Honors Geometry Cross Sections

DATE: 5/29

→ 2D object formed by slicing 3D solid w/plane

Describe the shape resulting from each cross section.

5.

Circle

6.

Triangle

7.

Rectangle

Describe the shape resulting from each cross section.

13.

Rectangle

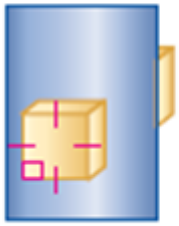
14.

Triangle

15.

Iso. Triangle

16.



square

17.

parabola

18.

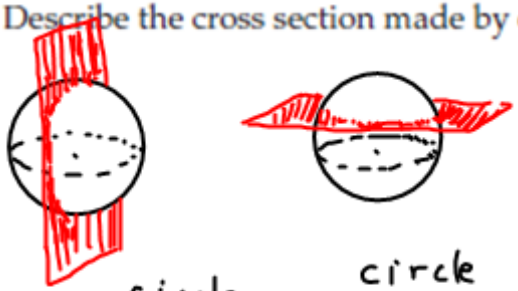
triangle

20. SPORTS A standard basketball is shaped like a *sphere*.

a. Draw a basketball with a vertical, angled, and horizontal slice.

b. Describe the cross section made by each slice.

a.



plane

b. circle circle circle

26. Benita received the gift box shown.

Which drawing **best** represents the top view of the gift box?

A.


B.


C.


D.


27. Which of the following is NOT an example of a polyhedron?

F. cylinder
G. rectangular prism
H. octagonal pyramid
I. triangular prism

28. Which of the following represents a side view of the figure below?

A.


C.


B.


D.


29. The figure below is a square pyramid.

Which of the following is NOT a cross section from the square pyramid?

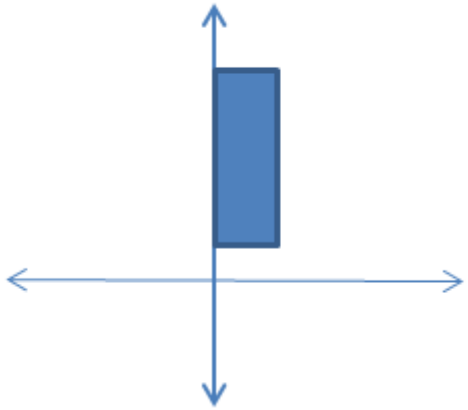
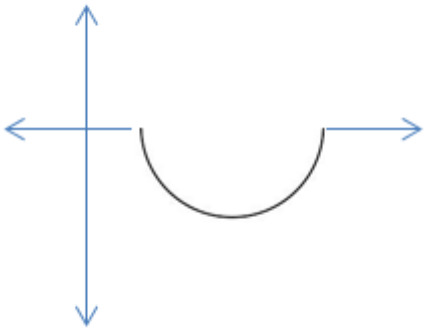
F.

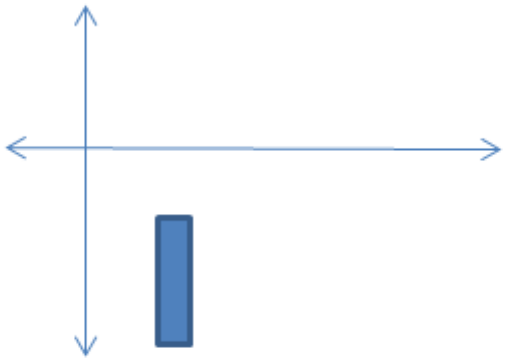
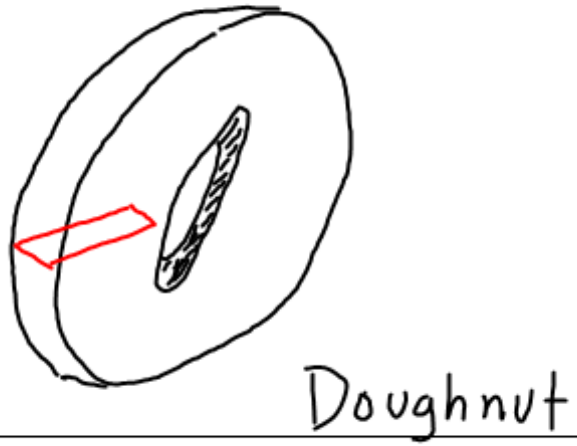

H.


G.

