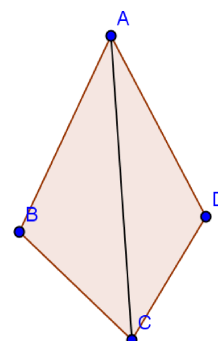


Summer Assignment Geometry

Name _____

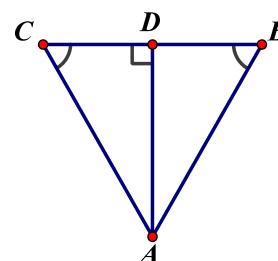
1. If $\angle B \cong \angle D$ and $\angle BAC \cong \angle DAC$, by what rule makes $\triangle BAC \cong \triangle DAC$?
 - a. SAS
 - b. AAS
 - c. ASA
 - d. The triangles are not congruent.



Use the following information to complete the proof below as you answer questions #2-4.

Given: $\overline{AD}$ is the perpendicular bisector of $\overline{CB}$, $\angle C \cong \angle B$

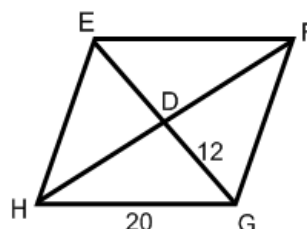
Prove: $\overline{AC} \cong \overline{AB}$



Statements	Reasons
1. $\overline{AD}$ is the perpendicular bisector of $\overline{CB}$, $\angle C \cong \angle B$	1. Given
2. ?	2. Definition of perpendicular bisector
3. $\angle ADC \cong \angle ADB$	3. Right angles are congruent
4. $\triangle ADC \cong \triangle ADB$	4. ?
5. $\overline{AC} \cong \overline{AB}$	5. ?

2. Which statement(s) should be used to fill in Statement #2 of the proof? Select **all** that apply.
 - a. $\overline{AD} \cong \overline{AD}$
 - b. $\overline{CD} \cong \overline{BD}$
 - c. $\angle CAD$ & $\angle BAD$ are right angles
 - d. $\angle ADC$ & $\angle ADB$ are right angles
 - e. $\angle CAD \cong \angle BAD$
3. Which reason should be used for step #4 of the proof?
 - a. SSS
 - b. SAS
 - c. ASA
 - d. AAS
 - e. HL
4. Which reason should be used for step #5 of the proof?
 - a. Definition of congruent segments
 - b. Reflexive Property of congruence
 - c. Corresponding parts of congruent triangles are congruent
 - d. Definition of congruent angles

5. EFGH is a rhombus. Find DH.
 - a. 16
 - b. $4\sqrt{34}$
 - c. 544
 - d. 256



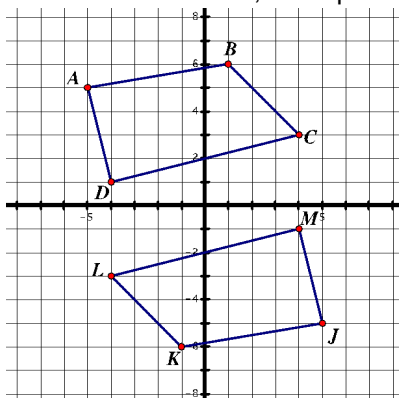
6. Quadrilateral ABDC is a parallelogram. Find the value of x .

- 189
- 95
- 213
- 84

7. The image of $A(-6, 12)$ after a dilation about the origin with a scale factor of -1.5 is

- $A'(-3, 12)$
- $A'(3, -12)$
- $A'(9, -18)$
- $A'(-9, 18)$

8. Quadrilaterals ABCD and JKLM are shown in the coordinate plane below. Quadrilateral JKLM is the image of quadrilateral ABCD after a transformation or a sequence of transformations. Which could be the transformation, or sequence of transformations? Select **all** that apply.



- a translation 3 units right and 7 units down
- a reflection across the x -axis
- a reflection across the x -axis followed by a reflection across the y -axis
- a reflection across the line $y = x$
- a reflection across the line $y = x$ followed by a reflection across the line $y = -x$
- a rotation of 180° about the origin

The figure to the right shows a circle with center E , diameter $\overline{HF}$, $HE = 16$, and inscribed $\triangle FGH$. Use this figure to answer questions 9 and 10.

