Geometry Regents Lomac 2015-2016 **Date** 3/22 **due** 3/23 | **3D: Space and General Cones** **9.4R**

Name _____ **Per**_____

LO: I can solve problems involving volumes of General Cones and General Cylinders.

☐ **DO NOW** On the back of this packet

☐ (1) calculator **What is a General Cone?**

General cones are 3-dimensional shapes formed by a region in a plane and all segments from a single point (V) not on the plane to every point in the region (B).

SHADE region B in plane E pink. HIGHLIGHT point V orange.

General Cones have _____ base(s) and _____ vertex.

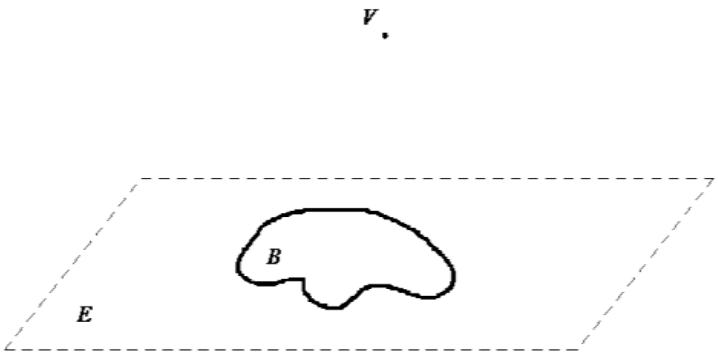


Figure 1

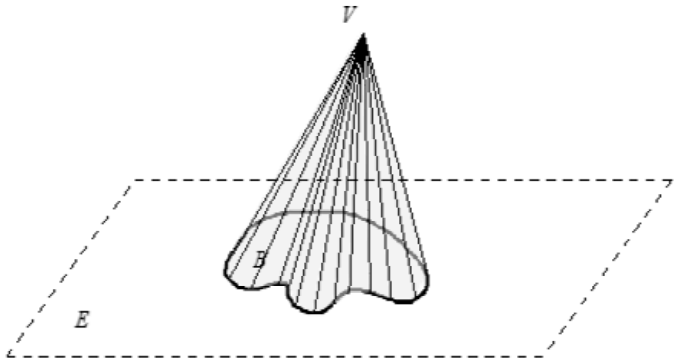
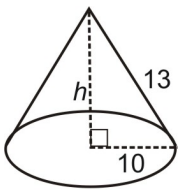


Figure 2

Go to the website http://tube.geogebra.org/student/m685821 to see the proof of the formula for the volume of a cone.

$$V_{cone} = \frac{1}{3}BH$$

Find the volume of the cone below:



☐ (2) calculator

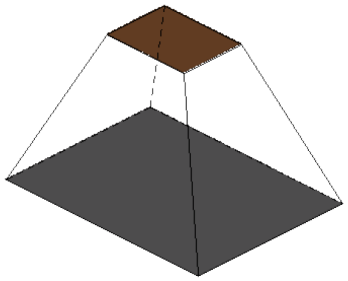
Using volume to solve problems

Suppose you fill a conical paper cup with a height of 6" with water. If all the water is then poured into a cylindrical cup with the same radius and same height as the conical paper cup, to what height will the water reach in the cylindrical cup?

☐ (3) calculator

Using volume to solve problems

The frustum of a pyramid is formed by cutting off the top part by a plane parallel to the base. The base of the pyramid and the cross-section where the cut is made are called the *bases of the frustum*. The distance between the planes containing the bases is called the *height of the frustum*. Find the volume of a frustum if the bases are squares of edge lengths 2 and 3, and the height of the frustum is 4.



☐ (4) calculator

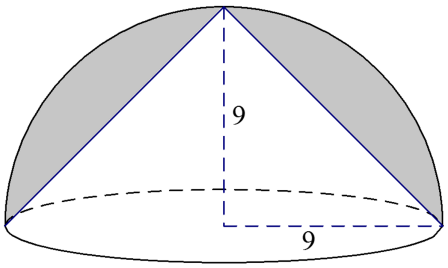
How can we use the volume of General Cones to answer real world problems?

A cone with a radius of 5 cm and height of 8 cm is to be printed from a 3D printer. The medium that the printer will use to print (i.e., the "ink" of this 3D printer) is a type of plastic that comes in coils of tubing which has a radius of $1\frac{1}{3}$ cm. What length of tubing is needed to complete the printing of this cone?

☐ (5) calculator

Cones and Spheres?

