Student Name _____

Form 201

Georgia End-Of-Course Tests

Geometry
Released Test Booklet
Spring 2004

Georgia Department of Education
Kathy Cox, State Superintendent of Schools
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EOCT

Mathematics Formula Sheet

Explanation of Symbols	
$b = base$	$A = Area$
$d = distance$	$B = Area\ of\ Base$
$h = height$	$C = Circumference$
$l = slant\ height$	$LA = Lateral\ Area$
$r = radius$	$P = Perimeter\ of\ Base$
	$S = Surface\ Area$
	$V = Volume$

$$C = 2\pi r$$

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

$$A = bh$$

$$A = \frac{1}{2}h(b_1 + b_2)$$

$$A = \pi r^2$$

$$V = Bh$$

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

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

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

$$LA = Ph$$

$$LA = \frac{1}{2}Pl$$

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Midpoint of a segment = $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

SECTION I

Directions:

Today you will be taking the Geometry End-of-Course Test. Read each question carefully and then choose the *best* answer.

Be sure that the question number on the answer sheet matches the number on the test. Then mark your answer by filling in the circle on your answer sheet. Do not write your answers in the test booklet. If you do not know the answer to a question, skip it and go on. You may return to it later if time permits.

If you need to change an answer on your answer sheet, be sure to erase your first mark completely. Do not make any stray marks on the answer sheet.

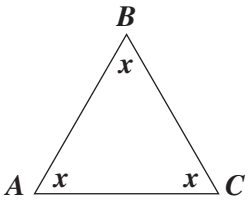
If you finish the section of the test, you may review your answers in that section only. You may not go on to the next section or return to a previous section.

There is a Formula Sheet provided for you on page 4 of this test booklet. You may refer to this sheet at any time during Section I of the test. The Formula Sheet is printed on the inside back cover for your use in Section II.

The two practice test questions below are provided to show you what the questions in the test are like. For each question, you should choose the one *best* answer and fill in the circle in the space provided on your answer sheet.

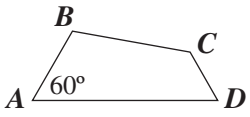
Practice Items:

P1 **Given triangle ABC, which expression BEST represents the sum of the interior angles?**



A $3x$
B $2x^2$
C x^3
D $2x^2 \bullet x$

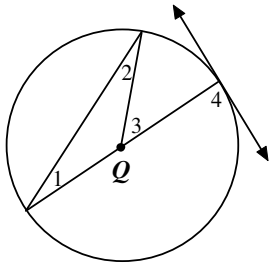
P2 **In the quadrilateral below, $m\angle A = 60°$. If $m\angle B$ is greater than $m\angle A$, which statement about $\angle B$ is correct?**



A $m\angle B$ is less than $60°$.
B $m\angle B$ is equal to $60°$.
C $m\angle B$ is greater than $60°$.
D Nothing can be known about $m\angle B$.

STOP

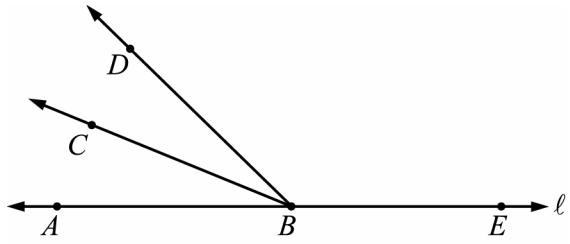
1 **In the figure below, Q is the center of the circle.**



Which angle is a central angle?

A $\angle 1$
B $\angle 2$
C $\angle 3$
D $\angle 4$

2 **In the figure below, $\overrightarrow{BC}$ bisects $\angle ABD$, and A, B, and E are all points on line ℓ.**



Which angles must be congruent?

A $\angle ABC$ and $\angle CBD$
B $\angle ABC$ and $\angle CBE$
C $\angle ABD$ and $\angle DBE$
D $\angle CBD$ and $\angle ABD$

3 **"If an animal is an ape, then it is a primate."**

"If an animal is a primate, then it has hair."

Bongo is an ape. Using these conditions, what is the correct conclusion?

A Bongo does not have hair.
B Bongo has hair.
C Bongo is a chimpanzee.
D Bongo is not a primate.

4 **A baby bottle manufacturer noticed that sales of bottles with teddy bears on them decreased during a 5-month period. The data are shown in the table below.**

Month	Bottles Sold
January	1250
February	1100
March	950
April	800
May	650

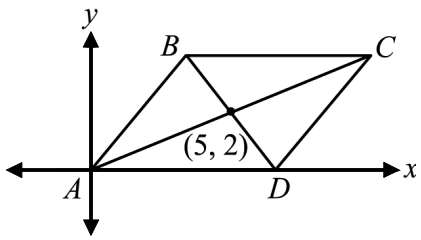
Which number represents the BEST conjecture about the number of baby bottles with teddy bears the manufacturer will sell in June?

