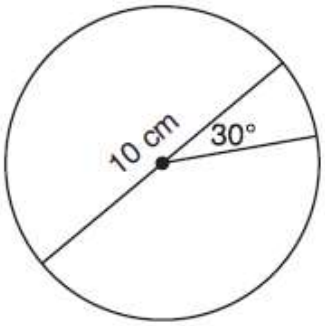
Name _____ Date _____

Mr. Schlansky Geometry

Area and Volume Review Sheet

1. A circle with a diameter of 10 cm and a central angle of 30° is drawn below.
What is the area, to the *nearest tenth of a square centimeter*, of the sector formed by the 30° angle?



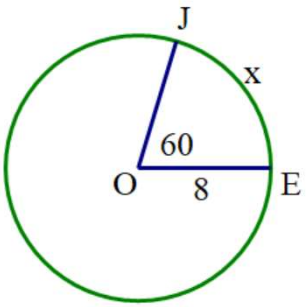
2. Determine and state, in terms of π, the area of a sector that intercepts a 40° arc of a circle with a radius of 4.5.

3. Which expression represents the arc length of a sector that has a radius of 4 inches and has a central angle of 45º?

1) $\frac{1}{4}(4)(\pi)$ 3) $\frac{1}{4}(8)(\pi)$

2) $\frac{1}{8}(4)(\pi)$ 4) $\frac{1}{8}(8)(\pi)$

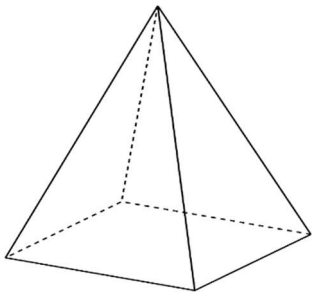
4. Which expression represents the length of $\overset{\frown}{JE}$?



1) $\frac{1}{6}(8)(\pi)$ 3) $\frac{1}{6}(16)(\pi)$

2) $\frac{1}{3}(8)(\pi)$ 4) $\frac{1}{3}(16)(\pi)$

5. A regular pyramid has a square base with an edge length of 14 and an altitude of 24. Find its volume.



6. Find the volume of a cone with a slant height of 12 in and a diameter of 8 in rounded to the nearest hundredth.

Find the volume of the following objects rounded to the *nearest tenth*:

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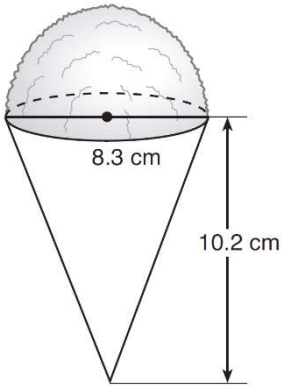

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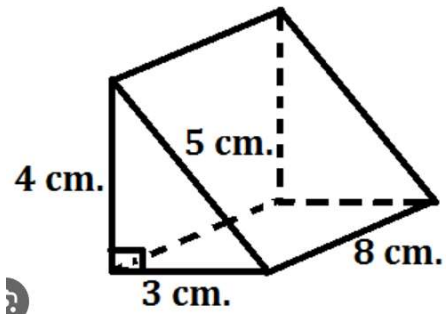

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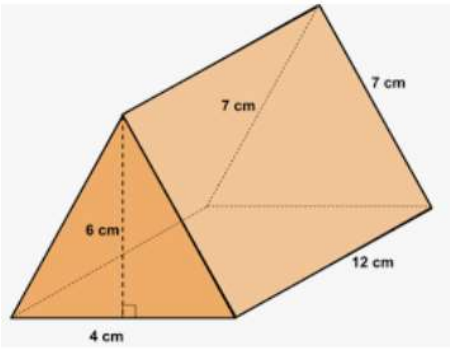


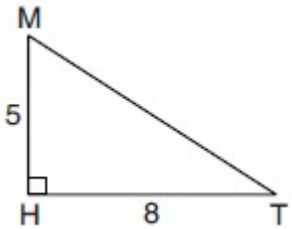
11. A plane intersects a hexagonal prism. The plane is perpendicular to the base of the prism. Which two-dimensional figure is the cross section of the plane intersecting the prism?

1) triangle
2) trapezoid
3) hexagon
4) rectangle

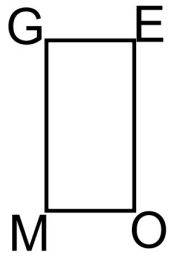
12. The cross section of a regular pyramid contains the altitude of the pyramid. The shape of this cross section is a

1) circle
2) square
3) triangle
4) rectangle

13. In right triangle *MTH* shown below, $m\angle H = 90°$, $HT = 8$, and $HM = 5$. Determine and state, to the *nearest tenth*, the volume of the three-dimensional solid formed by rotating $\triangle MTH$ continuously around $\overline{MH}$.



14. In rectangle GEOM, GE = 4 and EO = 10. Find the volume of the three-dimensional object create by continuously rotating rectangle GEOM about EO in terms of π.