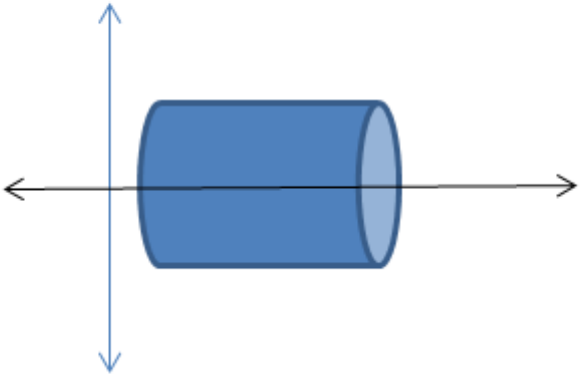
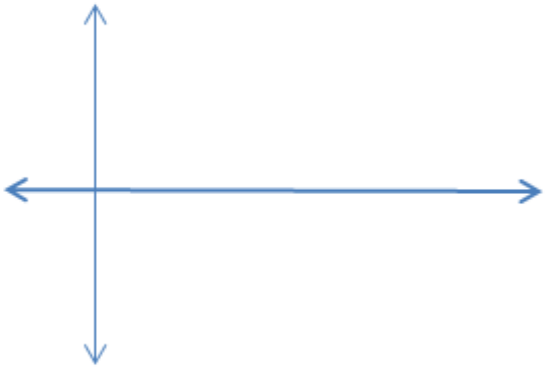

I.


Rotate a 2D object in the coordinate plane. What shape is the result of the rotation?

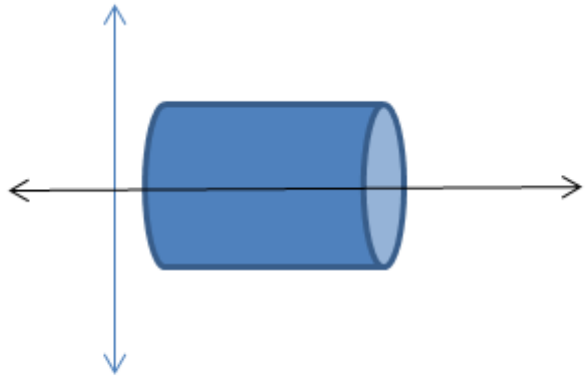
Rotate a rectangle about the y-axis. 	Cylinder
Rotate a semicircle about the x-axis. 	Sphere
Rotate a triangle about the y-axis. 	Cone

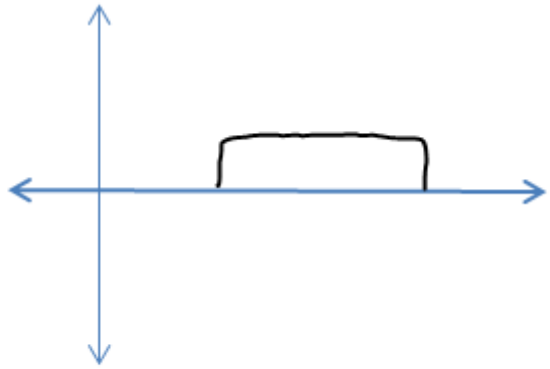
Rotate the rectangle about the x-axis. 	

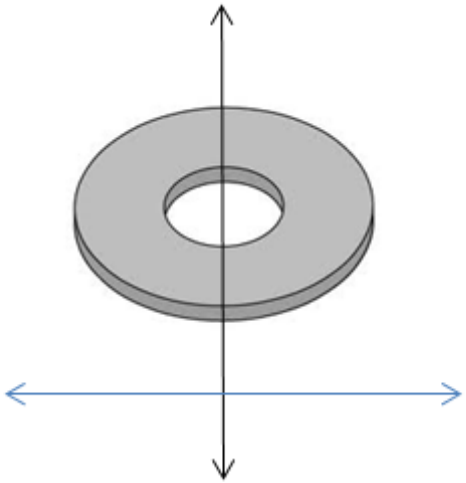
Draw and describe a 2D rotation that could give each 3D picture below.