A 150
B 500
C 600
D 650

5 **Which term matches the definition "has a definite beginning point and travels in one direction without end"?**

A line
B ray
C secant
D line segment

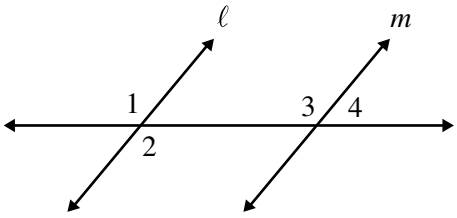
6 **In the figure below, the diagonals of parallelogram *ABCD* intersect at (5, 2).**



What are the coordinates of point *C*?

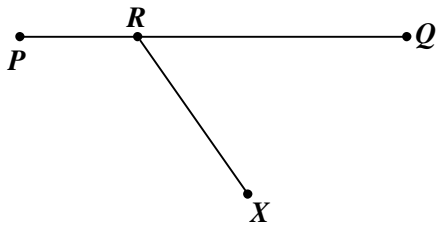
A (7, 3)
B (8, 3)
C (9, 4)
D (10, 4)

7 **In the figure below, ℓ is parallel to *m*. Which of the following are corresponding angles?**



A $\angle 1$ and $\angle 2$
B $\angle 1$ and $\angle 3$
C $\angle 2$ and $\angle 3$
D $\angle 3$ and $\angle 4$

8 **On $\overline{PQ}$, *R* is between *P* and *Q*. Point *X* does not lie on $\overline{PQ}$ and $\overline{XR}$ is not perpendicular to $\overline{PQ}$.**



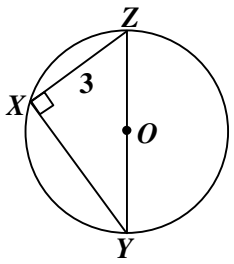
Which of the following describes $\angle XRQ$ and $\angle XRP$?

A complementary angles
B congruent angles
C supplementary angles
D vertical angles

9 **A toy company is producing a new toy that is called a "Zerk." All Zerks are either pink or green. Which of these is NOT necessarily true based on this information?**

A If an object is blue, it is not a Zerk.
B If a Zerk is not pink, it must be green.
C If an object is pink or green, it must be a Zerk.
D If an object is not pink or green, it cannot be a Zerk.

10 **In the figure below, the circle has diameter 5 and center *O*. Chord *XZ* has a length of 3.**



What is the length of chord *XY*?

A π

B 4

C $4\frac{2}{3}$

D $\sqrt{91}$

11 **Which of these statements is the BEST conclusion for the following list of statements?**

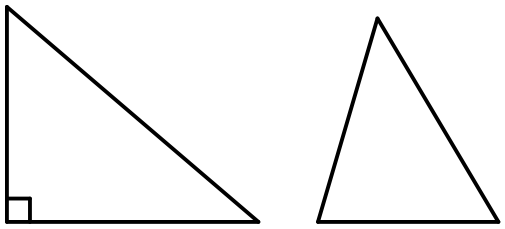
- **$\angle A$ and $\angle B$ are acute angles of ΔABC.**
- **$\angle A$ and $\angle B$ are base and vertex angles respectively.**
- **ΔABC is an equilateral triangle.**

A $\angle A \cong \angle B$
B $\angle A > \angle B$
C $m\angle A + m\angle B < 90°$
D $\angle A$ and $\angle B$ must be complementary.

12 **In the *xy*-plane, if the lines $y = 6$ and $y = 2x + k$ intersect at the point $(1, 6)$, what is the value of *k*?**

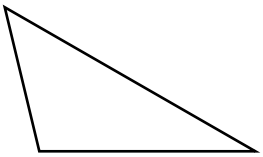
A 1
B 3
C 4
D 6

13 **After reviewing the two diagrams below, Jessie came to the conclusion that every angle within a triangle must be less than or equal to 90 degrees.**

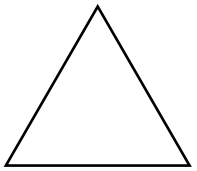


Which triangle below serves as a counterexample to Jessie's argument?

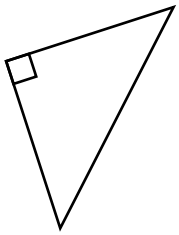
A



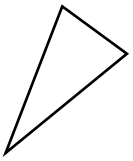
C



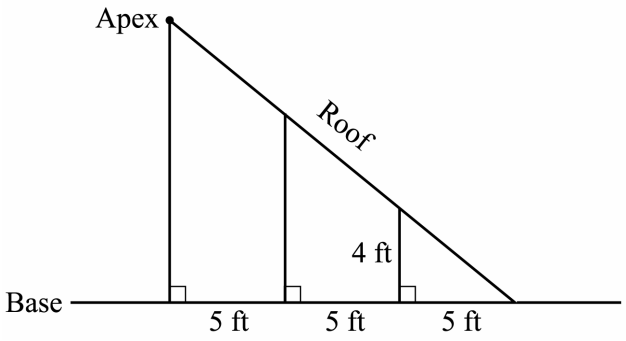
B



D



14 **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?

