

$$\mathbf{V = 935.31\ cm^3}$$

Therefore, the volume is 935.31 cm^3.

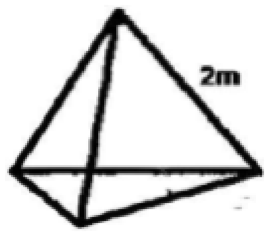
Example 4: Find the volume of the regular triangular pyramid as illustrated below.
Solution: Given: a = 2

$$V = \frac{a^3}{6\sqrt{2}}$$

$$V = \frac{2^3}{6\sqrt{2}}$$

$$V = \frac{8}{6\sqrt{2}}$$

$$\mathbf{V = 0.94\ m^3}$$



	Therefore, the volume of a regular triangular pyramid is 0.94 m^3. **3. Lesson Activity** **Activity 4** 1. Find the volume of a pentagonal pyramid given the side length and its height. (Round off your answers to the nearest hundredths) a) side length is 1 meter, height is 3 meters b) side length is 5 centimeters, height is 8 centimeters c) side length is 9 inches, height is 12 inches d) side length is 3 meters height is 7 meters e) side length is 11 feet height is 13 feet 2. What is the volume of a regular triangular pyramid with the given side: (Round off your answers to the nearest hundredths) a) 4 inches b) 9 centimeters c) 11 feet d) 1 meter e) 15 inches 3. Find the volume of a hexagonal pyramid given the side length and its height. (Round off your answers to the nearest hundredths) a) side length is 1 meter, height is 3 meters b) side length is 5 centimeters, height is 8 centimeters c) side length is 9 inches, height is 12 inches d) side length is 3 meters height is 7 meters e) side length is 11 feet height is 13 feet **DAY 3** **SUB-TOPICS: 4.6 Finding the area of irregular polygons.*; 4.7 Derive the formula for the volume of pyramids with irregular polygons as the base; 4.8 Solve problems involving volume of pyramids with irregular polygons as the base.*** **1. Explicitation** Compare the polygons in Column A to those polygons in Column B. What have you noticed in the polygons in the two columns?	**Activity 4 Answers:** 1. a) V = 11.4 m^3 b) V = 114.70 cm^3 c) V = 577.43 in^3 d) V = 36.13 m^3 e) V = 902.10 ft^3 2. a) 7.45 in^3 b) 85.91 cm^3 c) 156.86 ft^3 d) 0.12 m^3 e) 397.75 in^3 3. a) 2.60 m^3 b) 173.21 cm^3 c) 841.78 in^3 d) 54.56 m^3 e) 1362.62 ft^3

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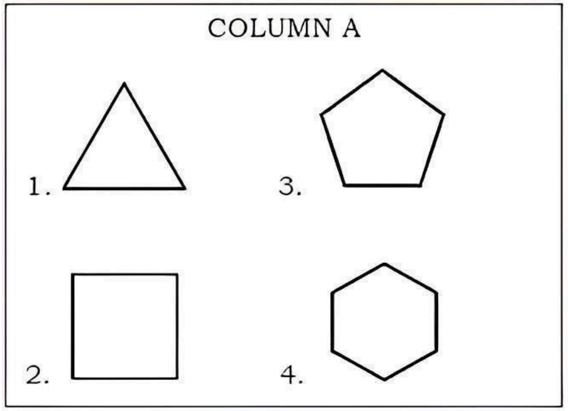
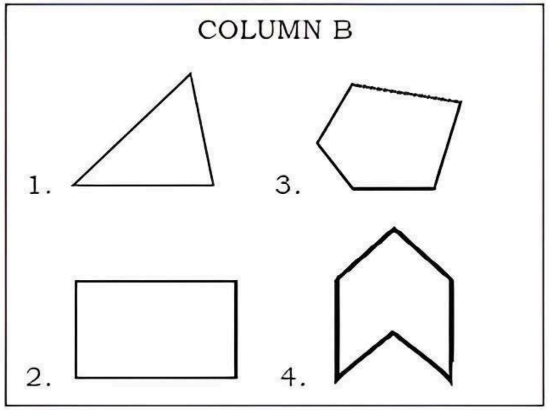
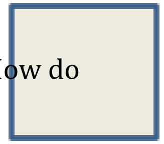
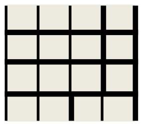
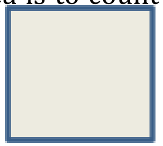
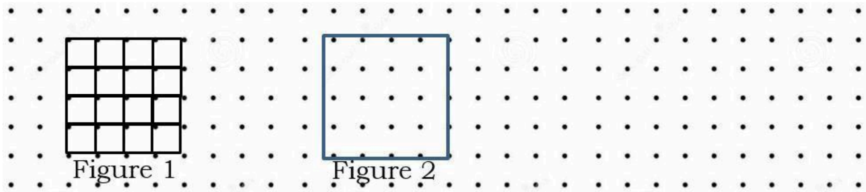




