Chapter 6 Vocabulary Test/Review

Choose from the terms above to complete each sentence.

1. If there are 15 girls and 9 boys in an art class, the ____ of girls to boys in the class is 5:3.

2. If \( \triangle ABC \sim \triangle DEF \), \( AB = 10 \), and \( DE = 2.5 \), then the ____ of \( \triangle ABC \) to \( \triangle DEF \) is 4:1.

3. In \( \triangle LMN \), \( P \) lies on \( \overline{LM} \) and \( Q \) on \( \overline{LN} \). If \( PQ = \frac{1}{2} MN \), \( PQ \) is called a(n) ____.

4. The product of the ____ in the equation \( \frac{3}{x} = \frac{24}{30} \) is 90.

5. The product of the ____ in the equation \( \frac{3}{x} = \frac{24}{30} \) is 24x.

6. A geometric figure created by using iteration is called a(n) ____.

7. If quadrilaterals \( ABCD \) and \( WXYZ \) have corresponding angles congruent and corresponding sides proportional, they are called ____.

8. In a recursive formula, an algebraic expression is evaluated repeatedly in a process called ____.

9. The equation \( \frac{3}{x} = \frac{24}{30} \) is called a(n) ____.

10. If some parts of a figure resemble the figure as a whole, the figure is called ____.

In your own words—

11. Explain what is meant by equality of cross products.

12. Describe a self-similar figure.
Write the letter for the correct answer in the blank at the right of each question.

1. Given the choice between doing an oral and a written report, 18 of the 28 students chose to do an oral report. Find the ratio of written to oral reports.
   A. 5:9 \hspace{1cm} B. 9:5 \hspace{1cm} C. 9:14 \hspace{1cm} D. 14:9

2. A model of a lighthouse has diameter 8 inches and height 18 inches. If the actual diameter of the lighthouse is 20 feet, find its actual height.
   A. 30 ft \hspace{1cm} B. 35 ft \hspace{1cm} C. 45 ft \hspace{1cm} D. 50 ft

3. The three sides of a triangle are in the ratio 2:4:5. If the shortest side of the triangle is 4 meters long, find the perimeter.
   A. 17 m \hspace{1cm} B. 22 m \hspace{1cm} C. 32 m \hspace{1cm} D. 40 m

4. Find the polygon that may be similar to ABCD.
   A. \hspace{1cm} B. \hspace{1cm} C. \hspace{1cm} D.

5. If \( \triangle ABC \sim \triangle DEF \), find \( m \angle C \).
   A. 54° \hspace{1cm} B. 59° \hspace{1cm} C. 67° \hspace{1cm} D. 69°

6. If quadrilateral JKLM \( \sim \) quadrilateral WXYZ, JK = 15, LM = 10, XY = 6, and WX = 9, find KL.
   A. 8 \hspace{1cm} B. 10 \hspace{1cm} C. 11 \hspace{1cm} D. 12

7. If \( \triangle LMN \sim \triangle RST \), LN = 21, MN = 28, and the scale factor of \( \triangle RST \) to \( \triangle LMN \) is \( \frac{4}{3} \), find ST.
   A. \( 15\frac{3}{4} \) \hspace{1cm} B. 21 \hspace{1cm} C. 28 \hspace{1cm} D. 37\frac{1}{3}

8. Name the theorem or postulate that can be used to prove that these triangles are similar.
   A. AA \hspace{1cm} B. SAS \hspace{1cm} C. SSA \hspace{1cm} D. SSS

For Questions 9 and 10, refer to the figure at the right.

9. Identify the similar triangles.
   A. \( \triangle LMN \sim \triangle MPQ \) \hspace{1cm} B. \( \triangle LMN \sim \triangle QMP \) \hspace{1cm} C. \( \triangle LMN \sim \triangle QPM \) \hspace{1cm} D. \( \triangle LMN \sim \triangle PQM \)

10. Find \( LM \).
   A. 16 \hspace{1cm} B. 17 \hspace{1cm} C. 18 \hspace{1cm} D. 20
11. A 6-foot tall fence post cast a $2\frac{1}{2}$-foot shadow. A nearby clock tower cast a 35-foot shadow. Find the height of the tower.
   A. 37$\frac{1}{2}$ ft  
   B. 71 ft  
   C. 78 ft  
   D. 84 ft

