Name _____

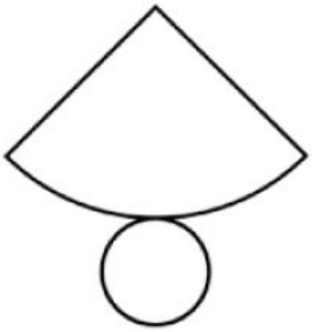
Math 3 Honors Unit 3: Modeling with Geometry

Monday	Tuesday	Wednesday	Thursday	Friday
	February 19 ● Shapes and nets ● **Project Intro** HW: worksheet 3.1, work on project	**February 20** ● ACT	**February 21** ● Surface area and volume HW: worksheet 3.2, work on project	**February 22** ● Cross-sections and rotations ● **Project workday** **Document 1 due at end of class** HW: worksheet 3.3, work on project
February 25 ● Geometric modeling ● **Project workday** HW: worksheet 3.4, work on project	**February 26** ● Geometric modeling ● **Project workday** **Document 2 due at end of class** HW: worksheet 3.5, work on project	**February 27** ● Review for test HW: finish review, work on project	**February 28** ● TEST!! HW: finalize project	**March 1** ● **Project presentations**

3.1 - Nets and Shapes

Name the 3D figure that is formed by the net.

1



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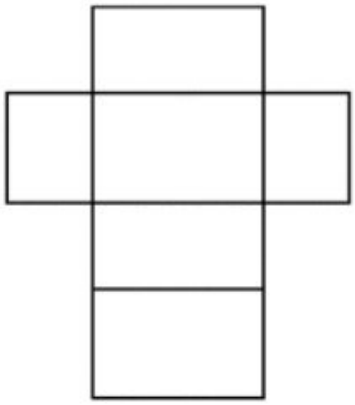

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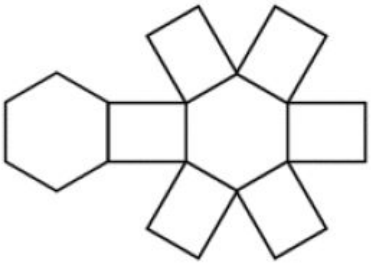

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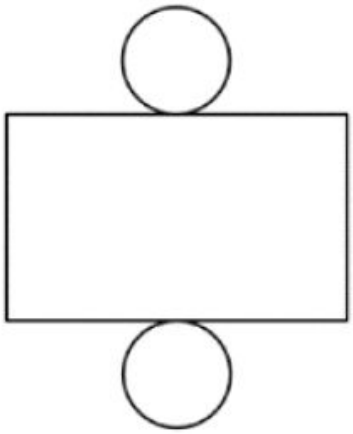

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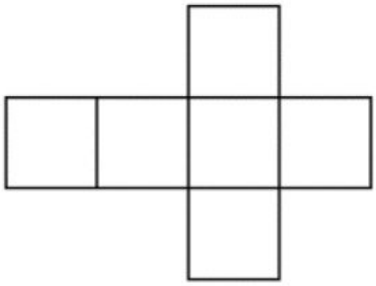

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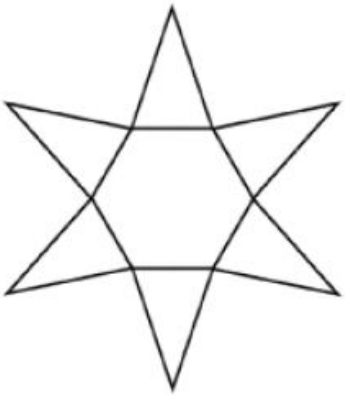

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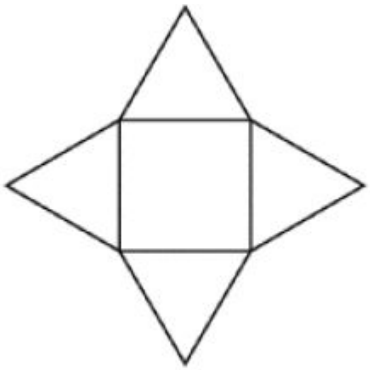

