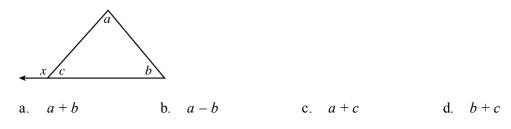
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## **Geometry EOC Practice Test #4**

### Multiple Choice

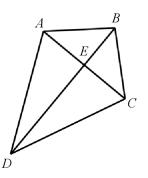
Identify the choice that best completes the statement or answers the question.

1. In the diagram below, which expression represents x, the degree measure of the exterior angle shown?



2. In the proof below, which triangle congruence property is missing in the last step?

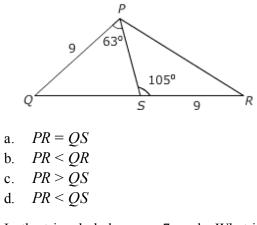




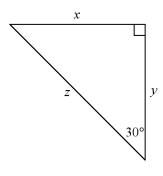
Statement	Reason
1. <i>ABCD</i> is a kite	1. Given
2. $\overline{AB} \cong \overline{BC}; \overline{AD} \cong \overline{CD}$	2. Definition of a kite
3. $\overline{BD} \cong \overline{BD}$	3. Reflexive Property
4. $\triangle ABD \cong \triangle CBD$	4. SSS
5. $\angle ABE \cong \angle CBE$	5. CPCTC
6. $\overline{BE} \cong \overline{BE}$	6. Reflexive Property
7. $\Delta ABE \cong \Delta CBE$	7. ?

- a. SAS
- c. AAS
- b. SSS d. ASA
- 3. An exterior angle of a regular polygon has a measure of 18°. How many sides does the polygon have?
  - a. 10 b. 16 c. 18 d. 20

\_\_\_\_ 4. Compare *PR* and *QS*.



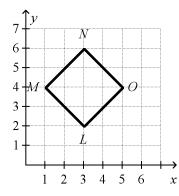
5. In the triangle below, x = 7 yards. What is the value of y?



- a. 7 yards
- b.  $7\sqrt{3}$  yards

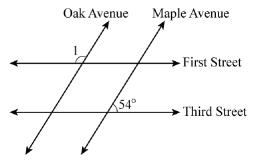
- c. 14 yards
- d.  $14\sqrt{3}$  yards

6. Quadrilateral *LMNO* has vertices as shown below. Each side has a length of  $2\sqrt{2}$  units.



Which of the following would be sufficient to prove that LMNO is a square?

- a.  $\overline{MN}$  and  $\overline{LO}$  have the same slope.
- b.  $\overline{MO}$  bisects  $\overline{LN}$ .
- c. The product of the slopes of  $\overline{MO}$  and  $\overline{LN}$  is -1.
- d. The product of the slopes of  $\overline{MN}$  and  $\overline{LM}$  is -1.
- A city engineer reviews a plan for four city streets. The numbered streets will be parallel and run East and West. The plan below shows two other parallel roadways that intersect First Street and Third Street. Maple Avenue forms a 54° angle with Third Street as shown.

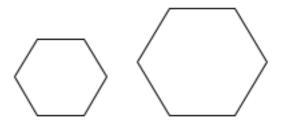


What is the measure of  $\angle 1$ ?

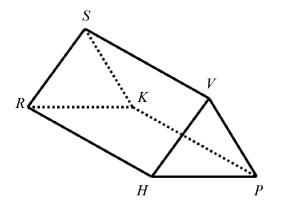
a.	36°	b.	54°	c.	126°	d.	136°
----	-----	----	-----	----	------	----	------

#### Name:

8. The side lengths of the smaller hexagon were increased by a factor of  $\sqrt{2}$  to make the larger hexagon. If the area of the smaller hexagon is  $9\sqrt{3}$  square units, what is the area of the larger hexagon?

