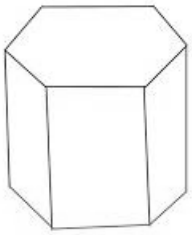
Name: _____ Period: _____ 12.1 Volume Prisms and Cylinders

VOLUME

1. Name each type of 3-d shape. Be as precise as possible.



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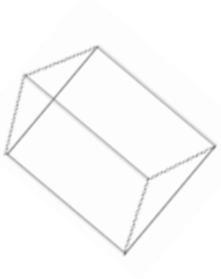

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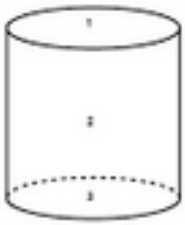

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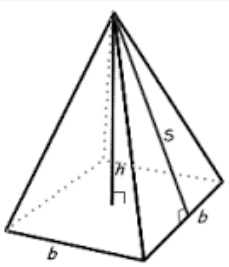

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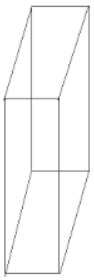
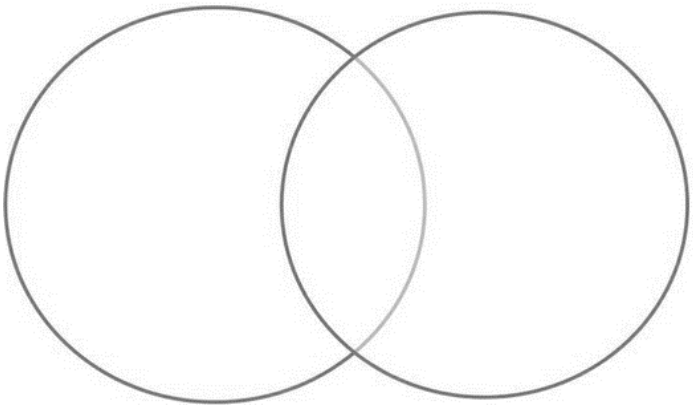


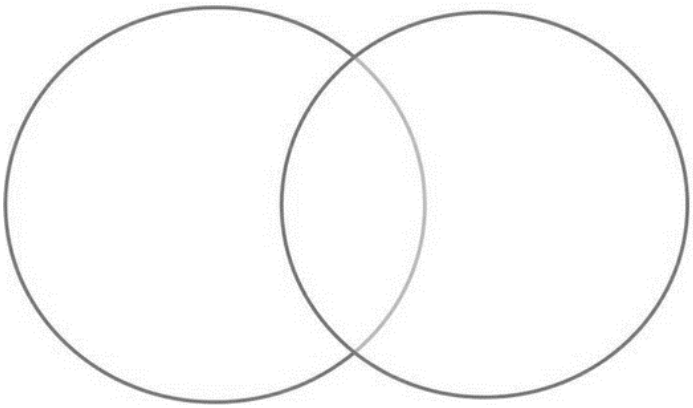
_____

2. Create Venn Diagrams using the properties of Prisms and Cylinders, and Pyramids and Prisms.

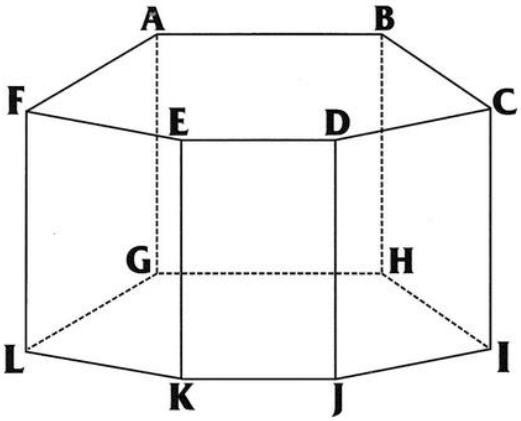
Prisms Cylinders



Pyramids Prisms



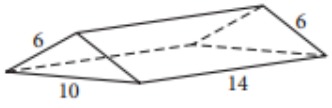
3. Use the hexagonal base prism to fill out the chart.



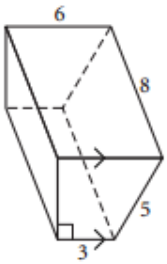
Use the diagram at the left to identify all the:	
Lateral Faces	
Bases	
Lateral Edges	
Base Edges	
Height of Prism	

Find the volume of each prims or cylinder. All measurements are in centimeters. Round to hundredths.

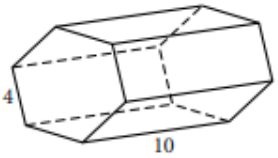
1. Right triangular prism



2. Right trapezoidal prism

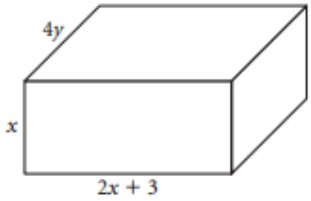


3. Regular hexagonal prism

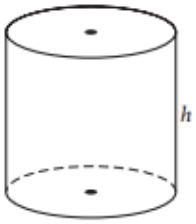


In Exercises 4–6, use algebra to express the volume of each solid.

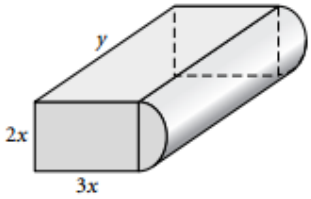
4. Right rectangular prism



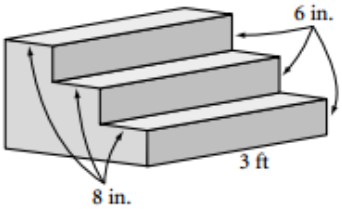
5. Right cylinder;
base circumference = $p\pi$



6. Right rectangular prism and half of a cylinder

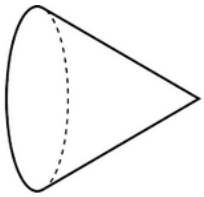
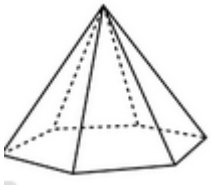
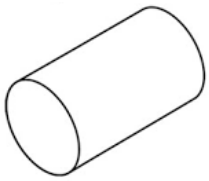
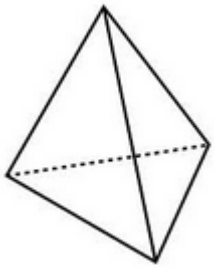
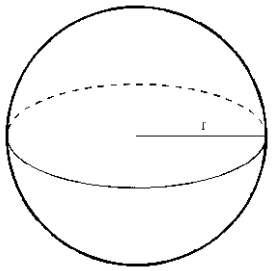


7. You need to build a set of solid cement steps for the entrance to your new house. How many cubic feet of cement do you need?



Name: _____ Period: _____ 12.2 Volume Pyramids and Cones

1. Name each type of 3-d shape. Be as precise as possible.

_____ _____ _____ _____ _____

2. Create Venn Diagrams using the properties of Cones and Cylinders, and Pyramids and Cone

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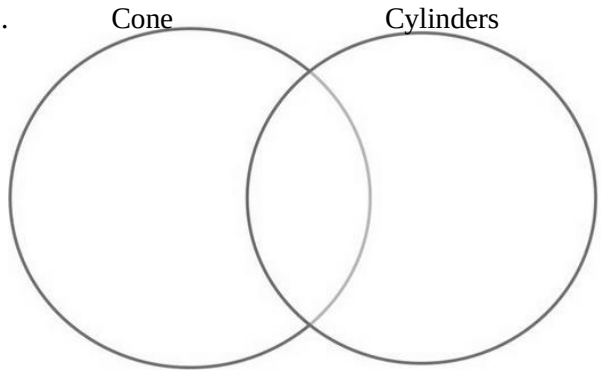
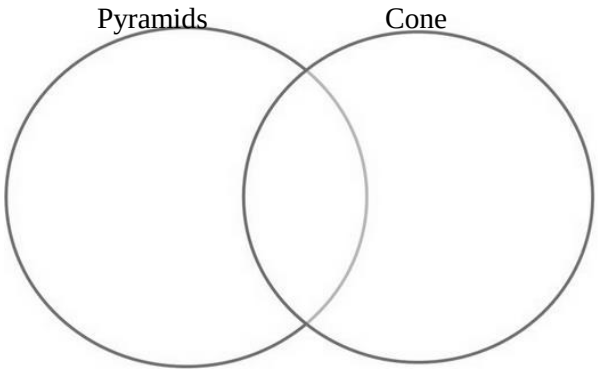
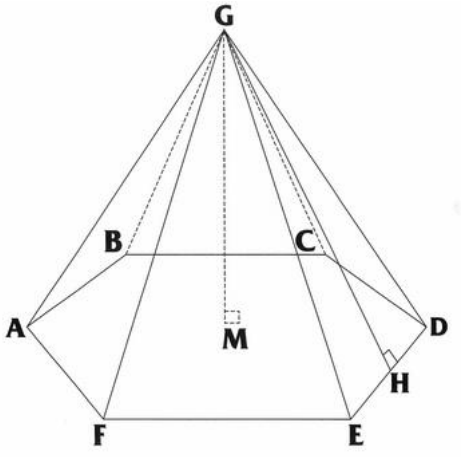




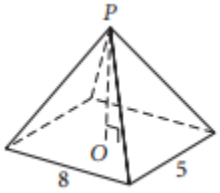
3. Use the diagram of the hexagonal pyramid to complete the chart.