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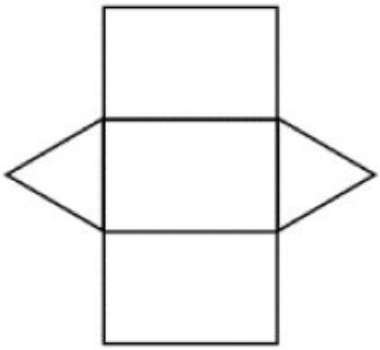

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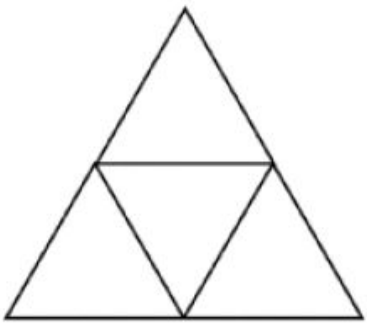
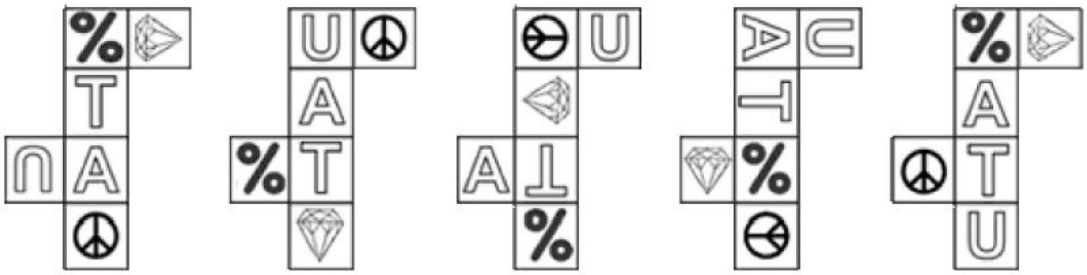
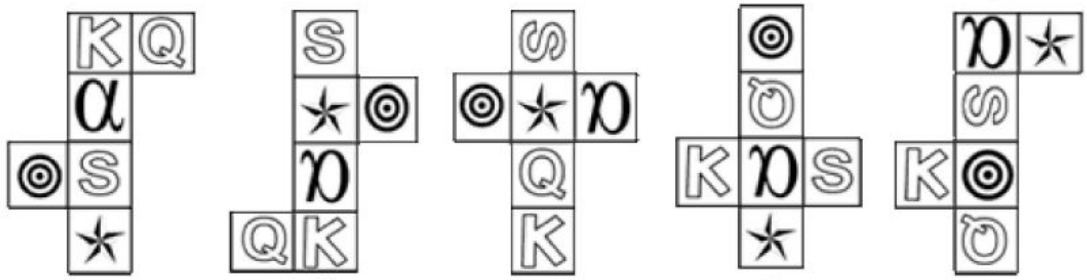


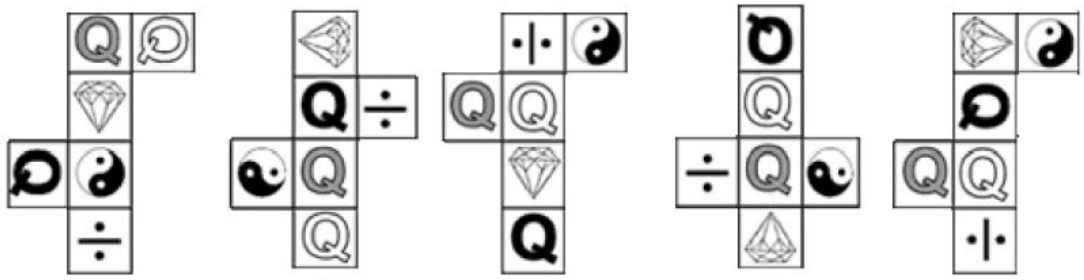
For each 3D cube given, match it to the correct corresponding net. (This is multiple choice.)



