



Arkansas Comprehensive Testing, Assessment, and Accountability Program

Released Item Booklet

Geometry Mid-Year End-of-Course Examination

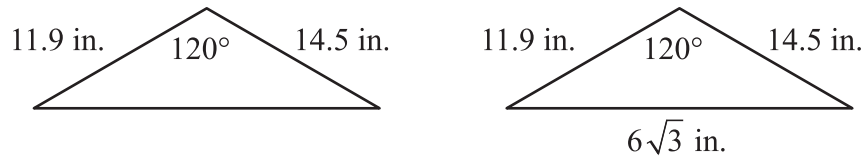
January 2010 Administration

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Arkansas Department of Education

PART II Released Geometry Items

1. Irma wants to show that the two triangles below are congruent.

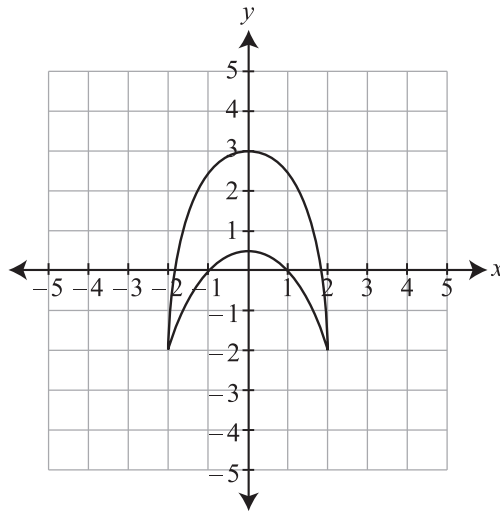


Based on only the information given, which theorem proves that the two triangles are congruent?

- A. AAS
B. ASA
*C. SAS
D. SSS
-
2. Aisha is creating a mold to make candles. She wants to make candles cylindrical in shape, with a diameter of 10 centimeters and a height of 20 centimeters. What will be the surface area of each candle? Round your answer to the nearest whole number.
- A. 471 cm^2
B. 628 cm^2
C. 707 cm^2
*D. 785 cm^2
3. A brownie recipe uses a 13-inch by 9-inch pan. Lily measures the height of her pan as 3 inches. How much brownie mixture would be required to fill the pan?
- A. 66 cubic inches
B. 117 cubic inches
C. 156 cubic inches
*D. 351 cubic inches

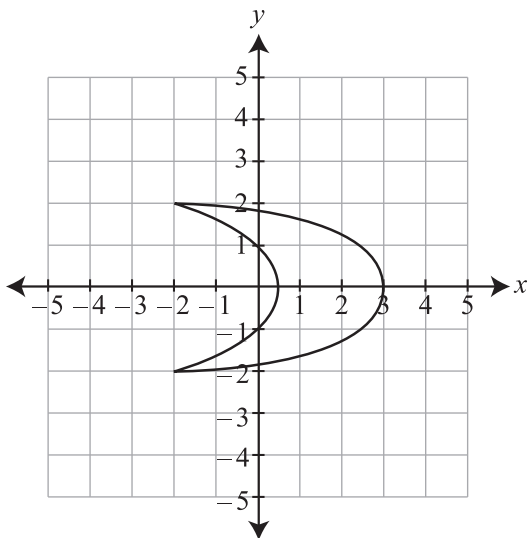
PART II Released Geometry Items

4. The figure below is rotated 90° clockwise about the origin, then reflected across the y -axis.

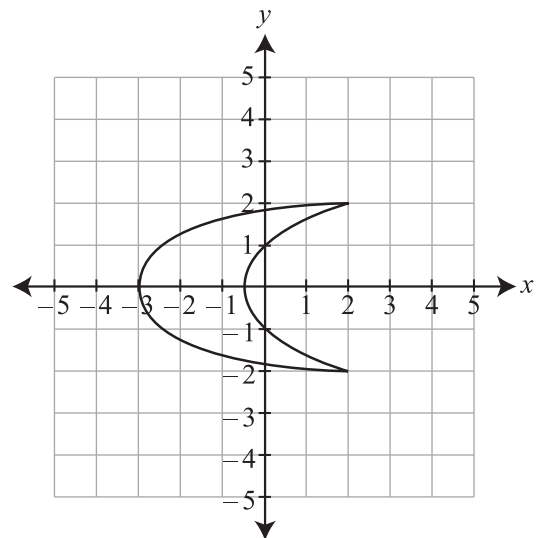


What is the final figure?

