READY, SET, GO! Name Period Date

READY

Topic: Comparing perimeter, area and volume

Solve each of the following problems. Make certain you label the units on each of your answers.

1. Calculate the perimeter of a rectangle that measures 5 cm by 12 cm.

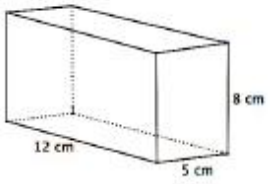
   Answer: 34 cm

2. Calculate the area of the same rectangle.

   Answer: 60 cm^2

3. Calculate the volume of a rectangular box that measures 5 cm by 12 cm. and is 8 cm. deep.

   Answer: 480 cm^3



4. Look back at problems 1 – 3. Explain how the units change for each answer.

   Answer: The units match the dimensions; 1 dimension has no exponent, 2 dimensions is squared, etc.

5. Calculate the surface area for the box in problem 3. Assume it does NOT have a cover on top. Identify the units for the surface area. How do you know your units are correct?

   Answer: 392 cm^2, Area is 2-dimensions

6. Calculate the circumference of a circle if the radius measures 8 inches. (Use $\pi = 3.14$)

   Answer: $16\pi \approx 50.24$ in

7. Calculate the area of the circle in problem 6.

   Answer: $64\pi \approx 200.96$ in^2

8. Calculate the volume of a ball with a diameter of 16 inches. $\left(V = \frac{4}{3}\pi r^3\right)$

   Answer: 2143.57 in^3

9. Calculate the surface area of the ball in problem 8. $(SA = 4\pi r^2)$

   Answer: 804.25 in^2

10. If a measurement were given, could you know if it represented a perimeter, an area, or a volume? Explain.

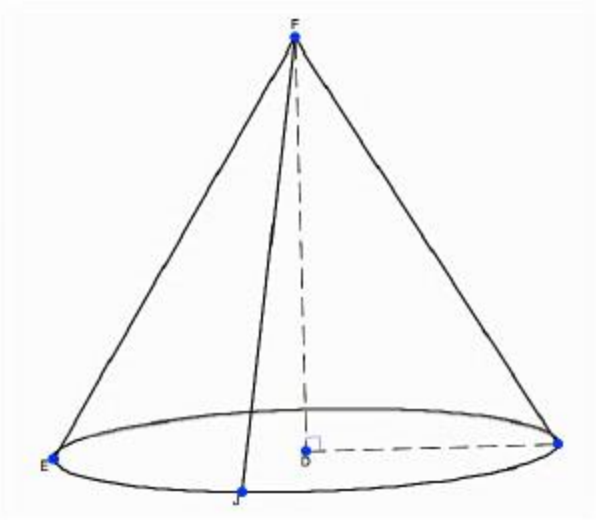
    Answer: Yes, if the units are given. Cubed is volume, squared is area, and no power on the units is perimeter.

11. In the problems above, which type of measurement would be considered a "linear measurement?"

    Answer: Perimeter

SET

Topic: Examining the cross sections of a cone



Consider the intersection of a plane and a cone.

12. If the plane were parallel to the base of the cone, what would be the shape of the cross-section?
Can think of 2 possibilities? Explain.
Answer: Circle or a single point if intersecting at vertex of cone.

13. How would a plane need to intersect the cone so that it would create a parabola?
Answer: An intersection that is slanted and goes through the side and ends on the base of the cone.

14. Describe how the plane would need to intersect the cone in order to get a cross-section that is a triangle. Would the triangle be scalene, isosceles, or equilateral? Explain.
Answer: Through F and circle D. F would be the vertex and there would be two points on circle D for the other vertices. It would be isosceles.

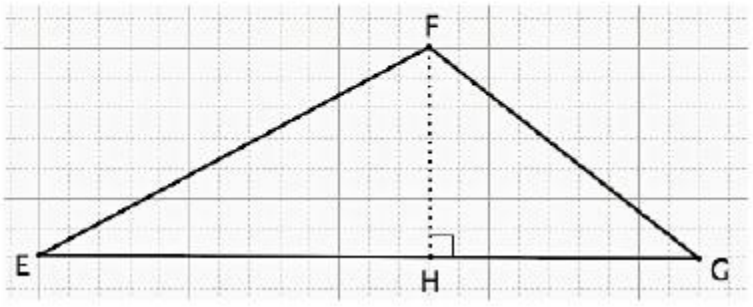
15. Would it be possible for the intersection of a plane and a cone to be a line? Explain.
Answer: Yes, if the plane intersects only the side of the cone touching it like on segment $\overline{EF}$.

GO

Topic: Finding the area of a triangle

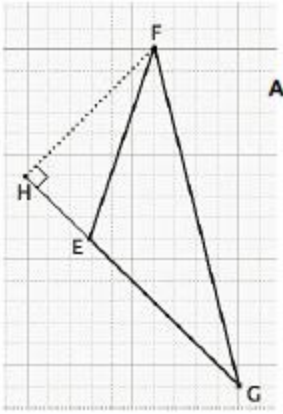
Calculate the area of triangle EFG in each exercise below.

16.



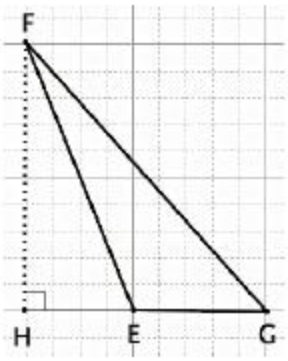
Answer: 77 $units^2$

17.



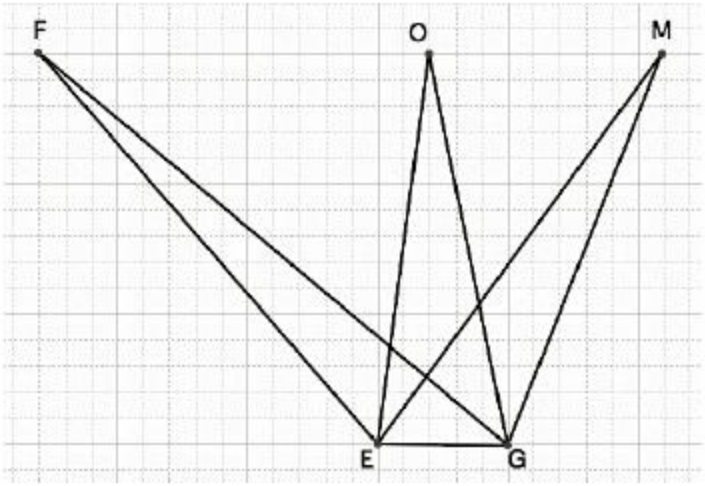
Answer: 42 $units^2$

18.



Answer: 25 $units^2$

19. Calculate the areas of $\Delta EFG, \Delta EOG, and\ \Delta EMG$. Justify your answers.



Answer: ΔEFG: 37.5 units^2
ΔEOG: 37.5 units^2
ΔEMG: 37.5 units^2

Each triangle has the same base and same height so they have the same area.