a b c d e



a b c d e



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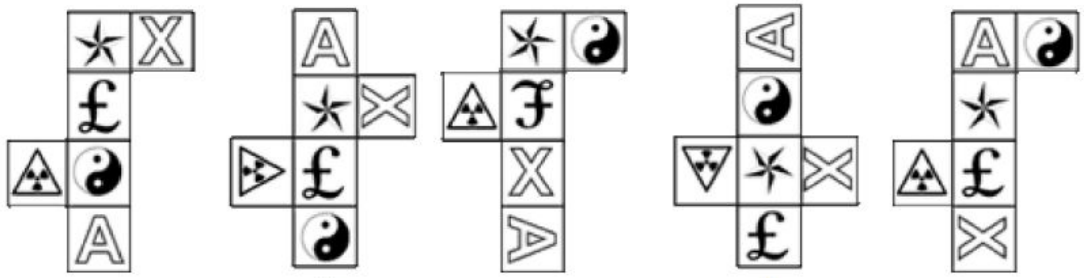

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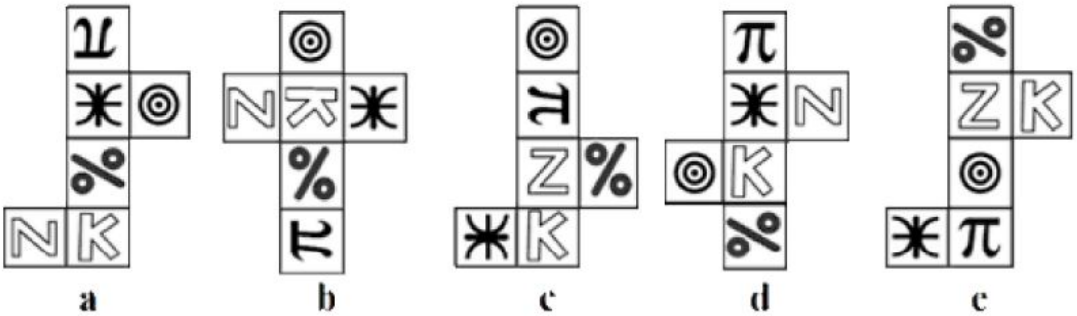
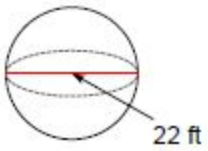


a b c d e

3.2 - Surface Area and Volume

Determine the surface area. Round to the nearest hundredth if needed.

1.



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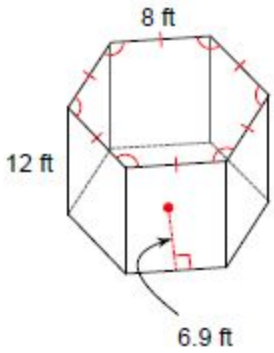
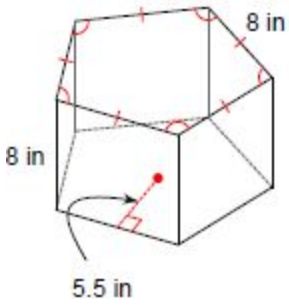
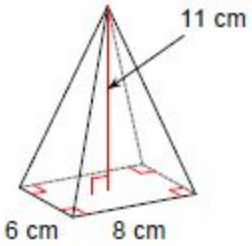


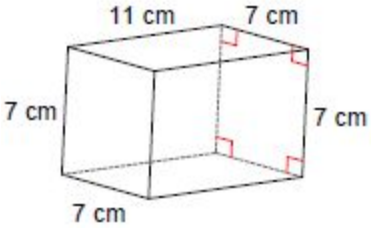
3.



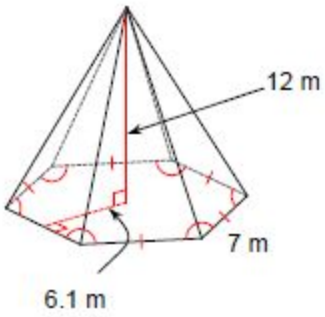
4.



5.

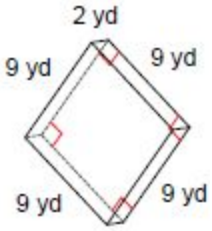


6.



Find the volume. Round to the nearest hundredth if needed.

7.