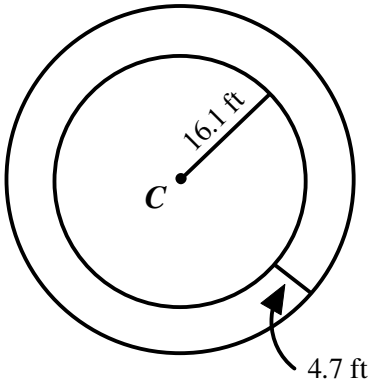
A 8
B 9
C 12
D 20

15 **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.

16 **In the figure below, *C* is the center of both circles.**



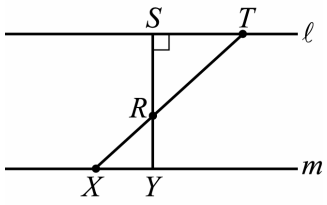
What is the circumference of the larger circle?

A 32.2π ft
B 20.8π ft
C 41.6π ft
D 9.4π ft

17 **What is the area of a square with sides of 4.3 meters?**

A $\sqrt{4.3}\ \text{m}^2$
B $8.6\ \text{m}^2$
C $17.2\ \text{m}^2$
D $18.49\ \text{m}^2$

18 **In the figure below, line ℓ is parallel to line m. If $RS = ST$, what is the measure of $\angle RXY$?**



A 30°
B 45°
C 60°
D 90°

19 **Which statement about a parallelogram must be true?**

A All of its sides are the same length.
B Its diagonals are the same length.
C Its opposite angles have the same measure.
D At least one angle is a right angle.

20 **The diameter of a large circular table is 7 feet. What is the circumference of the table in feet?**

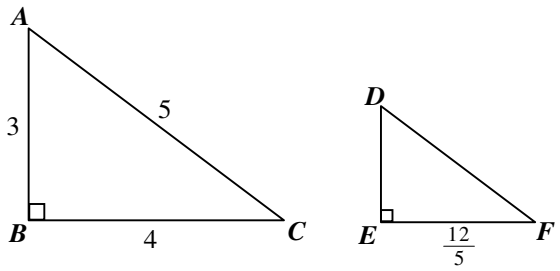
A 4π
B 7π
C 14π
D 21π

21 **FIELD TEST ITEM**

22 **FIELD TEST ITEM**

23 **FIELD TEST ITEM**

24 **The following triangles are similar.**



What is the measure of $\overline{DE}$?

A $\frac{6}{5}$

B $\frac{8}{5}$

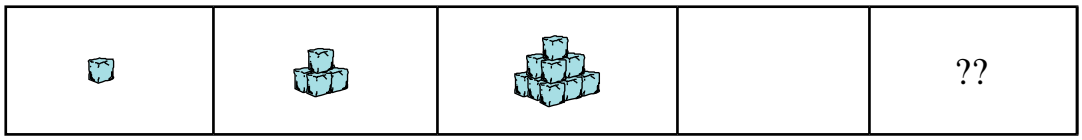
C $\frac{9}{5}$

D 2

25 **If the volume of a rectangular prism is 420.75 cubic centimeters and the area of the base is 49.5 square centimeters, what is the height of the prism in centimeters?**

A 4.5
B 8.5
C 11.0
D 15.5

26 **A ziggurat is a kind of pyramid formed by layers of cubes. In this ziggurat design made from small identical cubes, each side of a layer is one unit larger than the layer above it.**



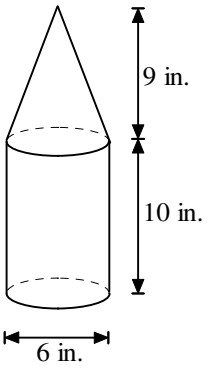
How many of the small cubes would be needed to build the fifth ziggurat in this series?

A 25
B 30
C 55
D 91

27 **Four points lie in a plane so that no three of them lie on a line. If lines are drawn connecting all pairs of these points, how many such lines are there?**

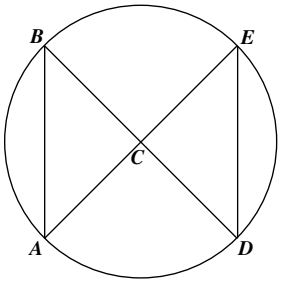
A 4
B 6
C 8
D 12

28 **What is the volume of the figure below?**



A 86π cubic inches
B 104π cubic inches
C 117π cubic inches
D 171π cubic inches

29 **Callie intends to show that $\Delta ACB \cong \Delta ECD$ given that C is the center of the circle and $\overset{\frown}{AB} \cong \overset{\frown}{DE}$.**



First, $\overline{CB} \cong \overline{CD} \cong \overline{AC} \cong \overline{CE}$ because _____.