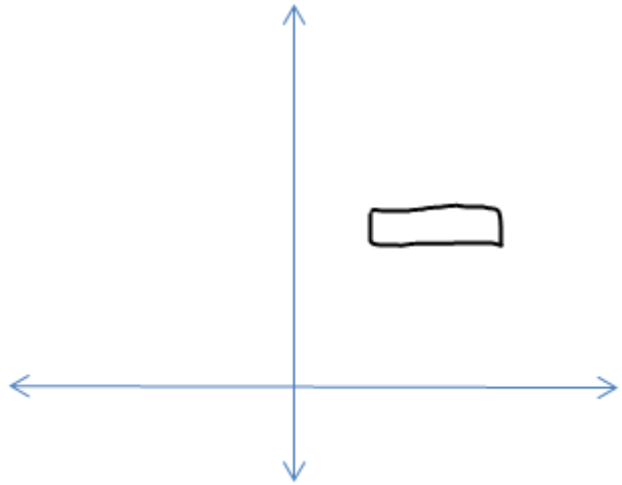
	

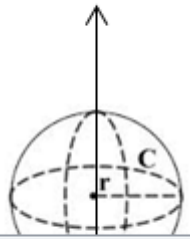
Draw and describe a 2D rotation that could give each 3D picture below.

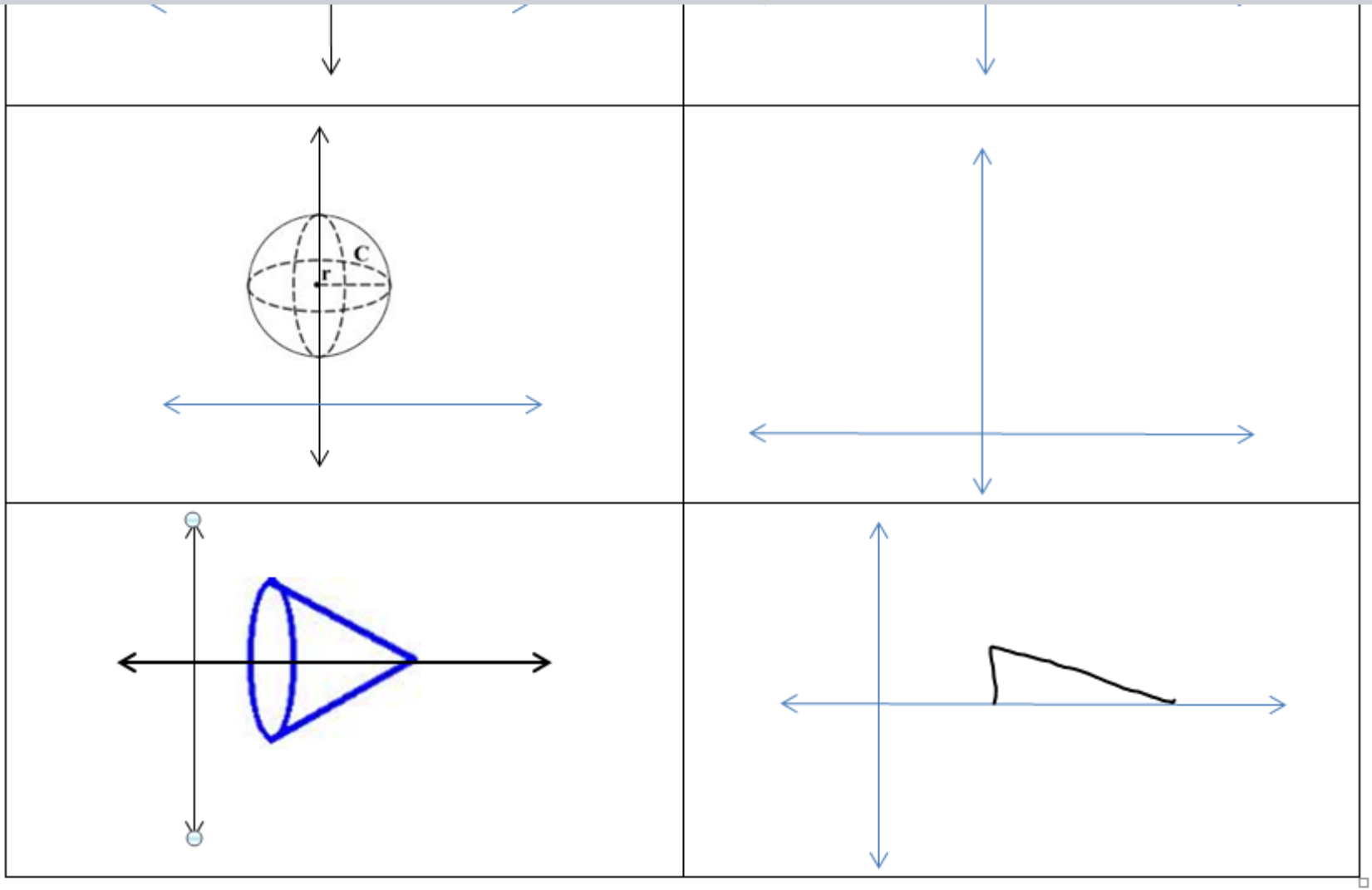




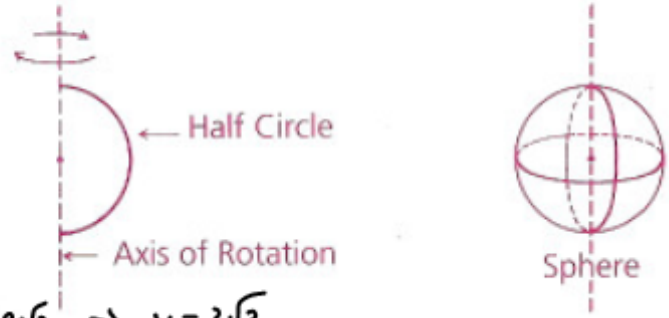








14 A *surface of rotation* is generated by revolving a shape about a fixed line, called the *axis of rotation*. For example, revolving a half circle about the line containing its endpoints produces a sphere.



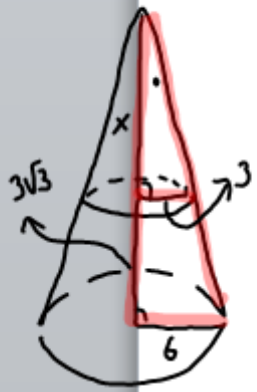
Similar Δs:

$$\frac{x}{(x+3\sqrt{3})} = \frac{3}{6}$$

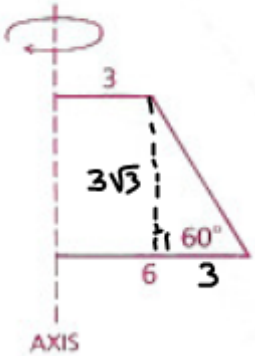
$$6x = 3(x+3\sqrt{3})$$

$$6x = 3x + 9\sqrt{3} \Rightarrow 3x = 9\sqrt{3} \Rightarrow x = 3\sqrt{3}$$

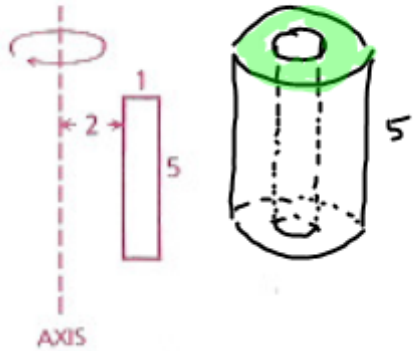