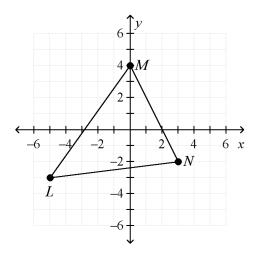


- a.  $36\sqrt{3}$  square units c.  $18\sqrt{6}$  square units
- b.  $18\sqrt{3}$  square units d.  $9\sqrt{6}$  square units
- 9. Which statement is NOT true about the figure?



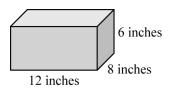
- a. It has 6 vertices.
- b. It has 8 edges.
- c. It has 5 faces.
- d. It is a triangular prism.

\_\_\_\_\_ 10. Triangle *LMN* has the vertices shown on the coordinate grid.



What is the length of  $\overline{MN}$ ?

- a.  $3\sqrt{5}$  units b.  $2\sqrt{13}$  units c.  $\sqrt{58}$  units d.  $\sqrt{65}$  units
- 11. Francesco built a box to store his baseball cards. The box is shown below.



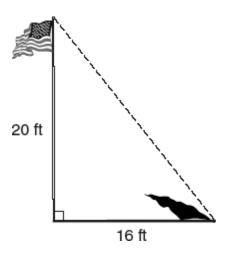
Francesco needed more storage and built a similar box that was one-half of each the length, the width, and the height of the first box. By what factor does the change in dimension between the two boxes affect the volume?

- a. The volume of the smaller box is  $\frac{1}{16}$  of the volume of the larger box.
- b. The volume of the smaller box is  $\frac{1}{8}$  of the volume of the larger box.
- c. The volume of the smaller box is  $\frac{1}{4}$  of the volume of the larger box.
- d. The volume of the smaller box is  $\frac{1}{2}$  of the volume of the larger box.

12. What is the converse of the statement below?

"If today is Friday, then tomorrow is Saturday."

- a. If tomorrow is not Saturday, then today is not Friday.
- b. If today is Saturday, then tomorrow is not Friday.
- c. If tomorrow is Saturday, then today is Friday.
- d. If today is not Friday, then tomorrow is not Saturday.
- 13. The picture below represents a 20-foot-tall flagpole that casts a 16-foot-long shadow.

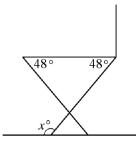


The dashed line in the figure represents the point where the shadow ends to the top of the flag. What is the approximate angle of elevation formed by the ground and the dashed line?

- a. 37°
- b. 39°
- c. 51°
- d. 53°

#### Name:

14. Monica is building a chair for her front porch. She cuts each leg so that they form a 48° angle with the base of the seat of the chair as shown in the diagram below.

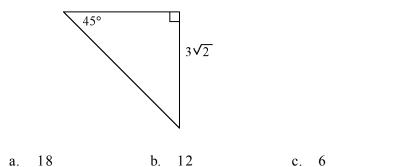


What angle does the front of each leg make with the ground, x, in order to ensure that the seat of the chair is parallel with the ground?

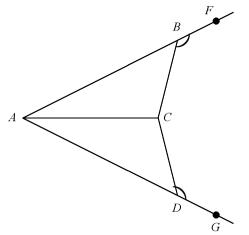
d. 5

a. 48° b. 90° c. 122° d. 132°

- \_\_\_\_ 15. Which conjecture is NOT always true?
  - a. Intersecting lines form 4 pairs of adjacent angles.
  - b. Intersecting lines form 2 pairs of vertical angles.
  - c. Intersecting lines form 4 pairs of congruent angles.
  - d. none of the above
  - 16. What is the length of the hypotenuse?

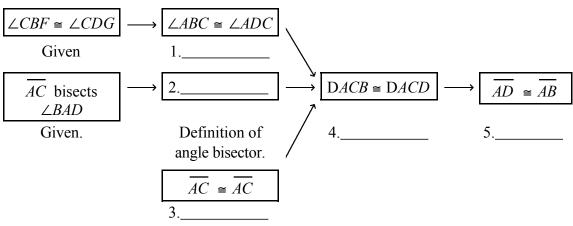


 $---- 17. Given: ∠CBF \cong ∠CDG, \overline{AC} \text{ bisects } ∠BAD$ Prove:  $\overline{AD} \cong \overline{AB}$ 



Complete the flowchart proof.

