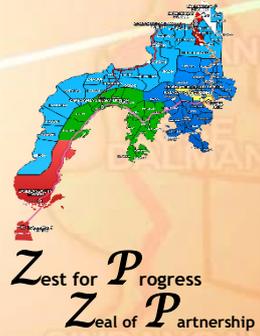




Republic of the Philippines
Department of Education
Regional Office IX, Zamboanga Peninsula



6



Mathematics

Quarter 3–Module 7

Surface Area: Figure It Out

Name of Learner: _____

Grade & Section: _____

Name of School: _____



What I Need to Know

The module contains one lesson:

Lesson 7: Visualizing and Describing Surface Area and Naming the Unit of Measure Used in Measuring the Surface Area of a Solid/Space Figure.

After accomplishing this module, you will be able to:

1. visualize and describe surface area and name the unit of measure used for measuring the surface area of solid/space figure.



What I Know

Directions: Identify the solid whose nets and clip arts are shown below. Encircle the letter of your answer.

1.		A. Rectangular pyramid B. Rectangular prism C. Triangular prism D. Square prism	2.		A. Cylinder B. Rectangular prism C. Triangular prism D. Sphere			
3.		A. Rectangular prism B. Cylinder C. Cube D. Triangular prism	4.		A. Rectangular pyramid B. Square pyramid C. Triangular pyramid D. Hexagonal pyramid			
5.		A. Cone B. Cylinder C. Cube D. Triangular pyramid	6.		A. Cylinder B. Square pyramid C. Triangular pyramid D. Sphere			
7.	<p>What do campers usually build during Camporee? What unit of measurement they will use in measuring their area? Draw your answer below.</p>					8.	<p>What object/thing is usually kicked, in order to hit a goal and played by both men and women? What is the unit of measurement used in measuring its surface area? Draw your answer below.</p>	

9. What unit of measurement do we use in wrapping a gift box?

10. Draw the object that the children forgot to bring causing them wet. Name the unit of measurement that is usually used to measure them.

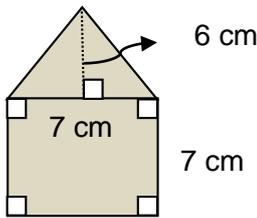


What's In

Activity 1: Remember Me

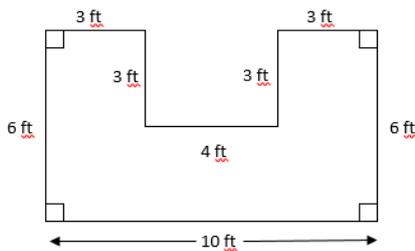
Directions: Encircle the letter of your answer.

1. Find the area of all shaded region. Assume that all angles appear to be right angles.



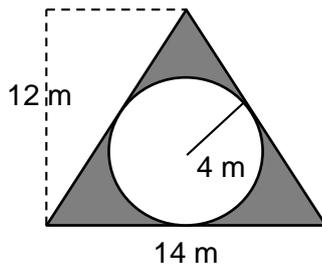
- A. 56 cm^2 C. 65 cm^2
 B. 60 cm^2 D. 70 cm^2

2. Solve the area of the shaded region below.



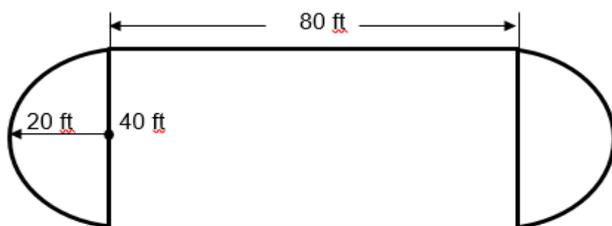
- A. 4650 ft^2 C. 4757 ft^2
 B. 4656 ft^2 D. 4858 ft^2

