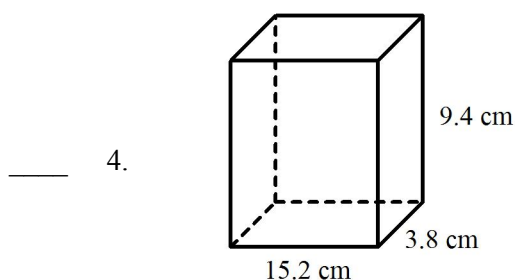


Geometry Honors Exam**Multiple Choice**

Identify the choice that best completes the statement or answers the question.

- _____ 1. What is the conclusion of the following conditional?
A number is divisible by 2 if the number is even.
- The number is divisible by 2.
 - The number is even.
 - If a number is even, then the number is divisible by 2.
 - The sum of the digits of the number is divisible by 2.
- _____ 2. Identify the hypothesis and conclusion of this conditional statement:
If tomorrow is Monday, then yesterday was Saturday.
- Hypothesis: Yesterday was Saturday.
Conclusion: Tomorrow is Monday.
 - Hypothesis: Tomorrow is Monday.
Conclusion: Yesterday was Saturday.
 - Hypothesis: Tomorrow is Monday.
Conclusion: Yesterday was not Saturday.
 - Hypothesis: Yesterday was not Saturday.
Conclusion: Tomorrow is Monday.
- _____ 3. What is the converse of the following conditional?
If a number is divisible by 6, then it is divisible by 2.
- If a number is divisible by 2, then it is divisible by 6.
 - If a number is divisible by 6, then it is divisible by 2.
 - If a number is not divisible by 2, then it is not divisible by 6.
 - If a number is not divisible by 6, then the number is not divisible by 2.

Find the volume of the given prism. Round to the nearest tenth if necessary.



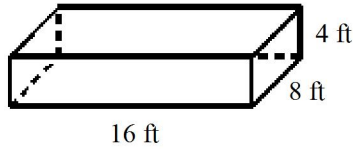
Not drawn to scale

- a. 472.7 cm^3 b. 542.9 cm^3 c. 533.5 cm^3 d. 546.7 cm^3

Name: _____

ID: A

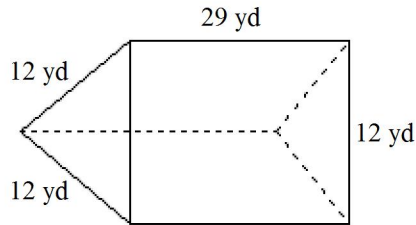
_____ 5.



Not drawn to scale

- a. 448 ft^3 b. 516 ft^3 c. 512 ft^3 d. 504 ft^3

_____ 6.



Not drawn to scale

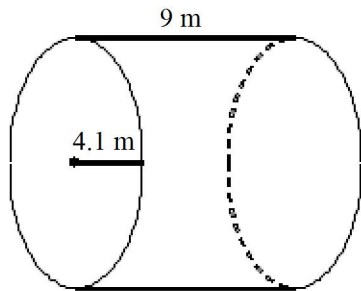
- a. 1808.3 yd^3 b. 2088.0 yd^3 c. 3616.5 yd^3 d. 1476.4 yd^3

_____ 7. Concrete can be purchased by the cubic yard. How much will it cost to pour a slab 15 feet by 15 feet by 2 inches for a patio if the concrete costs \$62.00 per cubic yard?

- a. \$86.11 b. \$2325.00 c. \$387.50 d. \$258.33

Find the volume of the cylinder in terms of π .

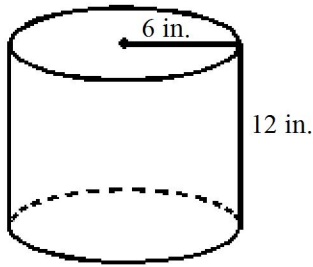
_____ 8.