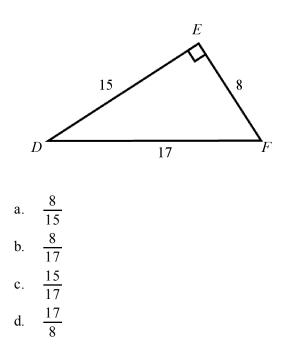
**Proof:** 



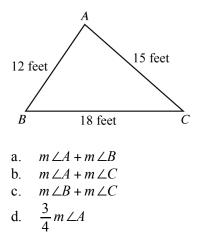
- a. 1. Congruent Complements Theorem 2.  $\angle ACB \cong \angle ACD$ 
  - 3. Transitive Property of Congruence
  - 4. CPCTC
  - 5. AAS
- b. 1. Congruent Supplements Theorem 2.  $\angle CAB \cong \angle CAD$ 
  - 3. Transitive Property of Congruence
  - 4. AAS
  - 5. CPCTC

- c. 1. Congruent Supplements Theorem 2.  $\angle CAB \cong \angle CAD$ 
  - 3. Reflexive Property of Congruence
  - 4. AAS
  - 5. CPCTC
- d. 1. Congruent Complements Theorem 2.  $\angle ACB \cong \angle ACD$ 
  - 3. Reflexive Property of Congruence
  - 4. CPCTC
  - 5. AAS

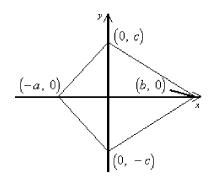
\_\_\_\_\_ 18. What is sin*D* in the right triangle shown below? Express your answer as a fraction in lowest terms.



19. Triangle ABC shows the lengths of the three sides. Which expression gives the greatest value?

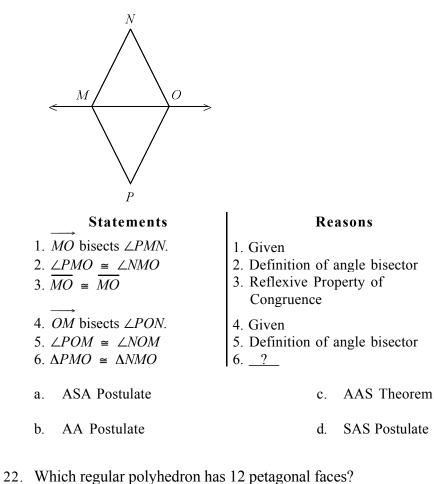


20. Which coordinates are the vertices of a figure that is similar to the figure pictured below?



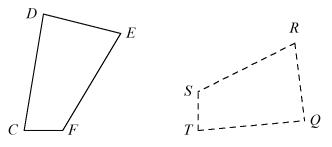
- b.  $(\frac{1}{2}a,0), (0,\frac{1}{2}c), (2b,0), (0,2c)$  d. (2a, 0), (0, 4c), (-2b, 0), (0, 2c)
- a. (-2a, 0), (0, 2c), (2b, 0), (0, -2c) c. (-a + 1, 0), (1, c), (b, 1), (0, -c + 1)

21. What is the missing reason in the two-column proof? **Given:**  $\overrightarrow{MO}$  bisects  $\angle PMN$  and  $\overrightarrow{OM}$  bisects  $\angle PON$ **Prove:**  $\triangle PMO \cong \triangle NMO$ 

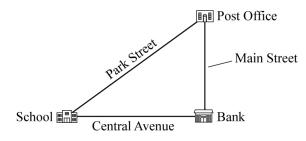


- a. dodecahedron
- b. tetrahedron
- c. icosahedron
- d. cube

23. Suppose *CDEF* represents the wing you built as part of the reconstruction of a vintage airplane model.  $\overline{CF}$  is to be attached to the plane with  $\overline{CD}$  closest to the propeller. You friend will build the second wing, *QRST*, congruent to *CDEF*, but needs instructions for how to place their wing exactly like you did. What are your instructions?