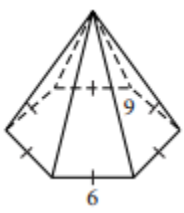
Use the diagram at the left to identify all the:	
Lateral Faces	
Base	
Lateral Edges	
Base Edges	
Slant Height	
Height of Pyramid	

Find the volume of each solid. All measurements are in cm. Round to the hundredths.

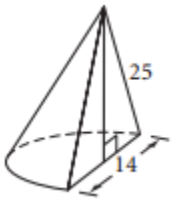
1. Rectangular pyramid. OP = 6



2. Right hexagonal pyramind

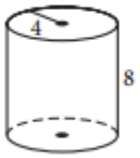


3. Half of a right cone.

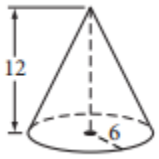


Find the volume of each figure, which is larger A or B? Show your work.

5. **A.**

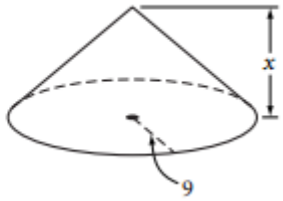


B.



6. **A.**

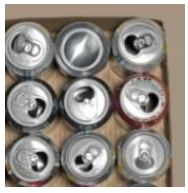
B.



7. A cone has volume 320 cm^3 and height 16 cm. Find the radius of the base. Round to the nearest 0.1 cm

8. How many cubic inches are in one cubic foot? Use your answer to help you with Exercises 9 and 10

9. Jerry is packing cylindrical cans with diameter 6 in. and height 10 in. tightly into a box that measures 3 ft by 2 ft by 1 ft. All rows must contain the same number of cans. The cans can touch each other. He then fills all the empty space in the box with packing foam. How many cans can Jerry pack in one box?



SOMETHING LIKE THIS

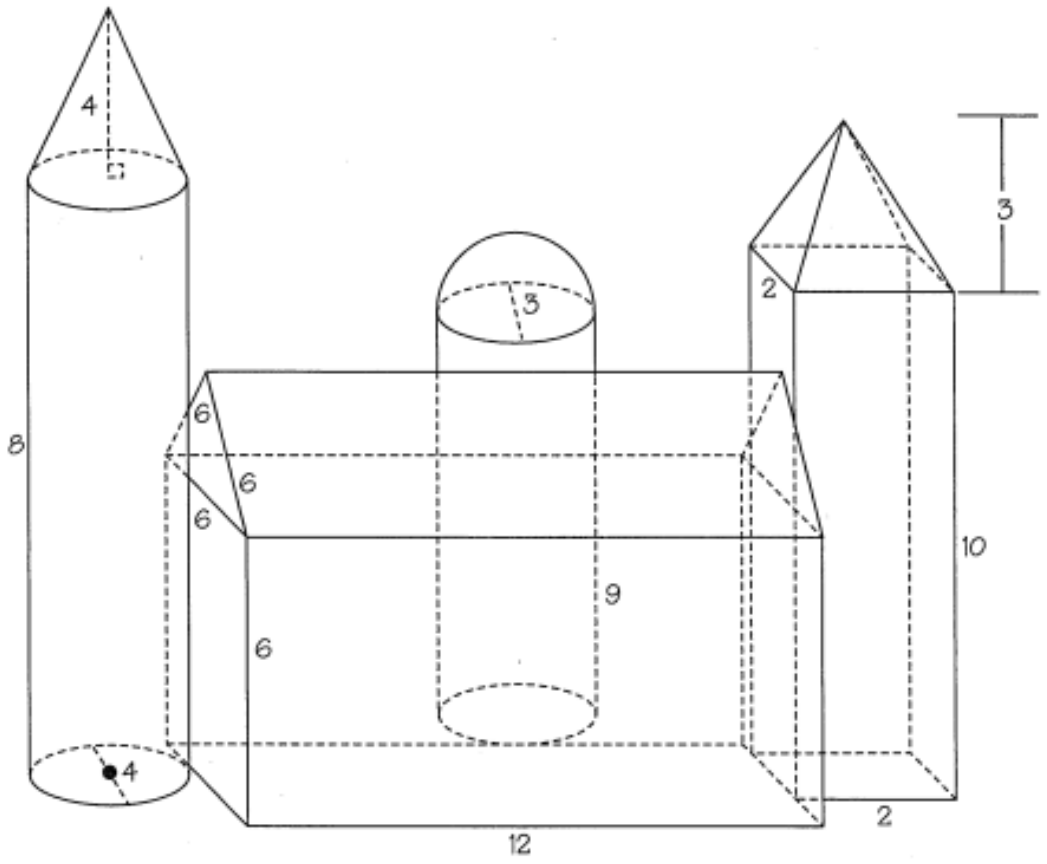
Find the volume of packing foam he uses.

What percentage of the box's volume is filled by the foam?

10. A king-size waterbed mattress measures 72 in. by 84 in. by 9 in. Water weighs 62.4 pounds per cubic foot. An empty mattress weighs 35 pounds. How much does a full mattress weigh?

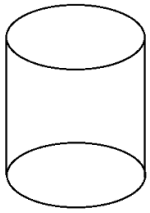
Name: _____ Period: _____ 12.3 Castle Volume

Find the volume of the castle. Round to the nearest hundredth. **Show your work**.



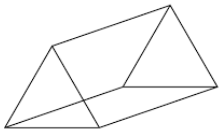
V = _____

For each solid, you are given certain measurements or facts. Use what you have learned to determine the answers to the unknown information. Show your work and include sketches if helpful. Assume all objects are right, meaning not oblique.

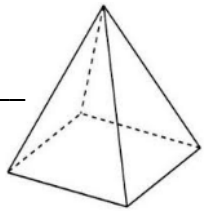


1. Object type: Cylinder
Given information: radius = 7 cm, height = 4 cm
Unknown information: Surface Area = _____, Volume = _____

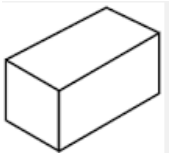
2. Object type: Triangular Prism
Given information: base triangle is an equilateral triangle with side lengths of 4 inches, height of the prism = 3 inches
Unknown information: Surface Area = _____, Volume = _____



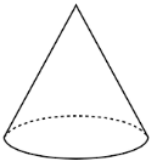
3. Object type: Square Pyramid
Given information: Volume = 75 cubic cm, height of the pyramid = 9 cm
Unknown information: Area of the base = _____,
side length of the base = _____, Surface Area of the pyramid = _____



4. Object type: Square prism
Given information: area of the base = 36 square inches, Total surface area of the prism = 288 square inches
Unknown information: height of the prism = _____, Volume = _____



5. Object type: Cone
Given information: Volume = 144π cubic inches, height of the cone is twice the radius of the cone's circular base
Unknown information: Radius = _____, height = _____,
Area of the base = _____

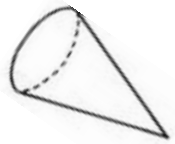


Name: _____ Period: _____ 12.4 Volume Word Problems

FILL 'ER UP!

