

MA.912.G.2.2

4. What regular polygon has an exterior angle that measures 60 degrees?

- A. Square
- B. Regular hexagon
- C. Regular pentagon
- D. Equilateral triangle

EXTERIOR ANGLES ALWAYS SUM TO 360°

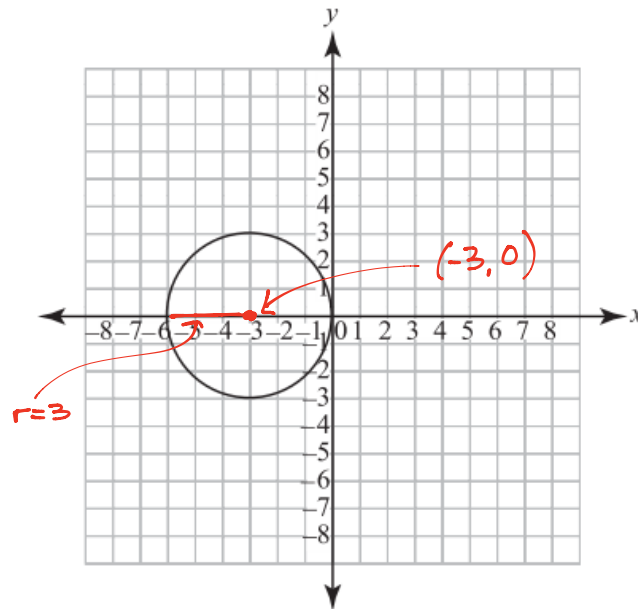
$$\frac{360}{60} = n$$

n = 6 sides
HEXAGON

MA.912.G. 6.6

5. Which is the equation of the circle shown below?

$(x-h)^2 + (y-k)^2 = r^2$
 $(h,k) = \text{center of circle}$
 $r = \text{radius}$
 $(x-(-3))^2 + (y-0)^2 = 3^2$
 $(x+3)^2 + y^2 = 9$



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

MA.912.G.7.5

6. A solid-glass sphere is cast with a radius of 30 cm. What is the volume, to the nearest whole number, of this sphere?

- A. 3,768 cm³
- B. 63,585 cm³
- C. 113,040 cm³
- D. 339,120 cm³

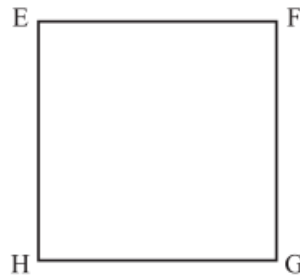
$$V = \frac{4}{3} \pi r^3$$

$$V = \frac{4}{3} (3.14) (30)^3$$

$$V \approx 113,040 \text{ cm}^3$$

MA.912.G.3.3

7. You are trying to prove that quadrilateral $EFGH$ is a square. You have already proven that all four sides are congruent.

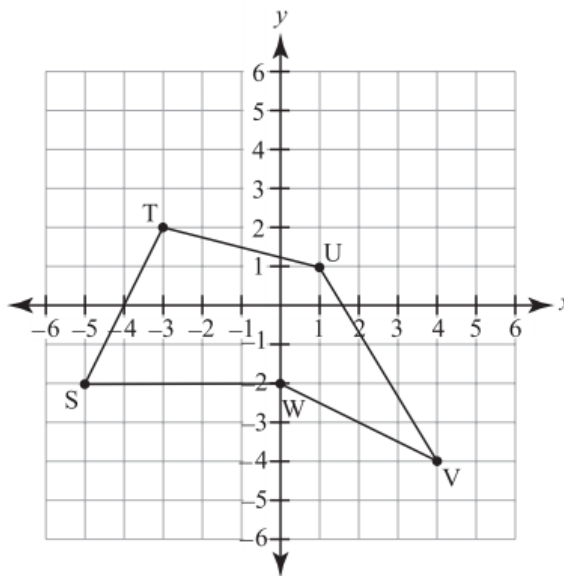


Which statement, if true, would prove that $EFGH$ is a square?

- A. The diagonals are congruent. *← also applies to rhombuses*
- ~~B. The opposite sides are congruent.~~
- ~~C. The opposite angles are congruent.~~ *← also applies to all parallelograms*
- D. The adjacent angles are supplementary.

MA.912.G.2.4

8. Polygon $STUVW$ is shown below.



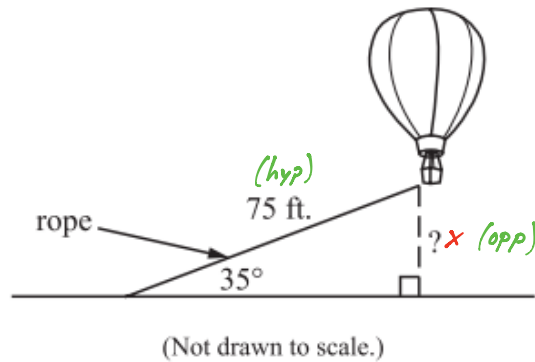
After polygon $STUVW$ is reflected across the y -axis, what are the coordinates of S' , the image of point S after the transformation?

- A. $(-5, -2)$
- B. $(-5, 2)$
- C. $(5, -2)$
- D. $(5, 2)$

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MA.912.T.2.1

9. A rope is tied to the bottom of a hot air balloon as shown below. The rope makes an angle of 35° with the ground and is 75 ft. long. How far is the bottom of the balloon from the ground to the nearest foot?



$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

$$\sin 35^\circ = \frac{x}{75}$$

$$x = 75 \sin 35^\circ$$

$$x = 43$$

- A. 43 ft.
- B. 53 ft.
- C. 61 ft.
- D. 131 ft.

MA.912.T.2.1

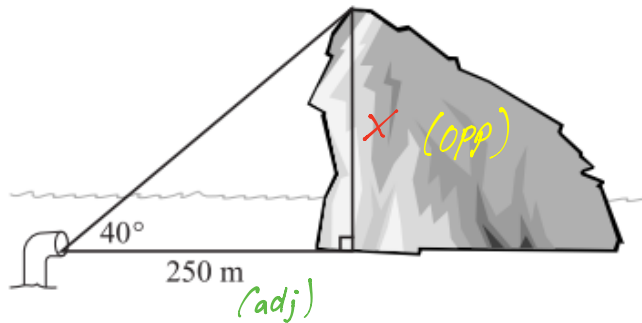
10. The captain of a submarine views an iceberg from his periscope, as shown in the figure below.

$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\tan 40^\circ = \frac{x}{250}$$

$$x = 250 \tan 40^\circ$$

$$x = 210$$



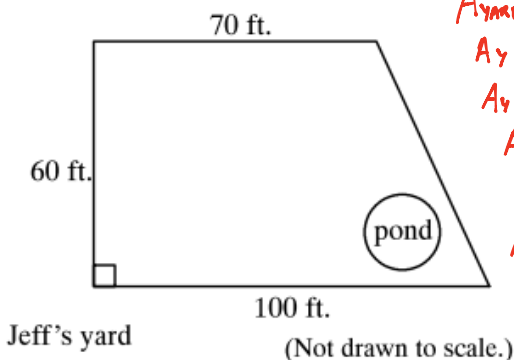
What is the height of the iceberg to the nearest meter?

- A. 161 m
- B. 192 m
- C. 210 m
- D. 298 m

MA.912.G.2.5

11. Below is a drawing of Jeff's yard. There is a circular fish pond near one corner. The diameter of the pond is 12 ft. How many square feet of grass are necessary to cover everything except the pond in Jeff's yard?

Pond
 $A_p = \pi r^2$
 $A_p = (3.14)(6)^2$
 $A_p = 113$



$A_{\text{yard}} = \frac{1}{2}h(b_1 + b_2)$
 $A_y = \frac{1}{2}(60)(70 + 100)$
 $A_y = 30(170)$
 $A_y = 5,100$
 $A_{\text{grass}} = 5,100 - 113 \approx 4987$

- A. 4,648 ft²
- B. 4,987 ft²**
- C. 5,548 ft²
- D. 5,887 ft²

MA.912.D.6.2

12. What is the converse of this statement?
 If a road sign is red, then it is a stop sign.

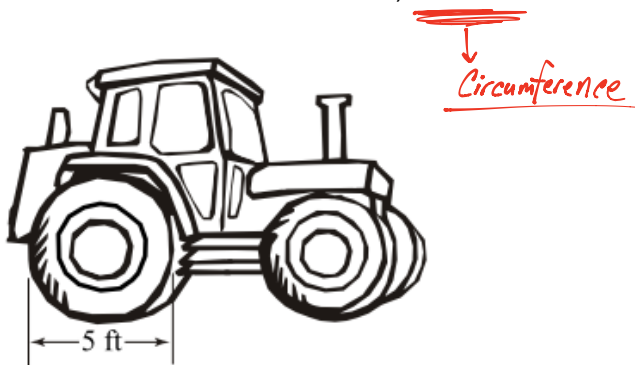
$P \rightarrow Q$
 $Q \rightarrow P$

- A. If a road sign is a stop sign, then it is red**
- B. If a road sign is not a stop sign, then it is not red.
- C. If a road sign is not red, then it is not a stop sign.
- D. If a stop sign is red, then it is a road sign.

MA.912.G.6.5

13. The diameter of a tractor tire is 5 feet. Rounded to the nearest hundredth, how far will the tractor move when the wheel rotates once?

$C = 2\pi r$
 $C = \pi d$
 $C = 5\pi \approx \underline{15.7 \text{ ft.}}$

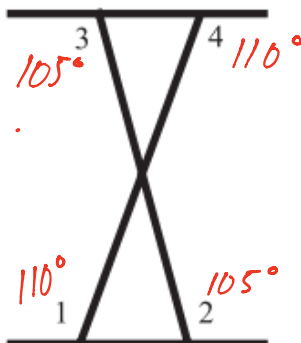


- A. 7.85 ft.
- B. 15.70 ft.**
- C. 19.63 ft.
- D. 78.50 ft.

MA.912.G.1.3

14. An engineer designed a steel beam, shown below. The horizontal parts that form the top and bottom are parallel. To build the cross pieces, the engineer needs to know the measure of the angles shown. The measure of $\angle 1 = 110$ degrees and $m\angle 2 = 105$ degrees. What are the measures of $\angle 3$ and $\angle 4$?

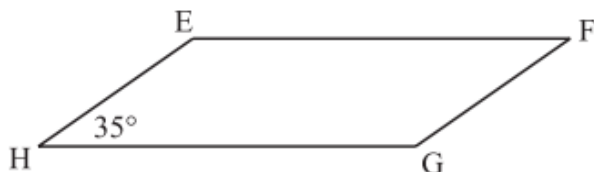
$m\angle 3 = 105^\circ$
 $m\angle 4 = 110^\circ$



- A. $m\angle 3 = 70^\circ, m\angle 4 = 65^\circ$
- B. $m\angle 3 = 65^\circ, m\angle 4 = 70^\circ$
- C. $m\angle 3 = 110^\circ, m\angle 4 = 105^\circ$
- D. $m\angle 3 = 105^\circ, m\angle 4 = 110^\circ$

MA.912.G.3.4

15. What is the measure of $\angle E$ in the parallelogram below?



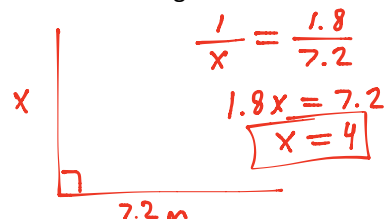
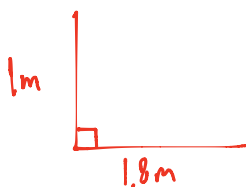
$m\angle E = 180^\circ - 35^\circ = 145^\circ$

- A. 35°
- B. 55°
- C. 145°
- D. 155°

MA.912.G.2.3

16. A meter stick is held perpendicular to the ground. It forms a shadow that is 1.8 m long. At the same time, a flagpole forms a shadow that is 7.2 m long. How tall is the flagpole?