Not drawn to scale

- a. $75.65\pi \text{ m}^3$ b. $620.29\pi \text{ m}^3$ c. $151.29\pi \text{ m}^3$ d. $73.8\pi \text{ m}^3$

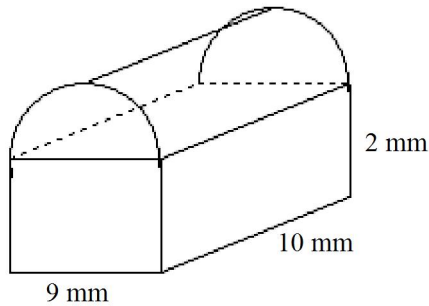
9.



Not drawn to scale

- a. $72\pi \text{ in.}^3$ b. $432\pi \text{ in.}^3$ c. $216\pi \text{ in.}^3$ d. $144\pi \text{ in.}^3$

10. Find the volume of the composite space figure to the nearest whole number.

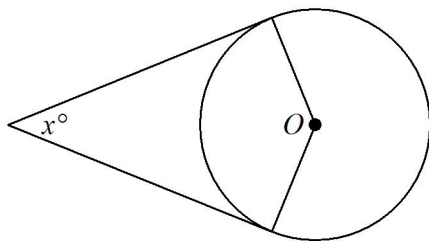


Not drawn to scale

- a. 816 mm^3 b. 281 mm^3 c. 338 mm^3 d. 498 mm^3

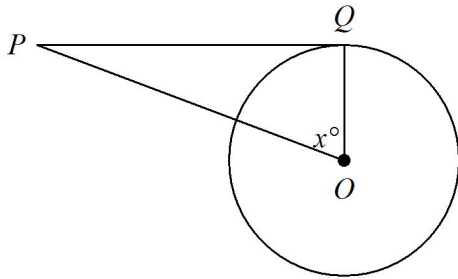
Assume that lines that appear to be tangent are tangent. O is the center of the circle. Find the value of x . (Figures are not drawn to scale.)

11. $m\angle O = 148$



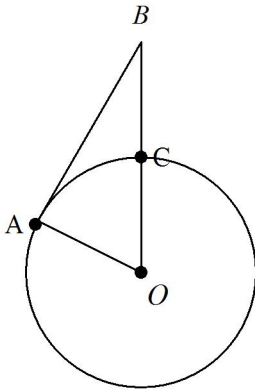
- a. 74 b. 32 c. 328 d. 296

___ 12. $m\angle P = 22$



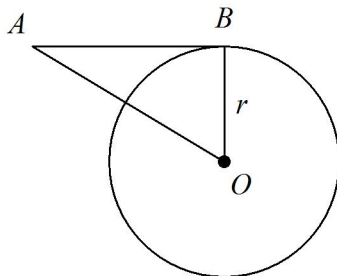
- a. 68 b. 34 c. 112 d. 44

___ 13. \overline{AB} is tangent to $\odot O$. If $AO = 21$ and $BC = 54$, what is AB ?
The diagram is not to scale.



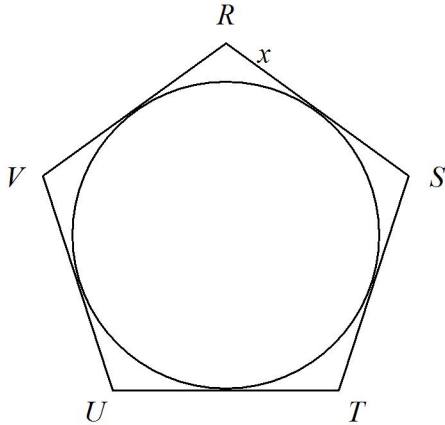
- a. 108 b. 93 c. 72 d. 75

___ 14. \overline{AB} is tangent to circle O at B . Find the length of the radius r for $AB = 6$ and $AO = 8.8$. Round to the nearest tenth if necessary. The diagram is not to scale.