3. Use $\pi = 3.14$ in solving the area of the shaded region.



- A. 31.3 m^2 C. 33 m^2
 B. 32.3 m^2 D. 33.76 m^2

4. What is the area of the roller-rink floor as shown below?



- A. $4\,456 \text{ ft}^2$ C. $6\,656 \text{ ft}^2$
 B. $5\,656 \text{ ft}^2$ D. $7\,656 \text{ ft}^2$

5. How much larger is leche flan made in a 12-inch square moulder than a leche flan made in a 12-inch diameter circular moulder? (Use $\pi = 3.14$)



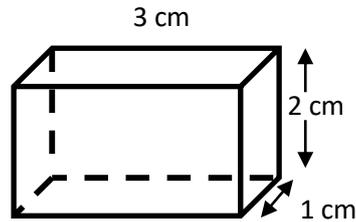
- A. 30.96 in^2 C. 50.98 in^2
 B. 40.97 in^2 D. 60 in^2



What's New

Read the problem.

Miko owns an antique shop. He is refinishing a rectangular jewelry box shown below. A can of varnish he is using has enough liquid left to cover 30 cm^2 . Is there enough varnish left in the can to refinish the jewelry box?



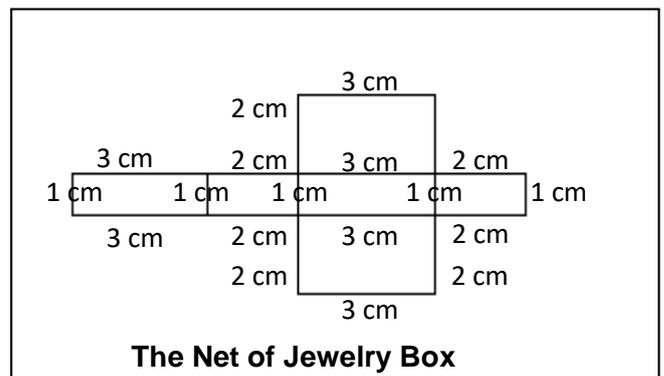
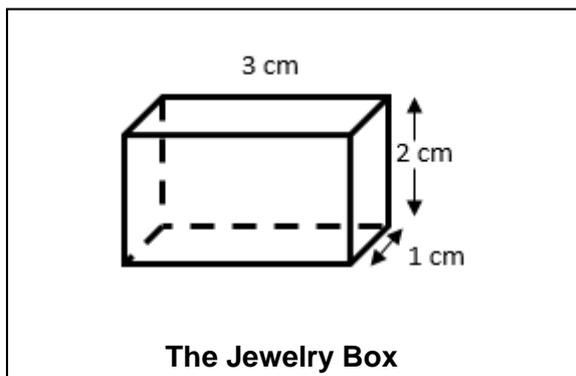
➤ Consider these questions:

- 1.) How many sides or faces does the jewelry box have? **6 sides or faces**
- 2.) What is the shape of the bottom and top faces of the box? **rectangle**
- 3.) What is the shape of the side faces (left side, back, right, and front side) of the

box?

left and right side is square while front and back side is rectangle

➤ To find whether there is enough varnish left, let's show the net of the box.

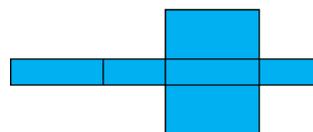


What is It

Solid Figures are three dimensional objects which have a width (w), depth/length (l), and height (h). For example, look at your computer, laptop, phone, TV or whatever else you are using, notice that it has a width, a depth/length, and a height.

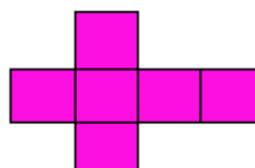
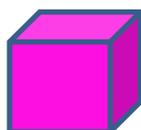
Examples of Solid Figures

A. Rectangular Prism is a solid figure that has six sides, called faces, which are rectangles. This can be thought of as a fancy name for something that has the shape of a cardboard box. Rectangular prisms show up all around us. Some examples may include a book, a piece of furniture, or a jewelry box.