Based on your comparison, what kind of polygons does Column A represent? What kind of polygons does Column B represent?
Since you already have learned how to find the area of some regular polygons, how will you find the area of irregular polygons?
Observe the given figure at the right. What regular polygon does it represent? How do you find the area of a square?

If small squares make up a bigger square, one way to find its area is to count the number of small squares that fits in the bigger square. Another way to find the area is to count the number of small squares for the length and the width of the bigger square.


What do you think is the area of the given square?
</td>
<td>
Each of the polygon in Column A have equal sides while each of the polygons in Column B have sides with different lengths.
Regular polygons. Irregular polygons.
Square
Area of Square = $(side)^2$
16 square units
</td>
</tr>
</table>

Activity 5. Picking the Area from Pick's Theorem

Place the given square in a dot paper. Observe that the given in Figure 1 and 2 are the same square.



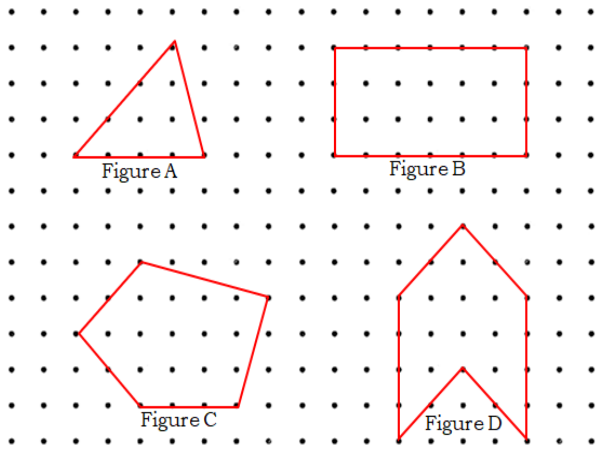
Questions:

1. How many dots are in the boundary of the square in Figure 2?
2. What is half of the dots in the boundary of the square in Figure 2?
3. How many dots are in the interior of the square in Figure 2?
4. If you get the sum of your answer in #2 and in #3 and then subtract it by one, what is the result?
5. Is your answer in #4 the same with the area obtained when counting the number of smaller squares that formed from the bigger square?

One way to fine the area of a polygon is by applying the Pick's Theorem.

$$\textbf{Area = interior points +} \frac{\textit{boundary points}}{2} \mathbf{- 1}$$

Now try to find the area of the irregular polygons using the dot paper or the grid graph. Complete the given table.



How will you determine the area of the irregular polygons if no dot paper is used?

