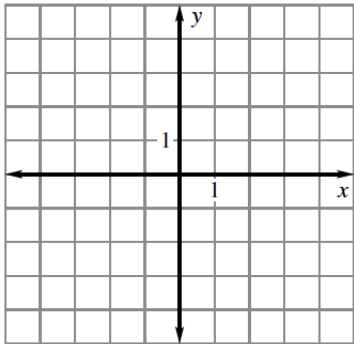


Geometry 2: 2D and 3D shapes

Review

G-GPE.7 *I can use the distance formula to compute perimeter and area of triangles and rectangles.*

- Given square DEFG has a perimeter of 12 units and the vertex $D(-2,2)$ find the other 3 vertices Explain your reasoning.

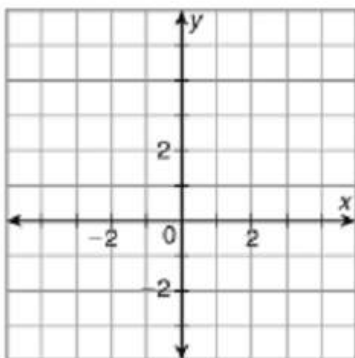


Part B: Are there other possible answers?

Explain _____

Part C: Find the area of square DEFG

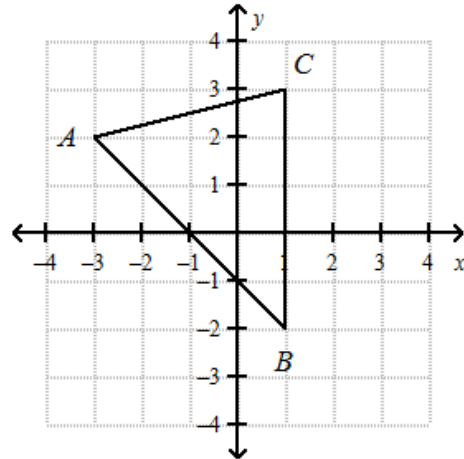
- What is the area of the polygon with vertices $W(-4,2)$, $X(1,2)$, $Y(1,-2)$ and $Z(-4,-2)$?



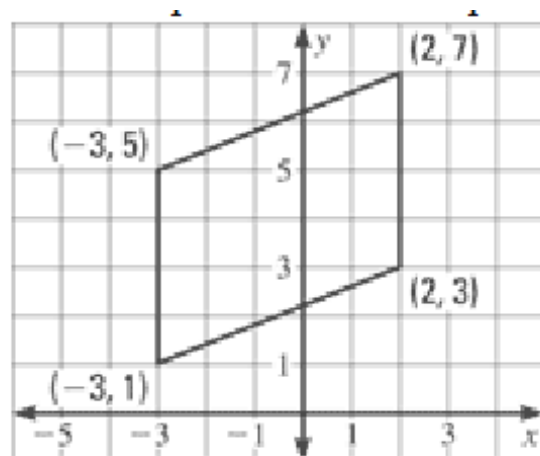
Name _____

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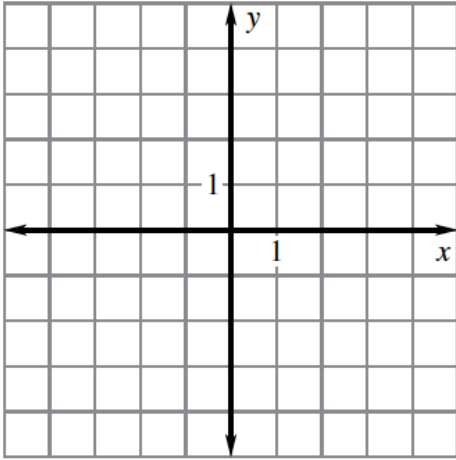
- Find the area and perimeter of the triangle with vertices $A(-3,2)$, $B(1,-2)$, and $C(1,3)$.



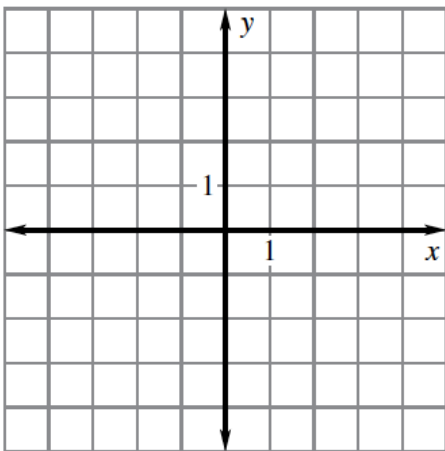
- Find the perimeter of the parallelogram.