12. Find $CE$.
   A. 25  
   B. 26  
   C. 27  
   D. 28

13. Find $FH$ so that $\overline{GH} \parallel \overline{DE}$.
   A. 4  
   B. 5  
   C. 6  
   D. 7

14. Find $x$.
   A. 4  
   B. 6  
   C. 9  
   D. 12

15. If $\triangle ABC \sim \triangle PQR$, find the perimeter of $\triangle PQR$.
   A. 12  
   B. $13\frac{1}{2}$  
   C. $14\frac{1}{2}$  
   D. 16

16. $\triangle ABC \sim \triangle XYZ$ with altitudes $\overline{AP}$ and $\overline{XQ}$. Find $AP$.
   A. $11\frac{1}{4}$  
   B. 14  
   C. $15\frac{1}{4}$  
   D. 20

17. Find $x$.
   A. 7  
   B. 8  
   C. 9  
   D. 10

18. Find $y$.
   A. $3\frac{3}{4}$  
   B. 4  
   C. 6  
   D. $7\frac{1}{2}$

19. Find the third iterate of the expression $3(2x - 1)$, where $x$ initially equals 2.
   A. 27  
   B. 63  
   C. 174  
   D. 303

**Bonus** Find $CE$.
1. Of the 300 television sets sold at an electronics store last month, 90 were flat-screen TVs. Find the ratio of flat-screen TVs to other TVs sold last month.

2. Determine whether $\triangle ABC \sim \triangle DEF$. Justify your answer.

3. When a 5-foot vertical pole casts a 3-foot, 4-inch shadow, an oak tree casts a 20-foot shadow. Find the height of the tree.

4. If quadrilateral $ABCD \sim$ quadrilateral $WXYZ$, $AB = 15$, $BC = 27$, and the scale factor of $WXYZ$ to $ABCD$ is $\frac{2}{3}$, find $XY$.

5. The blueprint for a swimming pool is 8 inches by $2\frac{1}{2}$ inches. The actual pool is 136 feet long. Find the width of the pool.

6. Find $CD$.

7. If quadrilateral $ABCD \sim$ quadrilateral $PQRS$, find $BC$.

8. Determine whether $\triangle ABC \sim \triangle DEF$. Justify your answer.

9. $\triangle ABC \sim \triangle XYZ$, $AB = 12$, $AC = 16$, $BC = 20$, and $XZ = 24$. Find the perimeter of $\triangle XYZ$.

For Questions 10 and 11, use the figure.

10. Identify the similar triangles.

11. Find $x$. 
12. If $\triangle ABC \sim \triangle PQR$ and $BM$ and $QN$ are medians, find $BM$.

13. The ratio of the measures of the three sides of a triangle is 3:4:6. If the perimeter is 91, find the measure of the longest side.

14. If $\triangle RST \sim \triangle UVW$, find $m \angle W$.

15. In $\triangle ABC$, $AX$ bisects $\angle BAC$. Find $x$.

16. Find $y$ so that $MN \parallel BC$.

17. $\triangle ABC \sim \triangle LMN$, and $AD$ and $LP$ are altitudes. Find $AD$.

18. Find $x$.

19. Find the third iterate of the expression $x^2 + 2$, where $x$ initially equals 1.

**Bonus** Find $EG$. 

B:
Choose from the terms above to complete each sentence.

1. The square root of the product of two numbers is the __________ of the numbers.

2. A group of three whole numbers that satisfy the equation \(a^2 + b^2 = c^2\), where \(c\) is the greatest number, is called a(n) __________.

3. A ratio of the lengths of two sides of a right triangle is called a(n) __________.

4. An angle between the line of sight and the horizontal when an observer looks upward is called a(n) __________.

5. An angle between the line of sight and the horizontal when an observer looks downward is called a(n) __________.

6. Three commonly used trigonometric ratios are the __________, __________, and __________.

7. For \(\triangle ABC\), the __________ says \(\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}\).

8. For \(\triangle ABC\), the __________ says \(a^2 = b^2 + c^2 - 2bc \cos A\).

9. The reciprocal of the sine is called the __________.

10. The reciprocal of the cosine is called the __________.

Define each term.