Answer:

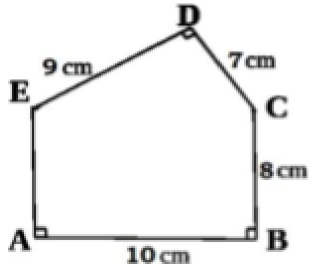
1. 16
2. 8
3. 9
4. 8+9-1 = 16
5. Yes

Polygon	Interior Points	Boundary Points	Area of the Polygon
A	3	8	6
B	10	18	18
C	13	$\frac{9}{2}$ or 4.5	$16\frac{1}{2}$ or 16.5
D	9	16	16

You can subdivide the figure into polygons that you can compute the area like triangle, square, etc. Get the sum of these areas.

Polygon	Interior Points	Boundary Points	Area of the Polygon
A			
B			
C			
D			

Example: Find the area of the given polygon at the right. Solution: You can subdivide the given into polygons that you can compute its area, then add their areas.



Area of Rectangle AECB = (length)(width)

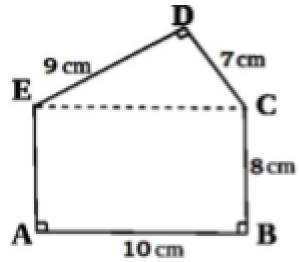
= (10cm)(8cm)

= **80 cm^2**

Area of Triangle EDC = $\frac{1}{2}$(base)(height)

= $\frac{1}{2}$(7cm)(9cm)

= **31.5 cm^2**



Area of Pentagon AEDCB = Area of Rectangle AECB + Area of Triangle EDC

= 80 cm^2 + 31.5 cm^2

= **101.5 cm^2.**

What about if these irregular polygons are the bases of the pyramids, how will find its volume?

2. Worked Example

Similar to pyramid with regular polygon as its base, the volume of a pyramid with an irregular polygon base can also be solved using the formula:

$$V = \frac{1}{3}\mathbf{Bh}$$

where: B = area of the base of the pyramid

h = height of the pyramid

Volume of Irregular Triangular Pyramid

Since the formula in finding the volume of a pyramid is V = $\frac{1}{3}$Bh, the area of the base of this pyramid will use the formula in finding the area of a triangle which is A = $\frac{1}{2}$bH, where b = base of the triangle and H is the altitude or height of the triangle. Substituting in the formula for the volume of a pyramid,

$$V = \frac{1}{3}Bh$$

$$V = \left(\frac{1}{3}\right)\left(\frac{1}{2}bH\right)(h)$$

$$\mathbf{V = \left(\frac{1}{6}bHh\right) \text{ or } \frac{bHh}{6}}$$

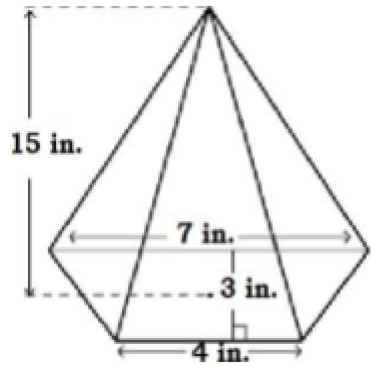
Volume of Other Irregular Pyramids

There are pyramids whose bases are polygons that has sides with different lengths are irregular pyramids. The volume is also obtained using the formula, $V = \frac{1}{3}Bh$. It is important that in finding the area of the base, you have to subdivide the polygonal base in either triangle, square, rectangle, etc., whose area can be computed. Then get the sum of the areas from the subdivided polygon.

Example 1: Find the volume of the trapezoidal pyramid.

Solution:

Given: $base_1$ = 7 in. ; $base_2$ = 4 in. height of the trapezoid = 3 in. height of the pyramid = 15 in.



Area of the Trapezoid = $\left(\frac{b1+b2}{2}\right)(h)$

Area of the Trapezoid = $\left(\frac{7+4}{2}\right)(3)$

Area of the Trapezoid = (5.5)(3)

Area of the Trapezoid = 16. 5 in^2.