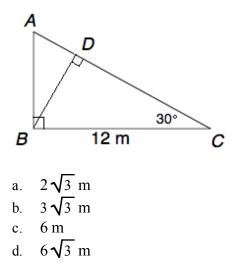


- a. Attach  $\overline{QR}$  to the plane with  $\overline{SR}$  closest to the propeller.
- b. Attach  $\overline{QR}$  to the plane with  $\overline{QT}$  closest to the propeller.
- c. Attach  $\overline{ST}$  to the plane with  $\overline{QT}$  closest to the propeller.
- d. Attach  $\overline{ST}$  to the plane with  $\overline{SR}$  closest to the propeller.
- 24. Grace drew the map shown below. On the map, Main Street is perpendicular to Central Avenue. Which of the following is NOT a valid conjecture Grace can make based on the map below?

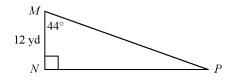


- a. The distance from the School to the Post Office is greater than the distance from the School to the Bank.
- b. The angles formed by Park Street and Central Avenue and by Park Street and Main Street are congruent.
- c. The angle formed by Park Street and Central Avenue is an acute angle.
- d. The distance from the Post Office to the Bank is less than the distance from the Post Office to the School.

\_\_\_\_ 25. Find *AD*.



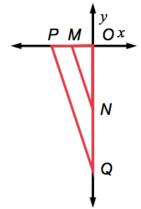
26. In the diagram below,  $m \angle M = 44^{\circ}$  and MN = 12 yards. What is the length of  $\overline{MP}$  to the nearest tenth?



a. 8.6 yardsb. 16.7 yards

c. 17 yardsd. 17.3 yards

27. Given that  $\Delta MON \sim \Delta POQ$ , and coordinates P(-4, 0), M(-2, 0) and Q(0, -12), find the coordinates of N and the scale factor of  $\Delta POQ$  to  $\Delta MON$ .



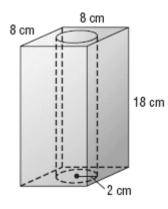
- a. N(0, -6) and scale factor is 2.
- b. N(0, -8) and scale factor is  $\frac{2}{3}$ .
- c. N(-6, 0) and scale factor is 3.
- d. N(0, -6) and scale factor is  $1\frac{1}{2}$
- 28. How many edges does a tetrahedron have?
  - a. 3
  - b. 6
  - c. 9
  - d. 12
- 29. How do you write the contrapositive of the conditional statement below?

"If  $m \angle 1 = 60^\circ$ , then  $\angle 1$  is acute."

- a. If  $m \angle 1 = 60^\circ$ , then  $\angle 1$  is not acute.
- b. If  $\angle 1$  is not acute, then  $m \angle 1 \neq 60^\circ$ .
- c. If  $\angle 1$  is acute, then  $m \angle 1 = 60^{\circ}$ .
- d. If  $m \angle 1 \neq 60^\circ$ , then  $\angle 1$  is not acute.

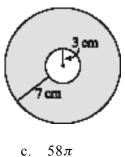
Name:

30. A square-based prism has a cylindrical hole bored through the middle as shown in the diagram below.



What is the approximate remaining volume of the prism? Use 3.14 for  $\pi$ .

- a. 226.08 cubic centimeters
- c. 925.92 cubic centimeters
- b. 247.68 cubic centimeters
- d. 1,052 cubic centimeters
- \_ 31. For the concentric circles shown, the radius of the inner circle is 3 centimeters and the distance from the edge of the inner circle to the edge of the outer circle is 7 centimeters. What is the exact area, in square centimeters, of the shaded outer region?



 a.  $40\pi$  c.  $58\pi$  

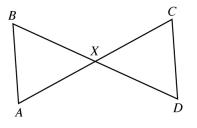
 b.  $49\pi$  d.  $91\pi$ 

32. What is the inverse of the statement below?

"If you live in Tallahassee, then you live in Florida."