15. The base of a pyramid is a rectangle with a width of 6 cm and a length of 8 cm. Find, in centimeters, the height of the pyramid if the volume is $288\ \text{cm}^3$.
1) 6
2) 8
3) 14
4) 24

16. Find the radius of a sphere with a volume of 576π cubic inches. Find the answer to the nearest tenth of an inch.
1) 4.9
2) 15.1
3) 9.2
4) 7.6

17. A rectangular brick that weighs 1824 grams has dimensions that measure 4 cm by 3 cm by 8 cm. To the nearest tenth, what is the density of the brick?

18. A metal sphere that has a mass of 8024 grams has a diameter of 10 cm. To the nearest tenth, what is the density of the sphere?

19. In the year 2020, the village of Depew, New York had an area of 5.1 square miles and a population of 15,069. In the same year, the village of Lancaster, New York had an area of 2.7 square miles and a population of 10,087. Which village had the larger population density in 2020? Justify your answer.

20. In 2017, Mr. Schlansky moved from Levittown, NY to Commack, NY. Levittown has a population of 51,557 and an area of 6.81 square miles. Commack has a population of 36,553 and an area of 12.25 square miles. Which town has the greater population density? Justify your answer.

Find the area of the following triangles:

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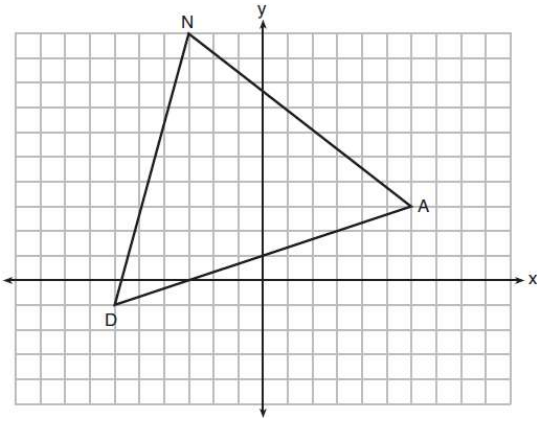

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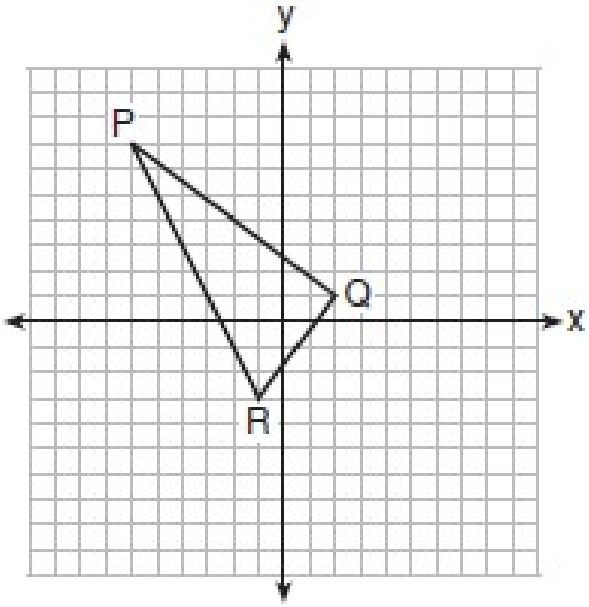

23. A triangle has sides that measure 15 and 18 with an included angle of $38°$. Find the area of the triangle to the *nearest tenth.*

24. A triangle has sides that measure 16 and 32 with an included angle of $29°$. Find the area of the triangle to the *nearest tenth.*

25. Cylindrical bricks are needed to fill a hole in a homeowner's backyard. Each brick is to have a diameter of 4 cm and a height of 2 cm. The weight of the concrete that the brick is going to be made from is 2.1 ounces per cubic centimeter. If the concrete costs $.14 per ounce, how much would it cost to purchase four bricks? Round your answer to the *nearest cent*.

26. Walter wants to make candles in the shape of a cone for his new candle business. Each candle will have a height of 8 inches and a diameter of 3 inches.
Walter goes to a hobby store to buy the wax for his candles. The wax costs $0.10 per ounce. If the weight of the wax is 0.52 ounce per cubic inch, how much will it cost Walter to buy the wax for 100 candles?

27. A sandbox in the shape of a rectangular prism has a length of 43 inches and a width of 30 inches. Jack uses bags of sand to fill the sandbox to a depth of 9 inches. Each bag of sand has a volume of 0.5 cubic foot. What is the minimum number of bags of sand that must be purchased to fill the sandbox?

28. A concrete footing is a cylinder that is placed in the ground to support a building structure. The cylinder is 4 feet tall and 12 inches in diameter. A contractor is installing 10 footings. If a bag of concrete mix makes $\frac{2}{3}$ of a cubic foot of concrete, determine and state the minimum number of bags of concrete mix needed to make all 10 footings.

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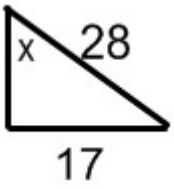

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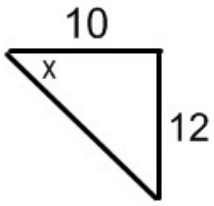

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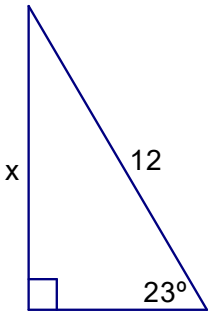

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