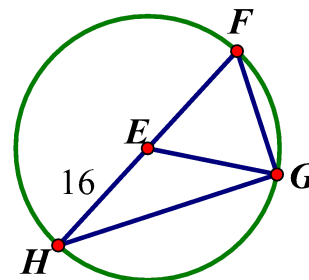
9. Let $m\angle FGH = (7x - 1)^\circ$ and $m\angle FHG = (2x)^\circ$. Find the value of x .

- 26
- 13
- 10
- 5

10. Choose the correct option for each blank.

The length of $\overline{FG}$ is _____ because _____.

- | | |
|--------------------|-----------------------------------|
| a. 16 | d. $\triangle EFG$ is equilateral |
| b. less than 16 | e. $m\angle GEF < 60^\circ$ |
| c. greater than 16 | f. $m\angle GEF > 60^\circ$ |

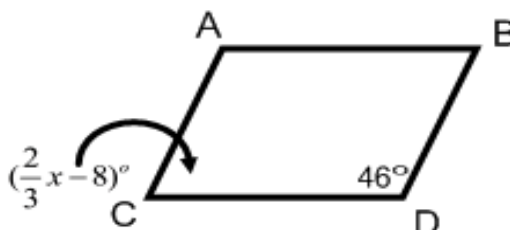


11. The center of a circle is at $(-7, 2)$ and the point $(-6, 3)$ is on the circle. Which is the equation for the circle?

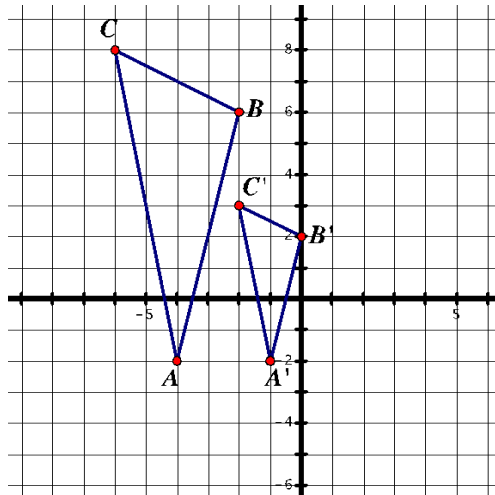
- $(x - 7)^2 + (y + 2)^2 = 2$
- $(x - 7)^2 + (y + 2)^2 = 4$
- $(x + 7)^2 + (y - 2)^2 = 2$
- $(x + 7)^2 + (y - 2)^2 = 4$

12. The base of a trapezoid is 18 cm and the height is 8 cm, if the area of the trapezoid is 96 cm^2 what is the length of the other base?

- 6 cm
- 8 cm
- 10 cm
- 12 cm



13. Triangle ABC is the pre-image of $\triangle A'B'C'$ before a transformation. Determine if these two figures are similar.



Select an answer from each group of choices to correctly complete the sentence.

Triangle ABC _____ similar to ,

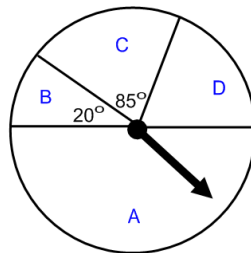
- a. is
- b. is not

which we can determine by a _____

- c. dilation of scale factor 2 centered at the point (1, -1)
- d. dilation of scale factor $\frac{1}{2}$ centered at the origin
- e. dilation of scale factor $\frac{1}{2}$ centered at the point (2, -2)
- f. translation 2 units right and 4 units down
- g. translation 3 units right

14. The vertices of a quadrilateral are (-3, 0), (1, 3), (7, 0), and (1, -3). Find the area of the figure.

- a. $21 u^2$
- b. $30 u^2$
- c. $44 u^2$
- d. $60 u^2$



15. Using the spinner, find $P(C)$

- a. $\frac{17}{72}$
- b. $\frac{19}{72}$
- c. $\frac{13}{72}$
- d. $\frac{1}{4}$