$V = \frac{1}{3}Bh$

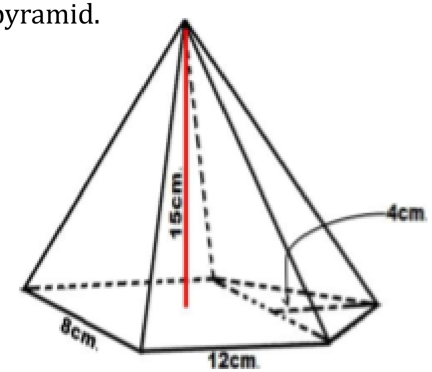
$V = \frac{1}{3}(16.5)(15)$

V = 82.5 in^3.

Therefore, the volume of the trapezoidal pyramid is 82.5 in^3.

Example 2: Find the volume of the irregular pentagonal pyramid.

Solution: Since the base can form a rectangle and a triangle, find the area of the rectangle and the triangle.



Area of Rectangle = (8cm)(12cm)

= **96 cm^2.**

Area of Triangle = $\frac{1}{2}$ (8cm)(4cm)

=**16cm^2.**

Area of the Base of the Irregular Pentagon= Area of Rectangle + Area of Triangle A = 96 cm^2 + 16cm^2

A = 112cm^2

Volume of the Irregular Pentagonal Pyramid = $\frac{1}{3}Bh$

$$V = \frac{1}{3}(112cm^2)(15cm)$$

V = 560cm³.

Therefore, the volume of the pyramid is 560cm³.

Example 3: The base of a pyramid is a right triangle with legs measuring 15 in. and 17 in. Find the volume of the triangular pyramid whose height of the pyramid is 19 in.

Solution:

$$V = \frac{bHh}{6}$$

$$V = \frac{(15in)(17in)(19in)}{6}$$

$V = 807.5\ in^3$

Therefore, the volume of the pyramid is $807.5\ in^3$.

Example 4: The trapezoid-based right pyramid has the bases 21cm and 23cm respectively. The height of the trapezoidal base is 6 cm while the height of the pyramid is 25 cm. Find its volume.

Solution:

Given: b_1 = 21 cm; b_2 = 23 cm; height of the trapezoid = 6 cm.

height of the pyramid = 25 cm.

$$\text{Area of the Trapezoid} = \left(\frac{b_1+b_2}{2}\right)(h)$$

$$\text{Area of the Trapezoid} = \left(\frac{21+23}{2}\right)(6)$$

Area of the Trapezoid = (22)(6)

Area of the Trapezoid = 132 cm^2.

$$V = \frac{1}{3}Bh$$

$$V = \frac{1}{3}(132)(25)$$

$V = 1100\ cm^3$.

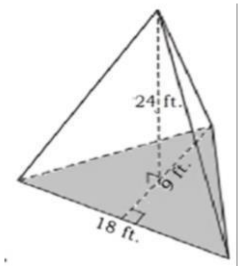
Therefore, the volume of the trapezoidal pyramid is $1100\ cm^3$.

3. Lesson Activity

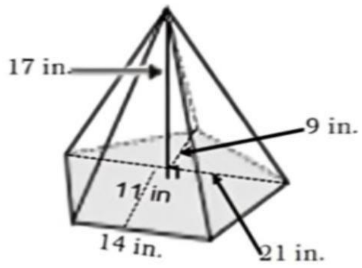
Activity 5

A. Find the volume of the following pyramid.

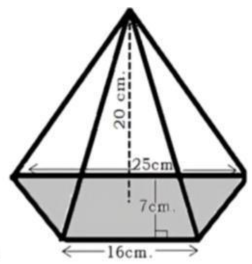
1.



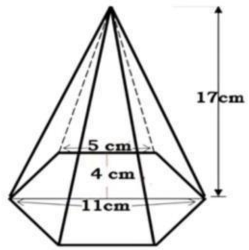
2.



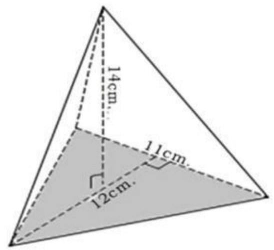
3.