11. solving a triangle

12. Pythagorean Theorem
Write the letter for the correct answer in the blank at the right of each question.

1. Find the geometric mean between 9 and 11.
   A. $\sqrt{99}$  
   B. $\sqrt{20}$  
   C. 10  
   D. 2

2. In $\triangle PQR$, $RS = 5$ and $QS = 8$. Find $PS$.
   A. 3  
   B. 6.5  
   C. $\sqrt{13}$  
   D. $2\sqrt{10}$

3. Find $x$.
   A. 5.5  
   B. $\sqrt{11}$  
   C. $\sqrt{24}$  
   D. $\sqrt{33}$

4. Find $y$.
   A. 4  
   B. 5  
   C. 8  
   D. 9

5. Find the length of the hypotenuse of a right triangle whose legs measure 6 and 5.
   A. 11  
   B. $\sqrt{11}$  
   C. $\sqrt{30}$  
   D. $\sqrt{61}$

6. Find $x$.
   A. $\sqrt{39}$  
   B. 6  
   C. $5\sqrt{3}$  
   D. 5

7. Which of the following could represent sides of a right triangle?
   A. $\frac{3}{4}$, 1, $\frac{5}{4}$  
   B. $\sqrt{3}$, $\sqrt{5}$, $\sqrt{15}$  
   C. 7, 17, 24  
   D. 8, 15, 16

8. Find $c$.
   A. 18  
   B. $9\sqrt{3}$  
   C. $9\sqrt{2}$  
   D. 9

9. Find the perimeter of a square to the nearest tenth if the length of its diagonal is 16 millimeters.
   A. 11.3 mm  
   B. 45.3 mm  
   C. 90.5 mm  
   D. 128.0 mm

10. Find $x$.
    A. 6  
    B. $6\sqrt{2}$  
    C. $6\sqrt{3}$  
    D. $12\sqrt{3}$
11. Find $x$.
A. 8.0  B. 8.9  C. 10.4  D. 10.8

12. In right triangle $ABC$, $a = 14$, $b = 48$, and $c = 50$. Find $\tan \angle A$.
A. $\frac{7}{25}$  B. $\frac{7}{24}$  C. $\frac{24}{25}$  D. $\frac{24}{7}$

13. Find $x$ to the nearest tenth of a degree.
A. 56.9  B. 54.5  C. 33.1  D. 28.6

14. If a 24-foot ladder makes a 58° angle with the ground, how many feet up a wall will it reach? Round your answer to the nearest tenth.
A. 38.4 ft  B. 20.8 ft  C. 20.4 ft  D. 12.7 ft

15. A ship’s sonar finds that the angle of depression to a wreck on the bottom of the ocean is 13.2°. If a point on the ocean floor is 75 meters directly below the ship, how many meters, to the nearest tenth, is it from that point on the ocean floor to the wreck?
A. 328.4 m  B. 319.8 m  C. 77.0 m  D. 17.6 m

16. To the nearest tenth of a degree, find the angle of elevation of the sun if a building 125 feet tall casts a shadow 196 feet long.
A. 63.8°  B. 50.4°  C. 39.6°  D. 32.5°

CHAPTER 7 TEST FORM 2C

1. Find the geometric mean between $2\sqrt{5}$ and $5\sqrt{5}$.

For Questions 2–5, find $x$.

2. 

3. 

4. 

5. 

6. Determine whether $\triangle ABC$ is a right triangle. Explain your answer.
7. Find $x$.

8. In parallelogram $ABCD$, $AD = 4$ and $m \angle D = 60$. Find $AF$.

9. Find $x$ and $y$.

10. Find $x$ to the nearest tenth.

11. An A-frame house is 40 feet high and 30 feet wide. Find the measure of the angle, to the nearest tenth of a degree, that the roof makes with the floor.

12. A 30-foot tree casts a 12-foot shadow. Find the angle of elevation of the sun to the nearest tenth of a degree.

13. A boat is 1000 meters from a cliff. If the angle of depression from the top of the cliff to the boat is $15^\circ$, how tall is the cliff? Round your answer to the nearest tenth.

14. A plane flying at an altitude of 10,000 feet begins descending when the end of the runway is below a point 50,000 feet away. Find the angle of descent (depression) to the nearest tenth of a degree.
Choose from the terms above to complete each sentence.

1. A quadrilateral with only one pair of opposite sides parallel and the other pair of opposite sides congruent is a(n) _____.

2. A quadrilateral with two pairs of opposite sides parallel is a(n) _____.

3. A quadrilateral with only one pair of opposite sides parallel is a(n) _____.

4. A quadrilateral that is both a rectangle and a rhombus is a(n) _____.

5. A quadrilateral with four congruent sides is a(n) _____.

6. A quadrilateral with four right angles is a(n) _____.

7. A quadrilateral with two pairs of congruent consecutive sides is a(n) _____.

8. Segments that join opposite vertices in a quadrilateral are called _____.

9. The segment joining the midpoints of the nonparallel sides of a trapezoid is called the _____.

10. The parallel sides of a trapezoid are called the _____.

Define each term.