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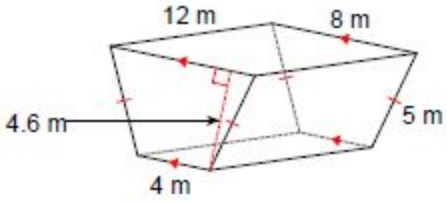

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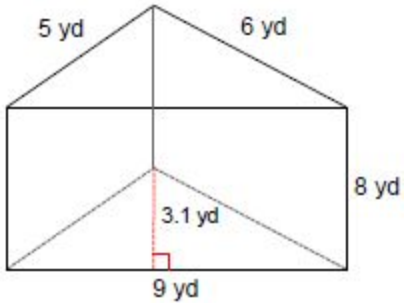

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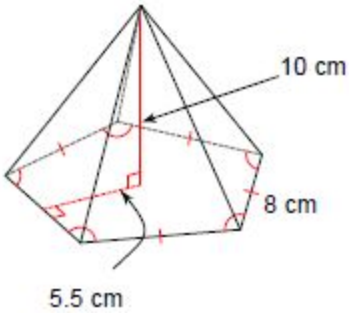
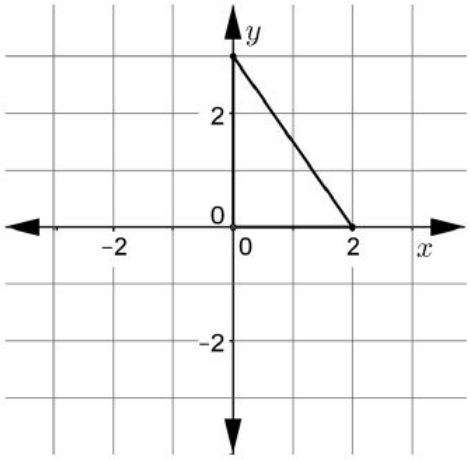
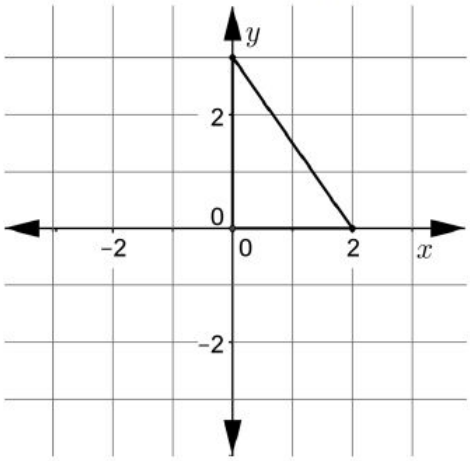


3.3 - Rotations of 2D Shapes to Create 3D Shapes

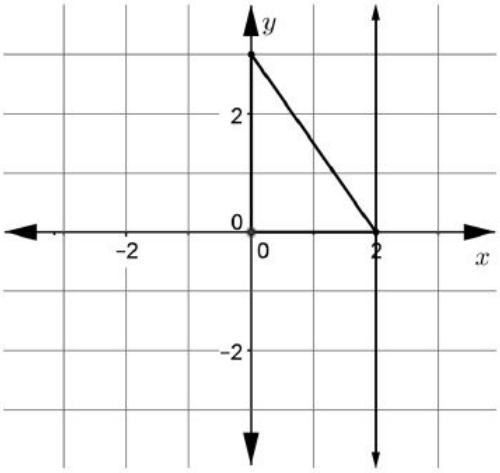
1. Describe in detail the solid formed by rotating a right triangle with vertices at (0, 0), (2, 0), and (0, 3) about the vertical axis. Include the dimensions (height, length, width, radius, etc) of the solid in your description.