16. How many edges does an oblique octagonal prism have?

- a. 8
- b. 16
- c. 18
- d. 24

17. The surface area of a box with length 8 cm and width 10 cm is 220 cm^2 . Find the height.

- a. .8 cm
- b. 1.67 cm
- c. 2.8 cm
- d. 3.33 cm

18. Find the surface area of a right cone with radius 8 and slant height 12.

- a. $160\pi u^2$
- b. $192\pi u^2$
- c. $207\pi u^2$
- d. $256\pi u^2$

19. Find the volume of the cylinder with height 10 ft and radius 4 ft.

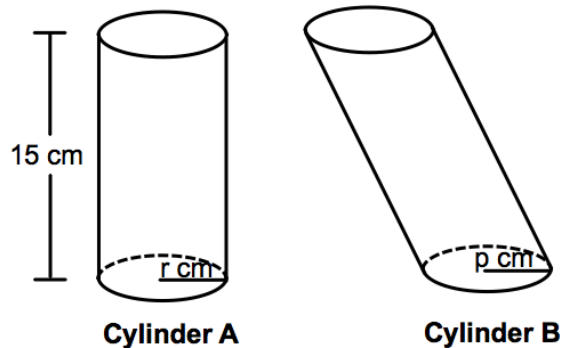
- a. $40\pi ft^3$
- b. $80\pi ft^3$
- c. $120\pi ft^3$

d. $160\pi ft^3$

20. Alejandro's bus runs every 30 minutes. If he arrives at the bus stop at a random time, what is the probability that he will *not* have to wait more than 12 minutes?

- a. $2/5$
- b. $8/15$
- c. $3/5$
- d. $14/15$

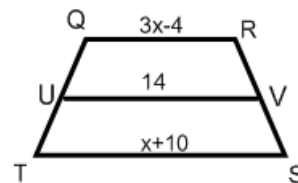
21. Two cylinders, each with a height of 15 cm, are shown.



Which statements about cylinders A and B are true? Select **all** that apply.

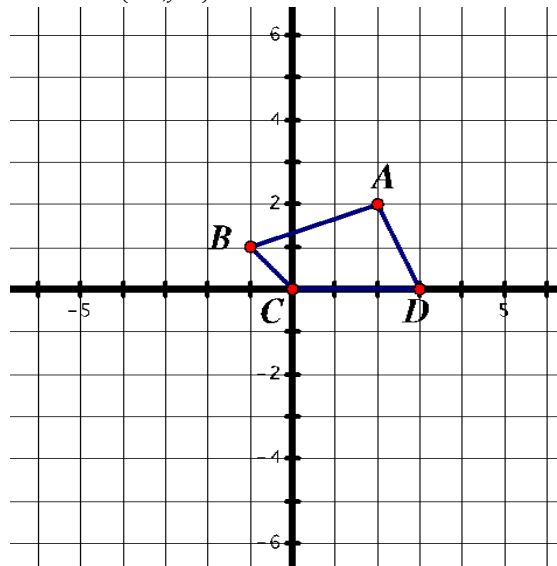
- a. If $r < p$, the area of the horizontal cross section of cylinder A is greater than the horizontal cross section of cylinder B.
- b. If $r < p$, the area of the horizontal cross section of cylinder A is equal to the horizontal cross section of cylinder B.
- c. If $r < p$, the area of the horizontal cross section of cylinder A is less than the horizontal cross section of cylinder B.
- d. If $r = p$, the volume of cylinder A is greater than the volume of cylinder B, because the base area of cylinder A is greater than the base area of cylinder B.
- e. If $r = p$, the volume of cylinder A is equal to the volume of cylinder B, because the base area of cylinder A is equal to the base area of cylinder B.
- f. If $r = p$, the volume of cylinder A is less than the volume of cylinder B, because the base area of cylinder A is less than the base area of cylinder B.

22. QRST is a trapezoid. If $\overline{UV}$ is the midsegment, find QR.



23. The population density is the amount of people living per square mile. If the town of Mathville is a rectangular town that has a length of 14 miles, a width of 11 miles, and a population of 20,259 people, what is the population density of the town? Round your answer to the nearest hundredth.