4.



5.



B. Solve the following problems. (Round off your answers to the nearest hundredths)

1. Find the volume of a pyramid with a triangular base. The base has a length of 6 in and a height of 8 in, while the height of the pyramid is 12 in.
2. The steel machine part shown below has a base area of 32.5 in^2 and a height of 7.8 in. The steel weighs 10.2 grams per cubic inch. How much does this part weigh?
3. A right pyramid whose height is 23 cm. has a trapezoid base. The lengths of the bases are 17cm and 14cm respectively and the trapezoid's height is 8cm. Find its volume.
4. The height of the base of a triangular pyramid has a length of 10 dm and its base measures 12 dm. The height of the triangular pyramid is 17dm. What is its volume?
5. 5. The base of this pyramid is a right triangle with legs of 11 inches and 7inches and the height of the pyramid is 12 inches. Find the volume of the

Activity 5 Answer Key:

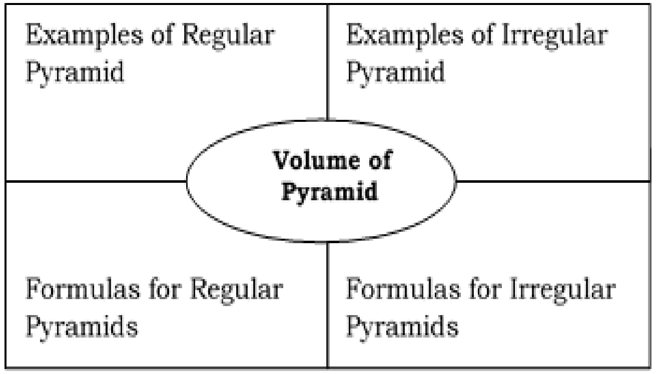
A.

1. 648 ft^3.
2.1626.33 in^3.
3. 956.67cm^3.
4. 362.67 cm^3.
5. 308 cm^3.

B.

1. 96 in^3.
2. 861.9 grams
3. 950.67cm^3.
4. 340 dm^3.
5. 154 in^3.

	pyramid.	

D. Making Generalizations	**DAY 4** **Learners' Takeaways and Reflection on Learning** Use the Frayer Diagram to show what you learned.  	The teacher will ask the learners of the important lessons they've learned.

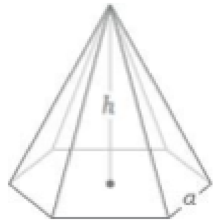
IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION		**NOTES TO TEACHERS**
A. Evaluating Learning	**1. Formative Assessment** A. Choose the letter of the correct answer. 1. Find the volume of an object that has a shape like a right square pyramid that has a base of 100 square units and the height of the pyramid is 12 units. A. 300 cubic units C. 400 cubic units B. 350 cubic units D. 450 cubic units 2. A rectangular pyramid has a volume of 60 m^3. and a height of 10 m. What are the possible dimensions of its base? A. 6 m. and 3 m. C. 8m. and 3 m. B. 5 m. and 4 m. D.10 m. and 5 m. 3. A hexagonal pyramid has a height of 12 ft and a base edge of 6 ft. Which of the following is its volume? A. 364.22 ft^3 C. 281.46 ft^3	**Answers:** A.1. C 2. C 3. B 4. D 5. A 6. A 7. A 8. D 9. B 10. B

	B. 374.12 ft^3 D. 381.64 ft^3	

4. Gabe is building a model of a square pyramid for a class project. The side length of the square base is 9 inches and the height of the pyramid is 15 inches. What is the volume of his pyramid project?
   A. 378 in^3 C. 320 in^3
   B. 450 in^3 D. 405 in^3