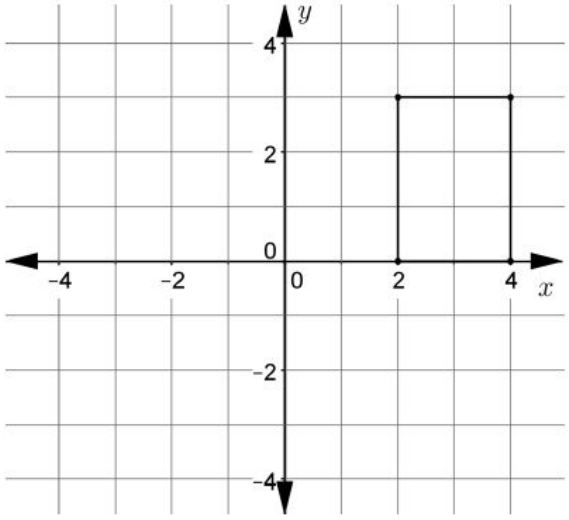
2. Describe in detail the solid formed by rotating a right triangle with vertices at (0, 0), (2, 0), and (0, 3) about the horizontal axis. Include the dimensions (height, length, width, radius, etc) of the solid in your description.



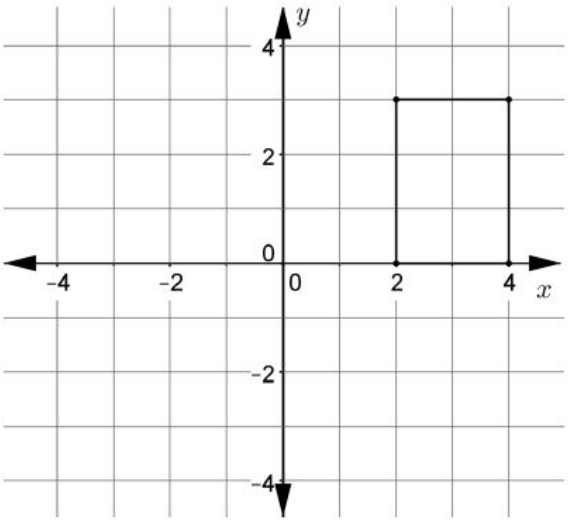
3. Imagine the solid formed by rotating the same right triangle about the line $x = 2$. Describe this solid in detail including its dimensions.



4. Describe in detail the solid formed by rotating a 2 x 3 rectangle with vertices (2, 0), (4, 0), (2, 3) and (4, 3) about the x-axis. Include the dimensions (height, length, width, radius, etc) of the solid in your description.

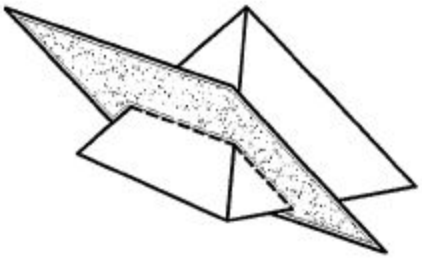


5. Describe in detail the solid formed by rotating a 2 x 3 rectangle with vertices (2, 0), (4, 0), (2, 3), and (4, 3) about the y-axis. Include the dimensions (height, length, width, radius, etc) of the solid in your description.

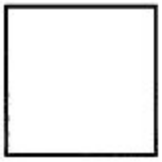


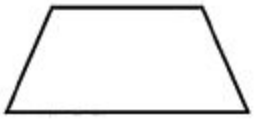
3.4 - Cross-Sections

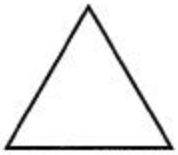
A square pyramid is cut along the shaded plane shown below.

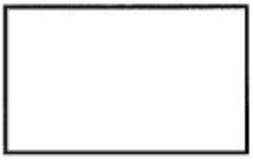


Which of the following is the cross-section of this solid?

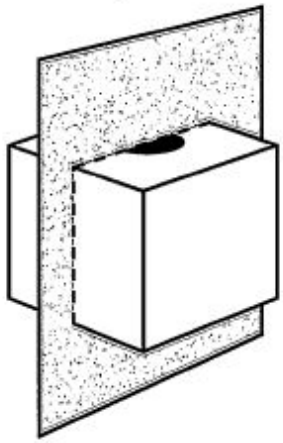
Ⓐ 

Ⓑ 

Ⓒ 

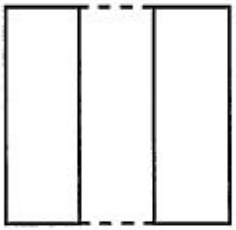
Ⓓ 

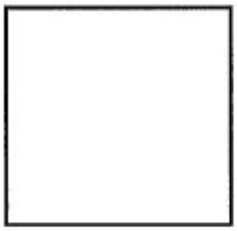
A cube with a cylinder cut from its center is cut along the plane shown below.