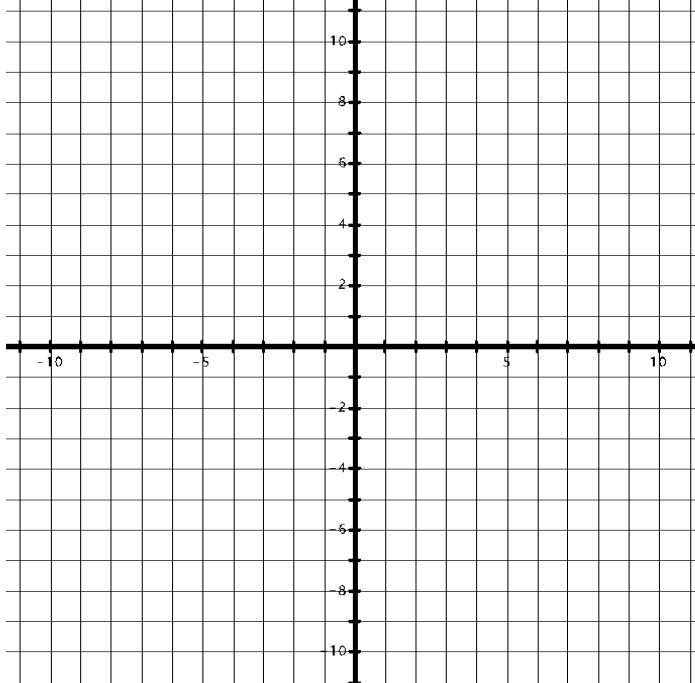
24. What is the image of ABCD after $T_{(x-3,y+2)}$? Draw a vector to show transformation.



25. The arc of a circle has measure 48° and length 20 cm, what is the circle's radius?
26. A circle with center (5,7) is tangent to the y-axis, find the circle's area.
27. The great circle areas of 2 similar spheres have the ratio of 1 to 64. If the volume of the larger sphere is $3584\pi \text{ u}^3$, what is the volume of the smaller sphere?
28. The Great Pyramid of Giza is a square based pyramid with height 146 meters and a base that measures 230 meters on each side. What is the volume of the pyramid? Round your answer to the nearest cubic meter.

29. Line segment EF in the coordinate plane has endpoints with coordinates E(-9, 10) and F(11, -10).

a) Graph $\overline{EF}$

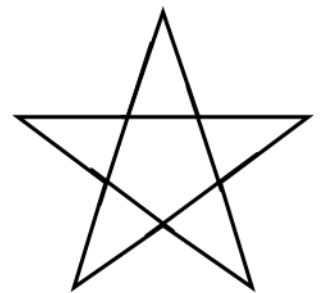


b) Find and graph 2 possible locations for point G so that G divides $\overline{EF}$ into 2 parts with lengths in a ratio of 3:7. Write down the coordinates for these 2 locations.

30. The equation $x^2 + y^2 + 8x - 12y = 29$ is the equation of a circle. Write the equation in standard form.

31. The star is a regular pentagon and 5 congruent isosceles triangles.

- If the triangle has 70° base angles and a base of 4 cm, what is the area of one triangle?
- If the base of the triangle is 4 cm, what is the area of the pentagon?
- What is the total area of the star?
- What 3-dimensional solid is formed by the star shaped net? Be as specific as possible.



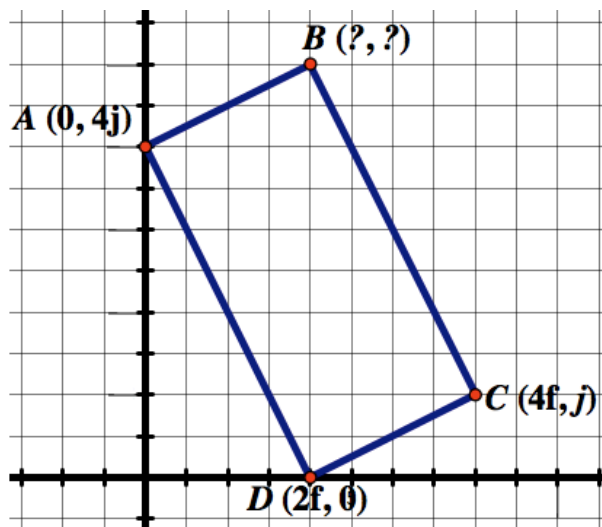
32. Given: Quadrilateral ABCD is a parallelogram.