In a solid hemisphere, a cone is removed as shown. Calculate the volume of the resulting solid. In addition to your solution, provide an explanation of the strategy you used in your solution.



☐ (6) calculator **Exit Ticket**

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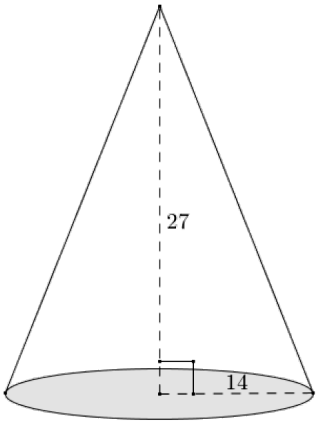
☐ (7) calculator **Homework**

Provide sufficient evidence for each response.

☐ (1) Find the volume of the circular cone in the diagram.



☐ (2) A pyramid has volume 24 and height 6. Find the area of its base.

☐ (7) internet **Homework**

☐ (3)

An ice cream cone is 11 cm deep and 5 cm across the opening of the cone. Two hemisphere-shaped scoops of ice cream, which also have diameters of 5 cm, are placed on top of the cone. If the ice cream were to melt into the cone, will it overflow?

Exit Ticket Name_____ **Date** _____ **Per**_____ **9.4R**

The LO (Learning Outcomes) are written below your name on the front of this packet. Demonstrate your achievement of these outcomes by doing the following:

SHOW SUFFICIENT WORK TO JUSTIFY YOUR CHOICE! Use the reference page on the back of 9.0 to help you.

The table shows the approximate measurements of the Great Pyramid of Giza in Egypt and the Pyramid of Kukulcan in Mexico.

Pyramid	Height (meters)	Area of Base (square meters)
Great Pyramid of Giza	147	52,900
Pyramid of Kukulcan	30	3,025

Approximately what is the difference between the volume of the Great Pyramid of Giza and the volume of the Pyramid of Kukulcan?

Ⓐ 1,945,000 cubic meters

Ⓑ 2,562,000 cubic meters

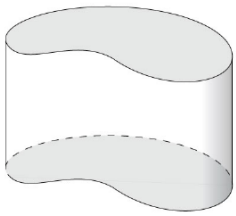
Ⓒ 5,835,000 cubic meters

Ⓓ 7,686,000 cubic meters

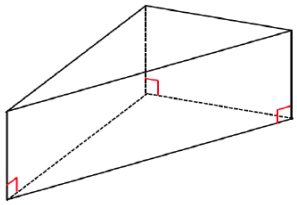
DO NOW **Name**_____ **Date** _____ **Per**_____ **9.4R**

(1)

Group the following images by shared properties. What defines each of the groups you have made?



1



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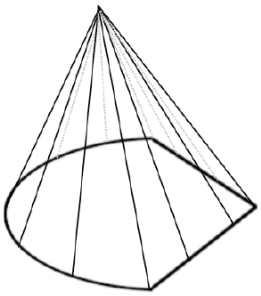

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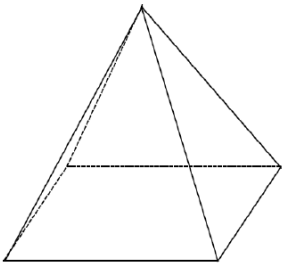

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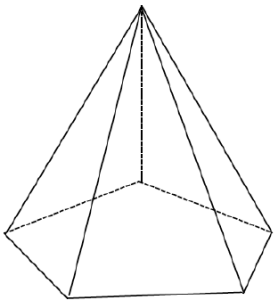

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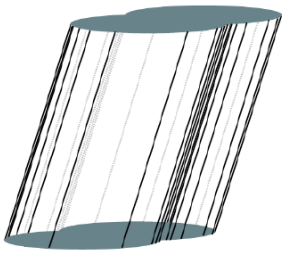

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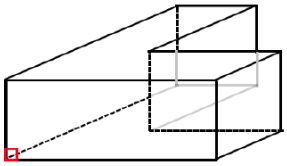

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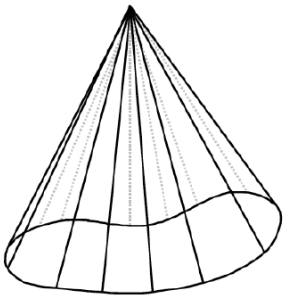

8

(2) In the cartoon below, the middle figure says, “Race ya to the bottom?” What about this is supposed to make people smile?