Net of a Rectangular Prism

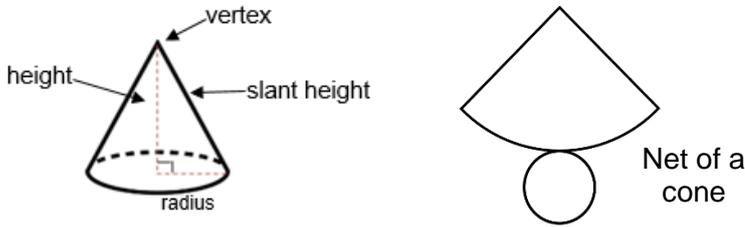
A.1 Cubes are just a special case of rectangular prisms. Cubes are solid figures that have six faces that are all squares of the same size. Since a square is a rectangle, a cube has six faces that are all rectangles, so a cube is a rectangular prism.



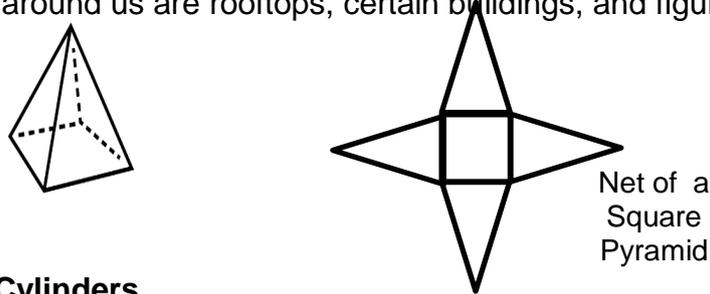
Net of a cube

B. Cones and Pyramids

B.1 Cone is a solid figure that has a circular face on one end, called the base, and a point at the other end where the sides meet. I'm pretty sure we have all enjoyed an ice cream cone at one point in our lives. The cone that you put the ice cream in is an example of a cone, and what a delicious example! Some other examples could include a megaphone, a tee-pee tent, or a birthday party hat. We see that a parking cone is another example of a cone.

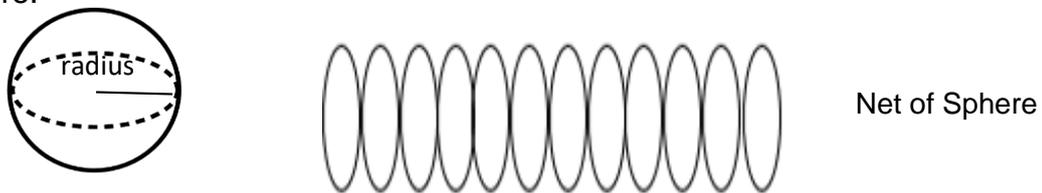


B.2 Pyramid is a solid figure that has a polygon as its base on one end and triangular faces all meeting at a single point on the other end. Many of us have heard of the Great Pyramids of Egypt. These are a perfect example of a pyramid in the world around us. Some other examples of pyramids in the world around us are rooftops, certain buildings, and figurines.

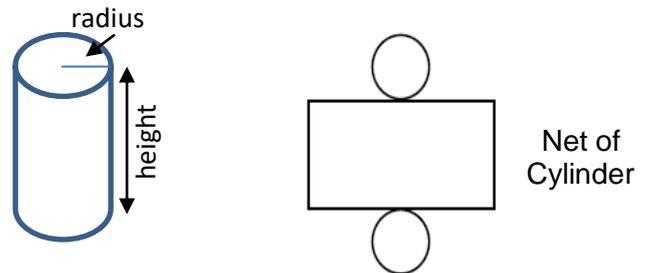


C. Spheres and Cylinders

C.1 Sphere is a solid figure that is round and has the shape of a ball. For example, a basketball is a sphere. Another example of a sphere is the earth we are standing on! When we look at a globe, we see that the earth is three-dimensional and has the shape of a ball. Therefore, the earth is a sphere.