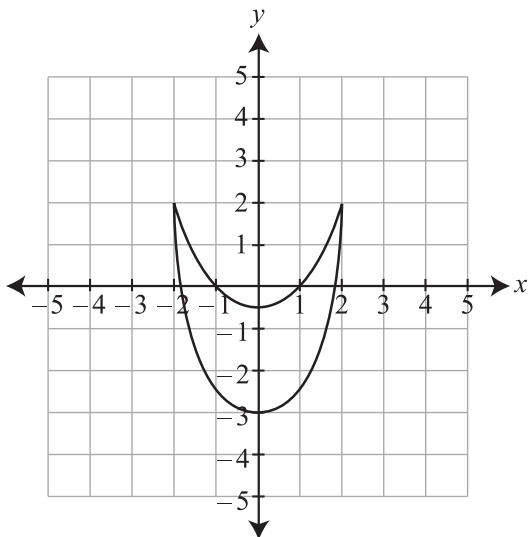
A.



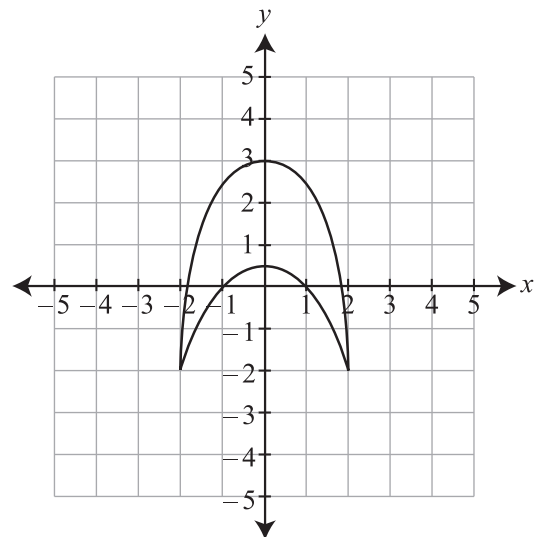
*B.



C.

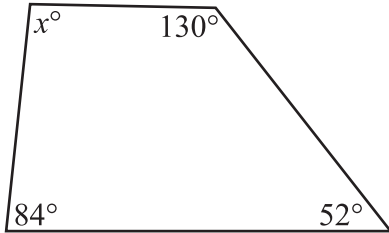


D.



PART II Released Geometry Items

5. Thorsten builds model airplanes. The design for the tail fin of one of his models is shown in the figure below.



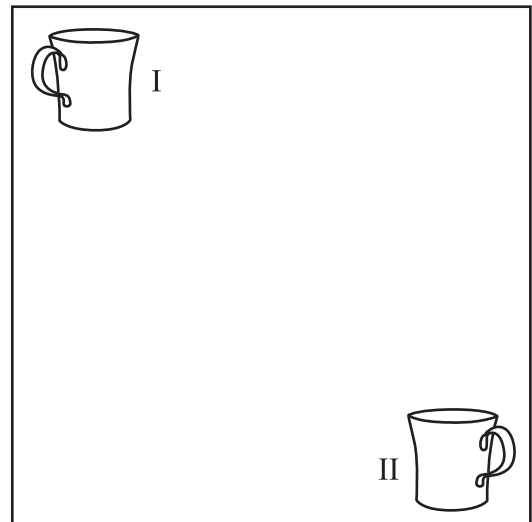
What is the value of x ?

- A. 50
 B. 86
 *C. 94
 D. 98
6. The sum of the measures of the interior angles of a regular polygon is 540° . Which type of polygon is this?
- A. hexagon
 *B. pentagon
 C. square
 D. triangle
7. Line FG has a slope of 3. Which is the equation of a line that is perpendicular to line FG ?
- *A. $y = -\frac{1}{3}x + 2$
 B. $y = -3x - 5$
 C. $y = \frac{1}{3}x - 5$
 D. $y = 3x - 4$

8. What is the equation of a circle with a radius of 9 and a center point of $(-2, 3)$?

- A. $(x + 4)^2 + (y - 9)^2 = 81$
 B. $(x + 2)^2 - (y - 3)^2 = 81$
 *C. $(x + 2)^2 + (y - 3)^2 = 81$
 D. $(x - 2)^2 + (y + 3)^2 = 81$

Use the figure below to answer question 9.



