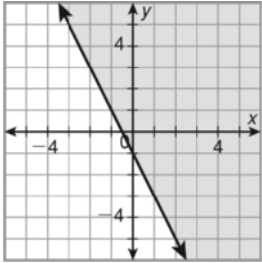


# Cumulative Test

Choose the best answer.

- Evaluate  $\frac{6(18 - 4)}{4}$ .  
 A 21                      C 26  
 B 23                      D 102
- Evaluate the expression  $3(4a - 5) - b$  for  $a = 6$  and  $b = -3$ .  
 F 54                      H 64  
 G 60                      J 70
- Evaluate  $|3 - r|$  for  $r = 10$ .  
 A -13                      C 7  
 B -7                      D 13
- In which quadrant is the coordinate pair  $(-11, 1)$  located?  
 F I                      H III  
 G II                      J IV
- Solve the equation  $\frac{m}{-3} + 5 = 1$ .  
 A -18                      C 2  
 B -2                      D 12
- Solve the inequality  $-7 \leq 2x + 9$ .  
 F  $x \leq -1$                       H  $x \geq -8$   
 G  $x \leq 1$                       J  $x \geq 8$
- Evaluate  $d^3$  for  $d = -5$ .  
 A -243                      C -75  
 B -125                      D -15
- Simplify  $z^9 \cdot z^3$ .  
 F  $z^3$                       H  $z^{12}$   
 G  $z^6$                       J  $z^{27}$
- What is the solution to the equation  $4c - 3 = 85$ ?  
 A -22                      C 22  
 B 20.5                      D 85
- What is the solution to the equation  $-4 - 3y = y + 8$ ?  
 F -3                      H 1  
 G -2                      J 2
- The statement "6 less than twice a number is at least 15" is represented by  
 A  $6 - 2n \leq 15$ .                      C  $6 - 2n \geq 15$ .  
 B  $2n - 6 \leq 15$ .                      D  $2n - 6 \geq 15$ .
- What is the slope of the line that passes through  $(-8, 2)$  and  $(4, 5)$ ?  
 F  $-\frac{7}{4}$                       H  $\frac{1}{4}$   
 G  $-\frac{4}{7}$                       J 4
- Which inequality is shown by the graph?  
  
 A  $y \geq -2x - 1$                       C  $y \geq -\frac{1}{2}x - 1$   
 B  $y \leq -2x - 1$                       D  $y \geq 2x - 1$
- If  $f(x) = 3x - 5$ , what is  $f(-2)$ ?  
 F  $-6x + 10$                       H  $3x - 7$   
 G 1                      J -11
- Thirty-two is what percent of 80?  
 A 4%                      C 40%  
 B 25.6%                      D 256%
- Which equation can be solved to find 150% of 16?  
 F  $x = 150 \cdot 16$                       H  $16x = 150$   
 G  $x = 1.5 \cdot 16$                       J  $1.5x = 16$
- Last year Miranda was 60 inches tall. This year she is 63 inches tall. What is the percent increase in her height?  
 A 5%                      C 60%  
 B 6.3%                      D 95%

**CHAPTER**  
**1**

**Cumulative Test**

*continued*

18. The area  $A$  of a trapezoid is given by the formula  $A = \frac{1}{2}(b_1 + b_2)$ , where  $b_1$  and  $b_2$  are the lengths of the two parallel sides. Solve the formula for  $b_2$ .

F  $b_2 = \frac{A}{2} - b_1$       H  $b_2 = 2A - b_1$

G  $b_2 = \frac{A}{2} + b_1$       J  $b_2 = 2A + b_1$

19. The surface area  $A$  of a cube can be found by using the formula  $A = 6s^2$ , where  $s$  represents the length of one side. What is the length of one side of a cube whose surface area is  $384 \text{ m}^2$ ?

A 64 m                      C 16 m

B 32 m                      D 8 m

20. What is the value of  $x$  if  $\sqrt{x} = 9$ ?

F 3                              H 18

G 9                              J 81

21. Which expression is equivalent to  $(3x^2 - 2x + 6) + (3x - 4)$ ?

A  $3x^2 + x + 2$       C  $3x^2 + 2$

B  $3x^2 - x + 2$       D  $-2x + 2$

22. Which expression is equivalent to  $2(3k^5)^2$ ?

F  $12k^{10}$                       H  $12k^7$

G  $18k^{10}$                       J  $18k^7$

23. Which expression is equivalent to  $(2x - 5)(2x + 5)$ ?

A  $4x^2 - 20x - 25$       C  $4x^2 - 25$

B  $4x^2 + 20x - 25$       D  $4x^2 + 25$

24. Which equation has the solutions  $-4$  and  $2$ ?

F  $(x + 4)(x - 2) = 0$

G  $(x - 4)(x - 2) = 0$

H  $(x + 4)(x + 2) = 0$

J  $(x - 4)(x + 2) = 0$

25. One of the solutions to the equation  $x^2 - 5x - 24 = 0$  is 8. What is the other solution?

A  $-8$                               C 3

B  $-3$                               D 5

26. What are all the solutions to the equation  $2x^2 = 72x$ ?

F 36                              H 0 and 6

G 0                                  J 0 and 36

27. A recipe for a dessert calls for 2 cups of blueberries and serves 9 people. Which equation can be solved to find the number of cups of blueberries needed to serve 30 people?