- A. 0.25 m
- B. 4 m
- C. 9 m
- D. 12.96 m



MA.912.G.2.2

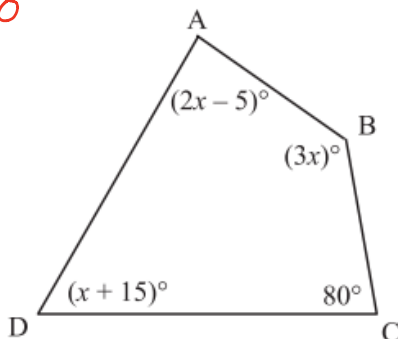
17. Figure $ABCD$ below is a quadrilateral. What is the value of x ?

$$2x - 5 + 3x + 80 + x + 15 = 360$$

$$6x + 90 = 360$$

$$6x = 270$$

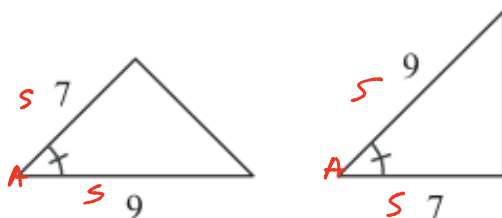
$$x = 45$$



- A. 15
- B. 40
- C. 45
- D. 65

MA.912.G.2.3

18. Which theorem can be used to show that the two triangles below are congruent?



- A. AAA
- B. ASA
- C. SAS
- D. SSS

MA.912.G.7.7

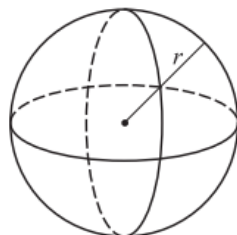
19. The surface area of the sphere below is $4\pi^2$. If the radius were to be divided by 2, how would the surface area be affected?

$$SA = 4\pi r^2$$

$$\frac{4\pi^2}{4\pi} = \frac{4\pi r^2}{4\pi}$$

$$\pi = r^2$$

$$r = \sqrt{\pi}$$



NEW RADIUS

$$\frac{\sqrt{\pi}}{2}$$

$$\frac{4\pi^2}{\pi^2} = 4$$

$$SA = 4\pi r^2$$

$$SA = 4\pi \left(\frac{\sqrt{\pi}}{2}\right)^2$$

$$SA = 4\pi \left(\frac{\pi}{4}\right) = \pi^2$$

- A. The surface area would be 16 times smaller.
- B. The surface area would be 8 times smaller.
- C. The surface area would be 4 times smaller.
- D. The surface area would be 2 times smaller.

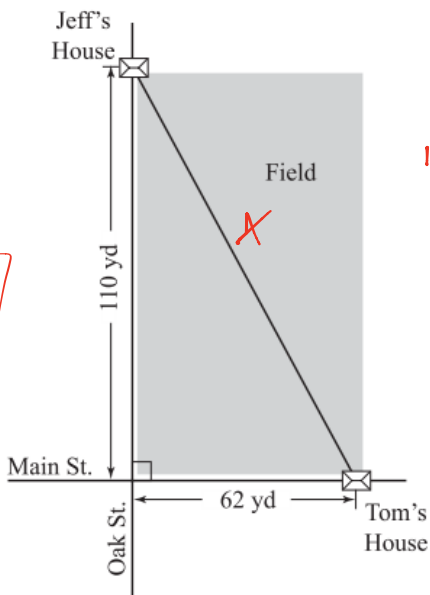
MA.912.G.5.4

20. Jeff lives on Oak Street, and Tom lives on Main Street.

$$\text{MAIN ST} + \text{OAK ST}$$

$$110 + 62 = 172 \text{ yds}$$
 (Long Way)

$$172 - 126 = 46$$



Short Way

$$a^2 + b^2 = c^2$$

$$110^2 + 62^2 = c^2$$

$$12,100 + 3844 = c^2$$

$$15,944 = c^2$$

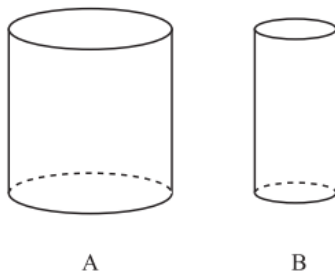
$$c = 126.3$$

How much farther, to the nearest yard, is it for Tom to walk down Main Street and turn on Oak Street to get to Jeff's house than if he travels the shortest distance between the houses through an empty field?

- A. 46 yd
- B. 48 yd
- C. 126 yd
- D. 172 yd

MA.912.G.7.7

21. Cylinders A and B have the same height. The radius of cylinder A is twice the radius of cylinder B.



$$r_A = 2r_B \rightarrow r_B = \frac{1}{2}r_A$$

$$V_A = \pi r_A^2 h \quad V_B = \pi \left(\frac{r_A}{2}\right)^2 h$$

$$V_B = \frac{\pi r_A^2 h}{4}$$

CYLINDER A is 4 TIMES GREATER! (4)

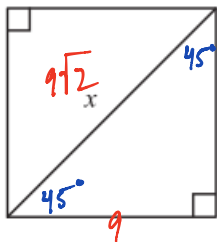
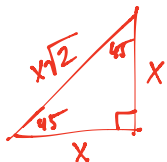
How does the volume of cylinder A compare to the volume of cylinder B?

- A. Cylinder A has $\frac{1}{2}$ the volume of cylinder B.
- B. Cylinder A has twice the volume of cylinder B.
- C. Cylinder A has 4 times the volume of cylinder B.
- D. Cylinder A has 8 times the volume of cylinder B.

MA.912.G.5.4

22. The perimeter of the square below is 36. What is the length of the diagonal, x ?

$45 - 45 = 90$



$P = 36$

$\frac{36}{4} = 9$

- A. 6
- B. 9
- C. $6\sqrt{2}$
- D. $9\sqrt{2}$

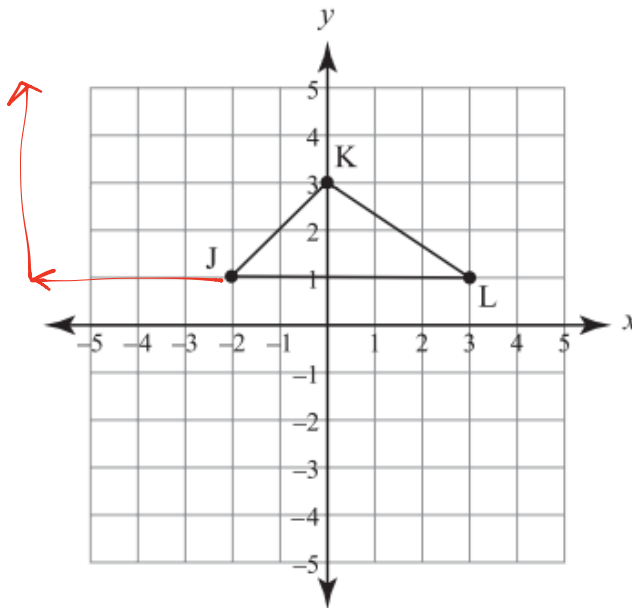
MA.912.G.2.4

23. Triangle JKL is translated 4 units left and 5 units up. What are the coordinates of the image of point J?

Point J: $J(-2, 1)$

$J'(-2-4, 1+5)$

$J' = (-6, 6)$

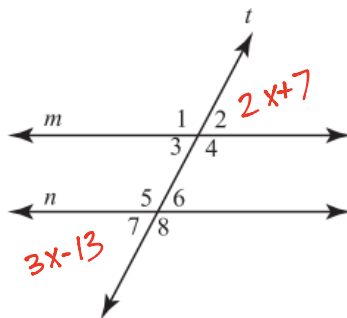


- A. (2, 6)
- B. (3, -3)
- C. (-6, 6)
- D. (-2, 6)

MA.912.G.1.3

24. Two parallel lines, m and n , are cut by a transversal, t , as shown in the figure below.

$m\angle 2 \cong m\angle 7$
 b/c they are alternate exterior.



$$2x + 7 = 3x - 13$$

$$-x + 7 = -13$$

$$-x = -20$$

$$x = 20$$

If $m\angle 2 = 2x + 7$ and $m\angle 7 = 3x - 13$, what is the measure of $\angle 7$?

- ~~A. 20~~
- B. 37
- C. 47
- D. 133

$$m\angle 7 = 3x - 13$$

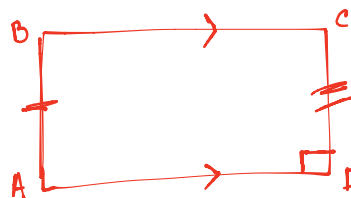
$$m\angle 7 = 3(20) - 13$$

$$= 60 - 13 = 47^\circ$$

MA.912.G.3.4

25. The following information is known about the quadrilateral $ABCD$:

- \overline{BC} is parallel to \overline{AD} .
- \overline{AB} is not congruent to \overline{CD} .
- $\angle CDA$ is a right angle.



Which must be true of quadrilateral $ABCD$?

- ~~A. $ABCD$ is a rhombus.~~
- ~~B. $ABCD$ is a rectangle.~~
- C. $ABCD$ is a trapezoid.
- ~~D. $ABCD$ is a parallelogram.~~

MA.912.G.2.5

26. How much paper is needed to cover a rectangular bulletin board that is 29 in. wide and 37 in. high?

- A. 132 in^2
- B. 536.5 in^2
- C. 957 in^2
- D. $1,073 \text{ in}^2$

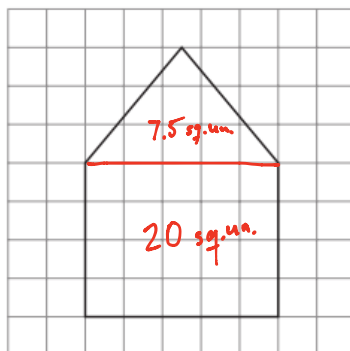
$$A = bh$$

$$A = (29)(37)$$

$$A = 1,073 \text{ in}^2$$

MA.912.G.2.5

27. A scale drawing of the side of a house is shown below. What is the best estimate of the area of the side of the house?



$\square = 36 \text{ ft}^2$!!!

$$A = 27.5 \text{ sq. units}$$

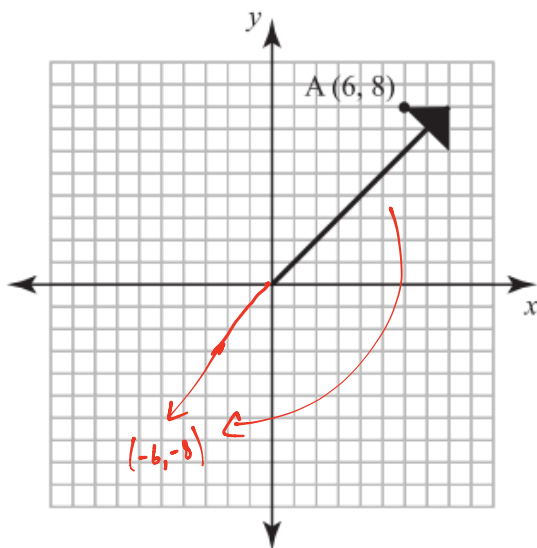
$$1 \text{ sq. unit} = 36 \text{ ft}^2$$

$$\frac{27.5 \text{ sq. units} \times 36 \text{ ft}^2}{1 \text{ sq. unit}} = 990 \text{ ft}^2$$

- A. 700 ft^2
- B. 850 ft^2
- C. $1,000 \text{ ft}^2 \approx 990$
- D. $1,250 \text{ ft}^2$

MA.912.G.2.4

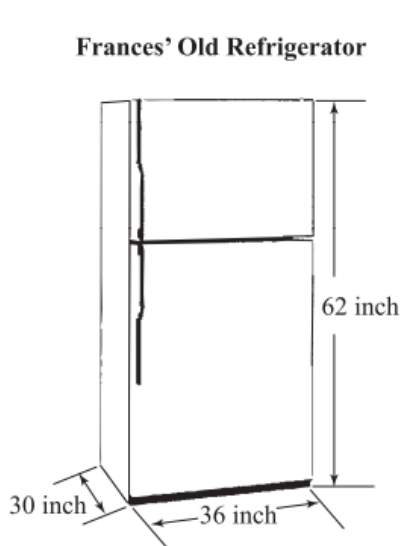
28. The arrow above represents the needle on a compass. The needle is rotated 180° in the clockwise direction. What are the coordinates of point A after the rotation?