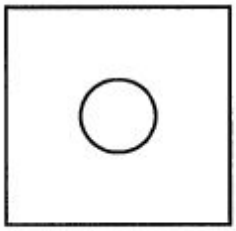


Which of the following is the cross-section of this solid?

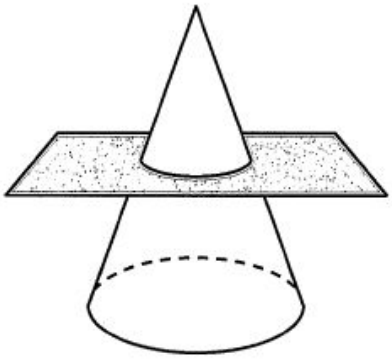
Ⓕ 

Ⓗ 

Ⓖ 

Ⓙ 

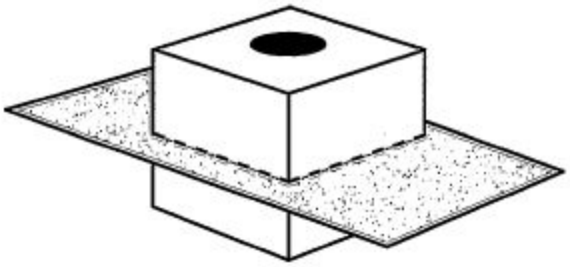
A cross-section is cut from the circular cone below.



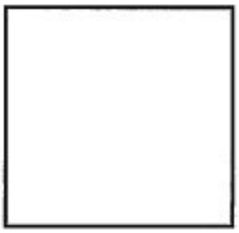
What is the shape of the cross-section?

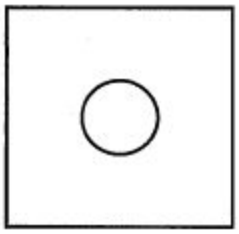
Ⓐ Square
Ⓑ Semicircle
Ⓒ Triangle
Ⓓ Circle

A cube with a cylinder cut from its center is cut along the plane shown below.

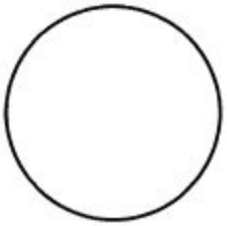


Which of the following is the cross-section of this solid?

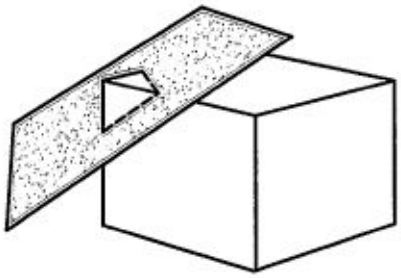
Ⓕ 

Ⓗ 

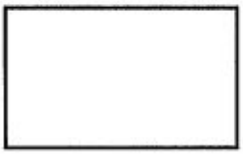
Ⓖ 

Ⓙ 

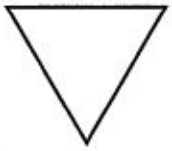
A rectangular prism is cut along the shaded plane shown below.



Which of the following is the cross-section of this solid?

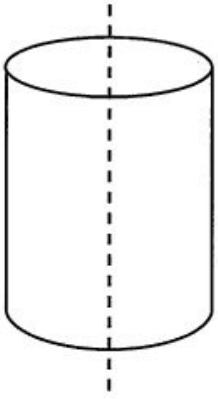
Ⓕ 

Ⓖ 

Ⓗ 

Ⓙ 

A cross-section is cut from the cylinder below.



What is the shape of the cross-section?