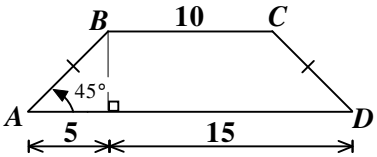
Second, $\angle ACB \cong \angle DCE$ because these are central angles that intersect congruent arcs.

Finally, $\Delta ACB \cong \Delta ECD$ because of the Side–Angle–Side postulate.

Which phrase belongs in the blank?

A the line segments are all radii of the same circle
B the line segments are all chords of the same circle
C the line segments are all tangents of the same circle
D the line segments are all skew to the same circle

30 **What is the area of isosceles trapezoid $ABCD$?**



A 62.5 square units
B 75.0 square units
C 76.4 square units
D 150 square units

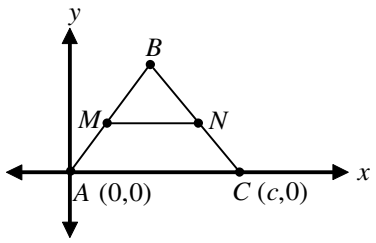
31 **An open area at a local high school is in the shape of a quadrilateral. Two sidewalks crisscross this open area as diagonals of the quadrilateral. If the walkways cross at their midpoints and the walkways are equal in length, what is the shape of the open area?**

A a parallelogram
B a rhombus
C a rectangle
D a trapezoid

32 **What is the measure of an angle inscribed in a circle if the intercepted arc measures 72º?**

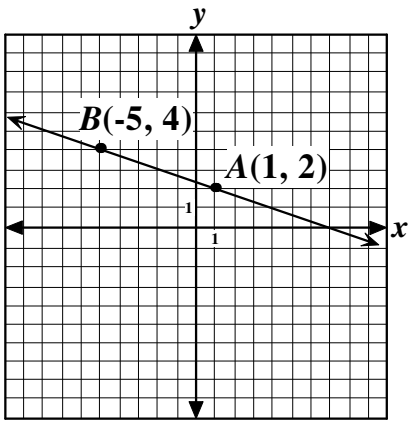
A 18º
B 36º
C 72º
D 144º

33 **In the coordinate system below, to prove that segment $\overline{MN}$ is parallel to segment $\overline{AC}$, which of the following must be shown?**



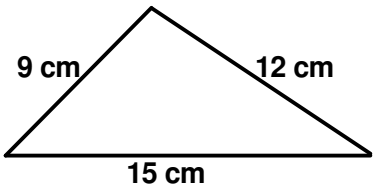
A The length of $\overline{MN}$ is half the length of $\overline{AC}$.
B The slope of $\overline{MN}$ equals the slope of $\overline{AC}$.
C The length of $\overline{AM}$ equals the length of $\overline{MB}$.
D The length of $\overline{AM}$ equals the length of $\overline{CN}$.

34 **Which equation describes the line through points *A* and *B*?**



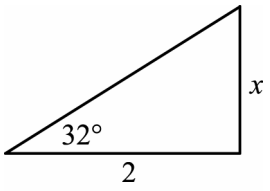
A $x - 3y = -5$
B $x + 3y = -5$
C $x + 3y = 7$
D $3x + y = 5$

35 **What is the area of a right triangle with legs of length 9 cm and 12 cm and a hypotenuse of length 15 cm?**



A 36 square cm
B 54 square cm
C 90 square cm
D 108 square cm

36 **Which number is closest to the value of *x* in the figure below?**



sin 32° = 0.530
cos 32° = 0.848
tan 32° = 0.625

A 0.424
B 1.060
C 1.250
D 1.378

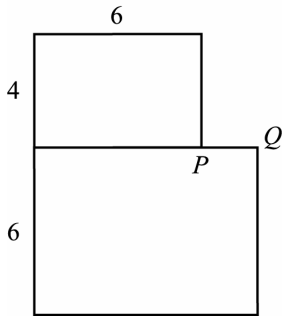
37 **A sector of a circle is created from a central angle with a measure of 60°. If the diameter of the circle is 6 inches, what is the area of the sector?**

A 1.5π in.^{2}
B 2π in.^{2}
C 6π in.^{2}
D 8π in.^{2}

38 **If $\overleftrightarrow{CD}$ intersects $\overline{AB}$ at point *K* and $\overleftrightarrow{CD}$ is the perpendicular bisector of $\overline{AB}$, which statement must be true?**

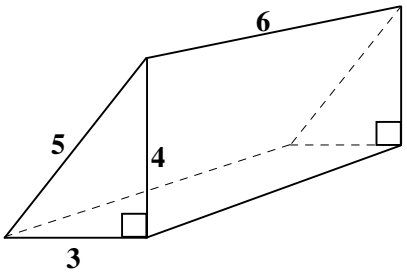
A $\overline{CK} = \overline{KD}$
B $\overline{AB} = \overline{CD}$
C $\overline{AC} = \overline{BC}$
D $\overline{AC} = \overline{AD}$