11. base angles of an isosceles trapezoid

12. legs of a trapezoid
Write the letter for the correct answer in the blank at the right of each question.

1. Find the sum of the measures of the interior angles of a convex 50-gon.
   A. 9000  B. 8640  C. 360  D. 172.8

2. Find x.
   A. 16  B. 34  C. 50  D. 70

3. Find the sum of the measures of the exterior angles of a convex 65-gon.
   A. 5.54  B. 90  C. 180  D. 360

4. Which of the following is a property of all parallelograms?
   A. Each pair of opposite angles is congruent.
   B. Only one pair of opposite sides is congruent.
   C. Each pair of opposite angles is supplementary.
   D. There are four right angles.

5. Find $m \angle 1$ in parallelogram $ABCD$.
   A. 19  B. 38  C. 52  D. 56

6. $ABCD$ is a parallelogram with diagonals intersecting at $E$. If $AE = 4x - 8$ and $EC = 36$, find $x$.
   A. 7  B. 11  C. 15.5  D. 38

7. Find $x$ and $y$ so that this quadrilateral is a parallelogram.
   A. $x = 27$, $y = 90$  B. $x = 27$, $y = 40$
   C. $x = 13$, $y = 90$  D. $x = 13$, $y = 40$

8. Find $x$ so that this quadrilateral is a parallelogram.
   A. $\frac{7}{3}$  B. 8  C. 12  D. 66

9. $ABCD$ is a parallelogram with $A(5, 4)$, $B(-1, -2)$, $C(8, -2)$. Find the coordinates of $D$.
   A. $D(-5, 4)$  B. $D(8, 2)$
   C. $D(14, 4)$  D. $D(4, 1)$

10. $ABCD$ is a rectangle. If $AB = 7x - 6$ and $CD = 5x + 30$, find $x$.
    A. $5\frac{1}{3}$  B. 12  C. 13  D. 18

11. Which of the following is true for all rectangles?
    A. The diagonals are perpendicular.
    B. The consecutive angles are supplementary.
    C. The opposite sides are supplementary.
    D. The opposite angles are complementary.
12. \(ABCD\) is a rectangle with \(B(-7, 3), C(5, 3), \) and \(D(5, -8)\). Find the coordinates of \(A\).
   \[\text{A. } (-8, -7) \quad \text{B. } (-7, -8) \quad \text{C. } (-5, -3) \quad \text{D. } (-8, -5)\]

13. Find \(m \angle 1\) in rhombus \(GHJK\).
   \[\text{A. } 90 \quad \text{B. } 64 \quad \text{C. } 52 \quad \text{D. } 38\]

14. The diagonals of square \(ABCD\) intersect at \(E\). If \(AE = 3x - 4\) and \(BD = 10x - 48\), find \(AC\).
   \[\text{A. } 90 \quad \text{B. } 52 \quad \text{C. } 26 \quad \text{D. } 10\]

15. \(ABCD\) is an isosceles trapezoid with \(A(0, -1), B(-2, 3), \) and \(D(6, -1)\). Find the coordinates of \(C\).
   \[\text{A. } C(6, 1) \quad \text{B. } C(9, 4) \quad \text{C. } C(2, 3) \quad \text{D. } C(8, 3)\]

16. Find \(m \angle MNP\) in isosceles trapezoid \(MNOP\).
   \[\text{A. } 42 \quad \text{B. } 70 \quad \text{C. } 82 \quad \text{D. } 98\]

17. The length of one base of a trapezoid is 19 meters and the length of the median is 23 meters. Find the length of the other base.
   \[\text{A. } 15 \text{ m} \quad \text{B. } 21 \text{ m} \quad \text{C. } 27 \text{ m} \quad \text{D. } 42 \text{ m}\]

18. \(\overline{EF}\) is the median of isosceles trapezoid \(ABCD\).
   Find \(x\).
   \[\text{A. } 22 \quad \text{B. } 18.5 \quad \text{C. } 42.5 \quad \text{D. } 82\]

19. What type of quadrilateral has vertices at \((0, 0), (a, b), (a + c, b), \) and \((c, 0)\)?
   \[\text{A. parallelogram} \quad \text{B. rectangle} \quad \text{C. rhombus} \quad \text{D. trapezoid}\]

20. To prove that the diagonals of a rectangle are congruent, you would position and label a rectangle on a coordinate plane and then find which of the following?
   \[\text{A. measures of the angles} \quad \text{B. slopes of the diagonals} \quad \text{C. lengths of the diagonals} \quad \text{D. midpoints of the diagonals}\]

Bonus The sum of the measures of the interior angles of a convex polygon is ten times the sum of the measures of its exterior angles. Find the number of sides of the polygon.
Chapter 8 Test, Form 2C

1. Find the sum of the measures of the interior angles of a convex 60-gon.  

2. A convex pentagon has interior angles with measures $(5x - 12)\degree$, $(2x + 100)\degree$, $(4x + 16)\degree$, $(6x + 15)\degree$, and $(3x + 41)\degree$. Find $x$.  