- A. $(-8, -6)$
- B. $(-8, 6)$
- C. $(-6, -8)$
- D. $(6, -8)$

MA.912.G.7.7

29. Frances bought a new refrigerator to replace her old refrigerator shown above. Her new refrigerator has the same length and width as the old refrigerator, but is 8 inches higher. How many more cubic inches of space are in Frances's new refrigerator compared to her old refrigerator?



(Not drawn to scale.)

<u>Old</u>	<u>New</u>
$V = lwh$	$h = 62 + 8 = 70 \text{ in}$
$V = (30)(36)(62)$	$V = lwh$
$V = 66,960 \text{ in}^3$	$V = (30)(36)(70)$
	$V = 75,600 \text{ in}^3$
	$75,600 - 66,960 = 8,640 \text{ in}^3$

- A. 8,640
- B. 14,880
- C. 17,856
- D. 25,440

MA.912.G.7.5

30. A cereal box is 10.4 inches high, 7.4 inches long, and 2.3 inches wide. What is the volume of the cereal box rounded to the nearest cubic inch?

- A. 77
- B. 140
- C. 177
- D. 236

No DECIMALS!

$$V = (10.4)(7.4)(2.3)$$

$$V = 177.008$$

MA.912.G.4.7

31. John measured the sides of four triangles. He measured the side lengths of one triangle incorrectly. Which triangle was measured incorrectly?

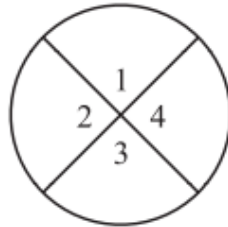
- A. $\triangle A$, with sides measuring 6, 6, and 15
- B. $\triangle B$, with sides measuring 8, 9, and 10
- C. $\triangle C$, with sides measuring 1, 18, and 18
- D. $\triangle D$, with sides measuring 11, 15, and 24

$$6 + 6 = 12 < 15$$

DOES NOT WORK

MA.912.G.8.4

32. Mari created the circular window represented below. She knew that $\angle 1$ and $\angle 2$ were supplementary and that $\angle 1 \cong \angle 3$ because they were vertical angles. What must be true about $\angle 2$ and $\angle 3$?

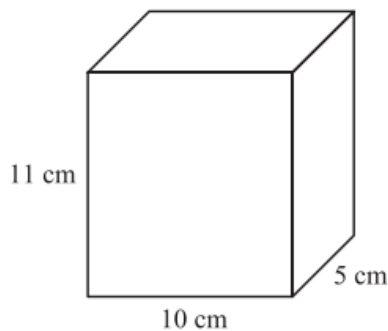


(Not drawn to scale.)

- A. $\angle 2 \cong \angle 3$
- B. $\angle 2$ is complementary to $\angle 3$
- C. $\angle 2$ is supplementary to $\angle 3$
- D. $\angle 2$ and $\angle 3$ are both right angles

MA.912.G.7.5

33. A company is planning to sell juice in boxes represented by the figure shown below. What is the total surface area of the box?



(Not drawn to scale.)

$$\begin{aligned}
 SA &= 2(11)(10) + 2(5)(11) + 2(5)(10) \\
 &= 220 + 110 + 100 \\
 &= 430 \text{ cm}^2
 \end{aligned}$$

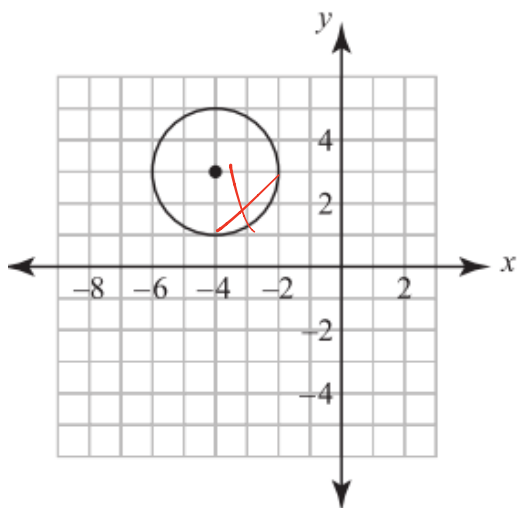
- A. 330 cm^2
- B. 380 cm^2
- C. 430 cm^2
- D. 550 cm^2

MA.912.G.6.6

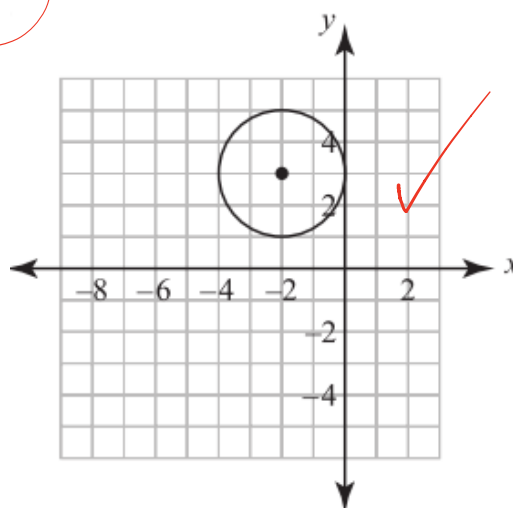
34. The equation of a circle is $(x + 2)^2 + (y + 3)^2 = 4$. Which represents this equation?

$(h, k) = (-2, -3)$ $r = 2$

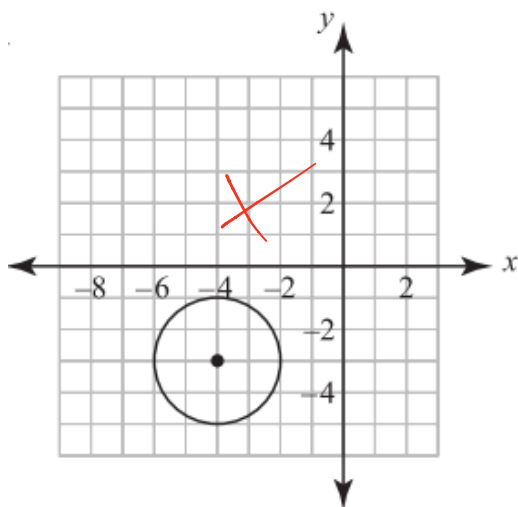
A.



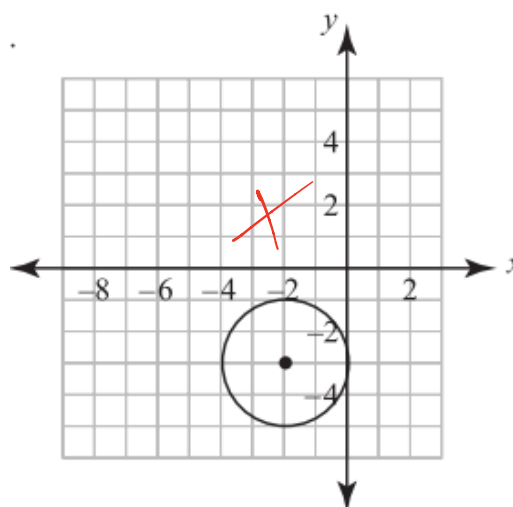
B.



C.



D.



MA.912.G.2.2

35. Joe's garden is the shape of a hexagon. The measures of 5 of the angles are: 160° , 90° , 60° , 160° , and 80° . What is the measure of the remaining angle?

- A. 110°
- B. 120°
- C. 160°
- D. 170°

Hexagon
 $n = 6$

$180(6-2) = 720^\circ$

$x + 160 + 90 + 60 + 160 + 80 = 720^\circ$

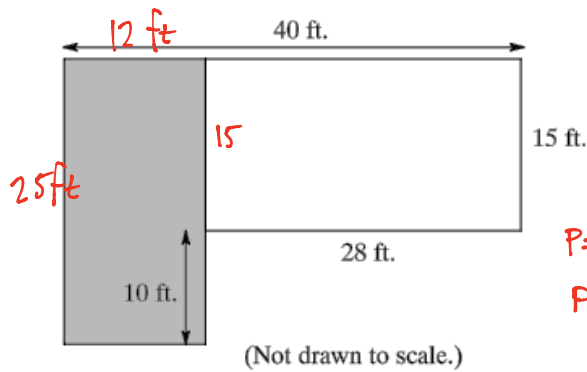
$x + 550 = 720$

$x = 170^\circ$

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MA.912.G.2.5

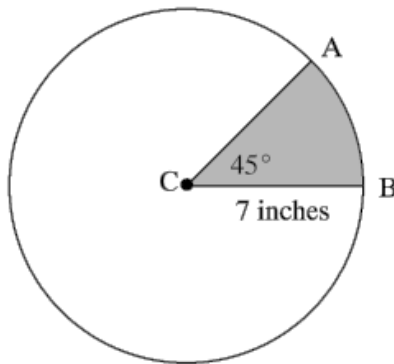
36. Shawn has a greenhouse in the shape shown in the figure below. He keeps new plants in the room represented by the shaded area. What is the perimeter of the room that is shaded?



- A. 74 ft.
- B. 86 ft.
- C. 93 ft.
- D. 130 ft.

MA.912.G.6.5

37. The measure of $\angle ACB$ is 45° . The length \overline{BC} is 7 inches. What is the area of sector ACB rounded to the nearest tenth?



$$A = \frac{\theta}{360} \cdot \pi r^2$$

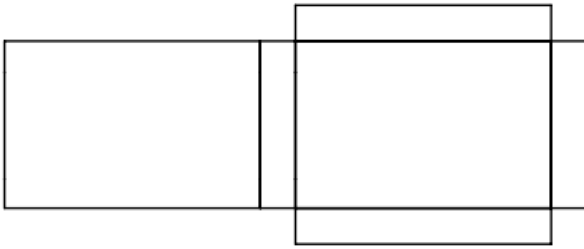
$$A = \frac{45}{360} \cdot \pi (7)^2$$

$$A \approx 19.2 \text{ in}^2$$

- A. 19.23 in²
- B. 45.0 in²
- C. 153.9 in²
- D. 315.0 in²

MA.912.G.7.1

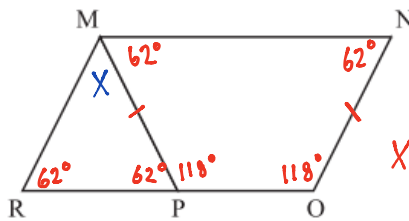
38. Which 3-dimensional shape can be formed from the net below?