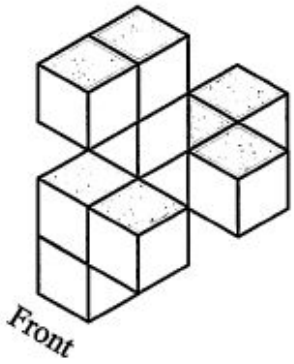
Ⓐ Rectangle

Ⓑ Circle

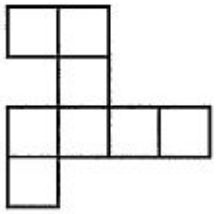
Ⓒ Semicircle

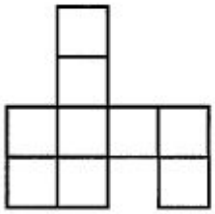
Ⓓ Oval

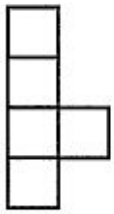
The three-dimensional figure shown is composed of 10 identical cubes.

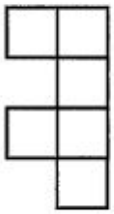


Which of the following could not represent a top, front, or side view of the figure?

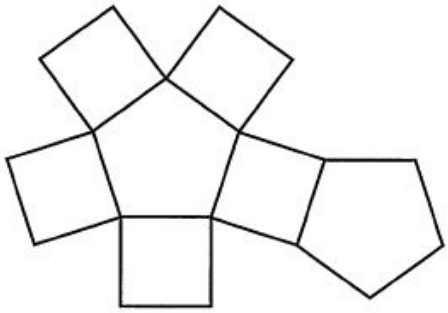
Ⓐ 

Ⓒ 

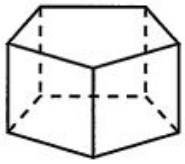
Ⓑ 

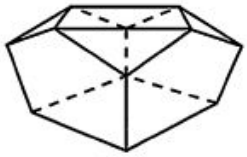
Ⓓ 

The net of a specific polyhedron is shown below.

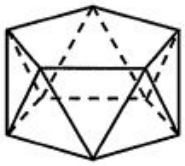


Which polyhedron is represented by this net?

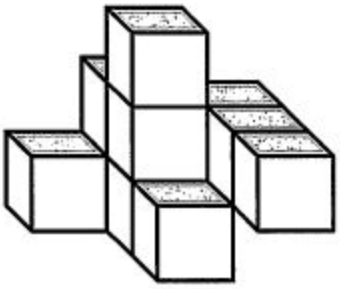
Ⓕ 

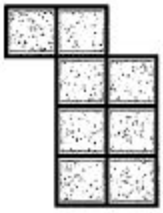
Ⓖ 

Ⓗ 

Ⓙ 

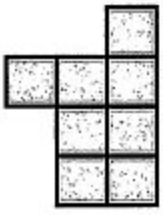
Which drawing represents the top view of this solid?



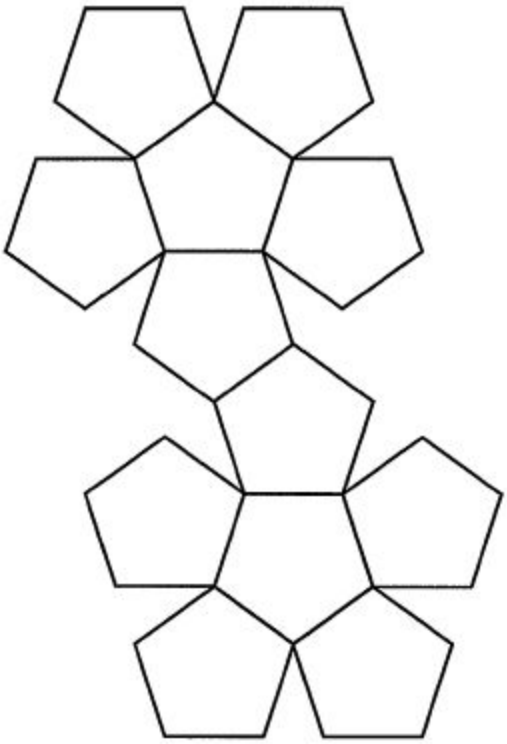
Ⓐ 

Ⓒ 

Ⓑ 

Ⓓ 

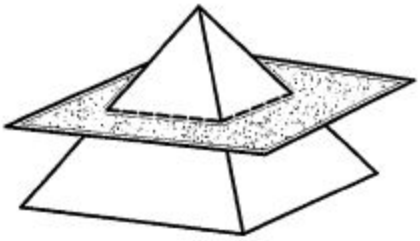
Below is the net of a regular dodecahedron.