5. The vertices of a triangle are $(3,1)$, $(-5,2)$ and $(-1,-3)$. Classify the triangle as scalene, isosceles or equilateral. Find the area and perimeter.



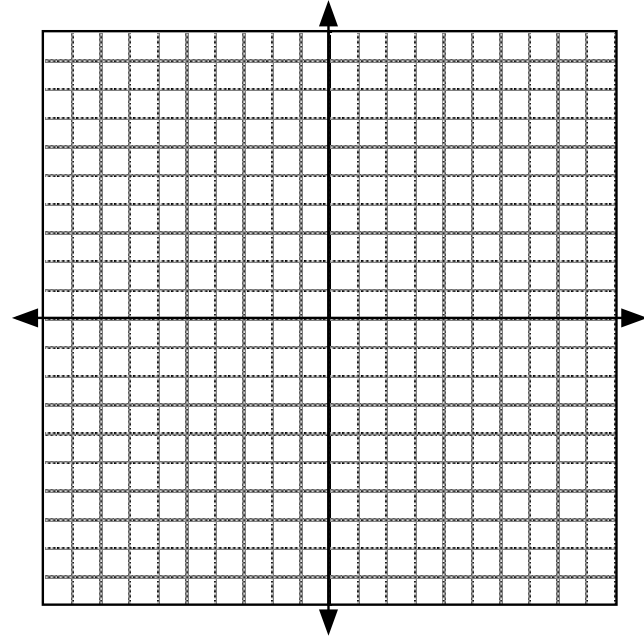
6. Draw a rectangle with vertices whose coordinates are $(-1,2)$, $(-1,4)$, $(3,4)$ and $(3,2)$



Part A: Find the perimeter and area of the rectangle.

Part B: Multiply the coordinates of the vertices of the rectangle by 2.

Part C: Draw the rectangle whose vertices you found in part B. Find the area and perimeter of the new rectangle.



7. Danielle has 40 yd of fencing to enclose a safe space for her rabbits. She has narrowed down her choices to either a square or circular enclosure. Which one would provide more area for her rabbits, and by how many square yards?

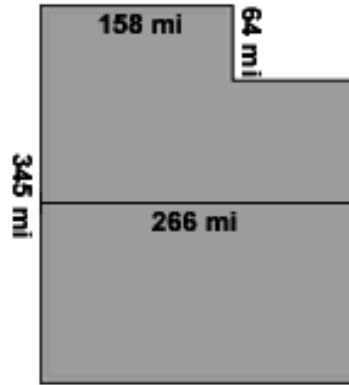
G.MG.2 I can use the concept of density in the process of modeling a situation.

8. A county has a population density of 365 people per square mile. The county population is 23000. What is the area of this county? Round to the nearest square mile if necessary.

9. An architect is designing a conference room for an office building. The room must be able to hold 20 people. The architect estimates that each person requires between 25 and 30 square feet. Which of the following room dimensions meets these requirements?
- a. 21 ft x 29 ft
 - b. 19 ft x 28 ft
 - c. 13 ft x 38 ft
 - d. 22 ft x 22 ft

10. The area of Missouri is $69,709 \text{ mi}^2$ and its population is 5,988,927. The average state population density is 87.4 people per square mile. How does the population density of Missouri compare to the national average?

11. The borders of the state of Utah have approximately the lengths shown on the map. The United States Department of the Census projects that Utah will have a population of 2,990,094 in the year 2020. Based on this information, find the population density of Utah in 2020.



12. Each side of a cube measures 3.9 centimeters. Its mass is 95.8 grams. Find the density of the cube. Round to the nearest hundredth if necessary.
- a. 24.56 g/cm^3
 - b. 0.62 g/cm^3
 - c. 1.61 g/cm^3
 - d. 373.62 g/cm^3

Answer: _____

13. Each side of a cube measures 2.6 centimeters. Its mass is 93.6 grams. Find the density of the cube. Round to the nearest hundredth if necessary.
- a. 36 g/cm^3
 - b. 0.19 g/cm^3
 - c. 5.32 g/cm^3
 - d. 243.36 g/cm^3

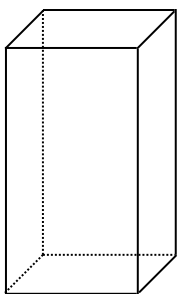
G-GMD.1- I can explain the formulas for volume of a cylinder, pyramid, and cone by using dissection, Cavalieri's, informal limit argument.