A  $\frac{2}{9} = \frac{n}{30}$                       C  $2 \cdot 9 = 30n$

B  $\frac{2}{9} = \frac{30}{n}$                       D  $9 \cdot 30 = \frac{n}{2}$

28. If  $3x - 1$  represents a positive number, what is the next consecutive number greater than it?

F  $3x - 2$                       H  $3x + 1$

G  $3x$                               J  $3x + 2$

29. What is the area of a rectangle whose sides are  $3a$  and  $2$ ?

A  $6a^2$                               C  $36a^2$

B  $6a$                               D  $36a$

30. Which names the longest segment in the figure?



F  $\overline{PRQ}$                       H  $\overline{PRQ}$

G  $\overline{PQ}$                               J  $\overline{PQ}$

31. Name the intersection of  $\overline{FG}$  and  $\overline{GF}$ .

A  $\overline{FG}$                               C  $\overline{GF}$

B  $\overline{FG}$                               D  $\overline{FG}$

**CHAPTER**  
**1**

**Cumulative Test**

*continued*

32. Which could represent the intersection of a line and a plane?

- F a plane                      H a segment  
G a ray                         J a point

33. Points  $H$ ,  $G$ , and  $J$  are collinear, and  $G$  is between  $H$  and  $J$ . If  $HG = 3x - 4$ ,  $HJ = 4x + 3$ , and  $GJ = 3x + 4$ , what is  $HJ$ ?

- A 5                                C 8  
B 6                                D 9

34.  $P$  is the midpoint of  $\overline{AB}$ . If  $AP = 3n$  and  $AB = n^2$ , what is  $AB$ ?

- F 12                              H 24  
G 18                              J 36

35. Jayna wants to construct the midpoint of  $\overline{CD}$ . She places the point of her compass on point  $C$  to swing an arc. How far should she open her compass?

- A less than half of  $CD$   
B more than half of  $CD$   
C exactly half of  $CD$   
D any amount

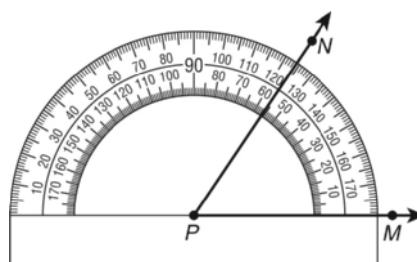
36. Draw  $\angle RST$ . What is the name of one of the sides of  $\angle RST$ ?

- F  $\overline{RS}$                          H  $\overline{RS}$   
G  $\overline{ST}$                          J  $\overline{ST}$

37.  $\overline{KL}$  bisects  $\angle VKW$ . Classify  $\angle VKW$  if  $m\angle LKW = 25^\circ$ .

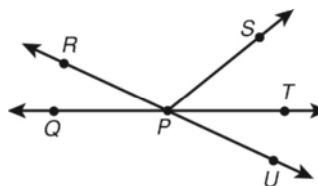
- A acute                         C right  
B obtuse                        D straight

38. What is  $m\angle MPN$ ?



- F  $56^\circ$                             H  $124^\circ$   
G  $64^\circ$                             J  $136^\circ$

**Use the figure for Exercises 39 and 40.**



39. Which angle is a supplement of  $\angle RPS$ ?

- A  $\angle RPU$                       C  $\angle UPQ$   
B  $\angle SPT$                       D  $\angle SPU$

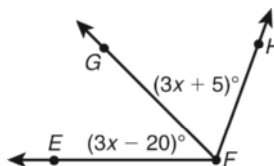
40. Which two angles are vertical angles?

- F  $\angle SPT$  and  $\angle TPU$   
G  $\angle RPS$  and  $\angle UPQ$   
H  $\angle RPQ$  and  $\angle TPU$   
J  $\angle RPQ$  and  $\angle SPT$

41. The ratio of the measures of two complementary angles is 3 : 7. What is the measure of the larger angle?

- A  $27^\circ$                             C  $63^\circ$   
B  $30^\circ$                             D  $70^\circ$

42. What is the measure of  $\angle EFG$  if  $m\angle EFH = 111^\circ$ ?

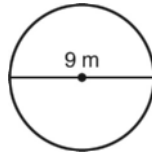


- F  $68^\circ$                             H  $43^\circ$   
G  $58^\circ$                             J  $21^\circ$

**CHAPTER**  
**1**

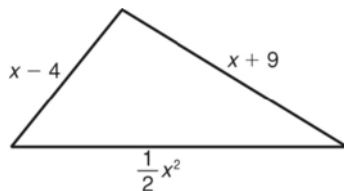
**Cumulative Test**  
**continued**

43. What is the area of the circle to the nearest square meter?



- A  $28 \text{ m}^2$                       C  $127 \text{ m}^2$   
B  $64 \text{ m}^2$                       D  $254 \text{ m}^2$

44. What is the perimeter of the triangle?



- F  $3x + 5$                       H  $x^2 + 2x + 5$   
G  $\frac{1}{4}x^4 + 5$                   J  $\frac{1}{2}x^2 + 2x + 5$

45. The area of a rectangular office is 288 square feet. One side of the office is 18 feet long. What is the perimeter of the office?

- A 34 ft                      C 72 ft  
B 68 ft                      D 88 ft

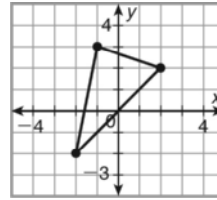
46.  $M$  is the midpoint of  $\overline{PQ}$ ,  $P$  has coordinates  $(-7, 2)$ , and  $Q$  has coordinates  $(0, -5)$ . What are the coordinates of  $M$ ?

- F  $(3.5, 1.5)$                   H  $(-3.5, -1.5)$   
G  $(-3.5, 3.5)$               J  $(3.5, -3.5)$

47.  $T$  is the midpoint of  $\overline{RS}$ ,  $T$  has coordinates  $(6, -4)$ , and  $S$  has coordinates  $(3, -2)$ . What are the coordinates of  $R$ ?