39 **The figure below shows two similar rectangles. What is the length of $\overline{PQ}$?**



A 2
B 3
C 4
D 5

40 **In the figure below, the two triangular faces of the prism are right triangles with sides of length 3, 4, and 5. The other three faces are rectangles. What is the surface area of the prism?**



A 72
B 84
C 96
D 108

41 **FIELD TEST ITEM**

42 **FIELD TEST ITEM**

43 **FIELD TEST ITEM**

44 **FIELD TEST ITEM**

45 **FIELD TEST ITEM**

STOP

STOP WORK

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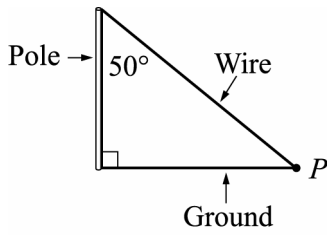
SECTION II

Do not turn page until instructed to do so.

46 **Planes *P* and *R* are parallel, and line ℓ is in plane *R*. Which of the following is true?**

A Every line that is perpendicular to ℓ intersects plane *P*.
B Every line in plane *P* is parallel to ℓ.
C No line in plane *P* is skew to ℓ.
D No line in plane *P* intersects line ℓ.

47 **A 100-foot wire extends from the top of a pole to a point *P* on the ground, as shown in the figure below.**



Which expression gives the distance, in feet, from *P* to the bottom of the pole?

A $100\cos 50°$

B $100\sin 50°$

C $\dfrac{\cos 50°}{100}$

D $\dfrac{\sin 50°}{100}$

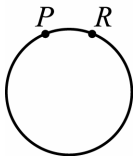
48 **What is the length of a diagonal of a rectangle with length 12 and width 5?**

A 7
B 13
C 17
D 60

49 **A square is to be dilated with a scale factor of 4. If a side of the original square is 12, what is the measure of a side of the new square?**

A 3
B 8
C 12
D 48

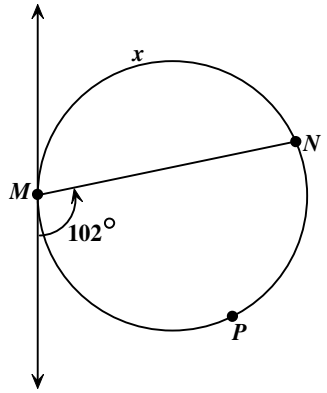
50 **Points *P*, *Q*, *R*, *S*, and *T* are different points on the circle below. Points *P* and *R* are shown. $\overline{PQ}$ and $\overline{RS}$ are diameters of the circle. The length of minor arc $\overset{\frown}{PR}$ is 1 unit, and the length of minor arc $\overset{\frown}{PT}$ is 1 unit.**



Which could be the clockwise order of these five points, beginning with point *R*?

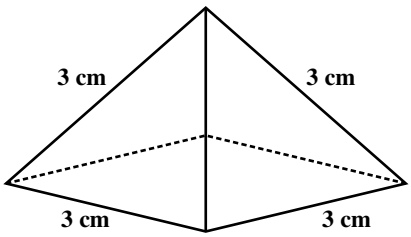
A *RQSTP*
B *RQTPS*
C *RSQTP*
D *RSTQP*

51 **What is the value of x in the figure below?**



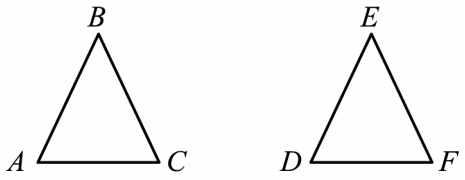
A 51°
B 78°
C 156°
D 180°

52 **Which unit is appropriate for describing the surface area of the 4-sided pyramid below?**



A cm
B cm^2
C cm^3
D cm^4

53 **Which set of information is NOT enough to prove that ΔABC is congruent to ΔDEF ?**



A $\angle A \cong \angle D$, $\angle C \cong \angle F$, and $\overline{BC} \cong \overline{EF}$
B $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$, and $\angle B \cong \angle E$
C $\angle A \cong \angle D$, $\angle C \cong \angle F$, and $\overline{AC} \cong \overline{DF}$
D $\angle A \cong \angle D$, $\overline{AC} \cong \overline{DF}$, and $\overline{BC} \cong \overline{EF}$

54 **Which statement will ALWAYS provide a counterexample to the statement below?**

If two angles are congruent, then they are right angles.

A $\angle A$ and $\angle B$ are right angles.
B $\angle A$ and $\angle B$ are supplementary angles.
C $\angle A$ and $\angle B$ are vertical angles.
D $\angle A$ and $\angle B$ both have measure 75°.

55 **A building that is 50 feet tall casts a shadow 30 feet long. Nearby, a tree casts a 75-foot-long shadow. How tall is the tree?**

A 95 feet
B 110 feet
C 125 feet
D 140 feet

56 **Lines ℓ and m are both perpendicular to plane I. Plane II contains lines ℓ and m. Which statement is true about planes I and II?**

A Planes I and II do not intersect.
B Planes I and II are perpendicular.
C Planes I and II intersect in line ℓ.
D Planes I and II are the same plane.