3. If the measure of each interior angle of a regular polygon is 171, find the number of sides of the polygon.  

4. In parallelogram $ABCD$, 
   \[ m\angle 1 = x + 12, \text{ and } m\angle 2 = 6x - 18. \]
   Find $m\angle 1$.  

5. Find the measure of each exterior angle of a regular 45-gon.  

6. In parallelogram $ABCD$, $m\angle A = 58$. Find $m\angle B$.  

7. Find the coordinates of the intersection of the diagonals of parallelogram $WXYZ$ with vertices $X(2, 2)$, $Y(3, 6)$, $Z(10, 6)$, and $W(9, 2)$.  

8. Determine whether $ABCD$ is a parallelogram. Justify your answer.  

9. Use the Slope Formula to determine whether $A(5, 7)$, $B(1, -2)$, $C(-6, -3)$, and $D(2, 5)$ are the coordinates of the vertices of parallelogram $ABCD$.  

10. If the slope of $AB$ is $\frac{1}{4}$, the slope of $BC$ is $-\frac{2}{3}$, and the slope of $CD$ is $\frac{1}{4}$, find the slope of $DA$ so that $ABCD$ will be a parallelogram.  

11. Given rectangle $ABCD$, find $x$.  

12. $ABCD$ is a parallelogram and $\overline{AC} \cong \overline{BD}$. Determine whether $ABCD$ is a rectangle. Justify your answer.  

13. $ABCD$ is a rhombus with diagonals intersecting at $E$. If $m\angle ABC = 3m\angle BAD$, find $m\angle EBC$. 
14. TUVW is a square with U(10, 2), V(8, 8), and W(2, 6). Find the coordinates of T.

15. Find \( m\angle MNQ \) in isosceles trapezoid MNOP.

16. \( ABCD \) is a quadrilateral with \( A(8, 3), B(6, 7), C(-1, 5) \), and \( D(-6, -1) \). Determine whether \( ABCD \) is a trapezoid. Justify your answer.

17. The length of the median of trapezoid \( EFGH \) is 13 feet. If the bases have lengths \( 2x + 4 \) and \( 10x - 50 \), find \( x \).

18. Name the missing coordinates for rhombus \( ABCD \). Then determine the relationship between \( AC \) and \( BD \).

For Questions 19–25, write true or false.

19. A rectangle is always a parallelogram.

20. The diagonals of a rhombus are always perpendicular.

21. The diagonals of a square always bisect each other.

22. A trapezoid always has two congruent sides.

23. The median of a trapezoid is always parallel to the bases.

24. A quadrilateral with vertices \( (a, 0), (b, c), (-b, c), \) and \( (-a, 0) \) is an isosceles trapezoid.

25. If the diagonals of a parallelogram are perpendicular, then the parallelogram is a rectangle.

Bonus In parallelogram \( ABCD \), \( AB = 2x - 7, BC = x + 3y, CD = x + y, \) and \( AD = 2x - y - 1 \). Find \( x \) and \( y \).
Write whether each sentence is true or false. If false, replace the underlined word or number to make a true sentence.

1. The vertex of a(n) central angle lies on the circle. 1. 

2. A(n) circle is the locus of all points in a plane equidistant from a given point. 2. 

3. \( C = 2\pi r \) is the formula for the circumference of a circle. 3. 

4. The diameter of a circle is a segment with one endpoint at the center and the other endpoint on the circle. 4. 

5. A major arc has measure greater than 0 but less than 180. 5. 

6. The point of tangency is the point where a tangent line intersects a circle. 6. 

7. A(n) chord is a line that intersects a circle in two points. 7. 

8. A(n) tangent is a line that intersects a circle in one point. 8. 

9. A(n) semicircle is an arc with measure 180. 9. 

10. Pi is an irrational number equal to the ratio of the circumference to the diameter of a circle. 10. 

Define each term.

11. congruent arcs 11. 