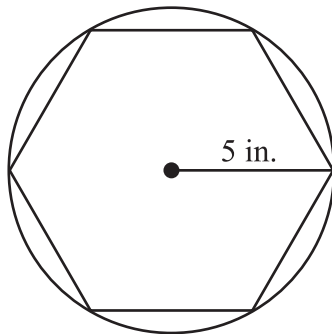
9. Roberto is a computer graphics designer and is working on an ad for the local coffee shop. The figure above shows a coffee mug in two different positions. Which describes the transformation of the coffee mug in position I to the image in position II?
- A. a reflection over a horizontal line and a translation down
 *B. translation down and a reflection over a vertical line
 C. 180° rotation
 D. translation to the right and a reflection over a vertical line

PART II Released Geometry Items

10. Patricia is constructing 2 similar boxes of different sizes. The perimeter of the front of the smaller box is 38 inches. The perimeter of the front of the larger box is 57 inches. The width of the smaller box is 6 inches. What is the width of the larger box?

- A. 4 inches
- *B. 9 inches
- C. 19 inches
- D. 25 inches

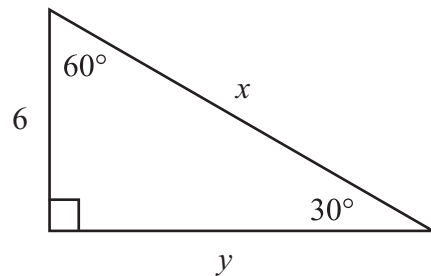
11. A regular hexagon has been inscribed in a circle having the radius shown below.



What is the perimeter of the hexagon?

- A. 21.2 in.
- B. 26.0 in.
- *C. 30.0 in.
- D. 31.4 in.

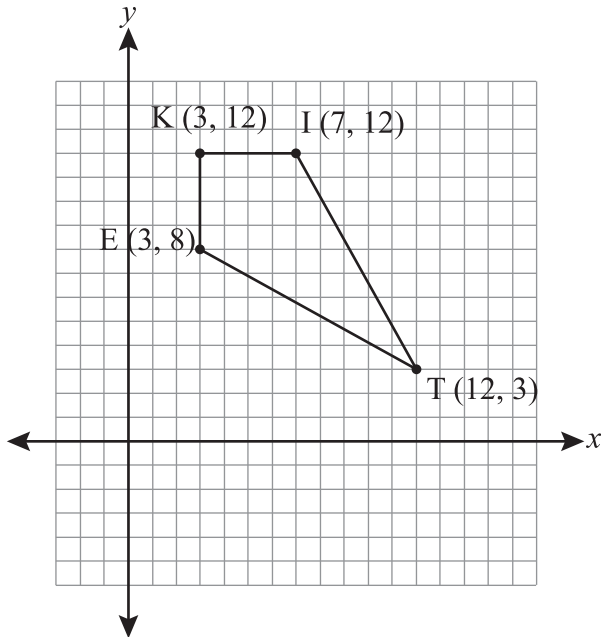
12. What are the values for x and y in the figure below?



- A. $x = 12, y = 6\sqrt{2}$
- *B. $x = 12, y = 6\sqrt{3}$
- C. $x = 6\sqrt{2}, y = 6$
- D. $x = 6\sqrt{3}, y = 12$

PART II Released Geometry Items

Use the graph below to answer question 13.



13. A kite is designed for an upcoming craft show. In order to get the design lined up properly, point S must be located. Point S is the midpoint of \overline{EI} . What are the coordinates of point S ?
- A. $(2, 2)$
- *B. $(5, 10)$
- C. $(5\frac{1}{2}, 9\frac{1}{2})$
- D. $(7\frac{1}{2}, 7\frac{1}{2})$

14. A map has a scale of 1.3 inches = 18 miles. Two cities are 125 miles apart. How many inches are between these two cities on the map? Round your answer to the nearest tenth.

- A. 5.3 inches
- B. 6.5 inches
- C. 7.5 inches
- *D. 9.0 inches

15. In her science class, Jane learns that the statements below are true.

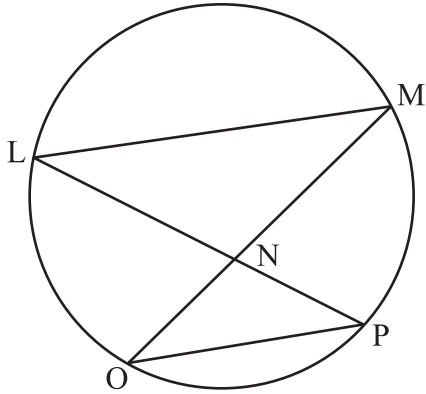
- All metals are elements.
- No vitamins are elements.