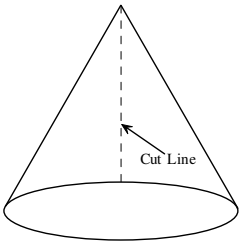
57 **If $r > 0$ and $s < 0$, in which quadrant of the xy-plane does the point (r, s) lie?**

A quadrant I
B quadrant II
C quadrant III
D quadrant IV

58 **If the length of the side of a square changes by a factor of 3, by what factor does the area change?**

A 3
B 9
C 12
D 27

59 **A paper cone is cut open with a single straight cut as shown.**



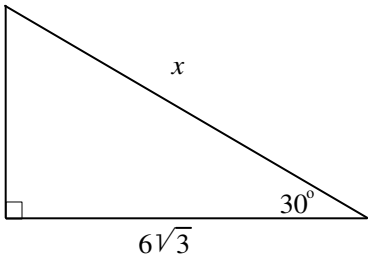
Which term BEST describes the straight cut shown?

A height
B slant height
C radius
D diameter

60 **FIELD TEST ITEM**

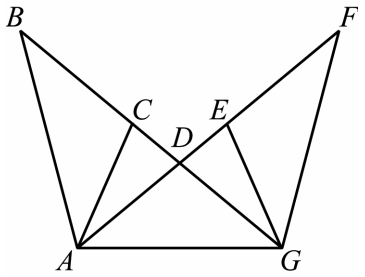
61 **FIELD TEST ITEM**

62 **What is the value of x in the triangle below?**



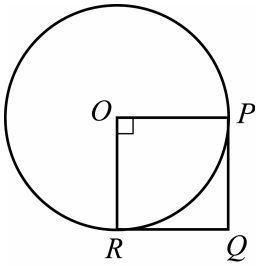
A $3\sqrt{3}$
B 6
C 12
D $12\sqrt{3}$

63 **In the figure below, $\overline{AD} \cong \overline{GD}$ and $\overline{AE} \cong \overline{GC}$. Which of the following must be true?**



A $\Delta ADC \cong \Delta GDE$
B $\Delta ABD \cong \Delta GFD$
C $\Delta BAC \cong \Delta FGE$
D $\Delta ADC \cong \Delta CED$

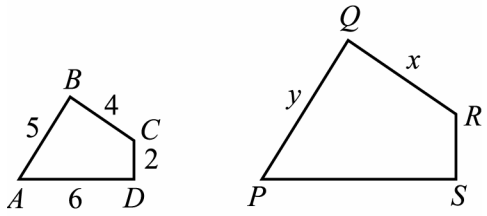
64 **Point *O* is the center of the circle below.**



$\overline{RQ}$ and $\overline{PQ}$ are tangent to the circle, and $\overline{OP} \perp \overline{OR}$. Which statement BEST describes quadrilateral *OPQR* ?

A It is a parallelogram, but $\angle Q > 90°$.
B It is a rectangle, but $RQ \neq PQ$.
C It is a trapezoid, and $PQ > OR$.
D It is a rhombus, and $\angle Q = 90°$.

65 **In the figure below, quadrilateral *ABCD* is similar to quadrilateral *PQRS*.**



Which of the following gives *x* in terms of *y*?

A $x = \frac{4}{5}y$

B $x = \frac{4}{6}y$

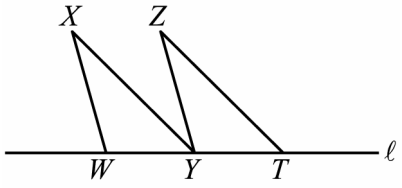
C $x = \frac{5}{4}y$

D $x = \frac{5}{6}y$

66 **Which set of points is equidistant from the rays that form an angle?**

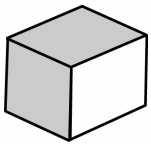
A perpendicular bisector
B skew line
C angle bisector
D central angle

67 **In the figure below, $\Delta WXY \cong \Delta YZT$. Which statement is NOT necessarily true?**



A $\angle WXY \cong \angle YZT$
B $\angle WXY \cong \angle XYZ$
C The measure of $\angle XWY$ is twice the measure of $\angle YZT$.
D $\overline{XY} \| \overline{ZT}$

68 **The figure below is one view of a cube.**



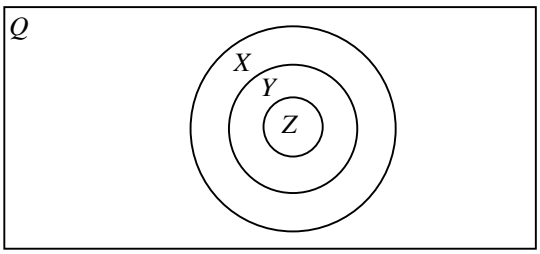
What is the greatest number of faces that could be shaded on the cube?