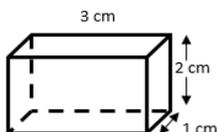


C.2 Cylinder is a solid figure that has two circular bases and one curved side. Remember when I explained what a cone is? Well, a cylinder is similar to a cone, except that rather than only one circular base and a point on the other end, there are circular bases on both ends connected by the curved side. Some examples of cylinders are tubes, tree stumps, poles, and cans.



Visualizing, Describing Surface Area and Naming the Unit of Measure Used for Measuring Solid Figures

1. Surface Area of a Rectangular Prism using Nets
Going back to the given problem on page 3,



We can see from the net that:

- there are 2 rectangles with dimensions 2 cm by 3 cm,
- 2 rectangles with dimensions 1 cm by 3 cm and 2 rectangles with dimensions 1 cm by 2 cm.

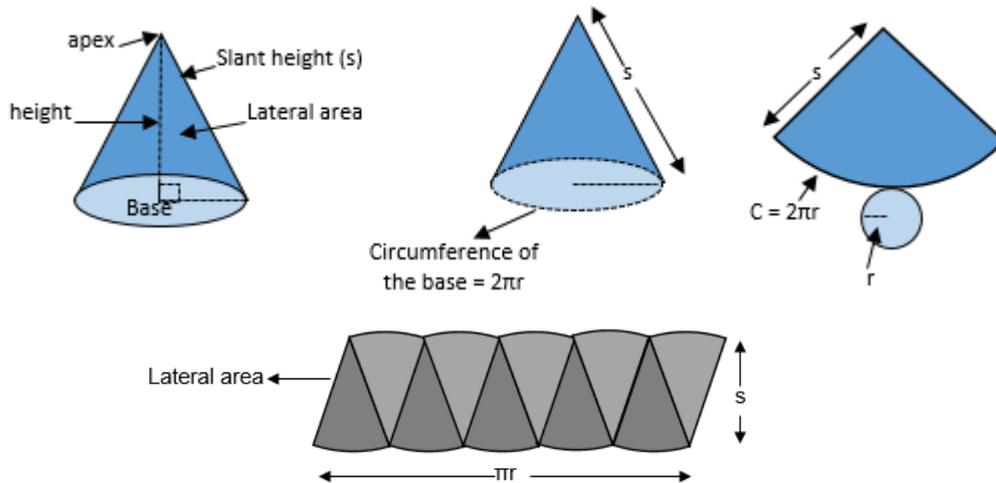
The total surface area then is $2 \times 2 \text{ cm} \times 3 \text{ cm} + 2 \times 1 \text{ cm} \times 3 \text{ cm} + 2 \times 1 \text{ cm} \times 2 \text{ cm} = \underline{22 \text{ cm}^2}$

There is enough varnish to refinish it.

Note: The illustration is only used for visualization not for computation. Thus, you don't need not to show the exact value.

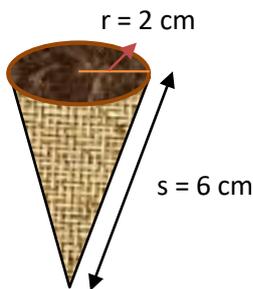
- From page 3, we can say that the unit of measurement used for measuring the surface area is **square centimeter** or cm^2 because the jewelry box is a small object.

2. Surface Area of a Cone using Nets



$$\begin{aligned} \text{Surface area} &= \text{Lateral Area} + \text{Base} \\ &= \pi r s + \pi r^2 \end{aligned}$$

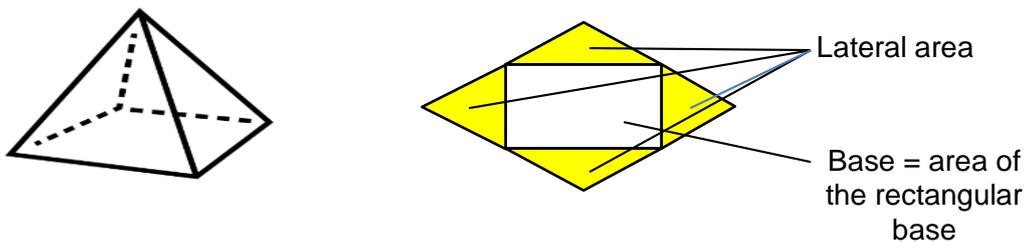
Example: Visualize the surface area of an ice cream cone with a radius of 2 cm and side of 6 cm.