- A  $(9, -6)$                       C  $(0, 0)$   
B  $(15, -10)$                 D  $(1.5, -2)$

48. Find the perimeter of the triangle to the nearest whole unit.

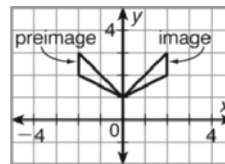


- F 18                                  H 14  
G 16                                  J 12

49.  $V$  has coordinates  $(11, -14)$ , and  $W$  has coordinates  $(x, 10)$ . What is the value of  $x$  if  $VW = 25$ ?

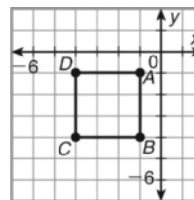
- A 4 or 18                      C  $-4$  or 18  
B  $-4$  or  $-18$                 D 4 or  $-18$

50. Which BEST describes the transformation?

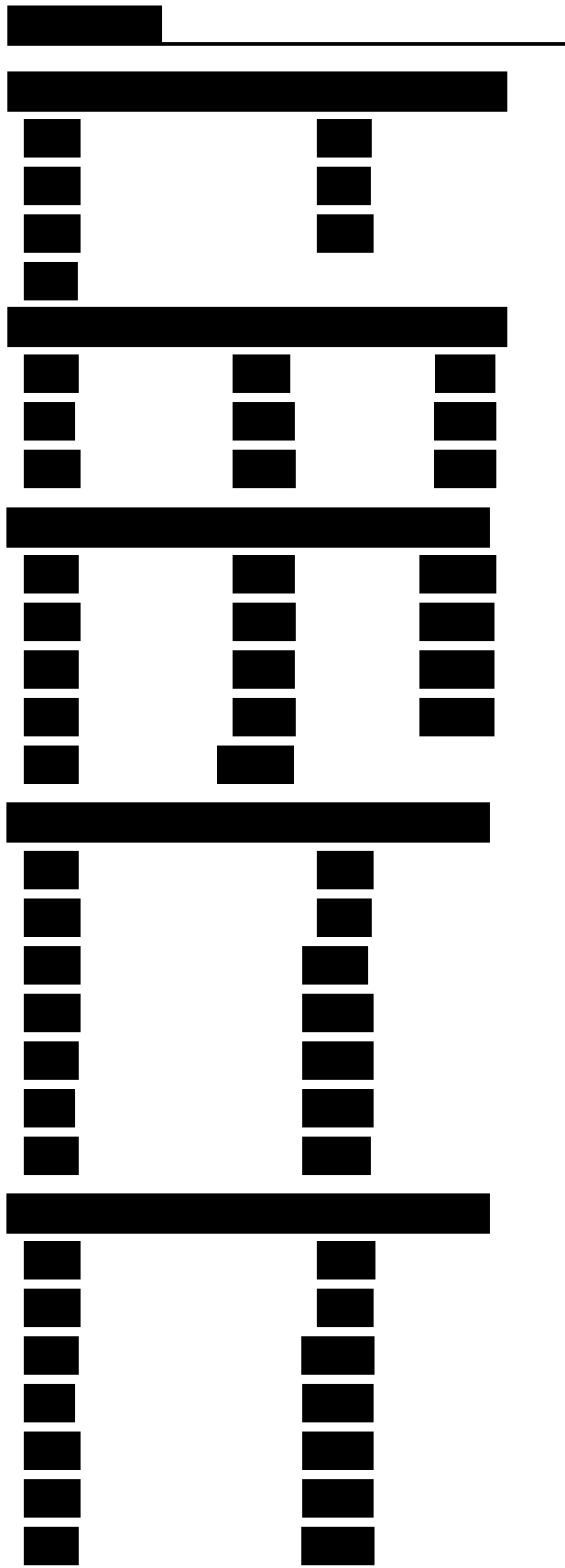
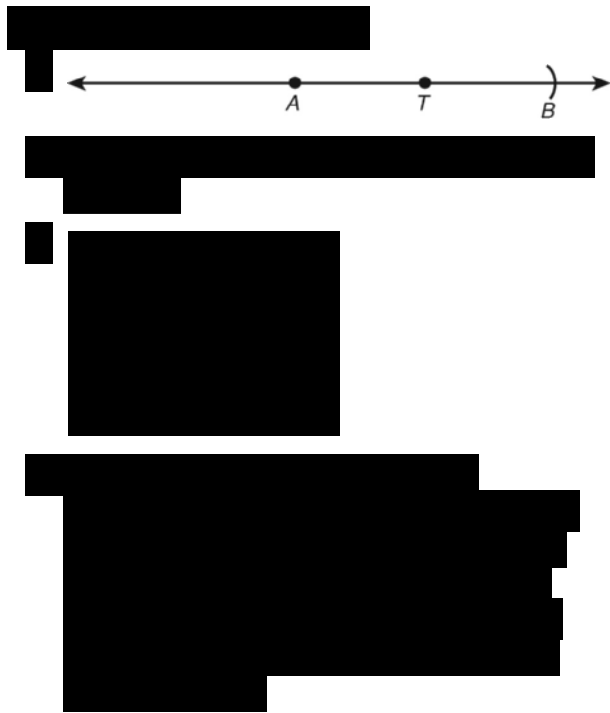


- F rotation about the origin  
G translation  $(x, y) \rightarrow (x + 5, y - 6)$   
H reflection across the x-axis  
J reflection across the y-axis