- A. Cube
- B. Pyramid
- C. Prism
- D. Cylinder

MA.912.G.3.4

39. Figure $MNOP$ is an isosceles trapezoid, and figure $MNOR$ is a parallelogram.



$$x + 62(2) = 180$$

$$x + 124 = 180$$

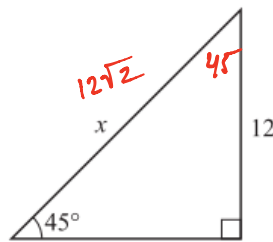
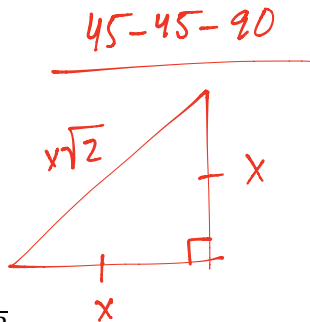
$$x = 56^\circ$$

If $m\angle MPR = 62$ degrees, what is $m\angle RMP$?

- A. 56°
- B. 62°
- C. 118°
- D. 136°

MA.912.G.5.4

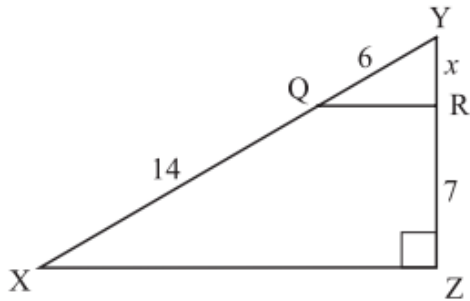
40. What is the value of x for the triangle below?



- A. $\sqrt{2}$
- B. $12\sqrt{2}$
- C. $12\sqrt{3}$
- D. 24

MA.912.G.2.3

41. For $\triangle XYZ$, $\overline{QR} \parallel \overline{XZ}$.



$$\frac{x}{6} = \frac{7}{14}$$

$$14x = 42$$

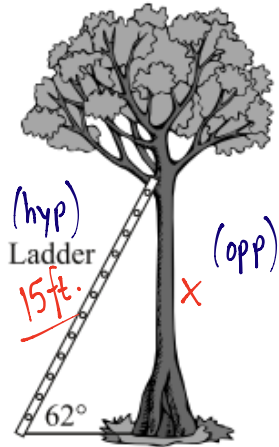
$$x = 3$$

What is the length of \overline{RY} ?

- A. 3
- B. 12
- C. 13
- D. 16

MA.912.T.2.1

42. A cat is stuck in a tree. A firefighter's 15-foot ladder is leaning against the tree. The ladder and the ground form a 62° angle. How high above the ground does the ladder touch the tree?



$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

$$\sin 62^\circ = \frac{x}{15}$$

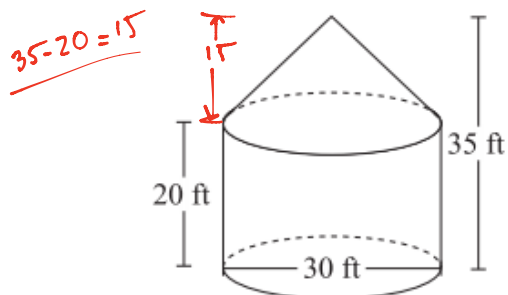
$$x = 15 \sin 62^\circ$$

$$x \approx 13.2 \text{ ft.}$$

- A. 7.04 ft.
- B. 13.24 ft.
- C. 16.99 ft.
- D. 28.21 ft.

MA.912.G.7.5

43. The grain bin below is made up of a cylinder with a cone on top.



Volume:

Cylinder

$$V = BH$$

$$V = \pi r^2 h$$

$$V = \pi (15)^2 (20)$$

$$V = 14,130 \text{ ft}^3$$

Cone

$$V = \frac{1}{3} BH$$

$$V = \frac{1}{3} \pi r^2 h$$

$$V = \frac{1}{3} \pi (15)^2 (15)$$

$$V = 3532.5 \text{ ft}^3$$

To the nearest cubic foot, how much grain will this bin hold? Use $\pi = 3.14$.

- A. 5,625 cubic feet
- B. 17,663 cubic feet**
- C. 32,987 cubic feet
- D. 70,650 cubic feet

$$V_{\text{TOTAL}} = 14,130 + 3532.5$$

$$V_{\text{TOTAL}} = 17,662.5 \text{ ft}^3$$

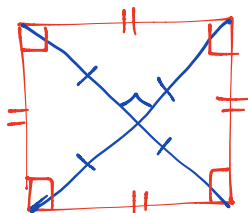
MA.912.G.3.4

44. Hannah cut a quadrilateral from a piece of cardboard with the diagonals having the following characteristics.

- congruent
- perpendicular
- bisect each other

Which type of quadrilateral must Hannah have cut out?

- A. parallelogram
- B. rectangle
- C. rhombus
- D. square**



MA.912.D.6.2

45. What is the contrapositive of the statement below?

If a triangle is isosceles, then it has two congruent sides.

- A. If a triangle does not have two congruent sides, then it is not isosceles.**
- B. If a triangle is isosceles, then it does not have two congruent sides.
- C. If a triangle has two congruent sides, then it is isosceles.
- D. If a triangle is not isosceles, then it does not have two congruent sides.

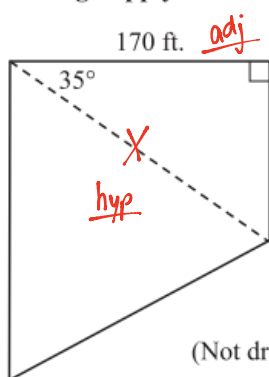
$$P \rightarrow Q$$

$$Q' \rightarrow P'$$

MA.912.T.2.1

46. The lot of a building supply store is in the shape of a trapezoid as shown below. The broken line represents a fence used to divide the lot into two parts. What is the length to the nearest whole foot of the fence that divides the lot?

Building Supply Store Lot



$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$\cos 35^\circ = \frac{170}{x}$$

$$x = \frac{170}{\cos 35^\circ}$$

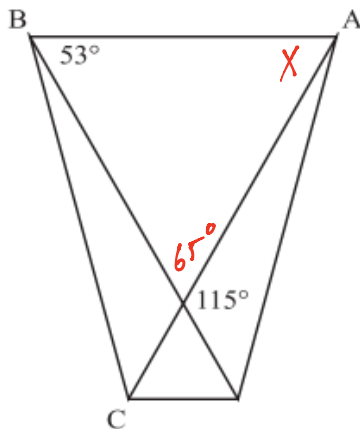
$$x \approx 207.5$$

(Not drawn to scale.)

- A. 139 ft.
- B. 208 ft.**
- C. 243 ft.
- D. 296 ft.

MA.912.G.3.4

47. Using the figure below, what is the measurement of $\angle BAC$?



$$x + 53 + 65 = 180$$

$$x + 118 = 180$$

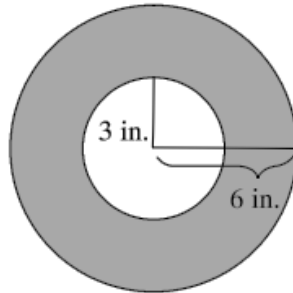
$$x = 62$$

(Not drawn to scale.)

- A. 37°
- B. 53°
- C. 62°**
- D. 65°

MA.912.G.6.5

48. An insulated foam sleeve is made to fit over water pipe. The distance from the center of the water pipe to the edge of the sleeve is 6 inches. The hole in the center has a radius of 3 inches. What is the area of the face of the foam sleeve? Use $\pi = 3.14$.



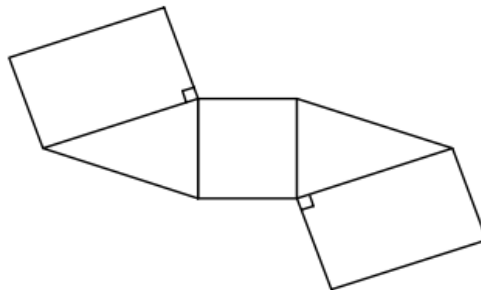
(Not drawn to scale.)

$$\begin{aligned} &\pi R^2 - \pi r^2 \\ &\pi(6)^2 - \pi(3)^2 \\ &36\pi - 9\pi \\ &27\pi \\ &27(3.14) \\ &84.78 \text{ in}^2 \end{aligned}$$

- A. 9.42 in^2
- B. 18.84 in^2
- C. 84.78 in^2
- D. 141.30 in^2

MA.912.G.7.1

49. The net in the figure below can be folded into which of the following three-dimensional solids?



- A. Triangular prism
- B. Rectangular prism
- C. Triangular pyramid
- D. Square pyramid

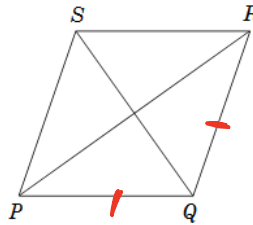
MA.912.G.7.1

50. Two tetrahedra are congruent. One tetrahedron is glued to the other so that the glued faces of the two tetrahedra completely cover each other, producing a new polyhedron. How many faces does the new polyhedron have?

- A. 6
- B. 7
- C. 8
- D. 9

MA.912.G.3.4

51. If $PQRS$ is a rhombus, which statement must be true?



- ~~A. $\angle PSR$ is a right angle.~~
- ~~B. $\overline{PR} \cong \overline{QS}$~~
- ~~C. $\angle PQR \cong \angle QRS$~~
- D. $\overline{PQ} \cong \overline{QR}$

MA.912.G.2.2

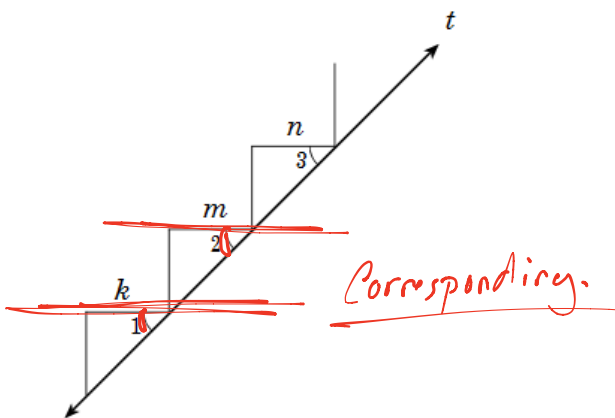
52. The measure of each exterior angle of a regular polygon is 45° . How many sides does the polygon have?

- A. 4
- B. 5
- C. 8
- D. 9

$$\frac{360^\circ}{45^\circ} = 8 \text{ sides}$$

MA.912.G.8.4

53. Given: $k \parallel m \parallel n$



Which statement justifies the conclusion that $\angle 1 \cong \angle 2 \cong \angle 3$

- ~~A. If $k \parallel m \parallel n$ and are cut by transversal t , then alternate interior angles are congruent.~~
- ~~B. If $k \parallel m \parallel n$ and are cut by transversal t , then vertical angles are congruent.~~
- ~~C. If $k \parallel m \parallel n$ and are cut by transversal t , then alternate exterior angles are congruent.~~
- D. If $k \parallel m \parallel n$ and are cut by transversal t , then corresponding angles are congruent.

MA.912.D.6.2

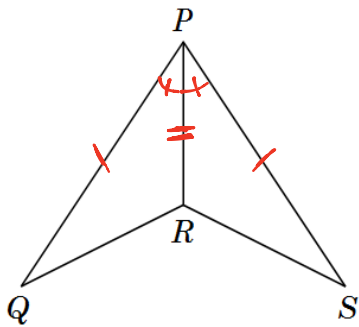
54. Which statement is the inverse of the statement below?

If a quadrilateral is a rectangle, then it is a parallelogram.

- A. If a quadrilateral is not a parallelogram, then it is not a rectangle.
- B. If a quadrilateral is a parallelogram, then it is a rectangle.
- C. If a quadrilateral is not a rectangle, then it is not a parallelogram.
- D. A quadrilateral is a rectangle if and only if it is a parallelogram.