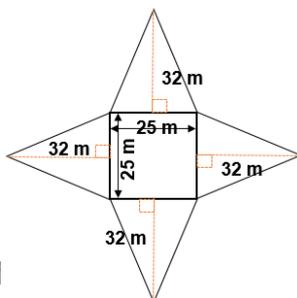
The illustration at the left will look like this or reverse: the apex may be on top while the base will be at the bottom.

The unit of measurement used is square centimeter (cm^2) because a cone in actual appearance is just a small object which can be measured by centimeter neither in millimeter nor in meter.

3. Surface Area of a Pyramid using Nets



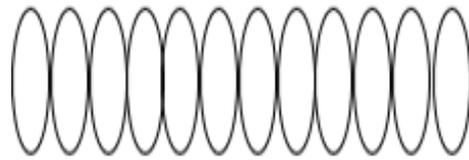
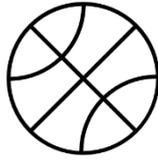
Example: Suppose a patrol of boy scouts want to construct a tent in a square pyramid shape which has a base of 25 m and a height of 32 m. How does will it look like?



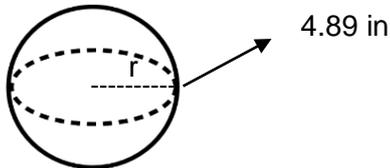
- The illustration will be like this.

- The unit of measurement to be used is meter since boy scouts are already bigger in size. If they will construct a tent in centimeters or millimeters, they could not enter the tent that they will be building.

4. Surf

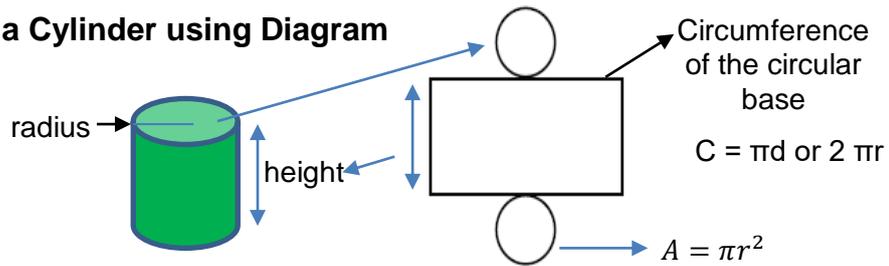


Example: Marlon is tasked to visualize a basketball with a radius of 4.89 inches. How would he do it?

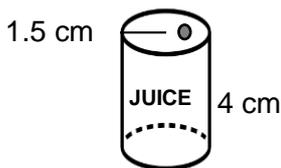


✚ This is the how it is being visualized and the unit of measurement used is inches because the area to be measured is small.

5. Surface Area of a Cylinder using Diagram



1.5 cm Example: Nimfa is asked to visualize an object by her patrol leader with a radius of and height of 4 cm. How will she do it?



✚ The illustration of Nimfa is correct hence she used a tin can which is a cylindrical in shape.

✚ The unit of measurement used is also in centimeters just enough to visualize her chosen object.



What's More

Activity 2: "Agree, Disagree"

Directions: Put a **check (✓)** on agree column if you agree with the statement, if not **put x** and support your answer.