51. In which quadrant is the image of point  $A$  after the translation  $(x, y) \rightarrow (x - 8, y + 7)$ ?



- A I                                  C III  
B II                                 D IV



**Cumulative Test**

- |       |       |       |
|-------|-------|-------|
| 1. A  | 18. H | 35. B |
| 2. G  | 19. D | 36. G |
| 3. C  | 20. J | 37. A |
| 4. G  | 21. A | 38. F |
| 5. D  | 22. G | 39. D |
| 6. H  | 23. C | 40. H |
| 7. B  | 24. F | 41. C |
| 8. H  | 25. B | 42. H |
| 9. C  | 26. J | 43. B |
| 10. F | 27. A | 44. J |
| 11. D | 28. G | 45. B |
| 12. H | 29. B | 46. H |
| 13. A | 30. G | 47. A |
| 14. J | 31. C | 48. H |
| 15. C | 32. J | 49. A |
| 16. G | 33. D | 50. J |
| 17. A | 34. J | 51. B |

# Cumulative Test

## Choose the best answer.

1. Which is the next term in the sequence?

-2, 6, -12, 20, -30, 42, . . .

A -56                      C 54

B -54                      D 56

2. What is the value of  $2(8 - 13)$ ?

F 10                      H 3

G -10                      J -3

3. Which is the solution to the equation

$6 - 5x = 3x + 22$ ?

A -3.5                      C 8

B -2                      D 14

4. Petra received the following scores on her spelling quizzes:

6, 9, 10, 10, 9, 10.

What is her mean score?

F 7                      H 9

G 8                      J 10

5. What is the value of the expression

$6a + b$  for  $a = -4$  and  $b = 9$ ?

A -15                      C 33

B 11                      D 50

6. What is the value of  $k$  if  $k + (-11) = -4$ ?

F 15                      H -7

G 7                      J -15

7. Which expression is equivalent to

$8r - 5(r - 1)$ ?

A  $3r - 1$                       C  $3r + 5$

B  $3r - 5$                       D  $3r$

8. Solve  $16 - 5x \leq 6$ .

F  $x \leq 2$                       H  $x \geq 2$

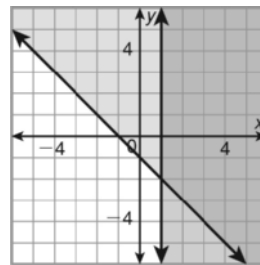
G  $x \leq -2$                       J  $x \geq -2$

9. Solve  $m^2 = 16$ .

A 8                      C 4

B -8 and 8                      D -4 and 4

10. Which system represents the graph?



F  $\begin{cases} y \leq -x - 1 \\ x \geq 1 \end{cases}$                       H  $\begin{cases} y \leq -x - 1 \\ x \leq 1 \end{cases}$

G  $\begin{cases} y \geq -x - 1 \\ x \geq 1 \end{cases}$                       J  $\begin{cases} y \geq -x - 1 \\ x \leq 1 \end{cases}$

11. What is the value of  $2^3 \cdot 3^3$ ?

A 18                      C 125

B 54                      D 216

12. Which is the factored form of

$x^2 - 5x - 14$ ?

F  $(x - 5)(x - 14)$                       H  $(x + 5)(x - 14)$

G  $(x - 7)(x + 2)$                       J  $(x + 7)(x - 2)$

13. What is the solution to the equation

$9(2 - x) = 0$ ?

A -18                      C 2

B 0                      D 18

14. What are all the solutions of

$(x + 7)^2 = 0$ ?

F 0                      H 7

G -7                      J -7 and 7

15. Twenty-two is how much less than the product of nine and three?

A 34                      C 10

B 16                      D 5

16. Which completes the sentence?

If two planes intersect, then they intersect in exactly one \_\_\_\_\_.

F point                      H ray

G segment                      J line

**CHAPTER**  
**2**

**Cumulative Test**

*continued*

17. Which is an alternative name for  $\overline{LN}$ ?



- A  $\overline{L}$                       C  $\overline{NL}$   
 B  $\overline{LK}$                      D  $\overline{LM}$

18. What is the distance between the points  $(6, -7)$  and  $(1, 5)$ ?

- F 13                              H  $\sqrt{53}$   
 G  $\sqrt{13}$                         J  $\sqrt{119}$

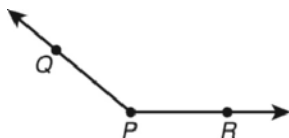
19.  $W$  is the midpoint of  $\overline{VX}$ . What is  $VX$  if  $VW = 2x + 5$  and  $WX = 4x - 3$ ?

- A 4                                C 13  
 B 8                                D 26

20. Which tool is NOT used to construct congruent segments?

- F ruler                          H straightedge  
 G compass                     J pencil

21. Which is NOT a name for the angle?

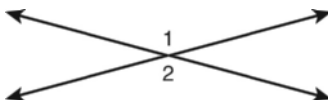


- A  $\angle P$                           C  $\angle QPR$   
 B  $\angle PQR$                      D  $\angle RPQ$

22.  $\overline{JK}$  bisects  $\angle LJM$ , which is an obtuse angle. What is the greatest possible whole-number measure of  $\angle LJK$ ?

- F 99                                H 90  
 G 91                                J 89

23. Which completes the sentence?  $\angle 1$  and  $\angle 2$  are \_\_\_\_\_ angles.



- A adjacent  
 B complementary  
 C supplementary  
 D vertical

24.  $\angle KLM$  and  $\angle RST$  are complementary angles.  $m\angle KLM = (7x)^\circ$  and  $m\angle RST = (36 - x)^\circ$ . What is the measure of the smaller angle?