12. circumscribed polygon 12. 

Write the letter for the correct answer in the blank at the right of each question.

For Questions 1–3, use \( \odot D \).

1. Name a radius.
   - A. \( \overline{AB} \)
   - B. \( \overline{DB} \)
   - C. \( \overline{CB} \)
   - D. \( \overline{CE} \)

2. Name a chord that is not a diameter.
   - A. \( \overline{AB} \)
   - B. \( \overline{DB} \)
   - C. \( \overline{CB} \)
   - D. \( \overline{CE} \)

3. Name a secant.
   - A. \( \overline{AB} \)
   - B. \( \overline{DB} \)
   - C. \( \overline{CB} \)
   - D. \( \overline{CE} \)

4. If the circumference of a circle is \( 20\pi \) inches, find the radius.
   - A. 10 in.
   - B. 20 in.
   - C. 40 in.
   - D. 100 in.

5. Find \( m\angle GH \).
   - A. 20
   - B. 50
   - C. 70
   - D. 90

6. Points \( G \) and \( H \) lie on \( \odot T \) so that \( TH = 8 \) meters and \( m \angle GTH = 45 \). Find the length of \( GH \) to the nearest hundredth.
   - A. 6.28 m
   - B. 12.57 m
   - C. 25.13 m
   - D. 37.70 m

7. Chords \( \overline{AB} \) and \( \overline{CD} \) in \( \odot X \) are congruent and \( \overline{AB} \) is 9 units from \( X \). Find the distance from \( \overline{CD} \) to \( X \).
   - A. 4.5 units
   - B. 9 units
   - C. 18 units
   - D. cannot tell

8. Find the radius of \( \odot O \).
   - A. \( 4\sqrt{2} \) units
   - B. 8 units
   - C. \( 4\sqrt{3} \) units
   - D. \( 4\sqrt{2} + 4 \) units

9. Find \( x \).
   - A. 36
   - B. 72
   - C. 144
   - D. 180

10. \( \triangle JKL \) is inscribed in \( \odot P \) with diameter \( \overline{JK} \) and \( m\angle JL = 130 \). Find \( m\angle KJL \).
    - A. 25
    - B. 50
    - C. 65
    - D. 130

11. The measure of an angle formed by two tangents to a circle is 90. The radius of the circle is 8 centimeters, how far is the vertex of the angle from the center of the circle?
    - A. 8 cm
    - B. \( 8\sqrt{2} \) cm
    - C. \( 8\sqrt{3} \) cm
    - D. 16 cm
12. If \( \overline{DE}, \overline{EF}, \) and \( \overline{FD} \) are tangent to \( \odot A \), find \( EF \).
   A. 9 ft  
   B. 8 ft  
   C. 7 ft  
   D. 6 ft

13. \( \odot A \) has its center at \( A(5, 7) \) and \( \overline{CB} \) is tangent to \( \odot A \) at \( B(2, 8) \). Find the slope of \( \overline{CB} \).
   A. 3  
   B. \( \frac{1}{3} \)  
   C. \( -\frac{1}{3} \)  
   D. -3

14. If \( \overline{AB} \) is tangent to \( \odot P \) at \( B \), find \( m \angle 1 \).
   A. 43  
   B. 86  
   C. 137  
   D. 274

15. Find \( m \angle PQR \) if \( \overline{QP} \) and \( \overline{QR} \) are tangent to \( \odot X \).
   A. 70  
   B. 110  
   C. 125  
   D. 140

10 Chapter 10 Test, Form 2C

1. If the diameter of \( \odot A \) is 10 inches, the diameter of \( \odot B \) is 8 inches, and \( AX = 3 \) inches, find \( YB \).

2. Find the radius and diameter of a circle whose circumference is \( 60\pi \) meters.

3. In \( \odot K \), \( m \angle HKG = x + 10 \) and \( m \angle IKJ = 3x - 22 \). Find \( m \angle FJ \).

4. The diameter of \( \odot C \) is 18 units long. Find the length of an arc that has a measure of 100 to the nearest hundredth.

5. If \( CG = 5x + 2 \) and \( GD = 7x - 12 \), find \( x \).
6. Find the distance from $O$ to $PQ$ in $\odot O$, if $PQ = 18$ meters.

7. Find $x$.

8. A regular decagon is inscribed in a circle. Find the measure of each minor arc.

For Questions 13–16, use $\odot G$ with $FA$ and $FE$ tangent at $A$ and $E$.

