INTRODUCTION

The Geometry MathSet contains pages of multiple-choice questions organized by the following 13 units:

Unit 1 Introductory Concepts
Unit 2 Points, Lines, and Planes
Unit 3 Angles
Unit 4 Parallel and Perpendicular Lines
Unit 5 Triangles
Unit 6 Polygons
Unit 7 Circles
Unit 8 Angles and Arcs
Unit 9 Areas of Polygonal Regions
Unit 10 Ratio, Proportion and Similarity
Unit 11 Regular Polygons and Circles
Unit 12 Coordinate Geometry
Unit 13 Trigonometry

There are over 500 questions, many containing graphics. Answer keys for all questions are provided.

The questions in this MathSet are a subset of the questions available in the Geometry TestBank.

Name: _____ Date: _____

INTRODUCTORY CONCEPTS — Unit 1

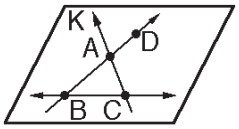
Circle the letter of the correct answer.

1. A _____ has position but no length, width or height.

A line
B plane
C point
D space
E figure

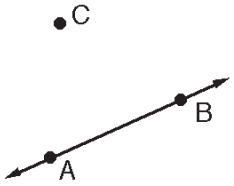
2. Name the points in plane K that are collinear.

A A, B & D
B A, B & C
C A, C & D
D B, C & D
E K, A & C



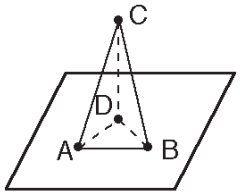
3. In the diagram, points A, B, C are

A collinear
B intersecting
C noncoplanar
D noncollinear
E none of these



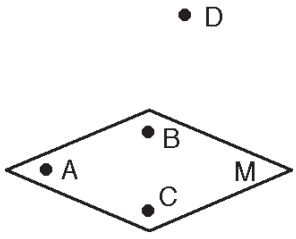
4. Name three coplanar points from the diagram.

A A, B & C
B B, C & D
C A, C & D
D All of the above
E None of the above



5. In the diagram, plane M contains the points A, B, and C. The points A, B, C and D are

A coplanar
B collinear
C noncoplanar
D linear
E non collated



6. A statement accepted without proof is a:

A theorem
B postulate
C corollary
D definition
E none of these

7. Which of the following is NOT a characteristic of a good definition?

A It is reversible.
B It uses the term being defined to describe itself.
C It uses terms simpler than the term being defined.
D It distinguishes the term from other terms.
E It places the term into a closely related category.

8. A student observes the answers when the even numbers are summed:

$2 = 2 \quad (1 \cdot 2)$
$2 + 4 = 6 \quad (2 \cdot 3)$
$2 + 4 + 6 = 12 \quad (3 \cdot 4)$
$2 + 4 + 6 + 8 = 20 \quad (4 \cdot 5)$

She makes the prediction that the sum of the first n even numbers is $n(n + 1)$. To arrive at this conclusion, she has used

A guesswork
B deductive reasoning
C counterexample
D inductive reasoning
E imagination

9. Change the following general statement to a conditional statement: Vertical angles are congruent.

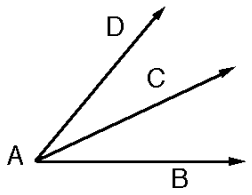
A If angles are vertical angles, then they are congruent.
B If angles are congruent, then they are vertical angles.
C Congruent angles are vertical.
D Angles are vertical if and only if they are congruent.
E Vertical angles are congruent.

Name: _____ Date: _____

ANGLES — Unit 3

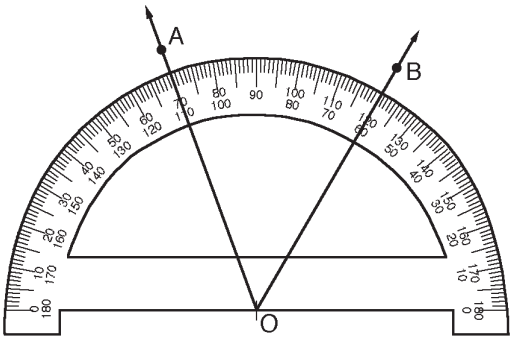
Circle the letter of the correct answer.