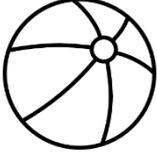
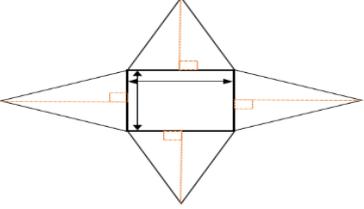
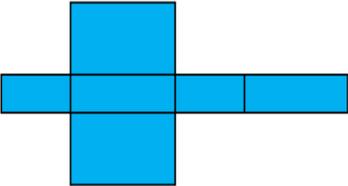
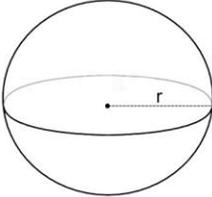
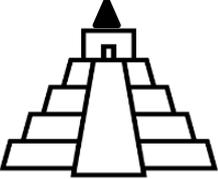
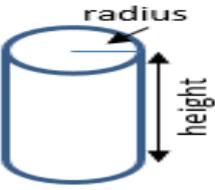
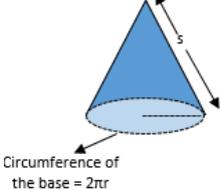
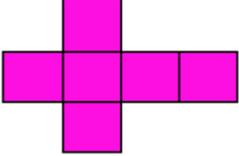
Statement	Agree	Disagree
1. We can use nets in visualizing the surface area of solid figures.		
2. Cube belongs to rectangular prism.		
3. Square meter is the measuring unit for condominiums and tall sky buildings.		
4. Solid Figures are two dimensional objects which have a width (w), depth/length (l), and height (h).		
5. Mayon Volcano is a perfect visualization of a solid figure cone.		



What I Have Learned

Activity 3: One Heart

Directions: Match Column A with Column B. Write the letter of your answer on the black Provided before the numeral.

_____ 1.) 	A. 
_____ 2.) 	B. 
_____ 3.) 	C. 
_____ 4.) 	D. 
_____ 5.) 	E.  F. 

Activity 4: Once More

Directions: Name the possible unit of measure used in measuring the surface area of solid figures below. Write the letter of your answer on the black provided before the numeral.



A. ft²

C. km²

B. in²

D. m²



A. mm²

C. km²

B. cm²

D. mi²

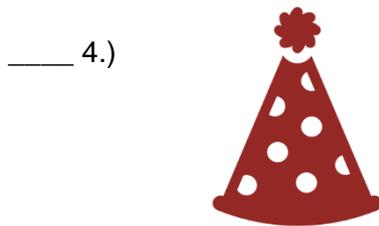


A. mm²

C. m²

B. dm²

D. km²

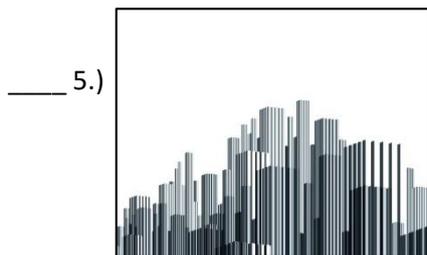


A. cm²

C. km²

B. m²

D. mi²



A. mm²

C. km²

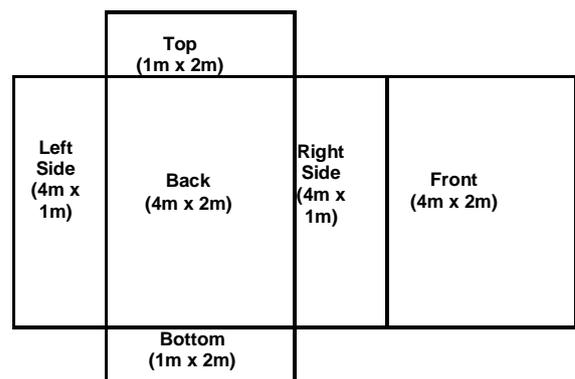
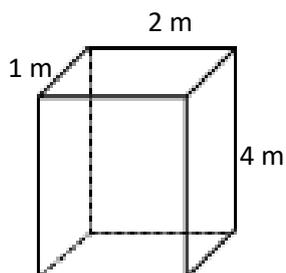
B. cm²

D. m²

What I Can Do

Activity 5: "Fill Me"

Directions: Refer to the illustration below and answer the following questions by filling it on the black.