MA.912.G.2.3

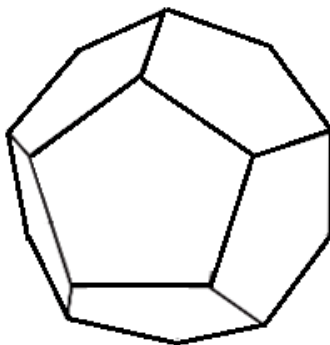
55. Which parts must be congruent to prove $\triangle PQR \cong \triangle PSR$ by SAS?



- ~~A. $\angle Q \cong \angle S$ and $\overline{QP} \cong \overline{SP}$ ASS~~
- ~~B. $\angle Q \cong \angle S$ and $\overline{QR} \cong \overline{SR}$ ASS~~
- ~~C. $\angle QRP \cong \angle SRP$ and $\overline{QP} \cong \overline{SP}$ SSA~~
- D. $\angle QPR \cong \angle SPR$ and $\overline{QP} \cong \overline{SP}$

MA.912.G.7.1

56. The figure below is a dodecahedron, one of the Platonic Solids.



EULER'S FORMULA

$$F + V = E + 2$$

$$12 + 20 = E + 2$$

$$32 = E + 2$$

$$E = 30$$

How many edges does this solid have?

- A. 40
- B. 30
- C. 20
- D. 10

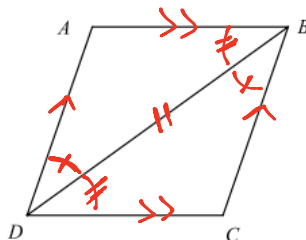
MA.912.G.4.6

57. What is the missing reason for the proof?

Given: Parallelogram ABCD with diagonal BD

Prove: $\triangle ABD \cong \triangle CDB$

ASA

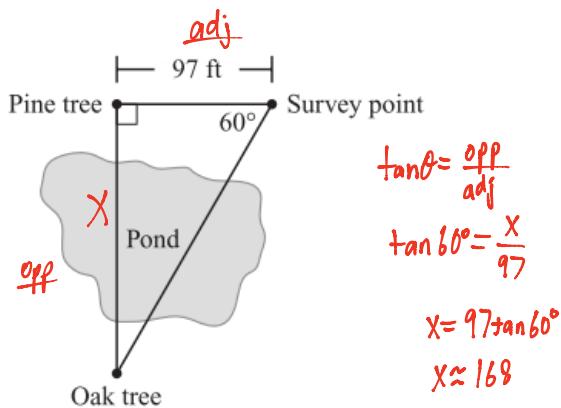


Statements	Reasons
1. $\overline{AD} \parallel \overline{BC}$	1. Definition of parallelogram
2. $\angle ADB \cong \angle CBD$	2. Alternate Interior Angles Theorem
3. $\overline{AB} \parallel \overline{CD}$	3. Definition of parallelogram
4. $\angle ABD \cong \angle CDB$	4. Alternate Interior Angles Theorem
5. $\overline{DB} \cong \overline{DB}$	5. Reflexive Property of Congruence
6. $\triangle ABD \cong \triangle CDB$	6. ?

- A. Reflexive Property of Congruence
- B. ASA**
- C. Alternate Interior Angles Theorem
- D. SSS

MA.912.G.5.4

58. As an assignment, two students in a surveying class had to find the distance between two trees separated by a pond. Starting at the pine tree, they walked until they found a point that they marked as the survey point. The angle formed between the pine tree, the survey point, and the oak tree was 60° . Their sketch is shown below.



To the nearest foot, what is the distance between the pine tree and the oak tree?

- A. 168 ft.**
- B. 194 ft.
- C. 291 ft.
- D. 336 ft.

MA.912.D.6.2

59. Look at the conditional statement.

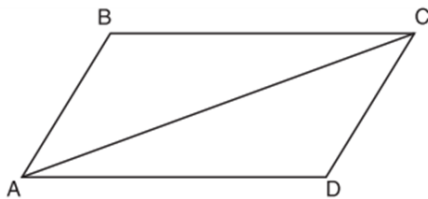
"If a figure is a pentagon, then it has five sides"

Which statement is the inverse?

- A. If a figure has five sides, then it is a pentagon.
- B. If a figure is a pentagon, then it does not have five sides.
- C. If a figure does not have five sides, then it is not a pentagon.
- D. If a figure is not a pentagon, then it does not have five sides.

MA.912.G.3.4

60. Given that ABCD is a parallelogram, a student wrote the proof below to show that a pair of its opposite angles are congruent.



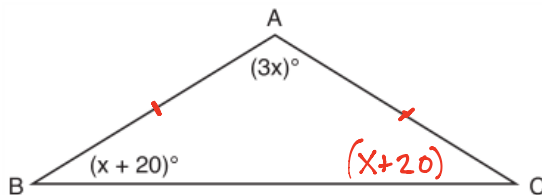
Statement	Reason
1. ABCD is a parallelogram.	1. Given
2. $\overline{BC} \cong \overline{AD}$ $\overline{AB} \cong \overline{DC}$	2. Opposite sides of a parallelogram are congruent.
3. $\overline{AC} \cong \overline{CA}$	3. Reflexive Postulate of Congruency
4. $\triangle ABC \cong \triangle CDA$	4. Side-Side-Side
5. $\angle B \cong \angle D$	5. <i>CPCTC</i>

What is the reason justifying that $\angle B \cong \angle D$?

- A. Opposite angles in a quadrilateral are congruent.
- B. Parallel lines have congruent corresponding angles.
- C. Corresponding parts of congruent triangles are congruent.
- D. Alternate interior angles in congruent triangles are congruent.

MA.912.G.2.2

61. In the diagram below of $\triangle ABC$, $\overline{AB} \cong \overline{AC}$, $m\angle A = 3x$, and $m\angle B = x + 20$.



$$3x + 2(x + 20) = 180$$

$$3x + 2x + 40 = 180$$

$$5x = 140$$

$$x = 28^\circ$$

What is the value of x?

- A. 10
- B. 28
- C. 32
- D. 40

MA.912.D.6.2

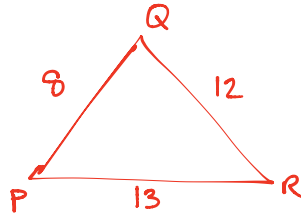
62. What is the converse of the statement ***“If Bob does his homework, then George gets candy”***?

- A. If George gets candy, then Bob does his homework.
- B. Bob does his homework if and only if George gets candy.
- C. If George does not get candy, then Bob does not do his homework.
- D. If Bob does not do his homework, then George does not get candy.

MA.912.G.4.7

63. In $\triangle PQR$, $PQ = 8$, $QR = 12$, and $RP = 13$. Which statement about the angles of $\triangle PQR$ must be true?

- A. $m\angle Q > m\angle P > m\angle R$
- B. $m\angle R > m\angle P > m\angle Q$
- C. $m\angle Q > m\angle R > m\angle P$
- D. $m\angle P > m\angle R > m\angle Q$



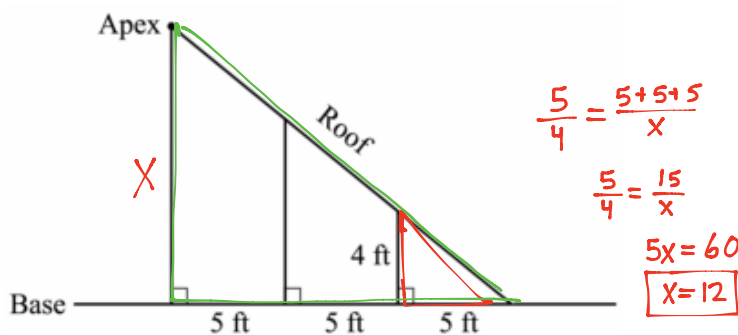
MA.912.D.6.2

64. What is the contrapositive of the statement, ***“If I am tall, then I will bump my head”***?

- A. If I bump my head, then I am tall.
- B. If I do not bump my head, then I am tall.
- C. If I am tall, then I will not bump my head.
- D. If I do not bump my head, then I am not tall.

MA.912.G.2.3

65. The diagram below shows a part of a roof. The highest part of the roof is called the apex.

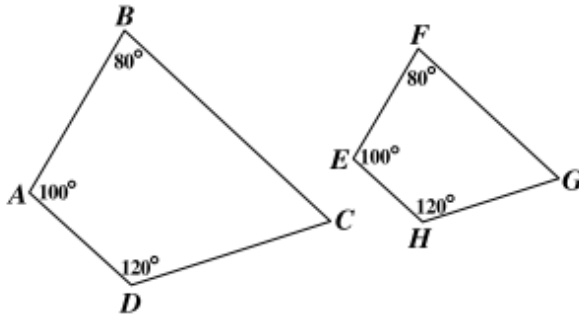


How many feet above the base is the apex of the roof?

- A. 8
- B. 9
- C. 12
- D. 20

MA.912.G.2.3

66. In the diagram below, $ABCD$ is similar to $EFGH$.



$$\frac{3}{2} = \frac{12}{P}$$

$$3P = 24$$

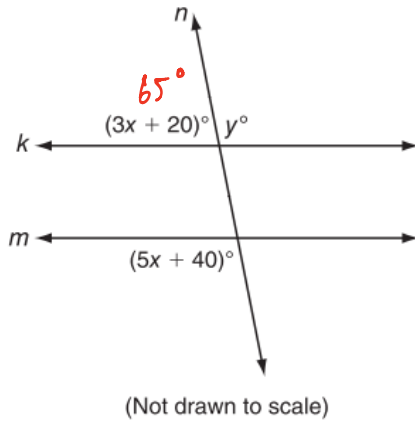
$$P = 8$$

If $\frac{AB}{EF} = \frac{3}{2}$ and the perimeter of $ABCD$ is 12, what is the perimeter of $EFGH$?

- A. 27
- B. 18
- C. 15
- D. 8

MA.912.G.1.3

67. In the figure below, $k \parallel m$.



$$3x + 20 + 5x + 40 = 180$$

$$8x + 60 = 180$$

$$8x = 120$$

$$x = 15$$

$$3(15) + 20$$

$$45 + 20$$

$$65^\circ$$

$$y = 180 - 65$$

$$y = 115^\circ$$

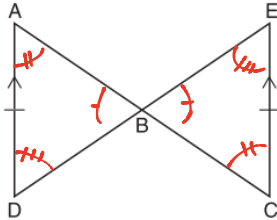
What is the value of y ?

- A. $y = 15$
- B. $y = 70$
- C. $y = 115$
- D. $y = 120$

MA.912.G.4.6

68. Given: $\overline{AD} \parallel \overline{EC}$, and $\overline{AD} \cong \overline{EC}$

Prove: $AB \cong CB$



Shown below are the statements and reasons for the proof. They are not in the correct order.

Statement	Reason
I. $\triangle ABD \cong \triangle CBE$	I. AAS
II. $\angle ABD \cong \angle EBC$	II. Vertical angles are congruent.
III. $\overline{AD} \parallel \overline{EC}$, $\overline{AD} \cong \overline{EC}$	III. Given
IV. $\overline{AB} \cong \overline{CB}$	IV. Corresponding parts of congruent triangles are congruent.
V. $\angle DAB \cong \angle ECB$	V. If two parallel lines are cut by a transversal, the alternate interior angles are congruent.

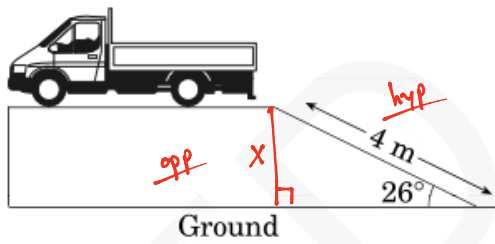
Handwritten annotations in red ink:
 - "First." with an arrow pointing to statement I.
 - "Second" with an arrow pointing to statement V.
 - "Third." with an arrow pointing to statement II.
 - "Fourth" with an arrow pointing to statement III.