10. In the given figure, which of the following is true?



A m ∠BAC = m ∠BAD
B ∠BAC ≅ ∠BAD
C m ∠BAC ≠ m ∠BAD
D m ∠BAC = m ∠DAB
E none of these

11. m ∠AOB =

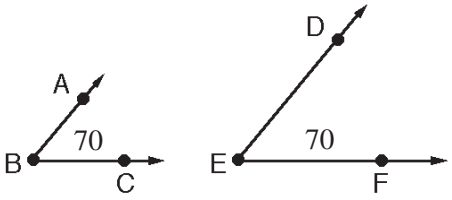


A 110
B 85
C 170
D 50
E 60

12. An angle whose measure is greater than 90 but less than 180 is called

A an acute angle
B a right angle
C a reflex angle
D an obtuse angle
E a straight angle

13. The diagram shows two congruent angles. Select the correct geometric statement describing this.



A ∠A = ∠D
B ∠ABC ~ ∠DEF
C ∠ABC ≈ ∠DEF
D ∠ABC ≅ ∠DEF
E ∠ABC = ∠DEF

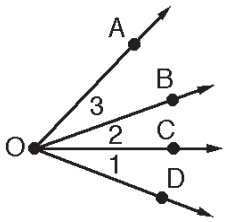
14. Which of the following statements illustrates the transitive property of angle congruence?

A If ∠X is any angle, then ∠X ≅ ∠X
B If ∠X and ∠Y are any angles and ∠X ≅ ∠Y, then ∠Y ≅ ∠X
C If ∠X, ∠Y and ∠Z are any angles and ∠X ~ ∠Y and ∠Y ~ ∠Z, then ∠X ~ ∠Z
D If ∠X and ∠Y are any angles and ∠X ≅ ∠Y, then ∠X ≅ ∠X
E If ∠X, ∠Y and ∠Z are any angles and ∠X ≅ ∠Y and ∠Y ≅ ∠Z, then ∠X ≅ ∠Z

15. Which of the following statements illustrates the symmetric property of angle congruence?

A If ∠X is any angle, then ∠X ≅ ∠X
B If ∠X and ∠Y are any angles and ∠X ~ ∠Y, then ∠Y ~ ∠X
C If ∠X, ∠Y and ∠Z are any angles and ∠X ≅ ∠Y and ∠Y ≅ Z then ∠X ≅ ∠Z
D If ∠X and ∠Y are any angles and ∠X ≅ ∠Y, then ∠Y ≅ ∠X
E None of these

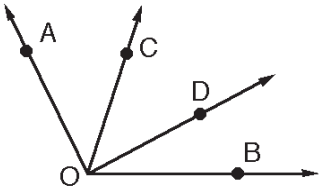
16. A third angle formed by ∠1 and ∠2 in the figure is?



A ∠COD
B ∠BOD
C ∠AOC
D ∠O
E none of these

17. In the diagram, m ∠AOB = 130

If m ∠AOC = 2x, m ∠COD = x + 10 and m ∠DOB = x, the value of x is



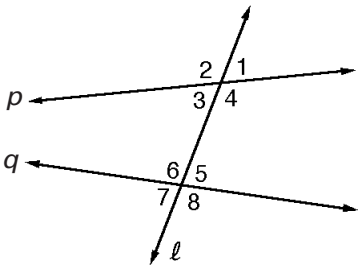
A 40
B 35
C 30
D 50
E impossible to determine without more information

Name: _____ Date: _____

PARALLEL AND PERPENDICULAR LINES — Unit 4

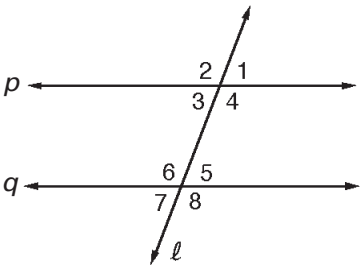
Circle the letter of the correct answer.

11. Line ℓ is a transversal of lines p and q. Which of the following is a pair of alternate interior angles?



A $\angle 4$ and $\angle 5$
B $\angle 1$ and $\angle 6$
C $\angle 3$ and $\angle 7$
D $\angle 2$ and $\angle 8$
E none of these

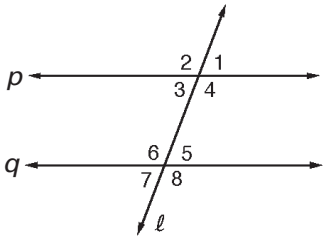
12. Line ℓ is a transversal of lines p and q. If _____ are congruent then p is parallel to q.