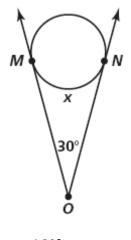
- a. If you do not live in Florida, then you do not live in Tallahassee.
- b. If you do not live in Florida, then you live in Tallahassee.
- c. If you do not live in Tallahassee, then you do not live in Florida.
- d. If you live in Florida, then you live in Tallahassee.

 $\_$  33. Given:  $\angle B \cong \angle D$ 



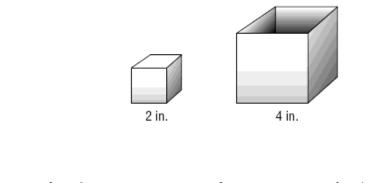
Which of the following conjectures can NOT be made based on the diagram and the given information?

- a.  $\overline{AB} \parallel \overline{CD}$
- b.  $\triangle AXB \sim \triangle CXD$
- c.  $BD \perp AC$
- d.  $\angle A \cong \angle C$
- \_\_\_\_ 34. A rectangle has a perimeter of 14 inches. A similar rectangle has a perimeter of 42 inches. The area of the smaller rectangle is 10 square inches. What is the area of the larger rectangle?
  - a. 3.3 square inches
  - b. 30.0 square inches
  - c. 38.0 square inches
  - d. 90.0 square inches
  - 35. Rob wants to take a picture of a fountain. His camera is at the vertex of the angle formed by the tangents to the fountain. If Rob estimates that this angle is  $30^\circ$ , what is the measure x of the arc of the fountain that will be in the photograph?

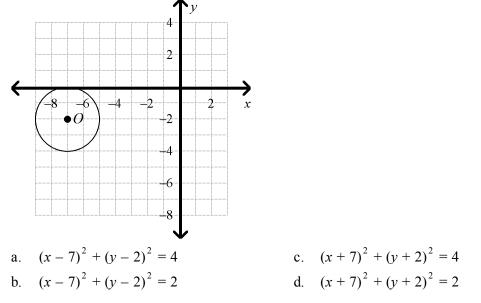


- a. 150°
- b. 140°
- c. 120°
- d. 100°

36. How many two inch cubes will fit inside the four inch cubic box?

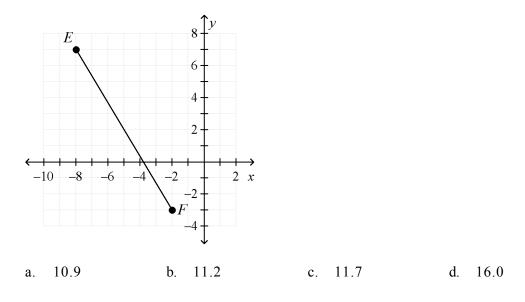


- a. 4 b. 6 c. 8 d. 16
- \_ 37. A low-wattage radio station can be heard only within a certain distance from the station. On the graph below, the circular region represents that part of the city where the station can be heard, and the center of the circle represents the location of the station. Which equation represents the boundary for the region where the station can be heard?

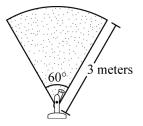


- \_ 38. Two sides of a triangle are 11 centimeters and 14 centimeters. What are all possible values for the length *x* of the third side?
  - a. x = 3 or x = 25b. 3 < x < 25c. x < 3 or x > 25d. x = 14

\_\_\_\_\_ 39. To the nearest tenth, what is the length, in units, of  $\overline{EF}$ ?

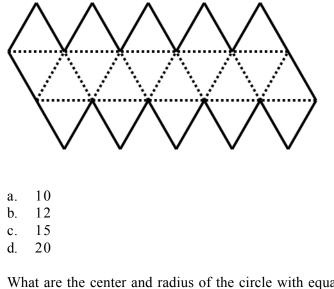


40. A sprinkler rotates through 60°, watering a section of a field. The distance from the sprinkler to the farthest point reached is 3 meters. Approximately how many square meters of the field is watered?