Part A

Find the coordinates of point B in terms of f and j .

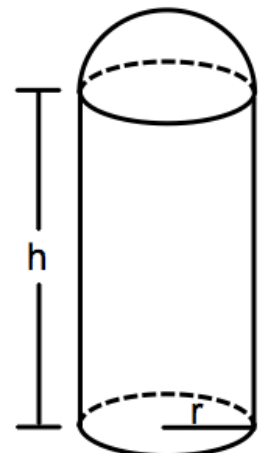
Part B

Prove: Quadrilateral ABCD is a rectangle.



33. Geometryville Farms is building a silo to store grain that has a cylindrical base and a hemispherical top as shown in the figure to the right. The laws of Geometryville say that the silo can have a maximum width of 18 feet and a maximum height of 26 feet.

- a. Truck cars are used to transport the food in loads that are 9 feet tall, 7.5 feet wide, and 27 feet long. Geometryville Farms wants to be able to store 2 truckloads of food. Determine the height of the cylinder, h , that Geometryville Farms should use in the design. Show that your design will be able to store at least 3 truckloads of food.

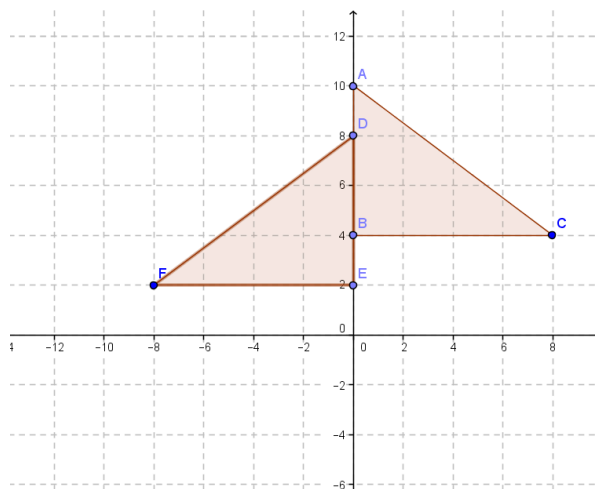


- b. Prior to storing the grains, Geometryville Farms wants to paint the outside of the silo with 2 coats of paint. How much paint is required. Assume that the base of the silo does not need to be painted.

Part 2

Name: _____

For 1 Use the diagram below to answer

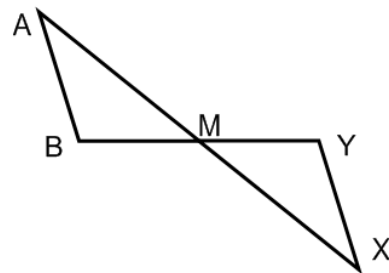


1. Prove triangle ABC congruent to triangle DEF by any of the criteria for triangle congruence (ASA, SSS, SAS, etc.)

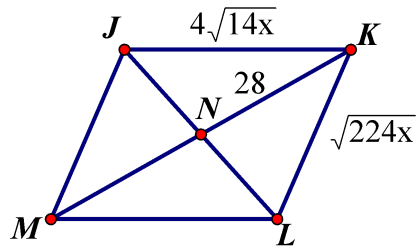
2. Write a proof.

Given: $\angle B \cong \angle Y$ and M is the midpoint of $\overline{BY}$

Prove: $\overline{AB} \cong \overline{XY}$ $\overline{AB} \cong \overline{XY}$.



3. Quadrilateral JKLM is a parallelogram with $KN = 28$, $KL = \sqrt{224x}$ and $JK = 4\sqrt{14x}$.



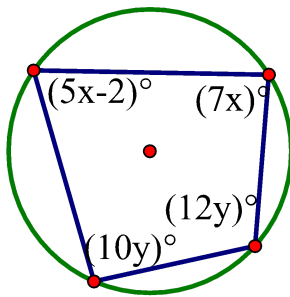
Part A

Let . What are the lengths of ? Justify your answer.

Part B

What conclusion can you make regarding the specific classification of parallelogram JKLM? Justify your answer.

4. The quadrilateral is inscribed in the circle below. Find the values of the variables.



5. Solve the triangle. Round your answers to the nearest hundredth.