- F  $9^\circ$                               H  $30^\circ$   
 G  $27^\circ$                             J  $63^\circ$

25. What is the circumference to the nearest tenth of a millimeter, of a circle whose radius is 40 mm?

- A 62.8 mm                        C 188.5 mm  
 B 125.6 mm                       D 251.3 mm

26. What is the area of a square whose sides measure  $(x - 8)$ ?

- F  $2x - 16$                         H  $x^2 - 64$   
 G  $4x - 32$                         J  $x^2 - 16x + 64$

27. The midpoint of a segment is  $(-9, -1)$ . One endpoint of the segment is  $(2, -5)$ . What are the coordinates of the other endpoint of the segment?

- A  $(-16, -7)$                      C  $(13, -9)$   
 B  $(-20, 3)$                       D  $(-5, -6)$

28. To the nearest tenth of a unit, what is the distance between  $(4, 5)$  and  $(-8, 1)$ ?

- F 12.6 units                        H 7.2 units  
 G 11.3 units                        J 4.5 units

29. Which transformation can you perform on the point  $(1, 10)$  to obtain  $(-1, -10)$  as the image?

- A reflection over the  $x$ -axis  
 B reflection over the  $y$ -axis  
 C a rotation of  $90^\circ$   
 D a rotation of  $180^\circ$

30. What is the image of  $(6, -7)$  after a reflection over the  $y$ -axis?

- F  $(6, 7)$                           H  $(-6, 7)$   
 G  $(6, -7)$                         J  $(-6, -7)$

**Cumulative Test***continued*

31. What is the next number in this pattern?  
1, 1, 3, 2, 5, 3, 7, 4, 9, . . .
- A 3                      C 7  
B 5                      D 10
32. Which is a counterexample to the conjecture "All prime numbers are odd"?
- F 0                      H 3  
G 2                      J 4
33. Which is the hypothesis of the conditional statement "If a triangle is an obtuse triangle, then two of its angles are acute."?
- A If  
B a triangle is an obtuse triangle  
C then  
D two of its angles are acute
34. Given: If an angle measures between  $90^\circ$  and  $180^\circ$ , then the angle is obtuse.  
 $m\angle R = 130^\circ$ .  
Which conjecture is valid by the Law of Detachment?
- F  $\angle R$  is not acute.  
G  $\angle R$  is not straight.  
H  $\angle R$  is not right.  
J  $\angle R$  is obtuse.
35. Which is the contrapositive of the statement "If a line bisects a segment, then it divides the segment into two congruent segments"?
- A If a line divides a segment into two congruent segments, then it bisects the segment.  
B If a line does not bisect a segment, then it does not divide the segment into two congruent segments.  
C If a line does not divide a segment into two congruent segments, then it does not bisect the segment.  
D If a line does not divide a segment into two congruent segments, then it bisects the segment.
36. Given: If a child is at least 4 feet tall, then he or she can ride the roller coaster. If a child can reach the red bar, then the child is at least 4 feet tall.  
Which conjecture is valid by the Law of Syllogism?
- F If a child can reach the red bar, then the child can ride the roller coaster.  
G If a child is at least 4 feet tall, then the child can reach the red bar.  
H If a child can ride the roller coaster, then the child is at least 4 feet tall.  
J If a child can ride the roller coaster, then the child can reach the red bar.
37. If  $k - 8 = 0$ , what property justifies  $k = 8$ ?
- A Distributive Property  
B Transitive Property of Equality  
C Addition Property of Equality  
D Subtraction Property of Equality
38. Complete: By the Multiplication Property of Equality, if  $a = b$ , then \_\_\_\_\_.
- F  $ab = ba$               H  $ac = bd$   
G  $ac = bc$               J  $ab = ab$
39. Given: If a square has an area of 36 square units, then its perimeter is 24 units.  
Which is a related biconditional statement for the given statement?
- A If a square has a perimeter of 24 units, then it has an area of 36 square units.  
B The perimeter of a square is 24 units if and only if it has an area of 36 square units.  
C If a square does not have a perimeter of 24 units, then it does not have an area of 36 square units.  
D If a square does not have an area of 36 square units, then it does not have a perimeter of 24 units.



**CHAPTER**  
**2**

**Cumulative Test**  
*continued*

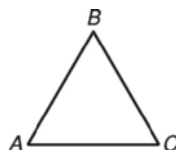
40. Which biconditional is false?
- F A person is eligible to attend the club meetings if and only if that person is a member of the club.
  - G A person can practice medicine in the United States if and only if that person has a valid medical license.
  - H A person can legally drive a car if and only if the person holds a valid driver's license.
  - J A student participates on the football team if and only if the student maintains at least a B average.

41. **Given:**  $\angle 1$  and  $\angle 2$  are supplementary;  
 $\angle 1 \cong \angle 2$   
**Prove:**  $\angle 1$  is a right angle.  
In a two-column proof, which is the statement in the final step?
- A Given
  - B  $\angle 1$  and  $\angle 2$  are supplementary.
  - C  $\angle 1$  is a right angle.
  - D Definition of right angle

42. **Given:**  $\overline{AB} \cong \overline{AC}$ ;  $\overline{BC} \cong \overline{AC}$

**Prove:**  $\overline{AB} \cong \overline{BC}$

**Proof:**



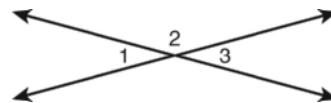
Statements	Reasons
1. $\overline{AB} \cong \overline{AC}$ ; $\overline{BC} \cong \overline{AC}$	1. Given
2. _____	2. Symmetric Prop. of $\cong$
3. $\overline{AB} \cong \overline{BC}$	3. Transitive Prop. of $\cong$

Which is the missing statement in Step 2?