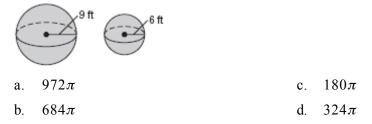
- a. 0.6 square meter
- b. 0.8 square meter
- c. 3.1 square meters
- d. 4.7 square meters

41. The net below represents an icosahedron. How many faces does an icosahedron have?

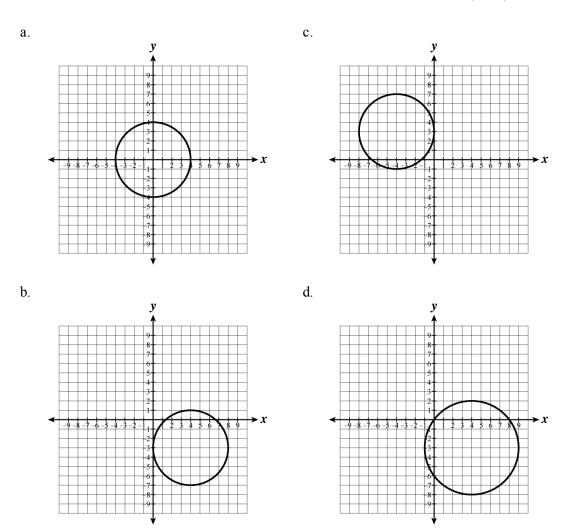


42. What are the center and radius of the circle with equation  $(x - 2)^2 + (y + 5)^2 = 180$ ? a. center (2, -5); radius 90 c. center (-2, 5); radius 36  $\sqrt{5}$ b. center (2, -5); radius 6  $\sqrt{5}$  d. center (-2, 5); radius 180

43. Find the difference in the volume of the two spheres below.



Name:



44. Which of the following graphs correctly displays the equation  $(x-4)^2 + (y+3)^2 = 16?$ 

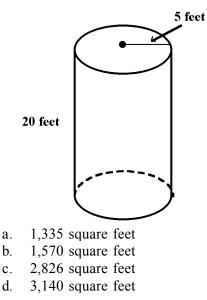
- 45. When writing a coordinate proof, which of the following would you use to prove that the diagonals of a quadrilateral are congruent?
  - a. the slope formula

c. the point-slope formula

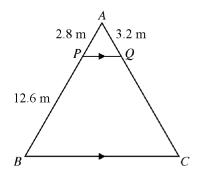
b. the distance formula

d. the midpoint formula

46. If you double the dimensions of the right cylinder below, what is the approximate surface area of the new cylinder?

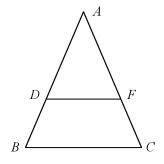


\_\_\_\_ 47. In triangle ABC,  $\overline{PQ}$  is parallel to  $\overline{BC}$ . What is the length of  $\overline{CQ}$ , in meters?

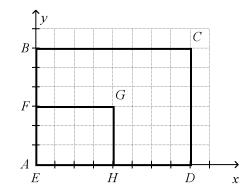


- a. 4.5 meters
- b. 9.6 meters
- c. 12.8 meters
- d. 14.4 meters

- 48. Which of the following is logically equivalent to the conditional statement below? "If there are no clouds in the sky, then it is not raining."
  - a. If it is raining, then there are clouds in the sky.
  - b. If it is not raining, then there are not clouds in the sky.
  - c. If there are clouds in the sky, then it is raining.
  - d. If it is raining, then there are no clouds in the sky.
  - 49. Which of the following would allow you to prove that  $\Delta ABC \sim \Delta ADF$ ?



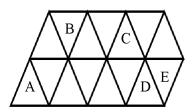
a.  $\angle B \cong \angle C$ b.  $\overline{AD} \cong \overline{DB}$ c.  $\overrightarrow{BC} \parallel \overrightarrow{DF}$ d.  $\overline{AB} \cong \overline{AC}$ 



50. Rectangles *ABCD* and *EFGH* lie in the coordinate plane as shown below.

Which of the following best explains why the rectangles are or are not similar?

- a. Yes, all rectangles are similar.
- b. Yes, both figures have four right angles and the corresponding sides are proportional.
- c. No, the corresponding sides are not proportional.
- d. No, the corresponding angles of the figures are not congruent.
- 51. A uniform tessellation is created using isosceles triangles as shown below.