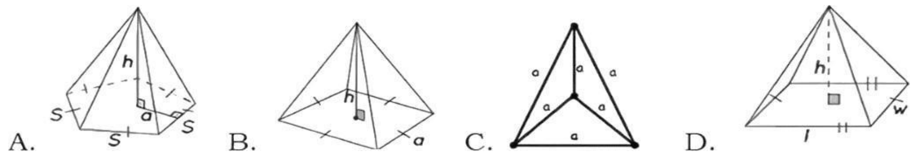
5. A regular pentagonal pyramid has a height of 10cm while one of its congruent side measures 5cm. Find its volume.
   A. 143.37 cm^3 C. 137.62 cm^3
   B. 157.71 cm^3 D. 128.46 cm^3

6. What kind of pyramid does the illustration represent?
   A. triangular pyramid C. pentagonal pyramid
   B. trapezoidal pyramid D. hexagonal pyramid

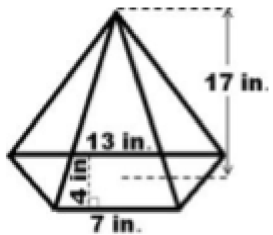


7. A sand pyramid was made by children near the beach. The square base of the sand pyramid measures 9cm on a side. The castle used 324 cm^3 to build it. How high is the square pyramid castle?
   A. 12 cm. C. 14 cm.
   B. 13 cm. D. 15 cm.

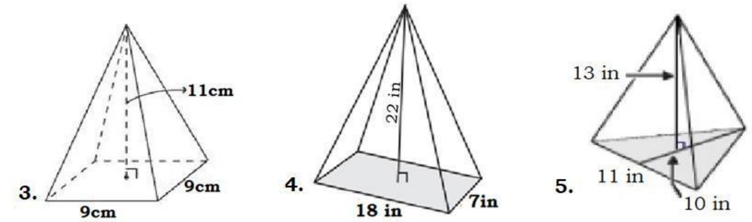
8. Which of the following is an irregular pyramid?



9. Which of the following is the correct volume of the figure at the right?
   A. 216.67 in^3 C. 236.67 in^3
   B. 226.67 in^3 D. 246.67 in^3



10. If the base of a pyramid has equal sides, then it is an irregular pyramid.
   A. True B. False C. Maybe

<table>
<tr>
<td></td>
<td colspan="3">B. Find the volume of the following pyramid. (Answers are expressed in the nearest hundredths)
1. A regular pentagonal pyramid with a side length of 20 cm. and a height of 25 cm.
2. A regular triangular pyramid whose side length is 13 in.


2. Homework (Optional)</td>
<td>Answer:
B. 1. 5734.92 cm^3
2. 258.92
3. 297 cm^3
4. 924 in^3
5. 228.33 in^3</td>
</tr>
<tr>
<td rowspan="5">B. Teacher's Remarks</td>
<td>Note observations on any of the following areas:</td>
<td>Effective Practices</td>
<td>Problems Encountered</td>
<td rowspan="5">The teacher may take note of some observations related to the effective practices and problems encountered after utilizing the different strategies, materials used, learner engagement, and other related stuff.

Teachers may also suggest ways to improve the different activities explored/lesson exemplar.</td>
</tr>
<tr><td>strategies explored</td><td></td><td></td></tr>
<tr><td>materials used</td><td></td><td></td></tr>
<tr><td>learner engagement/ interaction</td><td></td><td></td></tr>
<tr><td>others</td><td></td><td></td></tr>
<tr>
<td>C. Teacher's Reflection</td>
<td colspan="3">Reflection guide or prompt can be on:
● <u>principles behind the teaching</u>
What principles and beliefs informed my lesson? Why did I teach the lesson the way I did?
● <u>students</u>
What roles did my students play in my lesson? What did my students learn? How did they learn?
● <u>ways forward</u>
What could I have done differently? What can I explore in the next lesson?</td>
<td>Teacher's reflection in every lesson conducted/facilitated is essential and necessary to improve practice. You may also consider this as an input for the LAC/Collab sessions.</td>
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