- F  $\overline{AC} \cong \overline{AC}$
- G  $\overline{AB} \cong \overline{AC}$
- H  $\overline{AC} \cong \overline{BC}$
- J  $\overline{AB} \cong \overline{BA}$

43. **Given:**  $m\angle 1 = (60 - x)^\circ$ ,  $m\angle 3 = x^\circ$

**Prove:**  $m\angle 2 = 150^\circ$



**Proof:** By the Vertical Angles Theorem,  $\angle 1 \cong \angle 3$ , so  $60 - x = x$ . Then,  $60 = 2x$  by the Addition Property of Equality. By the Division Property of Equality,  $30 = x$ , or  $x = 30$ . Since  $m\angle 3 = 30^\circ$  and  $\angle 2$  and  $\angle 3$  form a linear pair,  
 $30^\circ + m\angle 3 = \underline{\hspace{2cm}}$ . By the Subtraction Property of Equality,  
 $m\angle 3 = 150^\circ$ .

What information completes the proof?

- A  $90^\circ$
  - B  $180^\circ$
  - C  $m\angle 1$
  - D  $m\angle 2$
44. Two angles form a linear pair. One angle measures  $(10x - 63)^\circ$ . The other angle measures  $(8x)^\circ$ . What is the value of  $x$ ?
- F 8.5
  - G 31.5
  - H 13.5
  - J Cannot be determined
45. Which is the next number in this pattern?  
0, 1, 1.5, 1.75, ...
- A 2
  - B 1.875
  - C 1.85
  - D 1.8

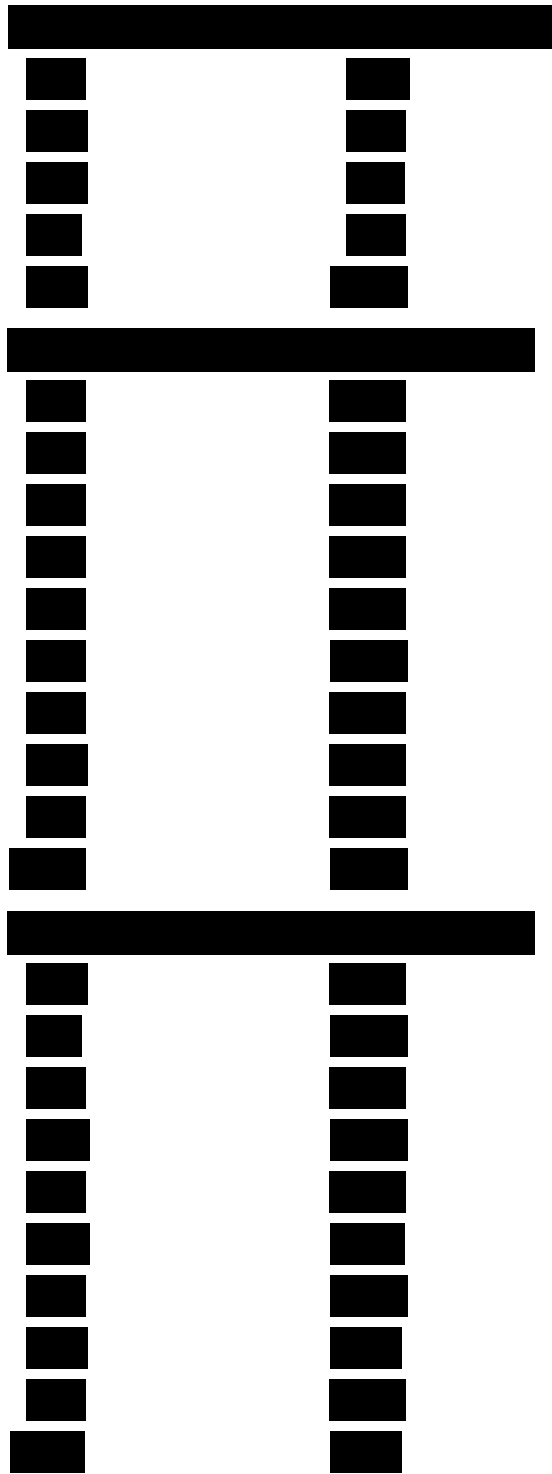
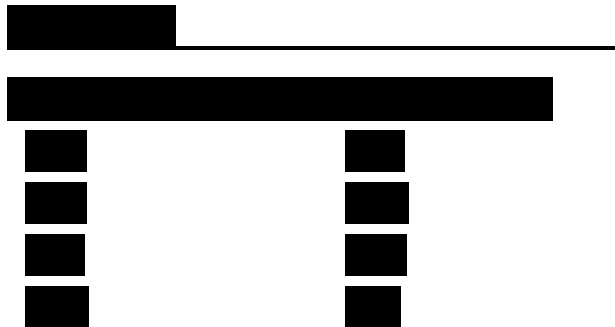
46. If  $\frac{n}{3} = \frac{7}{6}$ , which justifies the statement

$$n = \frac{7}{2}?$$

- F Substitution
- G Reflexive Property of Equality
- H Division Property of Equality
- J Multiplication Property of Equality

**Cumulative Test**

- |       |       |
|-------|-------|
| 1. A  | 24. G |
| 2. G  | 25. D |
| 3. B  | 26. J |
| 4. H  | 27. B |
| 5. A  | 28. F |
| 6. G  | 29. D |
| 7. C  | 30. J |
| 8. H  | 31. B |
| 9. D  | 32. G |
| 10. G | 33. B |
| 11. D | 34. J |
| 12. G | 35. C |
| 13. C | 36. F |
| 14. G | 37. C |
| 15. D | 38. G |
| 16. J | 39. B |
| 17. D | 40. J |
| 18. F | 41. C |
| 19. D | 42. H |
| 20. F | 43. B |
| 21. B | 44. H |
| 22. J | 45. B |
| 23. D | 46. J |



# Cumulative Test

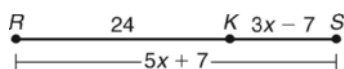
## Choose the best answer.