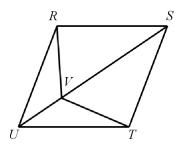


Which transformation could have been used to create triangle C from triangle A?

- a. dilation
- b. reflection
- c. rotation
- d. translation

\_\_\_\_ 52. In the proof below, what is the missing reason in step 2?

**Given:** *RSTU* is a rhombus with diagonal  $\overline{SU}$ ; Point *V* lies on  $\overline{SU}$ **Prove:**  $\overline{RV} \cong \overline{TV}$ 



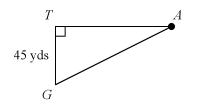
Statement	Reason
1. <i>RSTU</i> is a rhombus with diagonal $\overline{SU}$ ; Point <i>V</i> lies on $\overline{SU}$	1. Given
2. $\angle RUV \cong \angle TUV$	2. ?
3. $\overline{RU} \cong \overline{TU}$	3. Definition of a rhombus
4. $\overline{UV} \cong \overline{UV}$	4. Reflexive Property
5. $\Delta RUV \cong \Delta TUV$	5. SAS
6. $\overline{RV} \cong \overline{TV}$	6. CPCTC

a. Diagonals of a rhombus are congruent.

c. Diagonals of a rhombus are perpendicular.

- b. Diagonals of a rhombus bisect each other.
- d. Diagonals of a rhombus bisect opposite angles.

53.  $\overline{GT}$  is an air traffic control tower and point A is an airplane taking off. If angle A is 8.5°, what is the distance between the plane at point A and the top of the tower at point T?



- a. 45 yards
- b. 100 yards
- c. 301 yards
- d. 304 yards
- 54. The dimensions of a rectangle are multiplied by a factor of 2 to form a new rectangle. Which of the following best describes the relationship between the perimeter of the old rectangle and the perimeter of the new rectangle?
  - a. The perimeter of the new rectangle is half the original rectangle.
- c. The perimeter of the new rectangle is four times the original rectangle.
- b. The perimeter of the new rectangle is twice the original rectangle.
- d. The perimeter of the new rectangle is one-fourth the original rectangle.
- 55. Kurt has a rectangular garden in his backyard with an area of 40 square feet. He wants to increase the size of the garden by doubling each dimension. What will the area of the garden be after he doubles the length and width?
  - a. 180 square feet c. 120 square feet
  - b. 160 square feet d. 80 square feet

# Geometry EOC Practice Test #4 Answer Section

## **MULTIPLE CHOICE**

1.		A MA.912.G.2.			DIF:	Low	REF:	Geom: 4-2	
2		A			DIE	Moderate	<b>B</b> EE·	Geom: 6-6	
4.		MA.912.D.6.4					ILLI .		
3.		D					2		
4.	ANS:	С	PTS:	1	STA:	MA.912.G.4.	7		
5.	ANS:	В	PTS:	1	STA:	MA.912.G.5.3 High REF: Geom: 6-2, 6-3, 6-4, 6			
6.	ANS:	D	PTS:	1	DIF:	High	REF:	Geom: 6-2, 6-3, 6-4, 6-5	
	STA:	MA.912.G.3.	3						
7.	ANS:	С	PTS:	1	DIF:	Moderate	REF:	Geom: 3-1, 3-2	
	STA:	MA.912.G.1.	3						
8.	ANS:	В	PTS:	1	STA:	MA.912.G.2.	7		
		В							
10.		А		1	DIF:	Moderate	REF:	Geom: 1-3	
		MA.912.G.1.							
11.		В		1	DIF:	Moderate	REF:	Geom: 12-6	
		MA.912.G.7.				-		~ • •	
12.		C		1	DIF:	Low	REF:	Geom: 2-3	
1.2		MA.912.D.6.		1	OT A				
13.	ANS:	C	PIS:	1	SIA:	MA.912.1.2.	I DEE.	Comm. 2.1.2.2	
14.	ANS:	D MA.912.G.1.	P15:	1	DIF	Moderate	KEF:	Geom: 3-1, 3-2	
		MA.912.0.1. C			ST V ·	MA 012 G 8	1		
		C C							
		C C							
17. 18	ANS.	B	DTS.	1	DIE	MA.912.0.4.	DEE.	Gaom: 8 4	
10.	STA	MA.912.T.2.	115.	1	DII <sup>*</sup> .	Wioderate	KEF.	0.0111. 0-4	
19		A			DIF	Moderate	REF	Geom <sup>.</sup> 5-3	
17.		MA.912.G.6.			DII.	1110 del del	1021.		
20.		Α			STA:	MA.912.G.3.	3		
						MA.912.G.4.6			
22.	ANS:	А	PTS:	1	STA:	MA.912.G.7.1			
		С				MA.912.G.2.	3		
		В	PTS:		DIF:	Low	REF:	Geom: 2-1, 2-2, 8-2	
	STA:	MA.912.G.8.4	4						
25.	ANS:	А	PTS:	1	STA:	MA.912.G.5.	3		
26.	ANS:	В	PTS:	1	STA:	MA.912.T.2.	1		
27.	ANS:	А	PTS:	1	STA:	MA.912.G.2.4	4		
28.	ANS:	В	PTS:	1	DIF:	Moderate	REF:	Geom: 1-7	
	STA:	MA.912.G.7.	1						