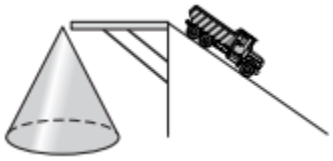
1. How many cubic inches are there in one cubic foot? ___ How many cubic inches are in a cubic yard? ____

2. A cone has volume 560 cm^3 and height 7 cm. Find the *circumference* of the base. Round your answer to the nearest 0.1 cm.

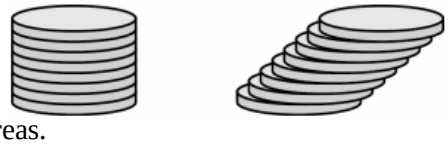


3. In Springwall the town engineers have contracted for a new water storage tank. The tank is cylindrical with a base 25 ft in diameter and a height of 30 ft. One cubic foot holds about 7.5 gallons of water. About how many gallons will the new storage tank hold?

4. The North County Sand and Gravel Company stockpiles sand to use on the icy roads in the northern rural counties of the state. Sand is brought in by tandem trailers that carry 12 m^3 each. The engineers know that when the pile of sand, which is in the shape of a cone, is 17 m across and 9 m high they will have enough for a normal winter. How many truckloads are needed to build the pile?



5. Jason constructed two cylinders using solid metal washers. The cylinders have the same height but one of the cylinders is slanted.



Which statement is true?

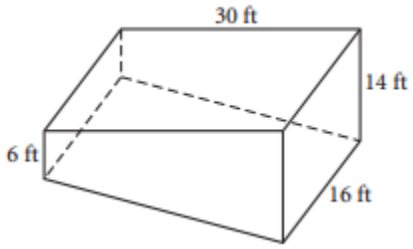
A) The cylinders have different volumes because they have different radii.

B) The cylinders have different volumes because they have different surface areas.

C) The cylinders have the same volume because each of the washers has the same height.

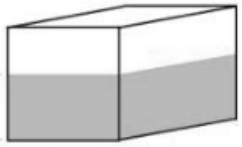
D) The cylinders have the same volume because they have the same cross-sectional area at every plane parallel to the bases.

6. A swimming pool is in the shape of the prism shown at right. How many gallons of water can the pool hold? (A cubic foot of water is about 7.5 gallons.)



7. Find the volume of a rectangular prism with dimensions that are twice those of another rectangular prism with volume 120 cm^3. Hint: Find a possible set of dimensions for the 120 cm^3 prism.

8. A sealed rectangular container 5 cm by 14 cm by 20 cm is sitting on its smallest face. It is filled with water up to 5 cm from the top. How many centimeters from the bottom will the water level reach if the container is placed on its largest face?

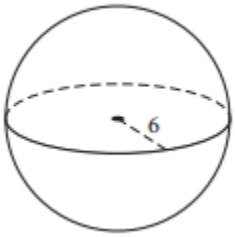


Name: _____ Period: _____ 12.5 Spheres and Shells

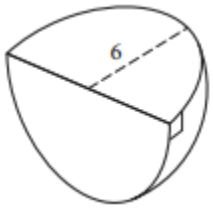
SPHERES and SHELLS

Find the volume of each solid. All measurements are in cm, round to the nearest 0.1 cm^3. Show work.

1.

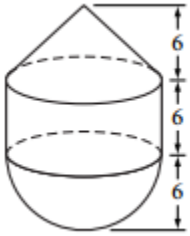


2.



(hint: what fraction of the sphere is it?)

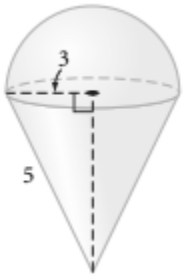
3.



4. A sphere has a volume of 972 $in.^3$
Find its radius.

5. A hemisphere has a volume of 2250π cm^3
Find its diameter.

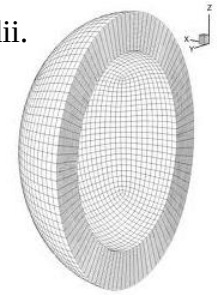
6. Find the volume of the shape



A spherical shell is the region between two concentric spheres of differing radii.

Like the chocolate around the peanut in an M & M.

Geometric drawing of a shell of a hemi-sphere



7. The crust of the Earth is the top part of the ground and goes down about 30 miles. The radius of the Earth is close to 3959 miles. What is the volume of the crust of the earth?

What percent of the Earth is the crust?

8. According to Pinterest, Chocolate "Hunny Pots" are made by dipping an inflated balloon half way into melted chocolate to make a candy shell.

Our balloons can inflate to a sphere with radius 5 cm.
We want the chocolate shell to be 1 cm thick.

How many 5 lb. bars (2.268 kg) should be melted to make a chocolate bowl for each student and teacher in your class?

There are _____ students in your class.

The density of chocolate is 1325 kg/m^3

Similar Polygons & Solids

Name _____

**If the scale factor between 2 similar polygons is $\frac{a}{b}$, then

- the ratio of their perimeters is $\frac{a}{b}$ and the ratio of their areas is $\frac{a^2}{b^2}$.

**So…in 3-dimensions: If the scale factor between 2 similar solids is $\frac{a}{b}$, then

- the ratio of their surface areas is $\frac{a^2}{b^2}$ and the ratio of their volumes is $\frac{a^3}{b^3}$.

Shape	Scale Factor/ Ratio of Perimeters	Ratio of Surface Areas	Ratio of Volumes
Cone	$\frac{2}{3}$		
Sphere	$\frac{4}{6}$		
Pyramid		$\frac{9}{16}$	
Prism			$\frac{8}{64}$
Cylinder		$\frac{49}{64}$	
Cube			$\frac{125}{216}$

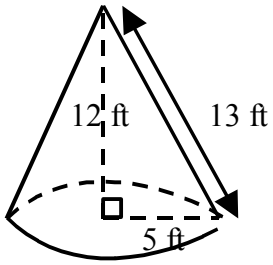
1. Triangle A is similar to Triangle B. If the scale factor of ΔA to ΔB is 4 to 5, what is the ratio of the perimeters of ΔA to ΔB? _____ What is the ratio of the areas of ΔA to ΔB? _____

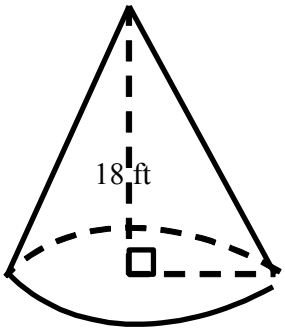
2. Pyramid X is similar to Pyramid Y. If the scale factor of X:Y is 3:7, what is the ratio of the surface areas of X:Y? _____ What is the ratio of the volumes of X:Y? _____

3. The ratio of the surface areas of two similar cones is 16:49. What is the scale factor between the similar cones? _____ What is the ratio of the volumes of the similar cones? _____

4. Two spheres have a scale factor of 1:3. The smaller sphere has a surface area of 16 ft^2. Find the surface area of the larger sphere.

5. The cones below are similar. What is the volume of the larger cone?





6. Two rectangular prisms are similar and the ratio of their sides is 2:3. The surface area of the larger rectangular prism is 1944cm^2. What is the surface area of the smaller rectangular prism?

7. The ratio of the sides of two similar cubes is 3:4. The smaller cube has a volume of 729m^3. What is the volume of the larger cube?

8. Pyramid X is similar to pyramid Y. The Surface area of pyramid X is 135cm^2, and the surface area of pyramid Y is 240cm^2. If the volume of pyramid X is 189cm^3, then what is the volume of pyramid Y?

Name: _____ Period: _____ 12.6 Density Lab

Density and Volume

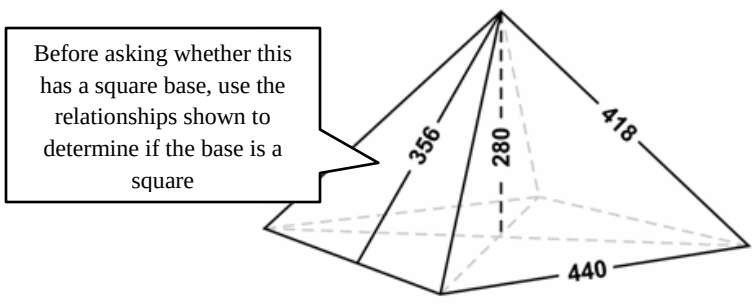
Part 1: Density measurements: Carefully weigh and find the volume of your 5 materials. Each density measurement should be in g/cm^3. The equation for the density of a material is $d = \frac{m}{v}$.