- Which statement is NOT true?
  - A Parallel lines do not intersect.
  - B A segment has exactly two endpoints.
  - C Two planes that do not intersect are always skew.
  - D A ray has exactly one endpoint.

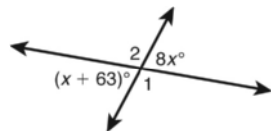
- How many different rays can be named using three collinear points  $P$ ,  $Q$ , and  $R$ ?
  - F 1                      H 3
  - G 2                      J 4

- The midpoint of  $\overline{XY}$  is  $Z$ . If  $XY = 3n$  and  $XZ = n + 15$ , what is  $YZ$ ?
  - A 18                      C 45
  - B 36                      D 90

- What is  $RS$ ?



- F 5                      H 56
  - G 32                      J 70
- Which is the measure of a straight angle?
    - A  $0^\circ$                       C  $100^\circ$
    - B  $90^\circ$                       D  $180^\circ$
  - Which is the last step in the construction of an angle congruent to another angle?
    - F Draw a ray.              H Swing an arc.
    - G Draw a line.              J Mark a point.
  - What is  $m\angle 1$ ?



- A  $76^\circ$                       C  $108^\circ$
- B  $104^\circ$                       D  $156^\circ$

- The measures of two supplementary angles are  $(3x - 10)^\circ$  and  $(6x + 100)^\circ$ . What is the measure of the smaller angle?
  - F  $0^\circ$                       H  $20^\circ$
  - G  $10^\circ$                       J  $\left(26\frac{2}{3}\right)^\circ$

- What is the area of a rectangle whose sides measure  $2g$  and  $(g + 5)$ ?
  - A  $3g + 5$                       C  $6g + 10$
  - B  $6g + 5$                       D  $2g^2 + 10g$

- To the nearest whole number, what is the circumference of a circle whose radius is 12.5? Use 3.14 for  $\pi$ .
  - F 20                      H 79
  - G 39                      J 491

- The midpoint of  $\overline{VW}$  is  $P(4, -3)$ . If the coordinates of  $W$  are  $(0, 15)$ , what are the coordinates of  $V$ ?
  - A  $(8, -21)$                       C  $(4, -33)$
  - B  $(-8, 21)$                       D  $(2, 6)$

- What is the distance from  $(8, 1)$  to  $(3, -11)$  on the coordinate plane?
  - F  $\sqrt{13}$  units                      H 24 units
  - G 13 units                      J 34 units

- What are the coordinates of the image of  $K(-8, 7)$  after the translation  $(x, y) \rightarrow (x - 10, y - 2)$ ?
  - A  $(-18, 5)$                       C  $(18, -5)$
  - B  $(2, 9)$                       D  $(-2, -9)$

- Which transformation maps  $T(-6, 3)$  to  $T'(6, -3)$ ?
  - F  $90^\circ$  rotation
  - G  $180^\circ$  rotation
  - H reflection over the  $x$ -axis
  - J reflection over the  $y$ -axis

**CHAPTER**  
**3****Cumulative Test***continued*

15. Find the next item in the pattern.  
2, 8, 18, 32, 50, 72, . . .
- A 74
  - B 76
  - C 94
  - D 98
16. Which is a counterexample that disproves the conjecture “If the area of a rectangle is 36 square units, then the perimeter is less than 36 units”?
- F a 6 by 6 rectangle
  - G a 4 by 9 rectangle
  - H a 3 by 12 rectangle
  - J a 2 by 18 rectangle
17. Which conditional statement is true?
- A If it is raining outside, then the ground is wet.
  - B If a person lives in the United States, then the person lives in Chicago.
  - C If a number is divisible by 3, then the number is odd.
  - D If today is Saturday, then yesterday was Sunday.
18. What is the inverse of the statement “If the key fits, then the lock opens”?
- F If the lock opens, then the key fits.
  - G If the key does not fit, then the lock does not open.
  - H If the lock does not open, then the key does not fit.
  - J If the key fits, then the lock does not open.
19. Given: If Maria passes geometry, then she will graduate. Maria passes geometry.  
What can you conclude by the Law of Detachment?
- A Maria will take geometry.
  - B If Maria does not graduate, then she is not taking geometry.
  - C If Maria does not take geometry, then she will graduate.
  - D Maria will graduate.
20. Given: If all four angles of a parallelogram are right angles, then the parallelogram is a rectangle. If a parallelogram has at least one right angle, then all four angles are right.  
Which conjecture is valid by the Law of Syllogism?
- F If a rectangle has four right angles, then the rectangle is a parallelogram.
  - G If a parallelogram has at least one right angle, then the parallelogram is a rectangle.
  - H If all four angles of a parallelogram are right angles, then at least one angle is a right angle.
  - J If a parallelogram is a rectangle, then the parallelogram has at least one right angle.
21. Which is a biconditional statement for the given conditional?  
If two coplanar lines do not intersect, then they are parallel.
- A Two coplanar lines intersect if and only if they are not parallel.
  - B Two coplanar lines do not intersect if and only if they are parallel.
  - C Two coplanar lines are not parallel if and only if they intersect.
  - D Two coplanar lines intersect if and only if they are parallel.