Using deductive reasoning, what can Jane conclude?

- *A. No vitamins are metals.
- B. All metals are vitamins.
- C. Some vitamins are metals.
- D. Some elements are vitamins.

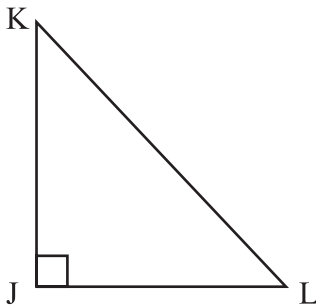
PART II Released Geometry Items

16. In the figure below, $m\angle MLP = 35^\circ$.



What is $m\angle MOP$?

- *A. 35°
 - B. 70°
 - C. 125°
 - D. 145°
17. In the triangle below, what is $\sin(L)$?



- A. $\frac{JK}{JL}$
- *B. $\frac{JK}{KL}$
- C. $\frac{JL}{JK}$
- D. $\frac{JL}{KL}$

18. A circle has the equation below.

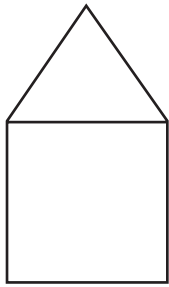
$$(x + 3)^2 + (y - 2)^2 = 16$$

What are the coordinates of its center?

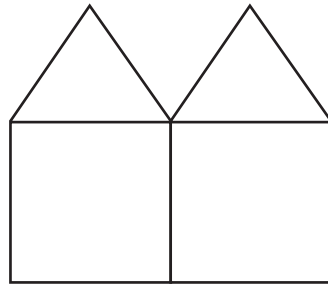
- *A. $(-3, 2)$
- B. $(-2, 3)$
- C. $(2, -3)$
- D. $(3, -2)$

PART II Released Geometry Items

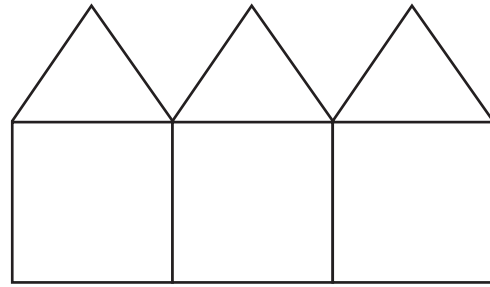
19. A square and an equilateral triangle form the figure in Stage 1. These figures are then placed side by side to form the pattern below.



Perimeter = 5 inches
Stage 1



Perimeter = 8 inches
Stage 2



Perimeter = 11 inches
Stage 3

If each side of the square has a measure of 1 inch, what is the perimeter of the figure formed in Stage 6?

- *A. 20 inches
- B. 23 inches
- C. 26 inches
- D. 30 inches

20. Each class in a high school wore a different color for spirit day. The colors were blue, red, green, and yellow.

- The sophomore class did not wear yellow.
- The senior class did not wear yellow or green.
- The junior class wore blue.
- The freshman class wore either yellow or red.

Based on the above statements, which class wore green?

- A. junior
- B. senior
- C. freshman
- *D. sophomore

21. A shipping company sells cylindrical boxes to ship items. The smallest box they offer has a height of 8 inches and a radius of 6 inches. The next larger box has the same radius as the smallest, but its height is 16 inches. How much does the volume change between the two cylinder sizes?

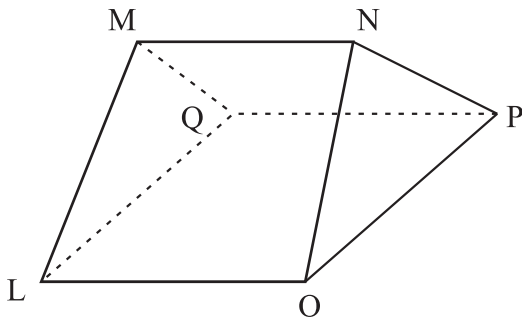
- *A. The volume of the larger cylinder is 2 times the volume of the smaller cylinder.
- B. The volume of the larger cylinder is 4 times the volume of the smaller cylinder.
- C. The volume of the larger cylinder is 8 times the volume of the smaller cylinder.
- D. The volume of the larger cylinder is 16 times the volume of the smaller cylinder.