A 2
B 3
C 4
D 5

69 **A machine produces identical toys in the shape of a circle. Which term BEST describes the relationship between any two of these toys?**

A concave
B concentric
C congruent
D tangent

70 **The Venn diagram below represents the set of all quadrilaterals.**



***Q* = Quadrilaterals**

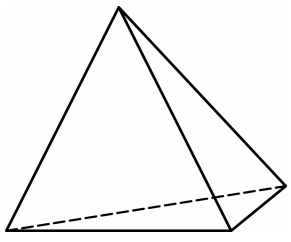
Which answer represents appropriate choices for *X*, *Y*, and *Z*, in that order?

A parallelogram, trapezoid, square
B parallelogram, rectangle, square
C rectangle, parallelogram, square
D rectangle, trapezoid, square

71 **In order to measure the amount of liquid needed to fill a cylindrical container, which unit would be appropriate?**

A in.
B in.^2
C in.^3
D in.^4

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

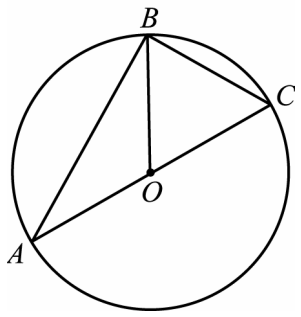


A $E = 6, F = 4$
B $E = 6, F = 3$
C $E = 4, F = 6$
D $E = 3, F = 5$

73 **Which word describes a triangle whose angles measure 24°, 37°, and 119°?**

A isosceles
B acute
C right
D obtuse

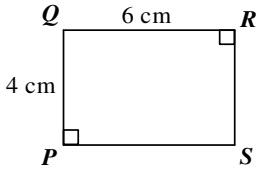
74 **In the figure below, *O* is the center of the circle.**



If the measure of minor arc $\overset{\frown}{BC}$ is 60°, what is the measure of $\angle ABO$?

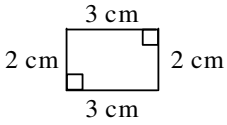
A 20°
B 30°
C 40°
D 50°

75 **In the figure below, *PQRS* is the floor plan of a rectangular room.**

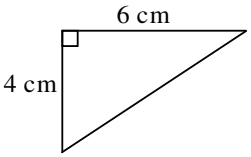


Which drawing is congruent to *PQRS*?

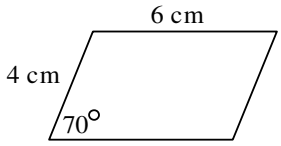
A



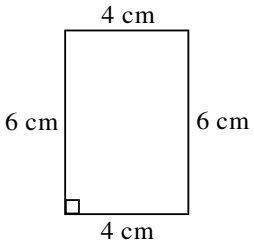
B



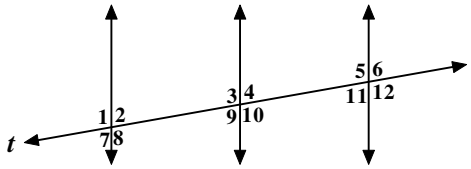
C



D



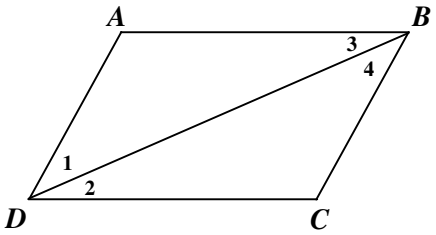
76 **In the figure below, the 3 lines are parallel and cut by transversal *t*.**



Which is a pair of alternate interior angles?

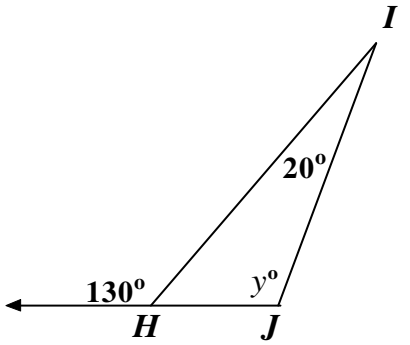
A $\angle 1$ and $\angle 4$
B $\angle 2$ and $\angle 11$
C $\angle 3$ and $\angle 10$
D $\angle 4$ and $\angle 6$

77 **Quincy finished proving that $\Delta ABD \cong \Delta CDB$. Using Quincy's diagram below, which is a pair of corresponding angles?**



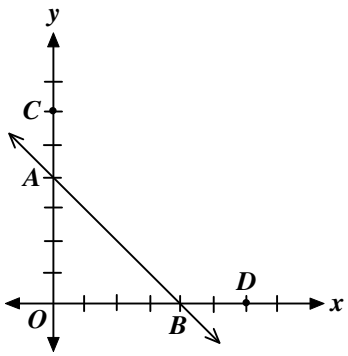
A $\angle 1$ and $\angle 2$
B $\angle 1$ and $\angle 4$
C $\angle 2$ and $\angle 4$
D $\angle 3$ and $\angle 4$