Which of these is the most logical order for the statements and reasons?

- ~~A. I, II, III, IV, V~~
- B. III, II, V, I, IV**
- C. III, II, V, IV, I
- ~~D. II, V, III, IV, I~~

MA.912.T.2.1

69. A truck is at the top of a ramp as shown below.



Handwritten calculations in red ink:
 $\sin \theta = \frac{\text{opp}}{\text{hyp}}$
 $\sin 26^\circ = \frac{x}{4}$
 $x = 4 \sin 26^\circ$
 $x \approx 1.75 \text{ m}$

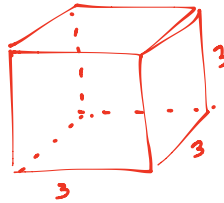
Approximately how high above the ground is the truck?

- A. 4.45 m
- B. 3.59 m
- C. 1.95 m
- D. 1.75 m**

MA.912.G.7.7

70. If a cube with side length 6 inches has its dimensions divided in half, what will be the volume of the new cube?

- A. 108 cubic inches
- B. 54 cubic inches
- C. 27 cubic inches
- D. 9 cubic inches

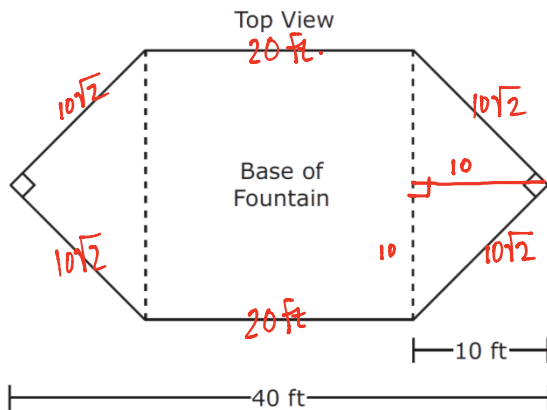


$$V = (3)^3$$

$$V = 27 \text{ in}^3$$

MA.912.G.2.5

71. When viewed from above, the base of a water fountain has the shape of a hexagon composed of a square and 2 congruent isosceles right triangles, as represented in the diagram below.



$$20 + 20 + 4(10\sqrt{2})$$

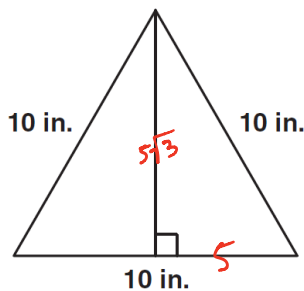
$$40 + 40\sqrt{2}$$

Which of the following measurements best represents the perimeter of the water fountain's base in feet?

- A. $(20 + 20\sqrt{2})$ ft
- B. $(20 + 40\sqrt{2})$ ft
- C. $(40 + 20\sqrt{2})$ ft
- D. $(40 + 40\sqrt{2})$ ft

MA.912.G.5.4

72. What is the area, in square inches, of the triangle below?



$$A = \frac{1}{2}bh$$

$$A = \frac{1}{2}(10)(5\sqrt{3})$$

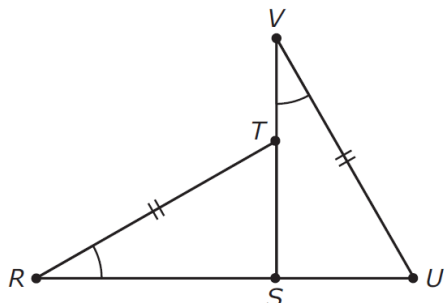
$$A = 5(5\sqrt{3})$$

$$A = 25\sqrt{3} \text{ in}^2$$

- A. 25
- B. $25\sqrt{3}$
- C. 50
- D. $50\sqrt{3}$

MA.912.G.8.4

73. Triangles \overline{RST} and \overline{VSU} are shown below.



Given: $\angle R \cong \angle V$
 $\overline{RT} \cong \overline{VU}$

Which additional condition is sufficient to prove that $\overline{RS} \cong \overline{SV}$?

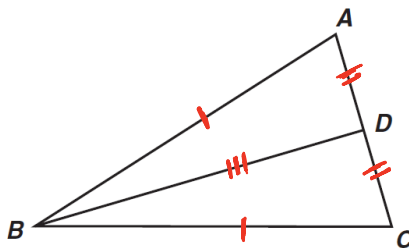
- A. ~~$\overline{TS} \cong \overline{SU}$~~
- B. $\overline{VS} \perp \overline{RU}$
- C. ~~$\overline{RS} \cong \overline{SU}$~~
- D. ~~$\angle VUS \cong \angle RST$~~

MA.912.G.4.6

74. Use the proof to answer the question below.

Given: $\overline{AB} \cong \overline{BC}$; D is the midpoint of \overline{AC}

Prove: $\triangle ABD \cong \triangle CBD$



<u>Statement</u>	<u>Reason</u>
1. $\overline{AB} \cong \overline{BC}$; D is the midpoint of \overline{AC}	1. Given
2. $\overline{AD} \cong \overline{CD}$	2. Definition of Midpoint
3. $\overline{BD} \cong \overline{BD}$	3. Reflexive Property
4. $\triangle ABD \cong \triangle CBD$	4. ?

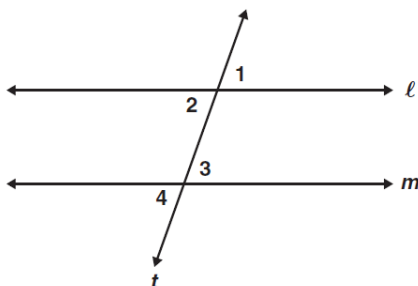
What reason can be used to prove that the triangles are congruent?

- A. AAS
- B. ASA
- C. SAS
- D. SSS

MA.912.G.8.4

75. **Given:** $\angle 2 \cong \angle 3$

Prove: $\angle 1 \cong \angle 4$



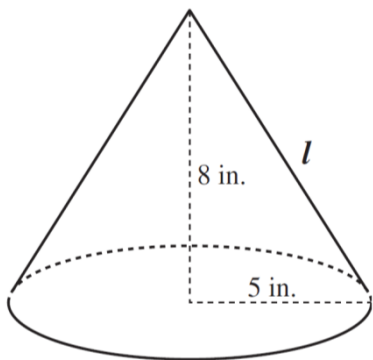
Statement	Reason
1. $\angle 2 \cong \angle 3$	1. Given
2. $\angle 1 \cong \angle 2; \angle 3 \cong \angle 4$	2. ? <u>Vertical Angles.</u>
3. $\angle 1 \cong \angle 4$	3. Transitive Property

What reason can be used to justify statement 2?

- A. Complements of congruent angles are congruent.
- B. Vertical angles are congruent.**
- C. Supplements of congruent angles are congruent.
- D. Corresponding angles are congruent.

MA.912.G.7.5

76. A right circular cone has radius 5 inches and height 8 inches. What is the lateral area of the cone?



$SA = \frac{1}{2}(2\pi r)l + B$ ← We don't need the area of the base.

$SA = \frac{1}{2}(2\pi)(5)(\sqrt{89})$

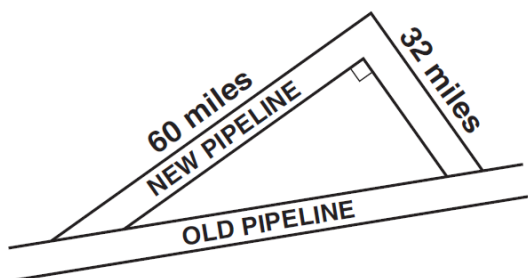
$SA = 5\pi\sqrt{89} \text{ in}^2$

$a^2 + b^2 = c^2$
 $5^2 + 8^2 = l^2$
 $25 + 64 = l^2$
 $89 = l^2$
 $l = \sqrt{89}$

- A. 40π sq. in
- B. 445π sq. in
- C. $5\pi\sqrt{39}$ sq. in
- D. $5\pi\sqrt{89}$ sq. in**

MA.912.G.5.4

77. A new pipeline is being constructed to re-route its oil flow around the exterior of a national wildlife preserve. The plan showing the old pipeline and the new route is shown below.



OLD PIPELINE

$$a^2 + b^2 = c^2$$

$$60^2 + 32^2 = c^2$$

$$c = \sqrt{60^2 + 32^2}$$

$$c = 68$$

About how many extra miles will the oil flow once the new route is established?

- A. 24
B. 68
C. 92
D. 160

NEW PIPELINE

$$60 + 32 = 92 \text{ miles}$$

$$\begin{array}{r} 92 \\ - 68 \\ \hline 24 \end{array}$$

MA.912.G.6.6

78. The point $(-3, 2)$ lies on a circle whose equation is $(x + 3)^2 + (y + 1)^2 = r^2$. Which of the following must be the radius of the circle?

- A. 3
B. $\sqrt{10}$
C. 9
D. 10

$$(h, k) = (-3, -1) \rightarrow (-3, 2)$$

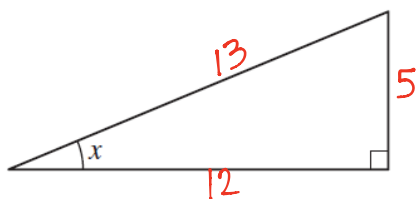
$$r = \sqrt{(-3 - (-3))^2 + (-1 - 2)^2}$$

$$r = \sqrt{(0)^2 + (-3)^2}$$

$$r = \sqrt{9} = 3$$

MA.912.T.2.1

79. In the figure below, if $\sin x = \frac{5}{13}$, what are $\cos x$ and $\tan x$?



$$a^2 + b^2 = c^2$$

$$5^2 + b^2 = 13^2$$

$$b^2 = 13^2 - 5^2$$

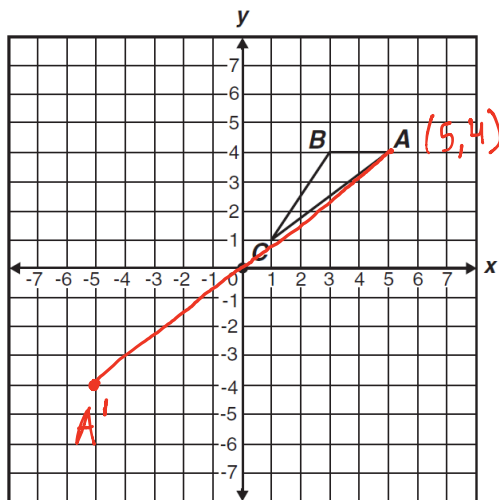
$$b = \sqrt{13^2 - 5^2}$$

$$b = 12$$

- A. $\cos x = \frac{12}{13}$ and $\tan x = \frac{5}{12}$
B. $\cos x = \frac{12}{13}$ and $\tan x = \frac{12}{5}$
C. $\cos x = \frac{13}{12}$ and $\tan x = \frac{5}{12}$
D. $\cos x = \frac{13}{12}$ and $\tan x = \frac{13}{5}$

MA.912.G.2.4

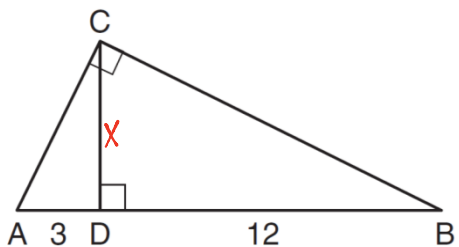
80. If triangle ABC is rotated 180 degrees about the origin, what are the coordinates of A'?



- A. (-5, -4)
- B. (-5, 4)
- C. (-4, 5)
- D. (-4, -5)

MA.912.G.4.6

81. In the diagram below of right triangle ABC, altitude \overline{CD} is drawn to hypotenuse \overline{AB} .



GEOMETRIC MEAN

$$\frac{3}{x} = \frac{x}{12}$$

$$x^2 = 36$$

$$x = 6$$

If $AD = 3$ and $DB = 12$, what is the length of altitude \overline{CD} ?