Measurement data:

Material A	Material B	Material C	Material D	Material E
Description	Description	Description	Description	Description
Mass (g):	Mass (g):	Mass (g):	Mass (g):	Mass (g):
Volume (cc)	Volume (cc)	Volume (cc)	Volume (cc)	Volume (cc)
Density (round to 2 places)	Density (round to 2 places)	Density (round to 2 places)	Density (round to 2 places)	Density (round to 2 places)

Part 2: Using your descriptions from above compute the weight of this object if it was made of the following materials (all measurements are in cm):

If the pyramid was made of material C:

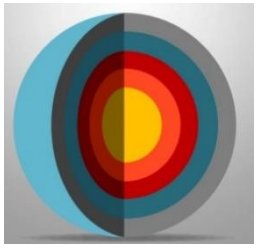


If the pyramid was made of material E:

2. The object is a spool of coated wire that is 2000 meters in length. The diameter of the entire wire is 10mm and the diameter of the inner core is 7mm.

What is the weight of this spool of wire if the outside is coated in the acrylic material, and the inside is the aluminum material?

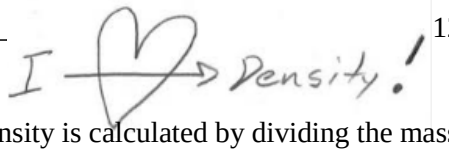
3. Find the mass of this sphere. The inner radius is 1cm, and each portion of the shell is 1 cm thick.



The inner portion is made of material A, the 2nd layer is material B, the third layer is material C, and so on.

What is the mass of the entire sphere? Show the five layers of calculations.

Name: _____Period: ____ 12.7 I💙 Density



Density is the mass of matter in a given volume. Density is calculated by dividing the mass (sometimes called weight on earth) in grams by the volume in cubic centimeters. D = m/v. Show your work.

1. A rock is added to a container of water, and it raises the water level 3 cm. If the container is a rectangular prism, with the base measuring 15 cm by 15 cm, what is the volume of the rock?

2. A solid glass ball is dropped into a cylinder with a radius of 6 cm, raising the water lever 1 cm. What is the volume of the glass ball?

3. A fish tank with a base of 10 inches by 14 inches and 12 inches high is the home of a fat goldfish named Columbus. When he is taken out for fresh air, the water level drop 1/3 of an inch. What is the volume of Columbus to the nearest cubic inch?

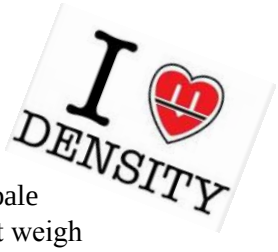
4. A block of ice is placed into an ice chest containing water. The water level rises 4 cm. The dimensions of the chests are 35 cm X 50 cm X 30 cm (H). When ice floats in water, one-eighth of its volume floats above the water level and 7/8 floats beneath the water level. What is the volume of the block of ice?

5. A piece of wood place in a cylindrical container causes the container's water level to rise 3 cm. This type of wood floats half out of the water. The radius of the container is 5 cm. What is the wood volume?

6. Sandy found a clump of metal that is either silver or lead. She drops it into a square container, with base edge of 5 cm, filled halfway with water. The water level rises 2 cm. The clump of metal weighs 525 grams. Find the volume of the metal and determine its density. Is the metal silver or gold.

7. A chemist is given a piece of metal identified as sodium, which weighs 145.5 grams. The chemist places the metal into a square prism whose square base measures 10 cm on one side, and that is filled with liquid Paraffin. If the metal is sodium, how many centimeters will the liquid level rise?
(Why would this not work if the liquid was water?)

Metal	Density		Metal	Density
Aluminum	2.81 g/cm^3		Platinum	21.40 g/cm^3
Gold	19.30 g/cm^3		Silver	10.50 g/cm^3
Lead	11.30 g/cm^3		Sodium	0.97 g/cm^3



8. Round hay bales are 4 ft. in diameter and 4 feet long. Calculate the volume of each bale. Each bale weighs 900 lbs. What is the density of the packed hay? Square balers make bales 4' X 4' X 6' that weigh 1400 lbs. Is the square bale more or less dense than the round bale? Considering that hay is left in the fields under inclement weather, how can the density help the preservation of the hay?

9. How much does a sold block of aluminum weigh if its dimensions are 4 cm X 8 cm X 20 cm?

10 Which will weigh more: a solid cylinder of gold (h = 5 cm, diameter = 6 cm) or a solid cone of platinum (h= 5 cm, diameter of 8 cm)?

11. Population density for a state is represented by the number of people per square mile.

A) Which state listed in the table has the greatest population density?

State:

Density (round appropriately and include units):

B) A different state has a population density that is higher than Louisiana. Describe TWO different ways this state compares to Louisiana in terns if land area and population

STATE	Population 2015	Area (in square miles)	Density
Louisiana	4,670,724	43,204	
Mississippi	2,992,333	46,923	
Rhode Island	1,056,298	1,034	
Wyoming	586,107	97093	

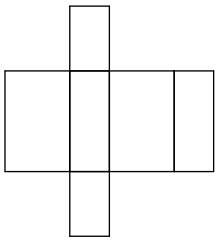
Geometry Unit 12 Name_____

No Nonsense Nets!

Date_____

Identify each solid given its net.

1)



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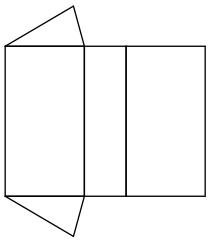

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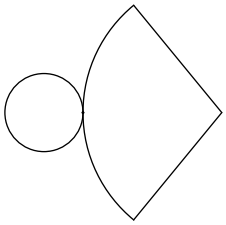

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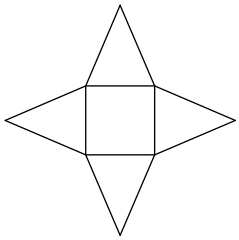

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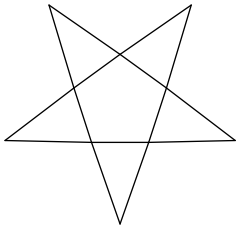

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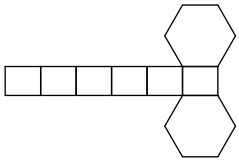

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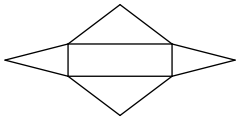

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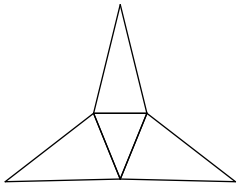
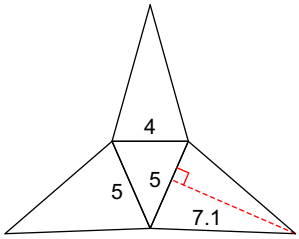


Sketch the solid that can be created from each net. Label the measurements given.

9)



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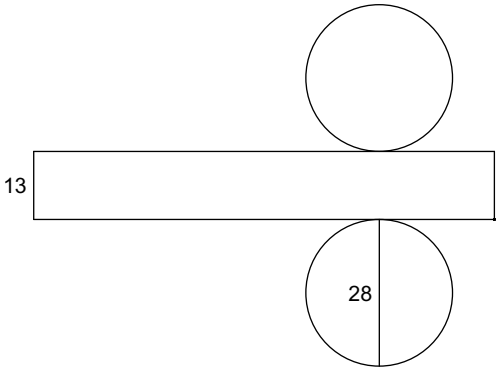
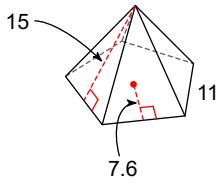
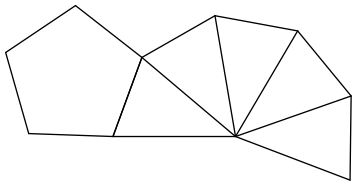


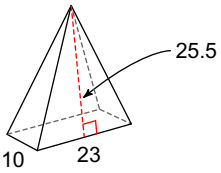
Copy the measurements given onto the net of each solid.