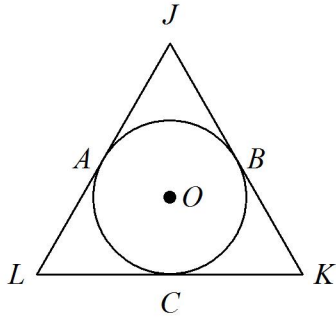


- a. 6.4 b. 10.7 c. 7.8 d. 2.8

15. Pentagon $RSTUV$ is circumscribed about a circle. Solve for x for $RS = 6$, $ST = 15$, $TU = 14$, $UV = 7$, and $VR = 9$. The figure is not drawn to scale.



- a. 2.5 b. 3.5 c. 7 d. 7.5
16. \overline{JK} , \overline{KL} , and \overline{LJ} are all tangent to circle O (not drawn to scale), and $\overline{JK} \cong \overline{LJ}$. $JA = 9$, $AL = 7$, and $CK = 8$. Find the perimeter of $\triangle JKL$.



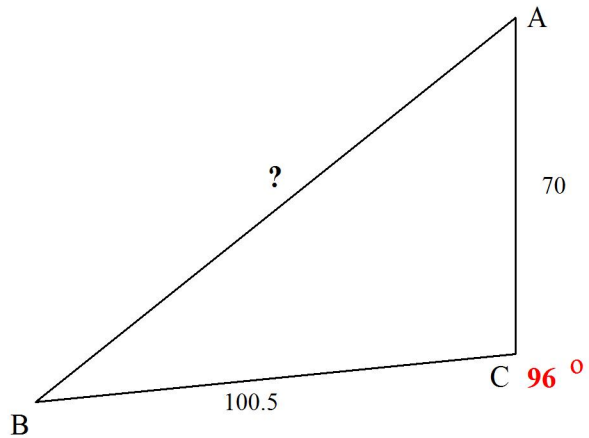
- a. 48 b. 32 c. 24 d. 34

Name: _____

ID: A

____ 17. Find the Length of Side **AB**

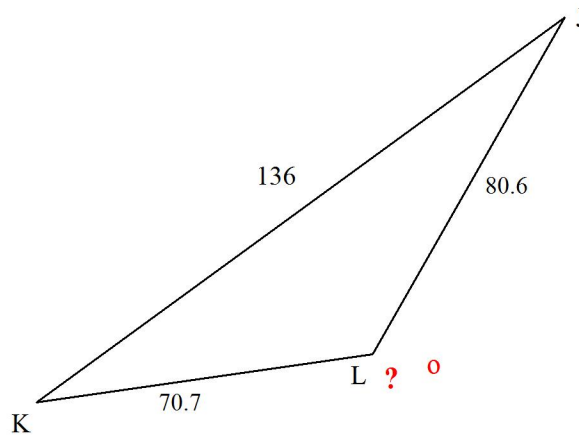
Given:
 $AC = 70$
 $BC = 100.5$
and
 $\angle C = 95.7^\circ$



- a. 95.7
- b. 70
- c. 100.5
- d. 128.1

____ 18. Find the $\angle L$ in $\triangle JKL$

Given:
 $JL = 80.6$
 $JK = 136$
 $KL = 70.7$



- a. 70.7°
- b. 27.9°
- c. 24.2°
- d. 127.9°

____ 19. Sine Law Find the length of side **MO**

Given:

Side

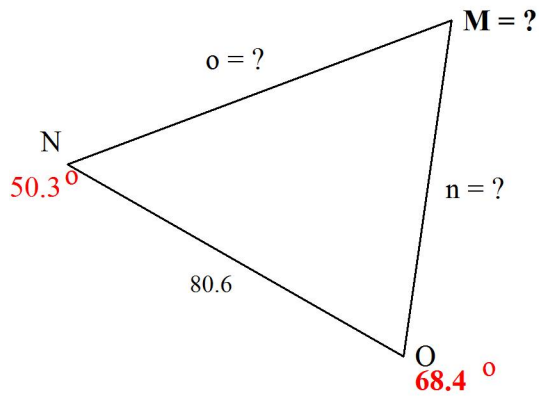
$$NO = 80.6$$

and

angles

$$\angle MON = 68.4^\circ$$

$$\angle MNO = 50.3^\circ$$



a. 68.4

c. 70.7

b. 80.6

d. 61.3

____ 20. Sine Law Find Angle $\angle BAC$

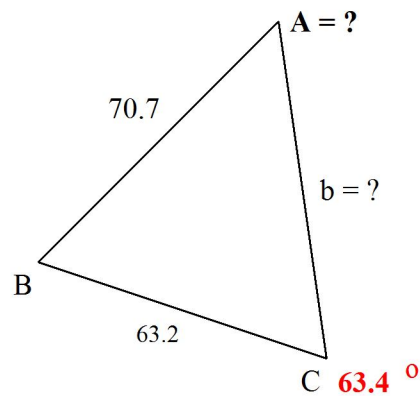
Given:

$$AB = 70.7$$

$$BC = 63.2$$

and

$$\angle ACB = 63.4^\circ$$



a. 63.2

c. 63.4

b. 70.7

d. 53.1

Geometry Honors Exam Answer Section

MULTIPLE CHOICE

1. ANS: A PTS: 1 DIF: L3 REF: 2-2 Conditional Statements
OBJ: 2-2.1 Recognize conditional statements and their parts STA: MA.912.G.8.4
TOP: 2-2 Problem 1 Identifying the Hypothesis and the Conclusion
KEY: conditional statement | conclusion DOK: DOK 2
2. ANS: B PTS: 1 DIF: L3 REF: 2-2 Conditional Statements
OBJ: 2-2.1 Recognize conditional statements and their parts STA: MA.912.G.8.4
TOP: 2-2 Problem 1 Identifying the Hypothesis and the Conclusion
KEY: conditional statement | hypothesis | conclusion DOK: DOK 2
3. ANS: A PTS: 1 DIF: L2 REF: 2-2 Conditional Statements
OBJ: 2-2.2 Write converses, inverses, and contrapositives of conditionals
STA: MA.912.D.6.2| MA.912.D.6.3
TOP: 2-2 Problem 4 Writing and Finding Truth Values of Statements
KEY: conditional statement | converse of a conditional DOK: DOK 2
4. ANS: B PTS: 1 DIF: L3
REF: 11-4 Volumes of Prisms and Cylinders
OBJ: 11-4.1 Find the volume of a prism and the volume of a cylinder
NAT: CC G.GMD.1| CC G.GMD.3| CC G.MG.1 STA: MA.912.G.7.5| MA.912.G.7.7
TOP: 11-4 Problem 1 Finding the Volume of a Rectangular Prism
KEY: volume of a rectangular prism | volume formulas | volume | prism
DOK: DOK 2
5. ANS: C PTS: 1 DIF: L2
REF: 11-4 Volumes of Prisms and Cylinders
OBJ: 11-4.1 Find the volume of a prism and the volume of a cylinder
NAT: CC G.GMD.1| CC G.GMD.3| CC G.MG.1 STA: MA.912.G.7.5| MA.912.G.7.7
TOP: 11-4 Problem 1 Finding the Volume of a Rectangular Prism
KEY: volume of a rectangular prism | volume formulas | volume | prism
DOK: DOK 2
6. ANS: A PTS: 1 DIF: L3
REF: 11-4 Volumes of Prisms and Cylinders
OBJ: 11-4.1 Find the volume of a prism and the volume of a cylinder
NAT: CC G.GMD.1| CC G.GMD.3| CC G.MG.1 STA: MA.912.G.7.5| MA.912.G.7.7
TOP: 11-4 Problem 2 Finding the Volume of a Triangular Prism
KEY: volume of a triangular prism | volume formulas | volume | prism
DOK: DOK 2
7. ANS: A PTS: 1 DIF: L4
REF: 11-4 Volumes of Prisms and Cylinders
OBJ: 11-4.1 Find the volume of a prism and the volume of a cylinder
NAT: CC G.GMD.1| CC G.GMD.3| CC G.MG.1 STA: MA.912.G.7.5| MA.912.G.7.7
TOP: 11-4 Problem 1 Finding the Volume of a Rectangular Prism
KEY: volume of a rectangular prism | prism | problem solving | word problem | volume formulas | volume
DOK: DOK 2