- A. $6\sqrt{5}$
- B. 6
- C. $3\sqrt{5}$
- D. 3

MA.912.D.6.2

82. What is the converse of the following statement?

If Gerald goes swimming, then he will wear his red swimsuit.

- A. If Gerald wears his red swimsuit, then he will go swimming.
- B. If Gerald does not go swimming, then he will not wear his red swimsuit.
- C. If Gerald does not wear his red swimsuit, then he will not go swimming.
- D. If Gerald goes swimming, then he will wear his blue swimsuit.

MA.912.G.6.5

83. A sector of a circle is created from a central angle with a measure of 60° . If the diameter of the circle is 6 inches, what is the area of the sector?

radius = 3 in

- A. $8\pi \text{ in}^2$
- B. $6\pi \text{ in}^2$
- C. $2\pi \text{ in}^2$
- D. $1.5\pi \text{ in}^2$

$$A = \frac{\alpha}{360} \cdot \pi r^2$$

$$A = \frac{60}{360} \cdot \pi (3)^2$$

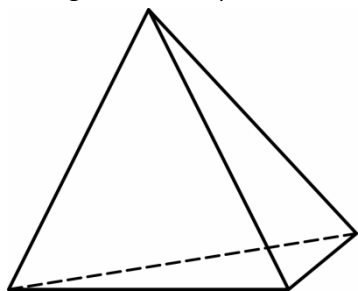
$$A = \frac{1}{6} \cdot \pi (9)$$

$$A = \frac{9}{6} \pi = \frac{3}{2} \pi$$

$$A = 1.5\pi \text{ in}^2$$

MA.912.G.7.1

84. The figure below represents a solid. For this solid, what are E, the number of edges, and F, the number of faces?



TETRAHEDRON

$$F = 4$$

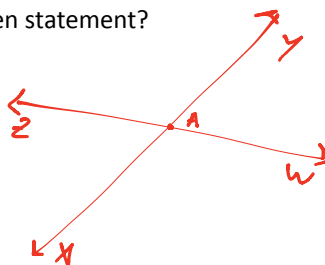
only possible solution.

- A. E = 6, F = 4
- B. E = 6, F = 3
- C. E = 4, F = 6
- D. E = 3, F = 5

MA.912.G.8.4

85. Given: \overline{XY} and \overline{ZW} intersect at point A.
Which conjecture is always true about the given statement?

- ~~A. $XA = AY$~~
- ~~B. $\angle XAZ$ is acute~~
- ~~C. \overline{XY} is perpendicular to \overline{ZW}~~
- D. X, Y, Z, and W are noncollinear



MA.912.G.7.5

86. A right triangular pyramid has a height of 10 inches and a base area of 41.57 square inches. What is the volume, in cubic inches, of the pyramid?

- A. 138.56
- B. 207.85
- C. 277.13
- D. 415.69

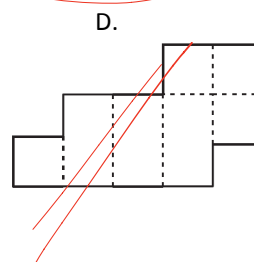
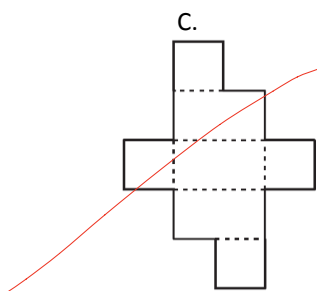
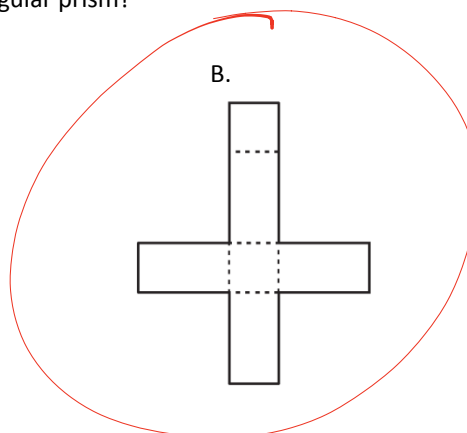
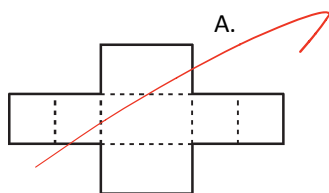
$$V = \frac{1}{3}BH$$

$$V = \frac{1}{3}(41.57)(10)$$

$$V = 138.6 \text{ in}^3$$

MA.912.G.7.1

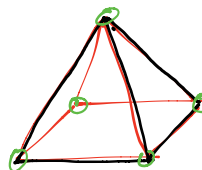
87. When folded on the dotted lines, which net will not form a rectangular prism?



MA.912.G.7.1

88. How many faces, edges, and vertices does a square pyramid have?

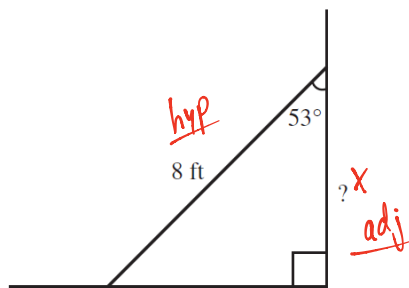
- ~~A. 4 faces, 6 edges, and 4 vertices~~
- B. 5 faces, 6 edges, and 6 vertices
- C. 5 faces, 8 edges, and 5 vertices**
- ~~D. 6 faces, 12 edges, and 8 vertices~~



5 FACES
5 VERTICES

MA.912.T.2.1

89. The diagram shows an 8-foot ladder leaning against a wall. The ladder makes a 53° angle with the wall. Which is closest to the distance up the wall the ladder reaches?



$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$\cos(53^\circ) = \frac{x}{8 \text{ ft.}}$$

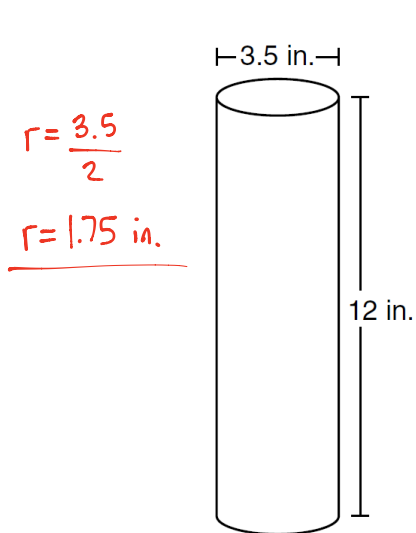
$$x = 8 \cos(53^\circ)$$

$$x \approx 4.81 \text{ ft.}$$

- A. 3.2 ft.
- B. 4.8 ft.**
- C. 6.4 ft.
- D. 9.6 ft.

MA.912.G.7.1

90. The owners of Neatly Packaged Company make a cylindrical container that has the dimensions shown below.



$$SA = 2\pi rh + 2\pi r^2$$

$$SA = 2\pi(1.75)(12)$$

$$SA = 2(3.14)(1.75)(12)$$

$$SA = 131.88 \text{ in}^2$$

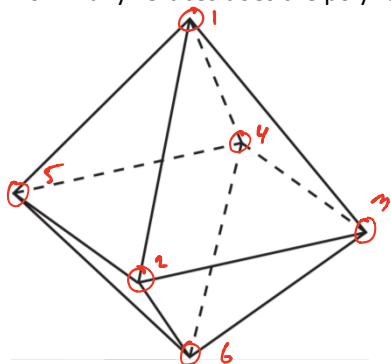
What is the approximate lateral surface area available for the package label?

- A. 131.95 in²
- B. 151.19 in²
- C. 263.89 in²
- D. 115.45 in²

NO BASE AREA!

MA.912.G.7.1

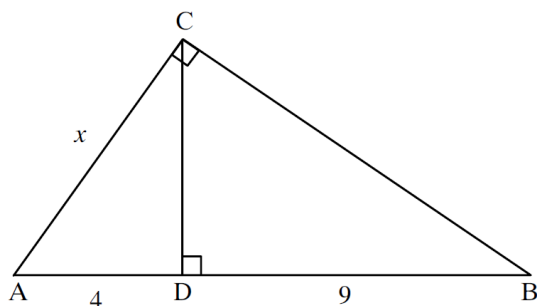
91. How many vertices does the polyhedron below have?



- A. 3
- B. 5
- C. 6
- D. 8

MA.912.G.4.6

92. CD is the altitude to the hypotenuse of $\triangle ABC$. What is AC?



$$\frac{x}{4} = \frac{4+9}{x}$$

$$\frac{x}{4} = \frac{13}{x}$$

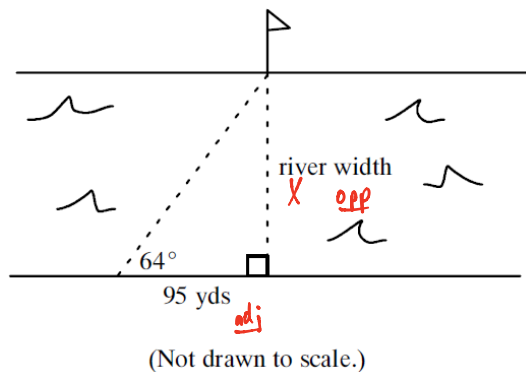
$$x^2 = 52$$

$$x = \sqrt{52} = \sqrt{4 \cdot 13} = 2\sqrt{13}$$

- A. 6
- B. $5\sqrt{2}$
- C. $2\sqrt{13}$
- D. $7\frac{1}{2}$

MA.912.T.2.1

93. A surveyor needs to find the width of the Miami River. Sighting a flagpole on the riverbank, the surveyor walks 95 yards along the riverbank. If the line of sight to the flagpole is 64° , what is the width of the river? Round to the nearest whole yard.



$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\tan(64^\circ) = \frac{x}{95}$$

$$x = 95 \tan(64^\circ)$$

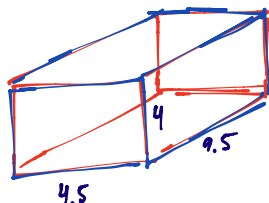
$$x = 194.78$$

- A. 42 yards
- B. 46 yards
- C. 85 yards
- D. 195 yards

MA.912.G.7.5

94. A box of tissues measures 4.5 inches wide, 4 inches high, and 9.5 inches long. What is the surface area of the box to the nearest square inch?

- A. 99
- B. 171
- C. 198
- D. 342



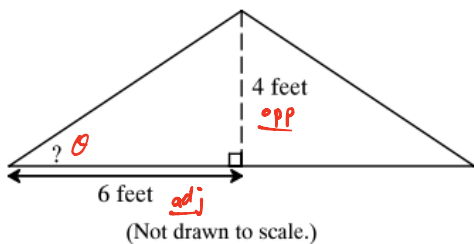
$$SA = 2(4.5)(4) + 2(4)(9.5) + 2(4.5)(9.5)$$

$$SA = 36 + 76 + 85.5$$

$$SA = 197.5 \text{ in}^2$$

MA.912.T.2.1

95. A roof rises 4 feet over a horizontal distance of 6 feet. What is the approximate angle formed by the horizontal and the roof?