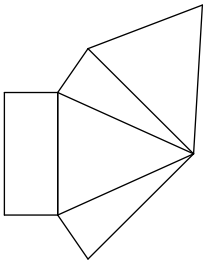
11)





12)





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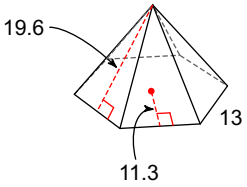
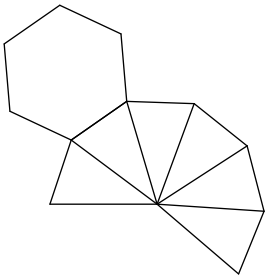
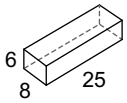
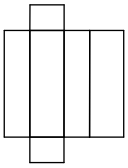




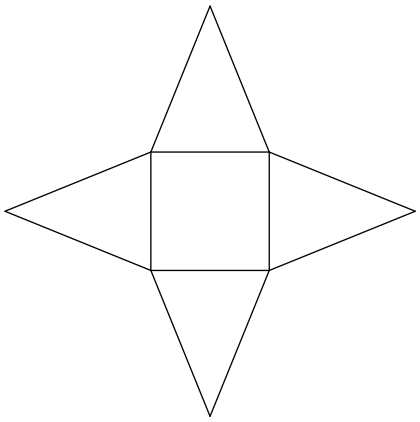
14)



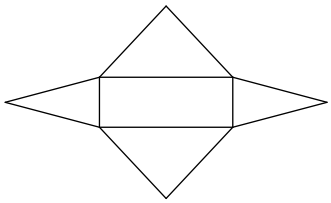


Sketch that solid that can be created from each net.

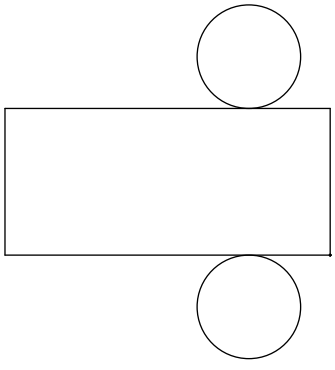
15)



16)



17)



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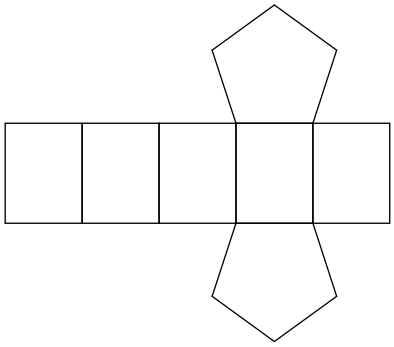
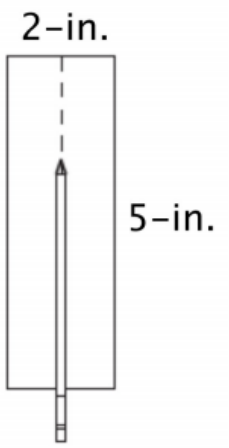


Name: _____ Period: _____ 12.7 Solids from rotations of 2-d objects

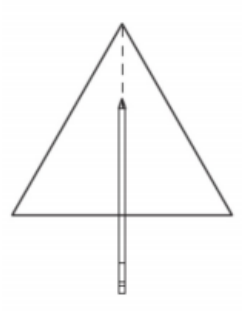
1. What solid shape is formed by rotating a rectangle around its line of symmetry?

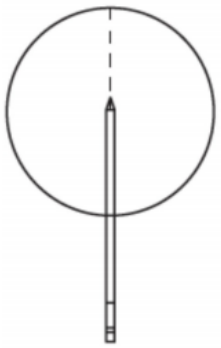
Sketch the 3-d shape and label its dimensions.



2. What solid is formed by rotating each shape around its line of symmetry?

Sketch each 3-d shape.





4. A) Name the resulting three-dimensional object of the rotation that is shown in the diagram.

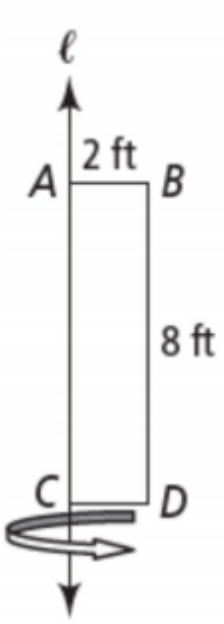
Sketch the 3-d shape. Label the resulting dimensions.

B) What is the volume of the solid?

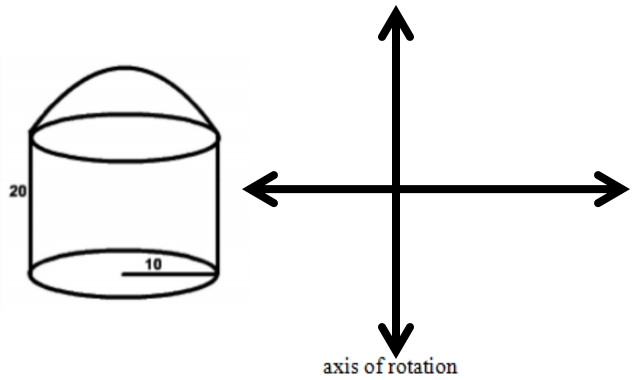
C) If the rectangle is rotated 360° around $\overline{CD}$, what 3-d object is generated?

Sketch the diagram and label its dimensions.

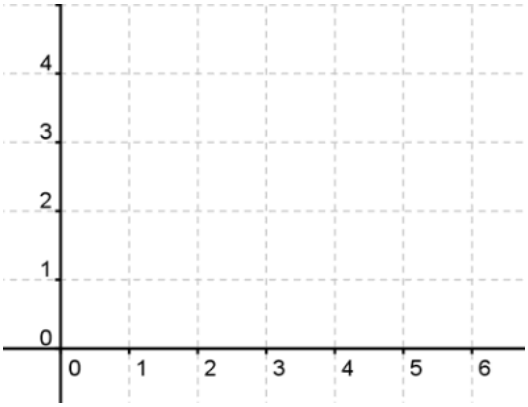
D) Find the volume of the solid that is created in question C.



5. Describe how to generate the silo in the diagram by rotating two-dimensional shapes.
Draw and label a sketch



6. Sketch the region bounded by the lines y = 3, y = 1, x = 1 and x = 6



A. Determine the perimeter of the region.

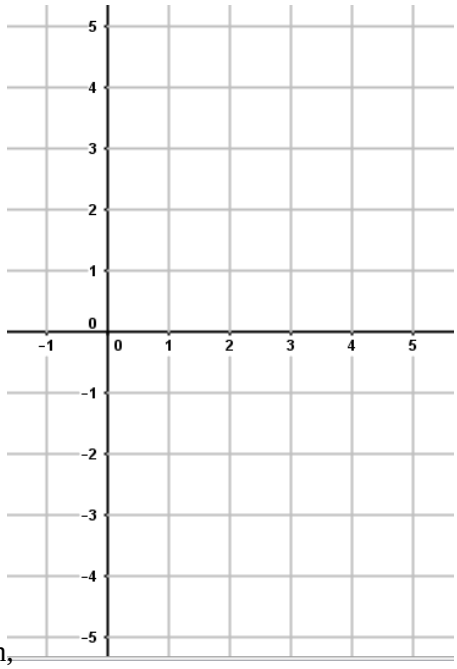
B. Determine the area of the region.

C. Draw a picture of the region being revolved around the x-axis.

D. Describe the geometric solid and label its dimensions.

E. Determine the volume of the geometric solid.

7. Sketch the region bounded by the lines $y = \frac{3}{4}x - 3, y = 0, x = 0$



A. Determine the perimeter of the region.

B. Determine the area of the region

C. Draw a picture of the region being revolved around the x-axis.

D. Describe the geometric solid formed by revolving the region around the x-axis. Label its dimensions.

E. Determine the volume of the 3-d shape.

F. If the region were revolved around the y-axis, would the volume be greater than, less than, or equal to the volume formed by revolving about the x-axis? Justify your answer.

G. Name another region that could be revolved about the x-axis to create exactly the same geometric solid. What equations create this region?

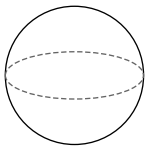
Geometry Name_____

12.8 Review for Quiz on Unit 12:Volume

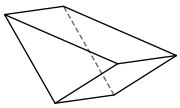
Date_____ Period____

Name each figure as precisely as possible.