Identify the surface of rotation generated in each diagram and compute the volume.



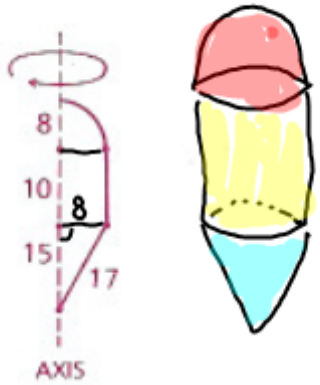
a



b



c



$V_{frustum} =$

$V_{BIG} - V_{small}$

$\frac{1}{3}\pi(6)^2(6\sqrt{3}) - \frac{1}{3}\pi(3)^2(3\sqrt{3})$

$72\pi\sqrt{3} - 9\pi\sqrt{3} = \underline{63\pi\sqrt{3} \text{ units}^3}$

$$V = V_{BIG} - V_{small}$$

$$= \pi(3)^2(5) - \pi(2)^2(5)$$

$$= 45\pi - 20\pi$$

$$= \underline{25\pi \text{ units}^3}$$

$$V = V_{cone} + V_{cyl} + V_{half\text{-}sphere}$$

$$= \frac{1}{3}\pi(8)^2(15) + \pi(8)^2(10) + \frac{1}{2}\left(\frac{4}{3}\pi(8)^3\right)$$

$$= \frac{3}{3}320\pi + \frac{3}{3}640\pi + \frac{1024}{3}\pi$$

$$= \frac{960\pi}{3} + \frac{1920\pi}{3} + \frac{1024\pi}{3}$$

$$= \frac{3904}{3}\pi \text{ units}^3$$