13. Find $m\angle ACE$.

14. Find $m\angle ADB$.

15. Find $m\angle AFE$.

16. Find $m\angle EHD$. 
Write the letter for the correct answer in the blank at the right of each question.

1. Find the area of parallelogram \(ABCD\) to the nearest tenth.
   A. 54 in\(^2\)  
   B. 76.4 in\(^2\)  
   C. 95.2 in\(^2\)  
   D. 152.7 in\(^2\)  

2. The area of parallelogram \(PQRS\) is 187 square units. Find the lengths of the height and the base. Round to the nearest tenth.
   A. 15, 12.5  
   B. 13.5, 7.5  
   C. 12, 15.6  
   D. 11, 17

3. What is the best classification of quadrilateral \(WXYZ\) with vertices \(W(1, 3), X(2, 1), Y(0, 0),\) and \(Z(-1, 2)\)?
   A. parallelogram  
   B. rectangle  
   C. square  
   D. none of these

4. Find the area of quadrilateral \(ABCD\).
   A. 49.5 cm\(^2\)  
   B. 52 cm\(^2\)  
   C. 60 cm\(^2\)  
   D. 97.5 cm\(^2\)  

5. Find the area of trapezoid \(ABCD\) with vertices \(A(2, 2), B(4, -2), C(-3, -2),\) and \(D(-1, 2)\).
   A. 30 units\(^2\)  
   B. 25 units\(^2\)  
   C. 24 units\(^2\)  
   D. 20 units\(^2\)  

6. Rhombus \(ABCD\) has an area of 126 square units. If \(DB = 18\) units, find \(AC\).
   A. 18 units  
   B. 14 units  
   C. 7 units  
   D. 3.5 units

7. Find the area of an equilateral triangle with a side length of 12 centimeters. Round to the nearest tenth.
   A. 187.1 cm\(^2\)  
   B. 93.5 cm\(^2\)  
   C. 62.4 cm\(^2\)  
   D. 54 cm\(^2\)  

8. Find the area of an octagon with a perimeter of 80 inches. Round to the nearest tenth.
   A. 965.7 in\(^2\)  
   B. 482.8 in\(^2\)  
   C. 165.7 in\(^2\)  
   D. 82.8 in\(^2\)
Chapter 11 Test, Form 2B (continued)

9. Find the area of the shaded region to the nearest tenth.
   A. 12.6 m²
   B. 24.6 m²
   C. 32.9 m²
   D. 44.9 m²

10. Find the area of the figure to the nearest tenth.
    A. 14.6 units²
    B. 15 units²
    C. 18.2 units²
    D. 22.4 units²

11. Find the area of the figure to the nearest tenth.
    A. 81 m²
    B. 65 m²
    C. 58.5 m²
    D. 48.5 m²

Chapter 11 Test, Form 2C

For Questions 1 and 2, find the area of each parallelogram to the nearest tenth.

1. 
   
2. 

3. The area of parallelogram ABCD is 2250 square meters. Find the lengths of the height and base.

For Questions 8–10, find the area of each polygon to the nearest tenth.

8. a square with a perimeter of $16\sqrt{2}$ inches

9. a regular hexagon with an apothem length of 4.3 centimeters

10. an equilateral triangle with a side length of 10.4 meters
For Questions 12–14, find the area of each figure to the nearest tenth.

12. [Diagram of a trapezoid with bases 6 cm and 8 cm, height 5 cm]

13. [Diagram of a rectangle with length 14.3 m and width 6.6 m]

**Solids**

For Questions 2 and 3, use the figure.

2. Identify the figure.
   A. pyramid  
   B. prism  
   C. cone  
   D. cylinder

3. Name a base.
   A. $\odot M$  
   B. $N$  
   C. $MN$  
   D. $M$

4. What name is given to a pyramid having seven faces?
   A. heptagonal pyramid  
   B. hexagonal pyramid  
   C. pentagonal pyramid  
   D. octagonal pyramid

6. Find the surface area of the solid.
   A. 88 cm$^2$  
   B. 102 cm$^2$  
   C. 156 cm$^2$  
   D. 160 cm$^2$  

7. Find the lateral area of an equilateral triangular prism if the area of each lateral face is 10 square centimeters.
   A. $10\sqrt{3}$ cm$^2$  
   B. 30 cm$^2$  
   C. 50 cm$^2$  
   D. 100 cm$^2$

8. The surface area of a cube is 96 square inches. Find the length of an edge.
   A. $\sqrt{24}$ in.  
   B. 4 in.  
   C. 8 in.  
   D. 16 in.