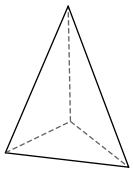
1)



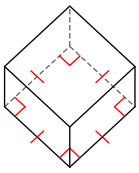
2)



3)

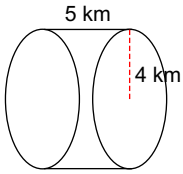


4)

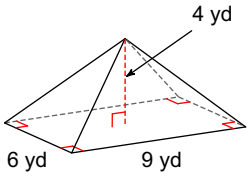


Find the volume of each figure. Round your answers to the nearest hundredth, if necessary.

5)



6)



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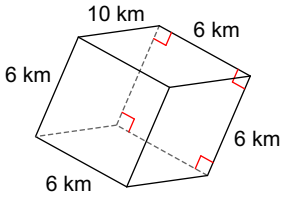
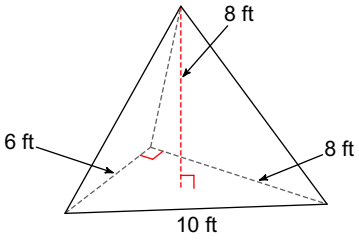
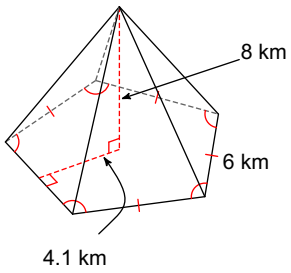


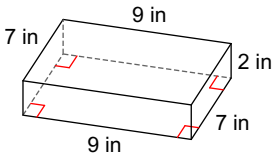
8)



9)



10)



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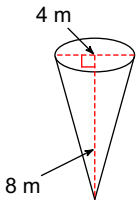

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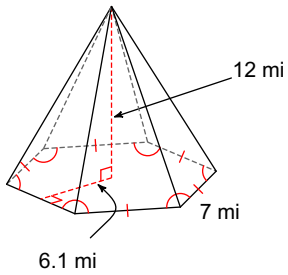
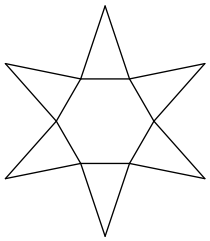


Identify each solid given its net.

13)



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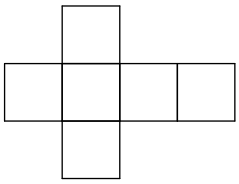

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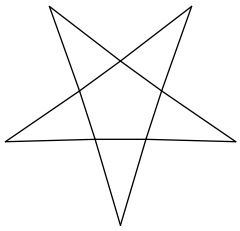

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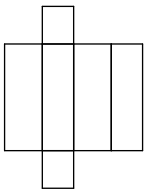


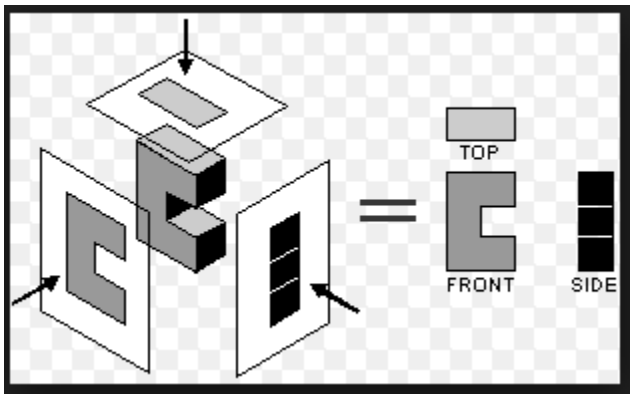
17) A block of aluminum occupies a volume of 15.0 mL and weighs 40.5 g. What is its density?

18) What is the weight of the ethyl alcohol that exactly fills a 200.0 mL container? The density of ethyl alcohol is 0.789 g/mL.

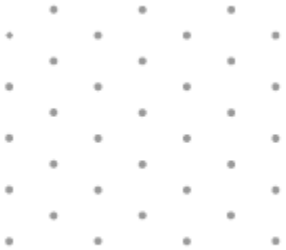
Name: _____ Period: _____ 12.9 Representations of 3-d objects

3-D VIEWS

There are six orthographic views of 3-d objects: top, bottom, front, back, side and side.

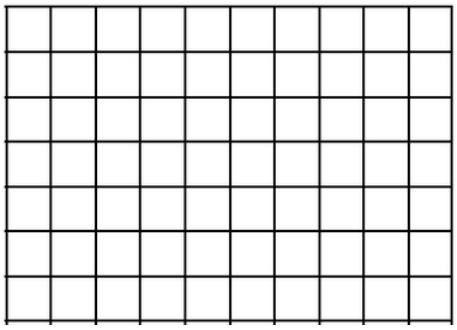


Draw the isometric view.

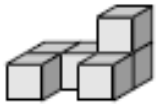


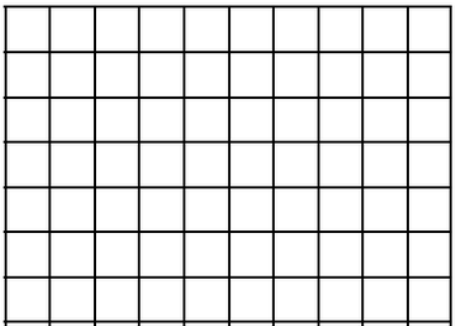
Draw all six orthographic views of each object. Assume there are no hidden cubes. In your answers, use dashed line to show that the edges touch and a solid line to show that the edges do not touch. Label each orthographic view.

1.

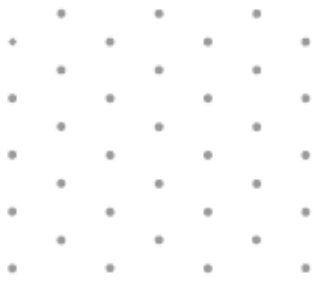


2.

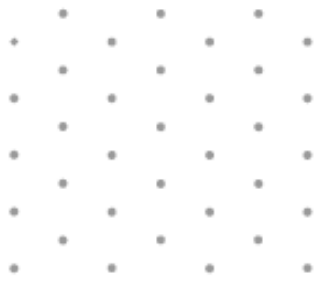




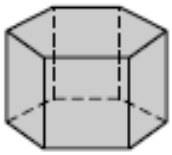
3. Draw an isometric view of the object in Exercise 1.



4. Draw an isometric view of the object in Exercise 2.



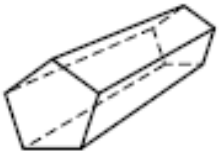
5. Describe the geometric shape of the top, front, and side views of the figure.



Top: _____ Front: _____ Side : _____

What is the 3-d shape? _____

6. Harrison used perspective drawing to design this shape.



What is the name of the shape? _____

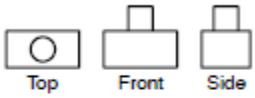
What do the dotted lines indicate? _____

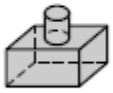
Choose the best answer.

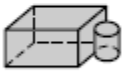
7. Which is a true statement about the figure?

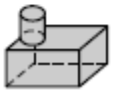
A The top view is a rectangle.
B A side view is a rectangle.
C A side view is a triangle.
D The front view is a triangle.

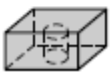
8. Which three-dimensional figure has these three views?



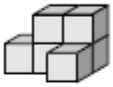
F 

H 

G 

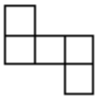
J 

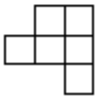
9. Which drawing best represents the top view of the three-dimensional figure? Assume there are no hidden cubes.