PART II Released Geometry Items

22. A student has metal rods of different lengths. Which set of rods can be arranged to form a triangle?

- A. 4 cm, 6 cm, 12 cm
- B. 4 cm, 12 cm, 20 cm
- C. 6 cm, 10 cm, 20 cm
- *D. 6 cm, 12 cm, 14 cm

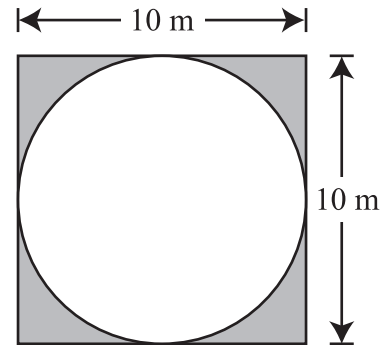
23. The figure below shows a triangular prism.



Which is true?

- A. $\overline{MN} \parallel \overline{OP}$
- B. $\overline{LM} \parallel \overline{NP}$
- *C. $\overline{MN} \parallel \overline{PQ}$
- D. $\overline{LQ} \parallel \overline{NP}$

24. A square courtyard has the design shown below.

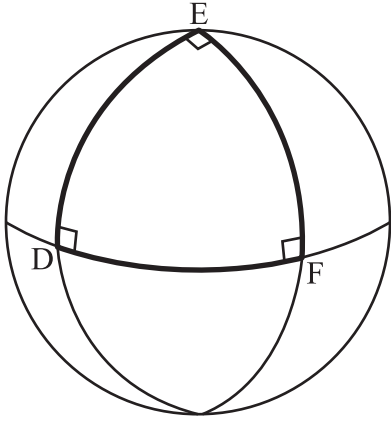


Wind blows a feather into the courtyard. What is the probability that the feather lands in the shaded area? Round your answer to the nearest tenth of a percent.

- A. 5.4%
- B. 8.0%
- C. 10.8%
- *D. 21.5%

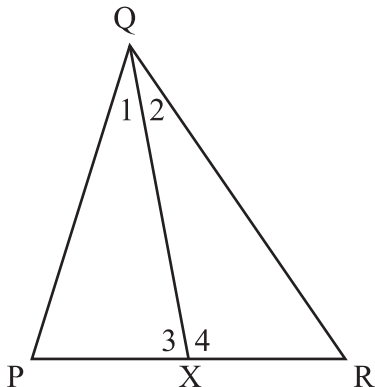
PART II Released Geometry Items

25. Smita draws three lines on a sphere. The three lines intersect each other at right angles to make $\triangle DEF$, as shown below.



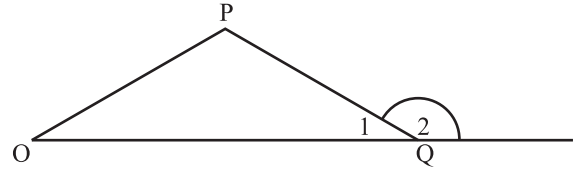
In $\triangle DEF$, $ED = EF = 8.2$ inches. What is DF ?

- A. 5.8 inches
 - *B. 8.2 inches
 - C. 11.6 inches
 - D. 12.3 inches
26. In $\triangle PQR$ below, \overline{QX} is a median. Which must be true?



- *A. $PX = XR$
- B. $PQ = QR$
- C. $\angle 1 \cong \angle 2$
- D. $\angle 3 \cong \angle 4$

27. In the figure below, which represents the roof of a house, $m\angle 1 = (x + 4)^\circ$ and $m\angle 2 = (5x + 20)^\circ$.

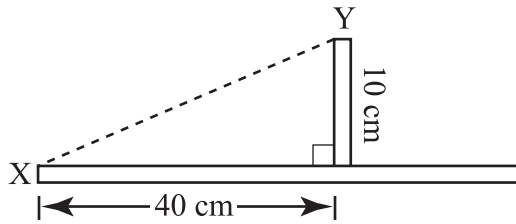


What is $m\angle 2$?

- A. 30°
 - B. 75°
 - C. 100°
 - *D. 150°
28. What is the equation of the line that passes through point $(-3, -1)$ and is perpendicular to the line with equation $y = -\frac{1}{3}x + 5$?
- A. $y = -3x - 10$
 - B. $y = -\frac{1}{3}x - 2$
 - *C. $y = 3x + 8$
 - D. $y = \frac{1}{3}x$