8. ANS: C PTS: 1 DIF: L3
 REF: 11-4 Volumes of Prisms and Cylinders
 OBJ: 11-4.1 Find the volume of a prism and the volume of a cylinder
 NAT: CC G.GMD.1| CC G.GMD.3| CC G.MG.1 STA: MA.912.G.7.5| MA.912.G.7.7
 TOP: 11-4 Problem 3 Finding the Volume of a Cylinder
 KEY: volume of a cylinder | cylinder | volume formulas | volume DOK: DOK 2
9. ANS: B PTS: 1 DIF: L3
 REF: 11-4 Volumes of Prisms and Cylinders
 OBJ: 11-4.1 Find the volume of a prism and the volume of a cylinder
 NAT: CC G.GMD.1| CC G.GMD.3| CC G.MG.1 STA: MA.912.G.7.5| MA.912.G.7.7
 TOP: 11-4 Problem 3 Finding the Volume of a Cylinder
 KEY: volume of a cylinder | cylinder | volume formulas | volume DOK: DOK 2
10. ANS: D PTS: 1 DIF: L4
 REF: 11-4 Volumes of Prisms and Cylinders
 OBJ: 11-4.1 Find the volume of a prism and the volume of a cylinder
 NAT: CC G.GMD.1| CC G.GMD.3| CC G.MG.1 STA: MA.912.G.7.5| MA.912.G.7.7
 TOP: 11-4 Problem 4 Finding Volume of a Composite Figure
 KEY: volume of a composite figure | cylinder | volume of a cylinder | composite space figure | volume of a rectangular prism | volume formulas | volume | prism DOK: DOK 2
11. ANS: B PTS: 1 DIF: L3 REF: 12-1 Tangent Lines
 OBJ: 12-1.1 Use properties of a tangent to a circle NAT: CC G.C.2
 STA: MA.912.G.6.1| MA.912.G.6.2| MA.912.G.6.3
 TOP: 12-1 Problem 1 Finding Angle Measures
 KEY: tangent to a circle | point of tangency | properties of tangents | central angle
 DOK: DOK 1
12. ANS: A PTS: 1 DIF: L3 REF: 12-1 Tangent Lines
 OBJ: 12-1.1 Use properties of a tangent to a circle NAT: CC G.C.2
 STA: MA.912.G.6.1| MA.912.G.6.2| MA.912.G.6.3
 TOP: 12-1 Problem 1 Finding Angle Measures
 KEY: tangent to a circle | point of tangency | angle measure | properties of tangents | central angle
 DOK: DOK 1
13. ANS: C PTS: 1 DIF: L2 REF: 12-1 Tangent Lines
 OBJ: 12-1.1 Use properties of a tangent to a circle NAT: CC G.C.2
 STA: MA.912.G.6.1| MA.912.G.6.2| MA.912.G.6.3 TOP: 12-1 Problem 2 Finding Distance
 KEY: tangent to a circle | point of tangency | properties of tangents | Pythagorean Theorem
 DOK: DOK 2
14. ANS: A PTS: 1 DIF: L3 REF: 12-1 Tangent Lines
 OBJ: 12-1.1 Use properties of a tangent to a circle NAT: CC G.C.2
 STA: MA.912.G.6.1| MA.912.G.6.2| MA.912.G.6.3 TOP: 12-1 Problem 3 Finding a Radius
 KEY: tangent to a circle | point of tangency | properties of tangents | right triangle | Pythagorean Theorem
 DOK: DOK 2
15. ANS: B PTS: 1 DIF: L3 REF: 12-1 Tangent Lines
 OBJ: 12-1.1 Use properties of a tangent to a circle NAT: CC G.C.2
 STA: MA.912.G.6.1| MA.912.G.6.2| MA.912.G.6.3
 TOP: 12-1 Problem 5 Circles Inscribed in Polygons
 KEY: properties of tangents | tangent to a circle | pentagon DOK: DOK 2