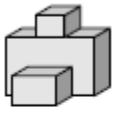
A 

C 

B 

D 

10. Which drawing best represents the side view of the building shown?



F 

H 

G 

J 

12.10 Play-Doh Lab

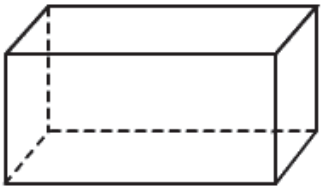
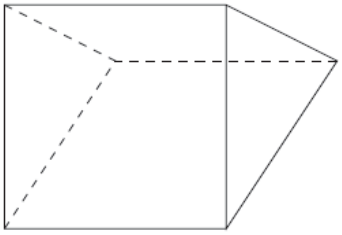
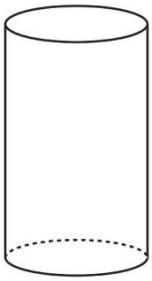
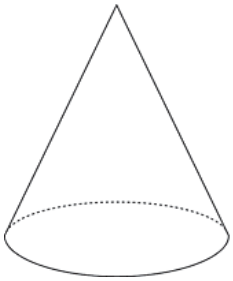
GEOMETRY

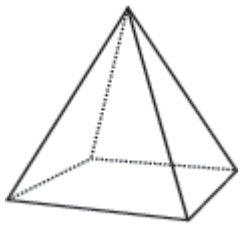
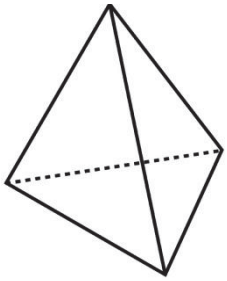
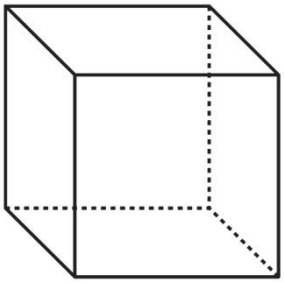
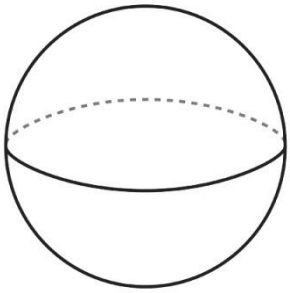
Name_____

Lab Activity: Play-Doh Cross Sections

Hour_____Date_____

When a solid is cut by a plane, the resulting two-dimensional figure is called a **cross section**.

SOLID	Draw a cross section that is **parallel** to the base; identify the polygon.	Draw a cross section that is **perpendicular** to the base; identify the polygon.	Draw a cross section that is **slanted** to the base; identify the polygon.
			
			
			
			

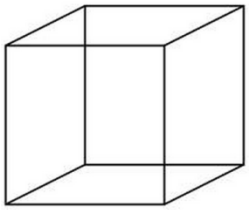
SOLID	Draw a cross section that is **parallel** to the base; identify the polygon.	Draw a cross section that is **perpendicular** to the base; identify the polygon.	Draw a cross section that is **slanted** to the base; identify the polygon.
			
			
			
			

Name: _____ Period: _____ 12.11 Cross Sections of Solids

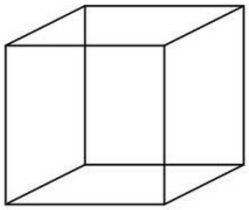
Think like a Ninja

In one cut, cut the cubes to illustrate each of these 2-d cross sections. Some shapes may not be are possible. Indicate how you would slice the cube in order to make the desired cross section. If it is not possible, explain why.

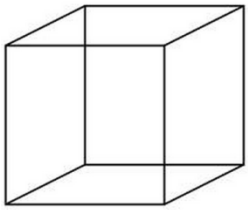
Square



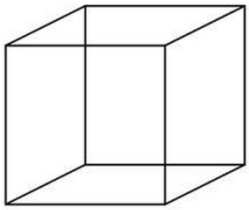
Equilateral Triangle



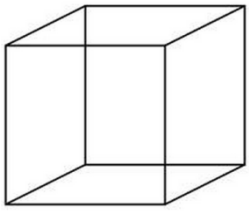
Rectangle (not a square)



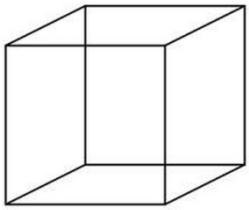
Triangle (not equilateral)



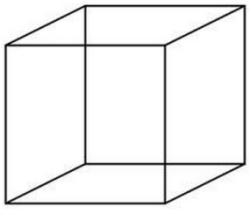
Pentagon



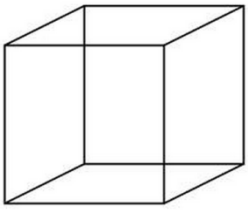
Regular hexagon



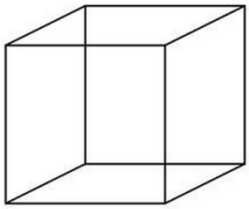
Hexagon (not regular)



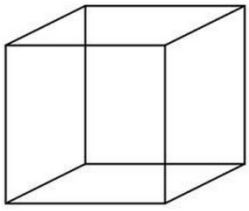
Octagon



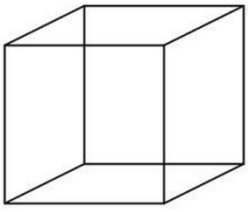
Trapezoid



Parallelogram (not rectangle)

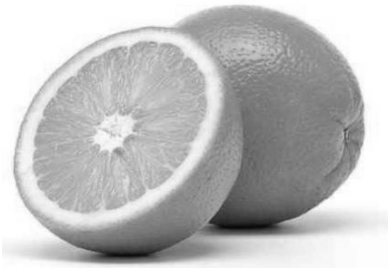


Circle



Try this website http://www.shodor.org/interactivate/activities/CrossSectionFlyer/ (change to a prism)

A knife is used to cut the top off a spherical orange, 4 cm from the center of the orange. The orange has a diameter of 10 cm. What is the surface area of the cross section?



A knife is used to cut the top off a grapefruit. The top is cut off x cm from the center of the grapefruit. The grapefruit has a radius of y cm. What is the area of the newly exposed surface?

These conical shaped vegetables were cut to remove their tip, x cm (vertical cm) from the tip. Each was cut at the stem as well, parallel to the first cut.

What shape describes the way the vegetables look? Include a 3-d diagram.

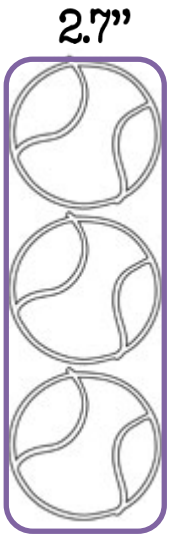
What is the 3-d shape called?

How can the volume and surface area of the figure be determined?

Name: _____ Period: _____ 12.12 Tennis Ball Cans Cross Section

3-D Cross Section

The official diameter of a tennis ball, as defined by the International Tennis Federation, is at least 2.575 inches and at most 2.700 inches. Tennis balls are sold in cylindrical containers that contain three balls each. To model the container and the balls in it, we will assume that the balls are 2.7 inches in diameter and that the container is a cylinder the interior of which measures 2.7 inches in diameter and $3 \times 2.7 = 8.1$ inches high.



a. Lying on its side, the container passes through an X-ray scanner in an airport. If the material of the container is opaque to X-rays, what outline will appear? With what dimensions?

b. If the material of the container is partially opaque to X-rays and the material of the balls is completely opaque to X-rays, what will the outline look like (still assuming the can is lying on its side)?

c. The central axis of the container is a line that passes through the centers of the top and bottom. If one cuts the container and balls by a plane passing through the central axis, what does the intersection of the plane with the container and balls look like? (The intersection is also called a cross section. Imagine putting the cut surface on an ink pad and then stamping a piece of paper. The stamped image is a picture of the intersection.)

d. If the can is cut by a plane parallel to the central axis, but at a distance of 1 inch from the axis, what will the intersection of this plane with the container and balls look like?

e. If the can is cut by a plane parallel to one end of the can—a horizontal plane—what are the possible appearances of the intersections?

f. A cross-section by a horizontal plane at a height of $1.35 + w$ inches from the bottom is made, with $0 < w < 1.35$ (so the bottom ball is cut). What is the area of the portion of the cross section inside the container but outside the tennis ball?

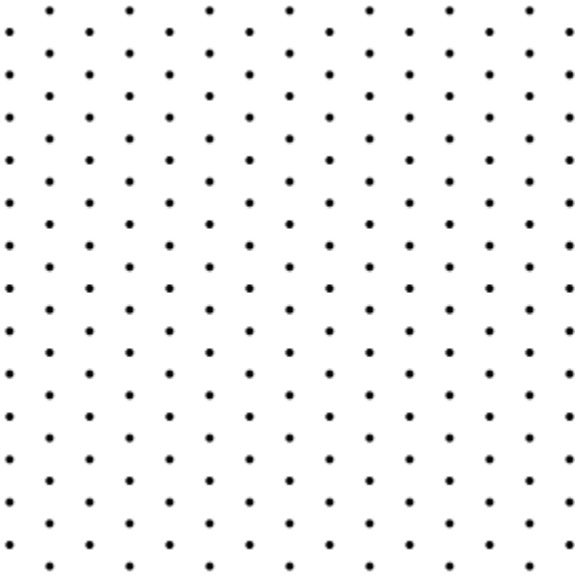
g. Suppose the can is cut by a plane parallel to the central axis but at a distance of w inches from the axis ($0 < w < 1.35$). What fractional part of the cross section of the container is inside of a tennis ball?