14. How could you use a stack of round drink coasters to demonstrate Cavalieri's Principle? Draw sketches to illustrate your answer.

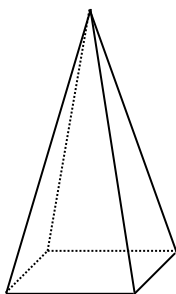
Coaster:



15. Evan has a popcorn container in the shape of a square prism that can hold 360 cubic inches. He also has some square-pyramid-shaped containers with the same height and base side lengths as the square prism. How many pyramid-shaped containers can he fill from the prism-shaped container? Explain your answer.

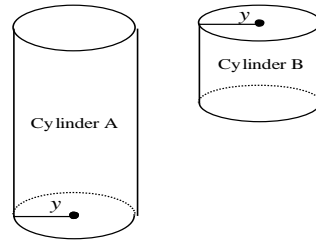


Square prism



Square pyramid

16. The height of Cylinder A is 26 feet. The height of Cylinder B is 14 feet. What is the ratio of the volume of Cylinder A to the volume of Cylinder B?



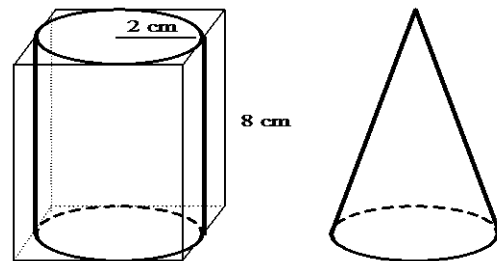
a. $\frac{13}{7}$

c. $\frac{7}{13}$

b. $\frac{13}{7} \pi$

d. $\frac{7}{13} \pi$

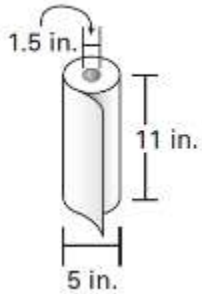
17. A square prism has a cylinder fitted inside it so that the square just touches the circle, as shown. The radius of the cylinder is 2 cm and its height is 8 cm.



Which has a greater volume: the part of the prism that is outside the cylinder, or a cone with the same radius and height as the cylinder? Justify your answer.

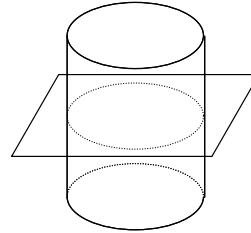
18. Find the volume of a cylinder with a base area of 49π inches squared and a height equal to twice the radius. If necessary, round to the nearest tenth.

19. A roll of paper towels is wrapped around a cardboard cylinder with a diameter of 1.5 in. The diameter of the whole roll of paper towels is 5 in. What is the volume of the paper on the role to the nearest cubic inch?



G-GMD.4: *I can identify shapes of 2-dimensional cross-section of 3-dimensional objects. I can identify 3-dimensional objects generated by rotations of 2-dimensional objects.*

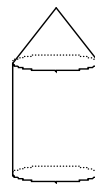
20. Given the diagram below:



Part A: Describe the cross section.

Part B: Sketch and describe the cross section if the plane was drawn perpendicular to the base of the cylinder.

21. Draw the 2D shape that would produce the solid below if rotated 360° . Make sure to label the axis of rotation.



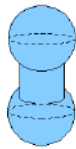
22. Draw the solid of revolution formed by the shape rotated around the axis given.



a.



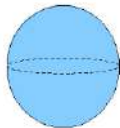
b.



c.

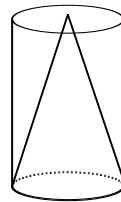


d.



G-GMD.3- *I can use volume formulas for cylinders, pyramids, cones and spheres to solve problems.*

23. A cone is inscribed in a cylinder with radius 1.5 units and height 10 units, as shown.



Part A: Find the volume of the cylinder.

Part B: Find the volume of the cone.

Part C: Find the ratio of the volume of the cone to the volume of the cylinder.