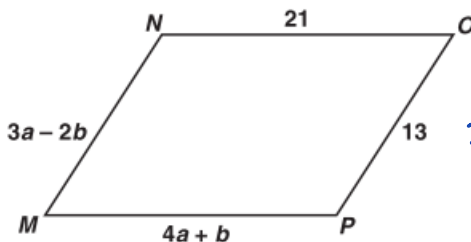


$$\begin{aligned} \tan \theta &= \frac{\text{opp}}{\text{adj}} \\ \tan \theta &= \frac{4}{6} \\ \theta &= \tan^{-1}\left(\frac{4}{6}\right) \\ \theta &\approx 33.7^\circ \end{aligned}$$

- A. 34°
- B. 42°
- C. 48°
- D. 88°

MA.912.G.3.4

96. What values of a and b make quadrilateral $MNOP$ a parallelogram?

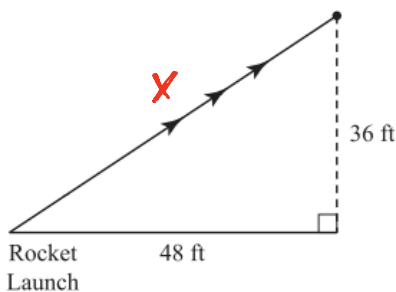


$$\begin{aligned} 3a - 2b &= 13 \\ 2(4a + b) &= 21 \\ \hline 3a - 2b &= 13 \\ 8a + 2b &= 42 \\ \hline 11a &= 55 \\ a &= 5 \end{aligned}$$

- A. $a = 1, b = 5$
- B. $a = 5, b = 1$
- C. $a = \frac{11}{7}, b = \frac{34}{7}$
- D. $a = \frac{34}{7}, b = \frac{11}{7}$

MA.912.G.5.4

97. A model rocket is launched. It rises to a point 36 feet above the ground, and is 48 feet along the ground from the lift-off site, as shown below. What is the length of the rocket's path in the air, to the nearest foot?

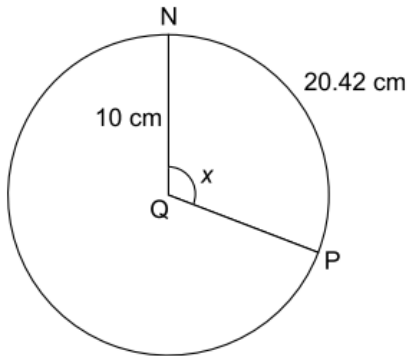


$$\begin{aligned} a^2 + b^2 &= c^2 \\ (36)^2 + (48)^2 &= c^2 \\ 3600 &= c^2 \\ c &= 60 \end{aligned}$$

						6	0
--	--	--	--	--	--	---	---

MA.912.G.6.5

98. This circle, with center point Q, has a radius of 10 centimeters. The length of the minor arc NP is 20.42 centimeters. To the nearest degree, what is the value of x?



$$\text{ARC LENGTH} = (\text{FRACTION})(\text{CIRCUMFERENCE})$$

$$20.42 = \frac{x}{360} \cdot 2\pi(10)$$

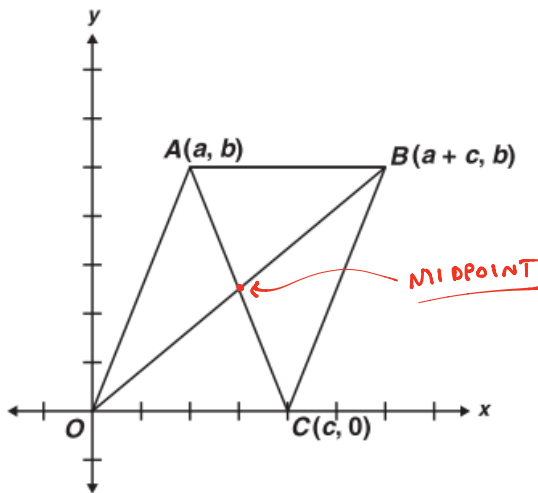
$$20.42 = \frac{62.8x}{360} \cdot \frac{360}{62.8}$$

$$x = 117.1^\circ$$

- A. 110°
- B. 117°
- C. 204°
- D. 233°

MA.912.G.3.4

99. Figure ABCO is a parallelogram.



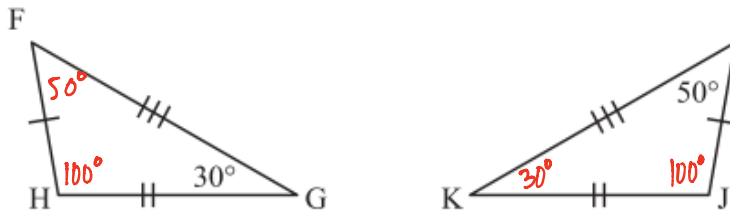
$$\left(\frac{a+c}{2}, \frac{b+0}{2} \right)$$

What are the coordinates of the point of intersection of the diagonals?

- A. $\left(\frac{a}{2}, \frac{b}{2} \right)$
- B. $\left(\frac{c}{2}, \frac{b}{2} \right)$
- C. $\left(\frac{a}{2}, \frac{b}{2} \right)$
- D. $\left(\frac{a+c}{2}, \frac{b}{2} \right)$

MA.912.G.2.4

100. In the figure below, $\triangle FGH \cong \triangle IKJ$.

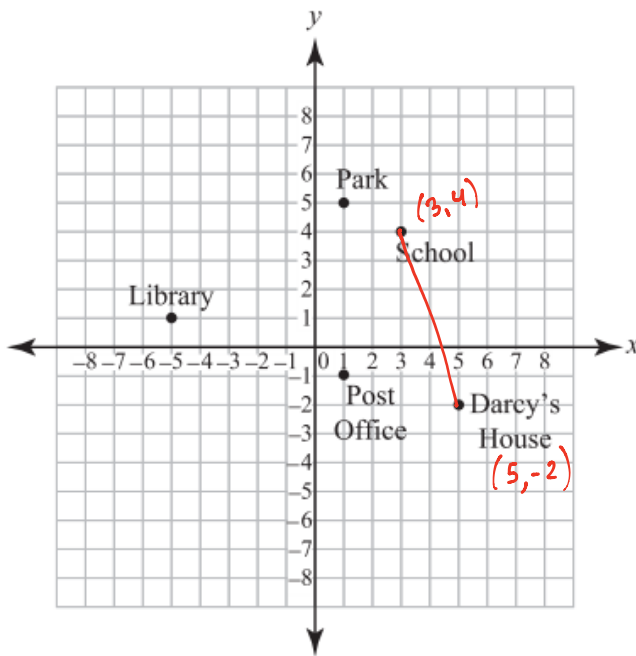


What is the measure of $\angle IJK$?

- A. 10°
- B. 30°
- C. 100°
- D. 130°

MA.912.G.1.1

101. Darcy used a coordinate grid, shown below, to sketch the locations of some important buildings in her town. Each block represents 1 square mile.



$$d = \sqrt{(3-5)^2 + (4-(-2))^2}$$

$$d = \sqrt{(-2)^2 + (6)^2}$$

$$d = \sqrt{4+36}$$

$$d = \sqrt{40}$$

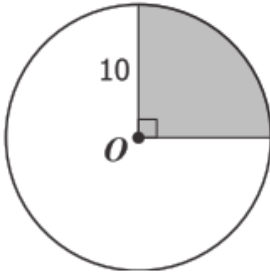
$$d \approx 6.3$$

If Darcy could travel in a straight line from her house to school, how many miles would she travel?

- A. 5.1 miles
- B. 6.3 miles
- C. 8.2 miles
- D. 9.1 miles

MA.912.G.6.5

102. Find the area of the shaded sector of circle O.



$$A = \frac{90}{360} \cdot \pi r^2$$

$$A = \frac{1}{4} \cdot \pi (10)^2$$

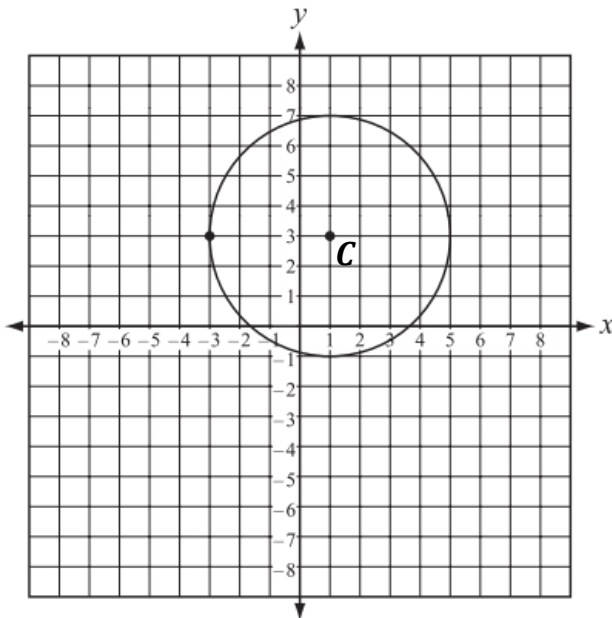
$$A = \frac{100\pi}{4}$$

$$A = 25\pi$$

- A. 5π
 B. 20π
 C. 25π
 D. 50π

MA.912.G.6.6

103. A factory uses the pattern shown below to cut circles out of sheet metal to make the bottoms of buckets.



$$(h, k) = (1, 3)$$

$$\text{radius} = 4$$

$$(x-1)^2 + (y-3)^2 = 4^2$$

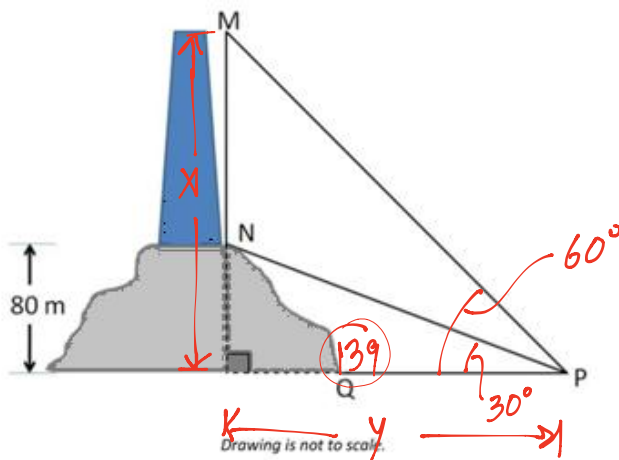
$$(x-1)^2 + (y-3)^2 = 16$$

If the center of the circle is C , what is the equation of the edge of the circular pattern?

- A. $(x-1)^2 + (y-3)^2 = 16$
 B. $(x-1)^2 + (y-3)^2 = 25$
 C. $(x-3)^2 + (y-1)^2 = 16$
 D. $(x-3)^2 + (y-1)^2 = 25$

MA.912.T.2.1

104. A lighthouse stands on a hill 80 meters above sea level. The measure of $\angle MPQ$ is 60° and the measure of $\angle NPQ$ is 30° .



$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\tan 30^\circ = \frac{80}{y}$$

$$y = \frac{80}{\tan 30^\circ}$$

$$y = 139$$

$$\tan 60^\circ = \frac{x}{139}$$

$$x = 139 \tan 60^\circ$$

$$x = 241$$

$$241 - 81 = 160$$

What is the height of the lighthouse?

- A. 80 meters
- B. 120 meters
- C. 160 meters
- D. 240 meters

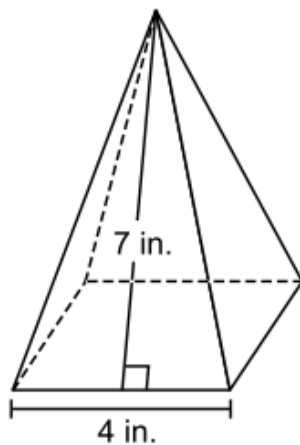
MA.912.G.7.1

105. This right square pyramid has a base length of 4 inches and a slant height of 7 inches. What is the surface area of the pyramid?

$$SA = (4)(4) + 4 \left[\frac{1}{2} (4)(7) \right]$$

$$SA = 16 + 56$$

$$SA = 72 \text{ in}^2$$



- A. 28 square inches
- B. 44 square inches
- C. 56 square inches
- D. 72 square inches