A $\angle 1$ and $\angle 3$
B $\angle 6$ and $\angle 8$
C $\angle 3$ and $\angle 7$
D $\angle 2$ and $\angle 3$
E $\angle 4$ and $\angle 5$

13. Line ℓ is a transversal of lines p and q.

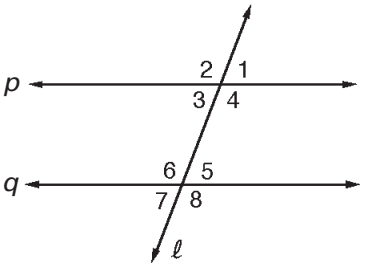
Select a pair of angles whose equality would guarantee that line p is parallel to line q.



A $\angle 2$ and $\angle 4$
B $\angle 2$ and $\angle 5$
C $\angle 4$ and $\angle 5$
D $\angle 2$ and $\angle 7$
E $\angle 1$ and $\angle 5$

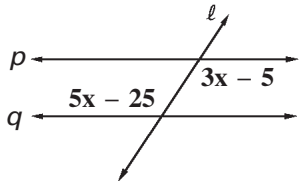
14. Line ℓ is a transversal of line p and q.

If _____ are congruent, then p is parallel to q.



A $\angle 3$ and $\angle 5$
B $\angle 3$ and $\angle 6$
C $\angle 6$ and $\angle 8$
D $\angle 2$ and $\angle 7$
E $\angle 4$ and $\angle 5$

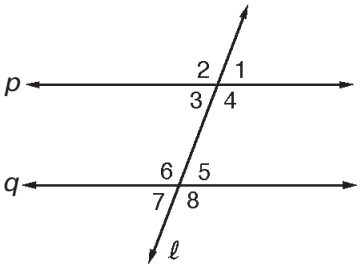
15. If lines p and q are parallel, the value of x is



A 40
B 20
C 110
D 10
E Impossible to determine without further information

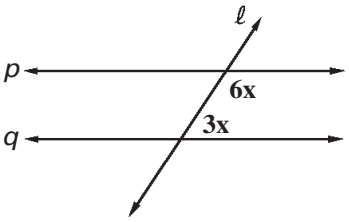
16. Line ℓ is a transversal of lines p and q.

If _____ are supplementary, then p is parallel to q.



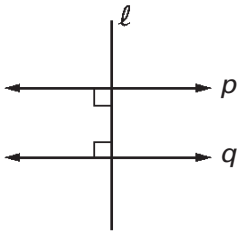
A $\angle 2$ and $\angle 8$
B $\angle 3$ and $\angle 5$
C $\angle 4$ and $\angle 5$
D $\angle 6$ and $\angle 4$
E $\angle 1$ and $\angle 7$

17. A value for x so that $p \parallel q$ is



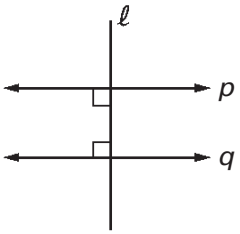
A 30
B 20
C 10
D 25
E nonexistent

18. In the diagram



A $\ell \parallel p$
B $p \perp q$
C $p \parallel q$
D $q \parallel \ell$
E none of these

19. Select the true statement about the three lines in the diagram.



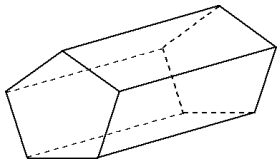
A $p \parallel q$
B ℓ and q are skew lines
C $\ell \parallel q$
D $\ell \parallel p$
E none of these

Name: _____ Date: _____

AREAS OF POLYGONAL REGIONS — Unit 9

Circle the letter of the correct answer.

36. This polyhedron is



A a pyramid
B a pentagonal prism
C a hexagonal prism
D a cylinder
E a cone

37. The volume of a polyhedron is measured in

A cubic units
B square units
C units
D acres
E none of these

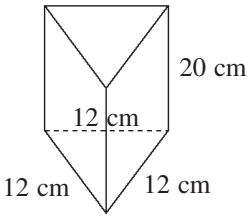
38. Find the altitude of a rectangular prism if its base is 4 units by 3 units and its volume is 156 cu units.