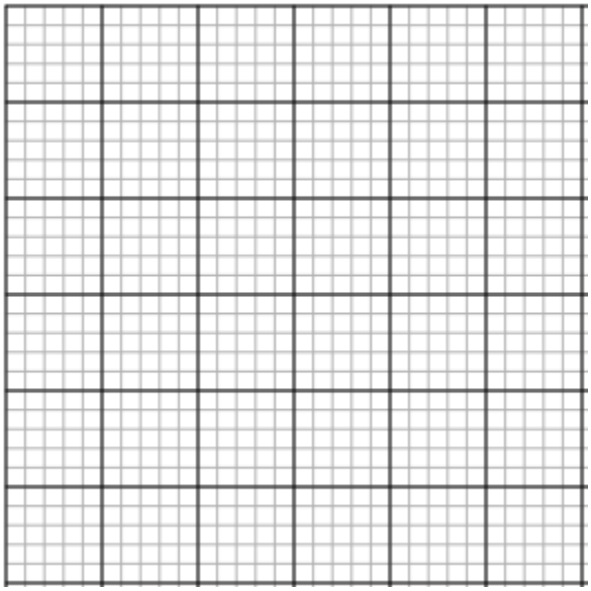
Name: _____ Period: _____ 12.13 Awesome Architecture

AWESOME ARCHITECTURE

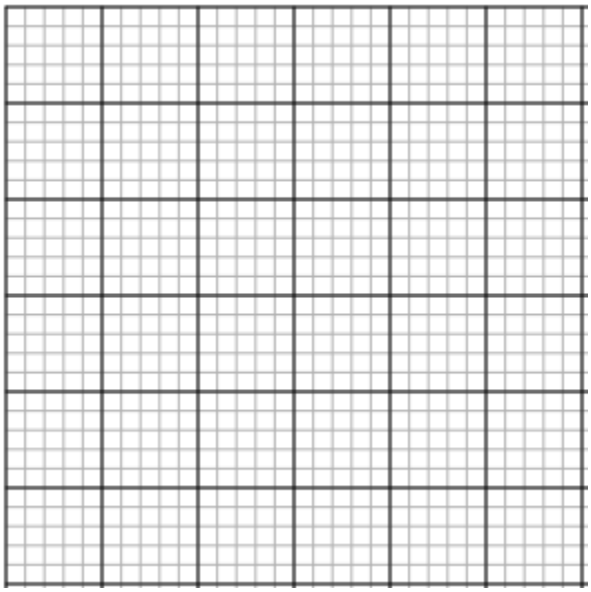
Goal: Create a "sculpture" using orthographic projections, and assemble it into a 3D shape.

Instructions: Use the isometric dot paper to develop an idea of what you want your sculpture to look like. Be careful of hidden geometry in this, since you can't see hidden geometric objects in orthographic perspective. Make your shapes on the orthographic drawing sections, then cut those shapes out of 3x5 cards (or heavy paperstock) and assemble them into a 3D object. The grid spacing is $1/10^{th}$ inch, with bold lines at ½ inch. The 3-d project is due _____

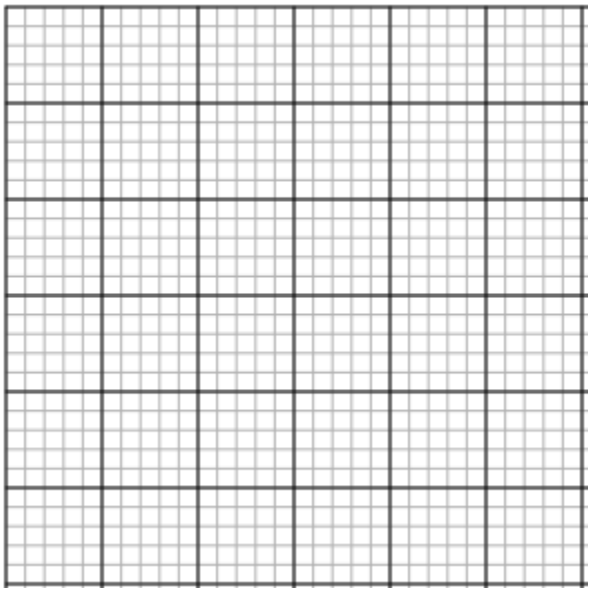




FRONT



BACK



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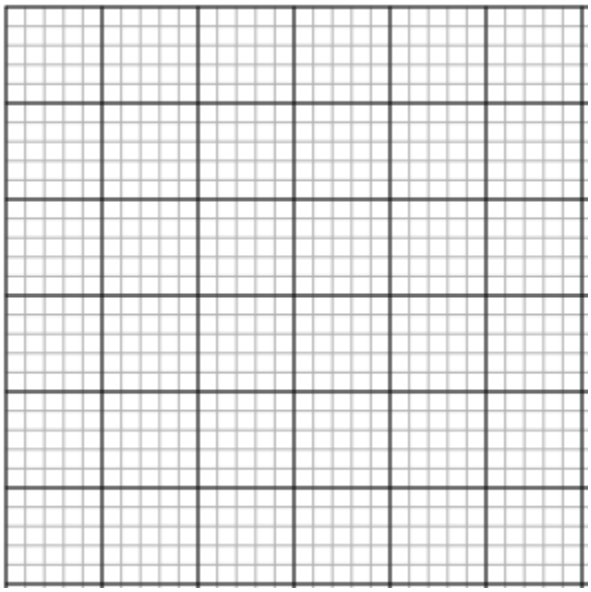

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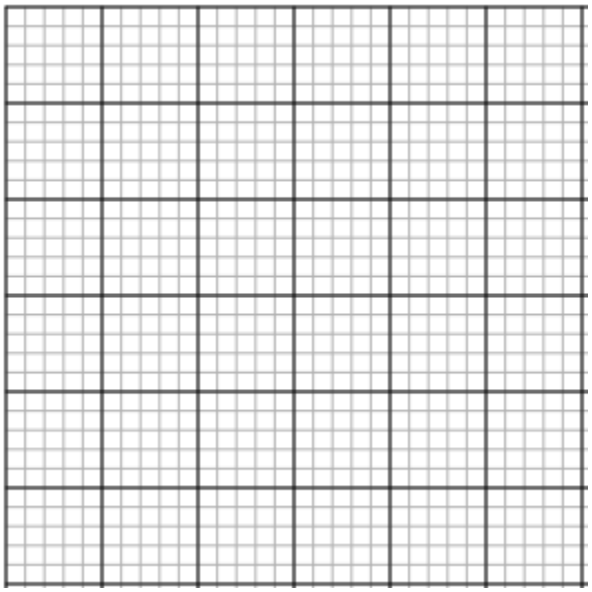
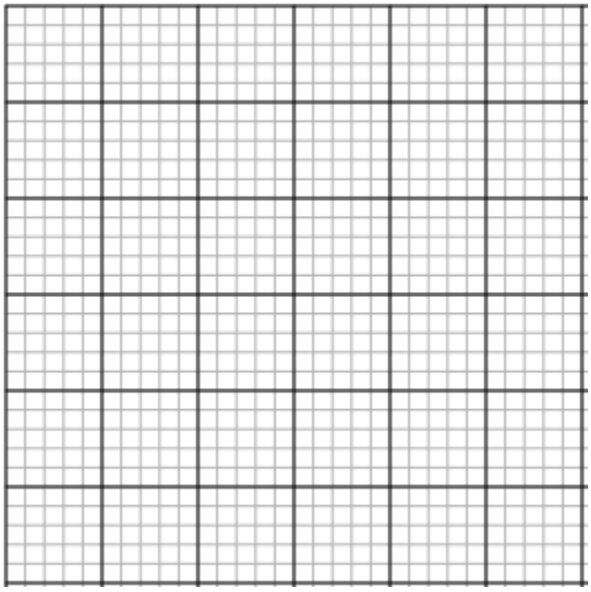


LEFT SIDE



RIGHT SIDE