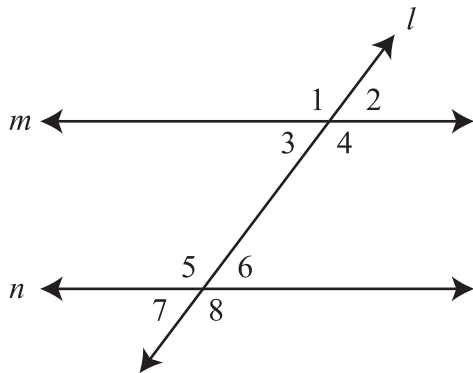
PART II Released Geometry Items

29. A student is making a model of a suspension bridge. A sketch of the model is shown below.



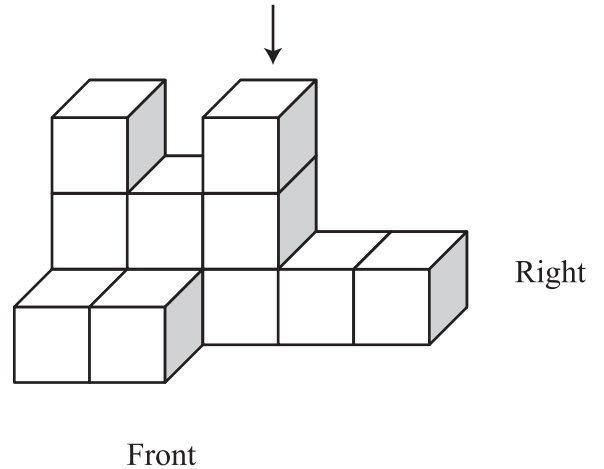
What length of wire should be cut to stretch from X to Y? Round your answer to the nearest tenth.

- A. 30.0 cm
 - B. 38.7 cm
 - *C. 41.2 cm
 - D. 50.0 cm
30. Which is sufficient to prove that lines m and n are parallel?



- *A. $m\angle 3 = m\angle 6$
- B. $m\angle 5 = m\angle 8$
- C. $m\angle 3 + m\angle 4 = 180$
- D. $m\angle 4 + m\angle 2 = 180$

31. A model of a building has been constructed using 12 cubes, as shown below. Another cube is to be added where the arrow is pointing.

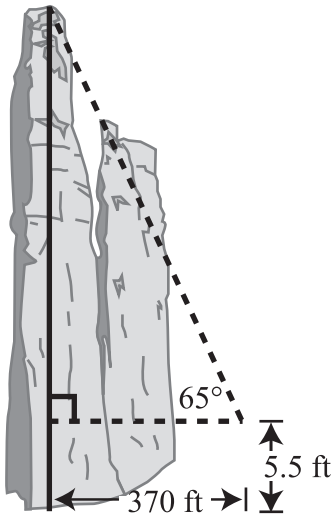


Which view will remain the same after the cube is added?

- *A. top view
- B. front view
- C. back view
- D. left-side view

PART II Released Geometry Items

32. Spider Rock is located in Canyon de Chelly National Park in Arizona. A surveyor stands 370 feet from the base of Spider Rock. From a point 5.5 feet above the ground, he measures the angle of elevation to the top of Spider Rock to be 65° .

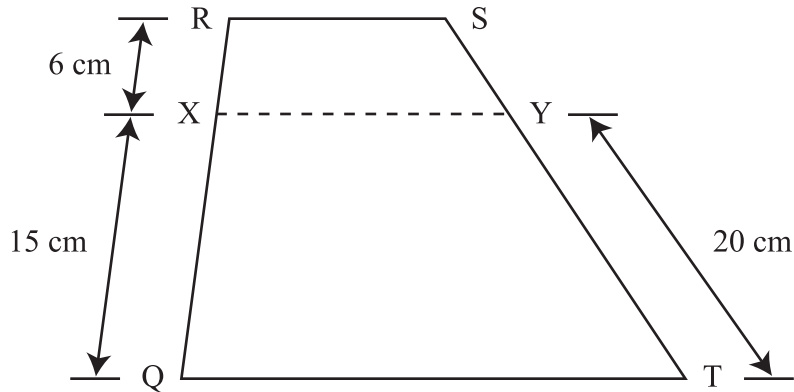


According to the surveyor's measurements, what is the height of Spider Rock? Round your answer to the nearest tenth.

- A. 178.0 ft
- B. 340.8 ft
- C. 413.7 ft
- *D. 799.0 ft

PART II Released Geometry Items

33. John drew trapezoid QRST shown below with $QX = 15$ cm, $XR = 6$ cm, and $TY = 20$ cm.



John then cut off the top along dotted line \overline{XY} , parallel to \overline{QT} . What is SY ?

- A. 4.5 cm
- *B. 8.0 cm
- C. 8.5 cm
- D. 11.0 cm