29. ANS: B DIF: Low REF: Geom: 2-3 PTS: 1 STA: MA.912.D.6.2 30. ANS: C PTS: 1 STA: MA.912.G.7.5 31. ANS: D PTS: 1 STA: MA.912.G.6.5 32. ANS: C PTS: 1 DIF: Low REF: Geom: 2-3 STA: MA.912.D.6.2 33. ANS: C **PTS:** 1 DIF: High REF: Geom: 2-1, 2-2, 4-3 STA: MA.912.G.8.4 34. ANS: D STA: MA.912.G.2.7 PTS: 1 PTS: 1 35. ANS: A STA: MA.912.G.6.4 36. ANS: C PTS: 1 STA: MA.912.G.7.5 37. ANS: C PTS: 1 STA: MA.912.G.6.6 38. ANS: B PTS: 1 STA: MA.912.G.4.7 39. ANS: C DIF: Moderate PTS: 1 REF: Geom: 1-3 STA: MA.912.G.1.1 40. ANS: D PTS: 1 DIF: Moderate REF: Geom: 11-3 STA: MA.912.G.6.5 41. ANS: D PTS: 1 DIF: Low REF: Geom: 1-7, 1-7 Extend STA: MA.912.G.7.1 PTS: 1 STA: MA.912.G.6.6 42. ANS: B 43. ANS: B PTS: 1 STA: MA.912.G.7.5 44. ANS: B PTS: 1 DIF: High REF: Geom: 10-8 STA: MA.912.G.6.6; MA.912.G.6.7 STA: MA.912.G.3.4 45. ANS: B PTS: 1 46. ANS: D **PTS:** 1 STA: MA.912.G.7.7 47. ANS: D PTS: 1 DIF: Moderate REF: Geom: 7-4 STA: MA.912.G.2.3; MA.912.G.4.4; MA.912.G.4.5 REF: Geom: 2-2, 2-3 48. ANS: A PTS: 1 DIF: Moderate STA: MA.912.D.6.3 49. ANS: C **PTS:** 1 STA: MA.912.G.4.6 50. ANS: B PTS: 1 DIF: High REF: Geom: 7-2 STA: MA.912.G.3.3 51. ANS: D **PTS:** 1 DIF: Low REF: Geom: 9-2, 9-4 Extend STA: MA.912.G.2.4 52. ANS: D PTS: 1 DIF: Moderate REF: Geom: 6-5 STA: MA.912.D.6.4 | MA.912.G.3.4 | MA.912.G.3.2 | MA.912.G.8.5 53. ANS: C PTS: 1 STA: MA.912.T.2.1 54. ANS: B PTS: 1 STA: MA.912.G.2.7 55. ANS: B PTS: 1 DIF: Moderate REF: Geom: 11-5 STA: MA.912.G.2.5; MA.912.G.2.7