16. ANS: A PTS: 1 DIF: L3 REF: 12-1 Tangent Lines
 OBJ: 12-1.1 Use properties of a tangent to a circle NAT: CC G.C.2
 STA: MA.912.G.6.1| MA.912.G.6.2| MA.912.G.6.3
 TOP: 12-1 Problem 5 Circles Inscribed in Polygons
 KEY: properties of tangents | tangent to a circle | triangle DOK: DOK 2

17. ANS: D

Cosine Law (The diagram **is to scale**, the question and diagram are generated by the random positions of A,B, and C), then the length of a,b,c are found, these are then used to determine a value for angle C)

$$c^2 = a^2 + b^2 - 2ab(\cos C)$$

$$= 100.5^2 + 70^2 - 2(100.5)(70)(\cos 95.7^\circ)$$

$$c = 128.1$$

PTS: 1 REF: Side Angle Side

18. ANS: D

Cosine Law (The diagram **is to scale**, the question and diagram are generated by the random positions of A,B, and C), then the length of a,b,c are found, these are then used to determine a value for angle C

| | |
|---|---|
| $l^2 = j^2 + k^2 - 2jk(\cos L)$ $= 70.7^2 + 80.6^2 - 2(70.7)(80.6)(\cos 127.9^\circ)$ $l = 136$ | $\cos L = \frac{j^2 + k^2 - l^2}{2jk}$ $= \frac{70.7^2 + 80.6^2 - 136^2}{2(70.7)(80.6)} = -0.6139$ $\angle L = \cos^{-1} -0.6139 = 127.9^\circ$ |
| $\angle J = 24.2^\circ$ $\angle K = 27.9^\circ$ | |

PTS: 1 REF: Side Side Side

19. ANS: C

Sine Law (The diagram is to scale, the question and diagram are generated by the random positions of A,B, and C), then the length of a,b,c are found, these are then used to determine a value for angle C)

$$\frac{\sin M}{m} = \frac{\sin N}{n} = \frac{\sin O}{o} \quad \angle M = 180 - (\angle N + \angle O) \quad \frac{n}{\sin N} = \frac{m}{\sin M}$$

$$= 180 - (50.3 + 68.4)$$

$$\angle NMO = 61.3^\circ$$

$$\frac{m}{\sin M} = \frac{n}{\sin N} = \frac{o}{\sin O} \quad \frac{o}{\sin O} = \frac{m}{\sin M} \quad n = m \left(\frac{\sin N}{\sin M} \right)$$

$$o = m \left(\frac{\sin O}{\sin M} \right) = m \left(\frac{\sin 68.4^\circ}{\sin 61.3^\circ} \right) \quad MO = 80.6 \left(\frac{0.7694}{0.8773} \right) = 70.7$$

$$MN = 80.6 \left(\frac{0.9297}{0.8773} \right) = 85.4$$

PTS: 1

REF: Angle Side Angle

20. ANS: D

Sine Law (The diagram is to scale, the question and diagram are generated by the random positions of A,B, and C), then the length of a,b,c are found, these are then used to determine a value for angle C)

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c} \quad \frac{\sin A}{63.2} = \frac{\sin 63.4^\circ}{70.7} \quad \angle B = 180 - (\angle A + \angle C)$$

$$= 180 - (53.1 + 63.4)$$

$$= 63.4^\circ$$

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} \quad \sin A = \frac{63.2}{70.7} \times 0.8944 = 0.8 \quad \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\angle A = \sin^{-1}(0.8) = 53.1^\circ$$

$$b = c \left(\frac{\sin B}{\sin C} \right)$$

$$AC = 70.7 \left(\frac{0.8944}{0.8944} \right) = 70.7$$

PTS: 1

REF: Side Side Angle