How many edges does a regular dodecahedron have?

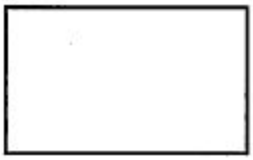
Ⓕ 60
Ⓖ 24
Ⓗ 50
Ⓙ 30

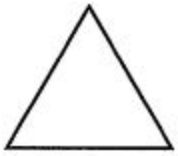
A square pyramid is cut along the shaded plane shown below.

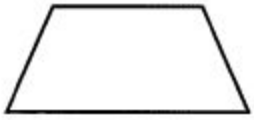


Which of the following is the cross-section of this solid?

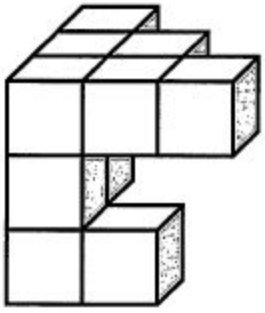
Ⓕ 

Ⓖ 

Ⓗ 

Ⓙ 

Which drawing represents the side view of this solid?



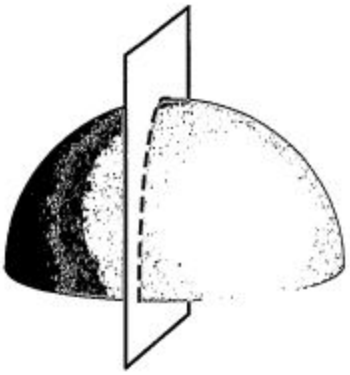
Ⓕ 

Ⓗ 

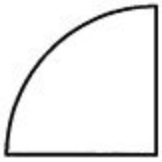
Ⓖ 

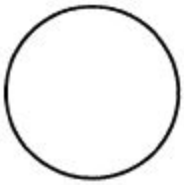
Ⓙ 

A hemisphere is cut along the plane shown below.

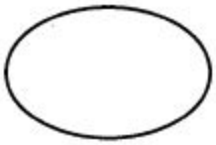


Which of the following is the cross-section of this solid?

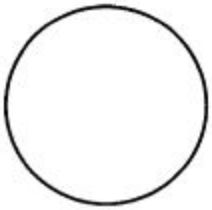
Ⓕ 

Ⓗ 

Ⓖ 

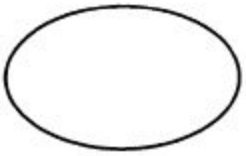
Ⓙ 

Which of the following is a cross-section of a sphere?

Ⓐ 

Ⓒ 

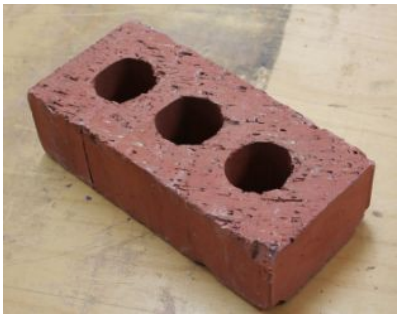
Ⓑ 

Ⓓ 

3.5 - Geometric Modeling

1. Determine the surface area of a cylindrical glass with a height of 6 inches and a diameter of 4 inches.

2. A brick has a length of 10 inches, a width of 4 inches, and a height of 2 inches. There are three identical cylinders with a radius of 1 inch missing out of the middle of the brick. Determine the volume of the brick.



3. Eight wooden spheres, each with a radius of 3 inches, are packed snugly into a square box that is 12 inches on one side. The remaining space is filled with packing beads. What is the volume occupied by the packing beads?

4. You are producing 500 of these metal wedges, and you must electroplate them with a thin layer of high-conducting silver (surface area). The measurements shown are in centimeters. Find the total cost for silver, if silver plating costs $3 for every 200 square centimeters.