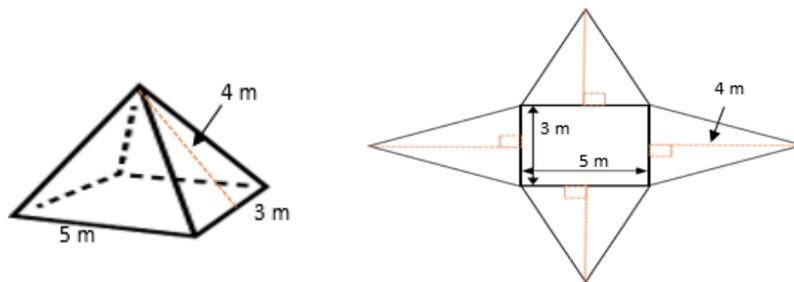
- 1.) What is the shape of the bases?
- 2.) What is the name of this solid figure?
- 3.) Why is m^2 not km^2 the unit of measure being used?
- 4.) How many lateral faces does this figure have?
- 5.) Is this the correct way of visualizing the object shown above? Why or Why not?

Assessment

A. Multiple Choice. Choose the letter of the best answer. Write the chosen letter on the space provided before the numeral.

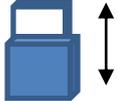
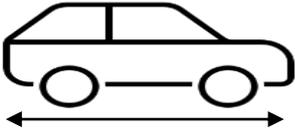
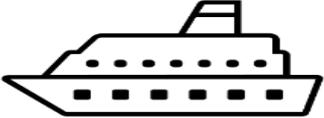
- ___ 1.) Which of the following represents a sphere?
 A. laptop B. billiard ball C. cellphone D. party hat
- ___ 2.) The following are solid figures **EXCEPT** _____.
 A. circle B. pyramid C. cone D. prism
- ___ 3.) What good values do we develop in visualizing a particular solid figure?
 A. pessimistic B. timidity C. apathy D. patience

B. For numerals 4-6, refer to the illustration below.



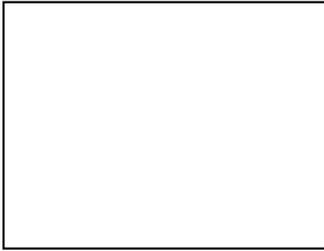
- ___ 4.) What is the shape of the base?
 A. sphere B. cone C. rectangle D. cylinder
- ___ 5.) How many faces are there in the figure?
 A. 2 B. 3 C. 4 D. 5
- ___ 6.) What is the name of this pyramid?
 A. hexagonal pyramid C. square pyramid
 B. triangular pyramid D. rectangular pyramid

C. For numerals 7-9, refer to the table below. Name the possible unit of measurement used in measuring the surface area of the following solid figures.

<p>___ 7.)</p>  <p>Pencil Eraser</p>	<p>_____</p>
<p>___ 8.)</p> 	<p>_____</p>
<p>___ 9.)</p>  <p>Cruise Ship</p>	<p>_____</p>

D. For numeral 10, given the measurement $l=6$ cm, $w=6$ cm, height= 6 cm, draw it in the box to show the surface area.

____ 10.)



Additional Activities

Directions: Compose a 2-stanza poem with 4 lines each about the different solid figures that you have learned and place it in the box below.

Analytic Rubrics for Scoring the Poem

Criteria	Points			Total Score
	6	4	2	
1. Authenticity 40%	Original composition is clearly exhibited	Partially copied from other authors	Totally copied from other authors	
2. Content 50%	All 5 solid figures were mentioned in the poem	3 out of 5 solid figures were mentioned in the poem	1 out of 5 solid figures were mentioned in the poem	
3. Neatness 10%	The writing is immaculately clean and legible	The writing is not so clean and legible	The writing is not clean and legible	

References

Perez, Marjoseph H., Donnel P. Placer, Jaime R. Burgos. *21st Century MATHletes 6*. edited by Mercurio T. Elenzano, EdD, Chin Uy, Ph.D..Quezon City.Vibal Group, Inc..2016

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