9. The surface area of a rectangular prism is 190 square inches, the length is 10 inches, and the width is 3 inches. Find the height.
   A. 30 in.  
   B. 20 in.  
   C. 10 in.  
   D. 5 in.

10. A right cylinder has a radius of 2 feet and a height of 5 feet. Find its surface area.
    A. $20\pi$ ft$^2$  
    B. $28\pi$ ft$^2$  
    C. $36\pi$ ft$^2$  
    D. $40\pi$ ft$^2$
For Questions 11 and 12, use a right cylinder with a radius of 5 centimeters and a height of 22 centimeters. Round to the nearest tenth.

11. Find the lateral area.
   A. \(848.2\, \text{cm}^2\)   B. \(769.7\, \text{cm}^2\)   C. \(691.2\, \text{cm}^2\)   D. \(345.6\, \text{cm}^2\)

12. Find the surface area.
   A. \(848.2\, \text{cm}^2\)   B. \(769.7\, \text{cm}^2\)   C. \(691.2\, \text{cm}^2\)   D. \(345.6\, \text{cm}^2\)

13. Find the lateral area of the conical hat to the nearest tenth.
   A. \(942.5\, \text{in}^2\)   B. \(408.4\, \text{in}^2\)   C. \(204.2\, \text{in}^2\)   D. \(188.5\, \text{in}^2\)

For Questions 16 and 17, use the figure. Round to the nearest tenth.

16. Find the lateral area.
   A. \(75.4\, \text{cm}^2\)   B. \(103.7\, \text{cm}^2\)   C. \(131.9\, \text{cm}^2\)   D. \(150.8\, \text{cm}^2\)

17. Find the surface area.
   A. \(75.4\, \text{cm}^2\)   B. \(103.7\, \text{cm}^2\)   C. \(131.9\, \text{cm}^2\)   D. \(150.8\, \text{cm}^2\)

20. The surface area of a sphere is \(64\pi\) square centimeters. Find the radius.
   A. \(16\, \text{cm}\)   B. \(8\, \text{cm}\)   C. \(4\, \text{cm}\)   D. \(2\, \text{cm}\)
Write the letter for the correct answer in the blank at the right of each question.

1. Which of the following is the formula for the volume of a prism?
   A. \( V = 2\pi r^2 + 2\pi rh \)
   B. \( V = ph \)
   C. \( V = \pi r^2 \)
   D. \( V = Bh \)

2. The lateral area of a cube is 324 square centimeters. Find the volume.
   A. 9 cm\(^3\)
   B. 81 cm\(^3\)
   C. 729 cm\(^3\)
   D. 972 cm\(^3\)

3. Find the volume to the nearest tenth.
   A. 31.4 in\(^3\)
   B. 41.9 in\(^3\)
   C. 125.7 in\(^3\)
   D. 502.7 in\(^3\)

4. A cylinder has a radius that is 7 inches long and a height that is 10 inches long. Find the volume to the nearest tenth.
   A. 1,539.4 in\(^3\)
   B. 490.0 in\(^3\)
   C. 219.9 in\(^3\)
   D. 70.0 in\(^3\)

5. A right triangular pyramid has a 12-meter height and a base with legs that are 3 meters and 4 meters long. Find the volume.
   A. 144 m\(^3\)
   B. 72 m\(^3\)
   C. 48 m\(^3\)
   D. 24 m\(^3\)

6. The volume of a square pyramid is 100 cubic feet and the height is 10 feet long. Find the length of a side of the base.
   A. 15 ft
   B. \( \sqrt{30} \) ft
   C. 7.5 ft
   D. \( \sqrt{5} \) ft

7. The volume of a cone is \( 336\pi \) cubic feet and the height is 7 feet long. Find the radius.
   A. 144 ft
   B. 36 ft
   C. 24 ft
   D. 12 ft

8. Find the volume to the nearest tenth.
   A. 41,224.0 m\(^3\)
   B. 20,612.0 m\(^3\)
   C. 10,306.0 m\(^3\)
   D. 763.4 m\(^3\)

9. A sphere has a 48-centimeter diameter. Find the volume to the nearest tenth.
   A. 463,246.7 cm\(^3\)
   B. 57,905.8 cm\(^3\)
   C. 28,952.9 cm\(^3\)
   D. 7238.2 cm\(^3\)

10. A sphere has a volume that is \( 288\pi \) cubic inches. Find the radius.
    A. 3 in.
    B. 6 in.
    C. 8 in.
    D. 12 in.