A 13
B 39
C 52
D both A and C
E none of these

39. Find the volume of a regular hexagonal prism if the edge of the base is 8 and the altitude is 4.

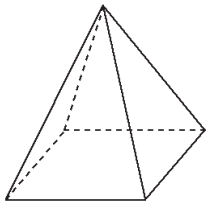
A $384\sqrt{3}$
B $64\sqrt{3}$
C 768
D $128\sqrt{3}$
E none of these

40. The volume of the regular triangular prism shown is:



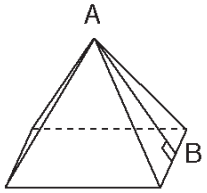
A 720 cm^3
B $360\sqrt{3}\,cm^3$
C $36\sqrt{3}\,cm^3$
D $720\sqrt{3}\,cm^3$
E 720 cm

41. For this square pyramid, the base is a



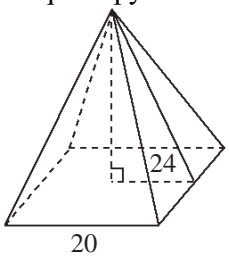
A triangle
B square
C pentagon
D hexagon
E none of these

42. The diagram shows a square pyramid. $\overline{AB}$ is called the:



A altitude
B lateral area
C slant height
D edge
E vertex

43. The square pyramid has slant height 24 and the base has sides with length 20.
The lateral area of the square pyramid is:

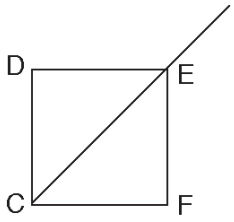


A 240
B 120
C 96
D 1920
E 960

44. Find the volume of a regular triangular pyramid if an edge of the base measures 12 units and a lateral edge measures 10 units.

A $24\sqrt{39}$
B $39\sqrt{24}$
C 144
D $36\sqrt{3}$
E none of these

45. For square CDEF, use diagonal $\overline{CE}$ as a line of reflection. The reflection image of $\overline{EF}$ is



A $\overline{CF}$
B $\overline{DE}$
C $\overline{CD}$
D $\overline{EF}$
E none of these

Name: _____ Date: _____

TRIGONOMETRY — Unit 13

Circle the letter of the correct answer.

13. In the triangle, find AB

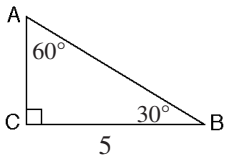
A 10

B 5

C $\frac{5\sqrt{3}}{3}$

D $\frac{10\sqrt{3}}{3}$

E $5\sqrt{2}$



14. In the right triangle, the value of x is

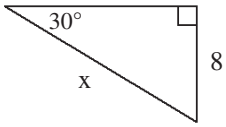
A 4

B $8\sqrt{2}$

C 16

D $\frac{\sqrt{3}}{16}$

E impossible to determine without more information.



15. In the triangle find BC

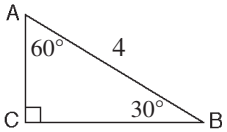
A 8

B 2

C $2\sqrt{3}$

D $\frac{4\sqrt{3}}{3}$

E none of these



16. In the right triangle, the value of y is

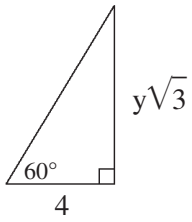
A 4

B $\frac{4}{3}$

C $4\sqrt{3}$

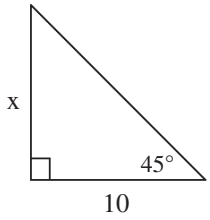
D $\frac{1}{4}$

E impossible to determine without more information.



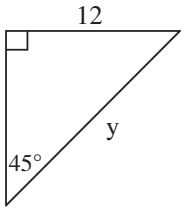
17. In the right triangle, x =

A $5\sqrt{2}$
B $10\sqrt{2}$
C $5\sqrt{3}$
D 5
E 10



18. In the right triangle, the value of y is $K\sqrt{2}$. The value of K is

A $6\sqrt{2}$
B 12
C $12\sqrt{2}$
D 24
E 6



19. Using your calculator, the value of cos 58° (correct to three decimal places) is:

A 0.848
B 1.600
C 0.613
D 0.530
E 0.087