78 **In ΔHIJ below, what is the value of *y*?**



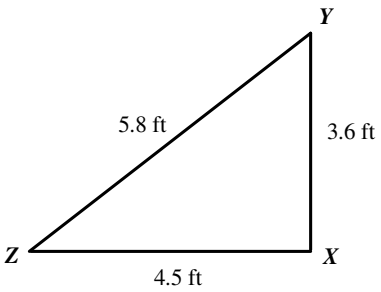
A 80
B 70
C 110
D 130

79 **If ΔAOB is dilated to ΔCOD, then which statement is true?**



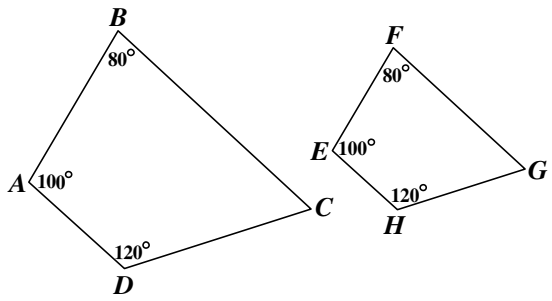
A ΔAOB is congruent to ΔCOD.
B ΔAOB is similar to ΔCOD.
C ΔAOB has half the area of ΔCOD.
D ΔAOB has half the perimeter of ΔCOD.

80 **In the triangle below, which list shows the angles from smallest to largest?**



A $\angle X, \angle Y, \angle Z$
B $\angle Z, \angle Y, \angle X$
C $\angle Y, \angle X, \angle Z$
D $\angle X, \angle Z, \angle Y$

81 **In the diagram below, *ABCD* is similar to *EFGH*.**



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

82 **Haley looked at Figure 1 and moved the shape to create Figure 2.**

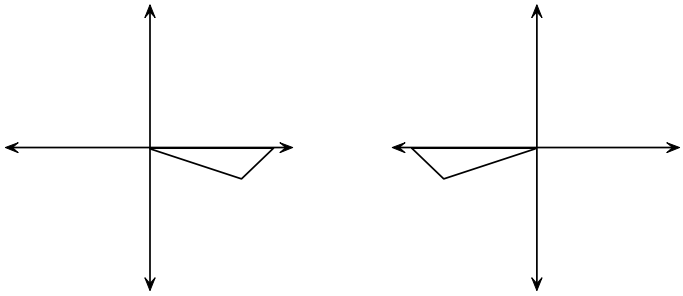
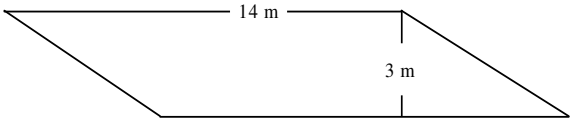


Figure 1 **Figure 2**

Which term describes the change that Haley made?

A dilation
B reflection
C rotation
D translation

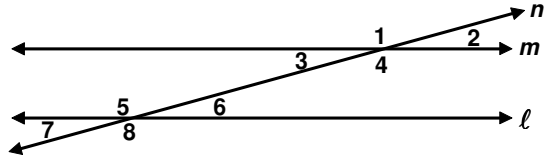
83 **Look at the quadrilateral below.**



What is the area of the figure?

A 14 square meters
B 28 square meters
C 34 square meters
D 42 square meters

84 **In the diagram below, $\ell \parallel m$.**



If the measure of $\angle 1$ is 165º, what must be the measure of $\angle 6$?

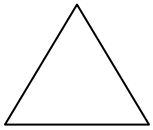
A 3º
B 15º
C 165º
D 180º

85 **Look at the triangles below.**

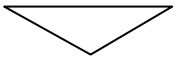
Triangle 1

Triangle 2

Triangle 3



Triangle 4



Which of these triangles are MOST likely similar?

A 1 and 2
B 1 and 3
C 2 and 3
D 3 and 4

86 **FIELD TEST ITEM**

87 **FIELD TEST ITEM**

88 **FIELD TEST ITEM**

89 **FIELD TEST ITEM**

90 **FIELD TEST ITEM**

Mathematics Formula Sheet

Explanation of Symbols	
$b = base$	$A = Area$
$d = distance$	$B = Area\ of\ Base$
$h = height$	$C = Circumference$
$l = slant\ height$	$LA = Lateral\ Area$
$r = radius$	$P = Perimeter\ of\ Base$
	$S = Surface\ Area$
	$V = Volume$

$$C = 2\pi r$$

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

$$A = bh$$

$$A = \frac{1}{2}h(b_1 + b_2)$$

$$A = \pi r^2$$

$$V = Bh$$

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

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

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

$$LA = Ph$$

$$LA = \frac{1}{2}Pl$$

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Midpoint of a segment = $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$