**CHAPTER**  
**3**

**Cumulative Test**  
*continued*

22. Which biconditional statement is true?
- F Peter lives in Cincinnati if and only if he lives in Ohio.
  - G A rectangle has sides 3 and 5 if and only if its area is 15.
  - H Two segments are congruent if and only if they have the same measure.
  - J Two angles measure  $90^\circ$  if and only if they are supplementary.
23. If  $6k - 9 = 20$  and  $k = r$ , why is  $6r - 9 = 20$ ?
- A Addition Property of Equality
  - B Multiplication Property of Equality
  - C Symmetric Property of Equality
  - D Substitution Property of Equality
24. Which property justifies the statement "If  $2y = n$  and  $n = -3$ , then  $2y = -3$ "?
- F Transitive Property of Equality
  - G Reflexive Property of Equality
  - H Symmetric Property of Equality
  - J Multiplication Property of Equality

25. What is missing from the proof?

**Given:**  $m\angle 1 = m\angle 2$ ,  $m\angle 1 = 90^\circ$

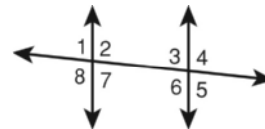
**Prove:**  $\angle 2$  is a right angle.

**Proof:**

Statements	Reasons
1. $m\angle 1 = m\angle 2$ , $m\angle 1 = 90^\circ$	1. Given
2. $90^\circ = m\angle 2$	2. Substitution
3. $\angle 2$ is a rt. $\angle$ .	3. <u>    ?</u>

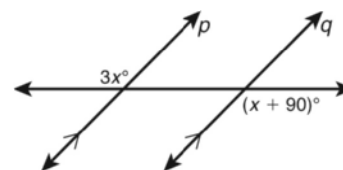
- A Definition of congruence
- B Definition of perpendicular
- C Definition of right angle
- D  $\angle 1$  is a right angle.

**Refer to the figure for Exercises 26 and 27.**



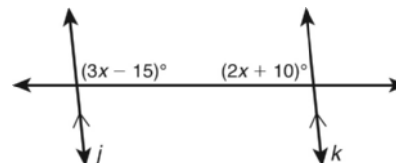
26. Which pair of angles are corresponding angles?
- F  $\angle 1$  and  $\angle 2$
  - G  $\angle 1$  and  $\angle 3$
  - H  $\angle 1$  and  $\angle 4$
  - J  $\angle 1$  and  $\angle 6$
27. Which completes the statement "Angles 6 and 7 are an example of \_\_\_\_\_ angles"?
- A same-side interior
  - B alternate interior
  - C alternate exterior
  - D corresponding

28. If lines  $p$  and  $q$  are parallel, what is the value of  $x$ ?



- F 15
- G 30
- H 45
- J 90

29. If  $j \parallel k$ , which could be one of the angle measures?

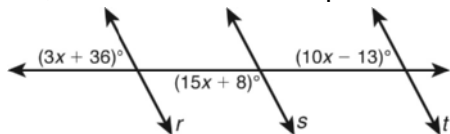


- A  $25^\circ$
- B  $37^\circ$
- C  $60^\circ$
- D  $84^\circ$

**CHAPTER**  
**3**

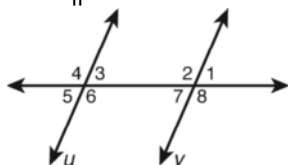
**Cumulative Test**  
*continued*

30. If  $x = 7$ , which lines must be parallel?



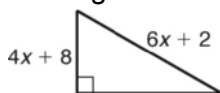
- F  $r \parallel s$  only      H  $s \parallel t$  only  
G  $r \parallel t$  only      J  $r \parallel s \parallel t$

31. Which angle must be congruent to  $\angle 8$  to prove that  $u \parallel v$ ?



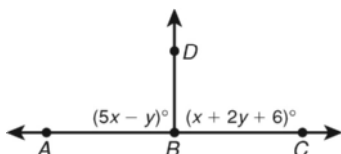
- A  $\angle 1$                       C  $\angle 3$   
B  $\angle 2$                       D  $\angle 4$

32. Which inequality must be true, given the information in the figure?



- F  $x < 3$                       H  $-2 > x$   
G  $x > 3$                       J  $x < -3$

33. In the figure,  $\angle ABD \cong \angle CBD$ . What is the value of  $x$ ?



- A 6                              C 30  
B 24                             D 48

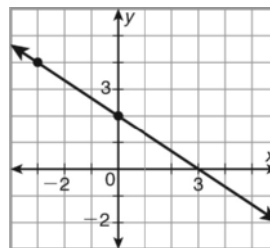
34. What is the slope of the line whose equation is  $2x - 6y = 0$ ?

- F  $-\frac{1}{3}$                           H  $\frac{2}{3}$   
G  $\frac{1}{3}$                              J 3

35. What is the slope of a line parallel to the graph of  $y + 1 = -8(x - 2)$ ?

- A -8                              C  $-\frac{1}{2}$   
B -2                              D  $\frac{1}{8}$

36. Which is an equation of the line in the graph?



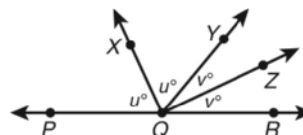
- F  $y + 4 = -\frac{2}{3}(x - 3)$   
G  $y + 3 = -\frac{2}{3}(x - 4)$   
H  $y - 4 = -\frac{2}{3}(x + 3)$   
J  $y - 3 = -\frac{2}{3}(x + 4)$

37. The graph of  $y = 3x - 8$  coincides with the graph of  $6x - ay = 16$ . What is the value of  $a$ ?

- A -2                              C 1  
B -1                              D 2

38. Which completes the paragraph proof?

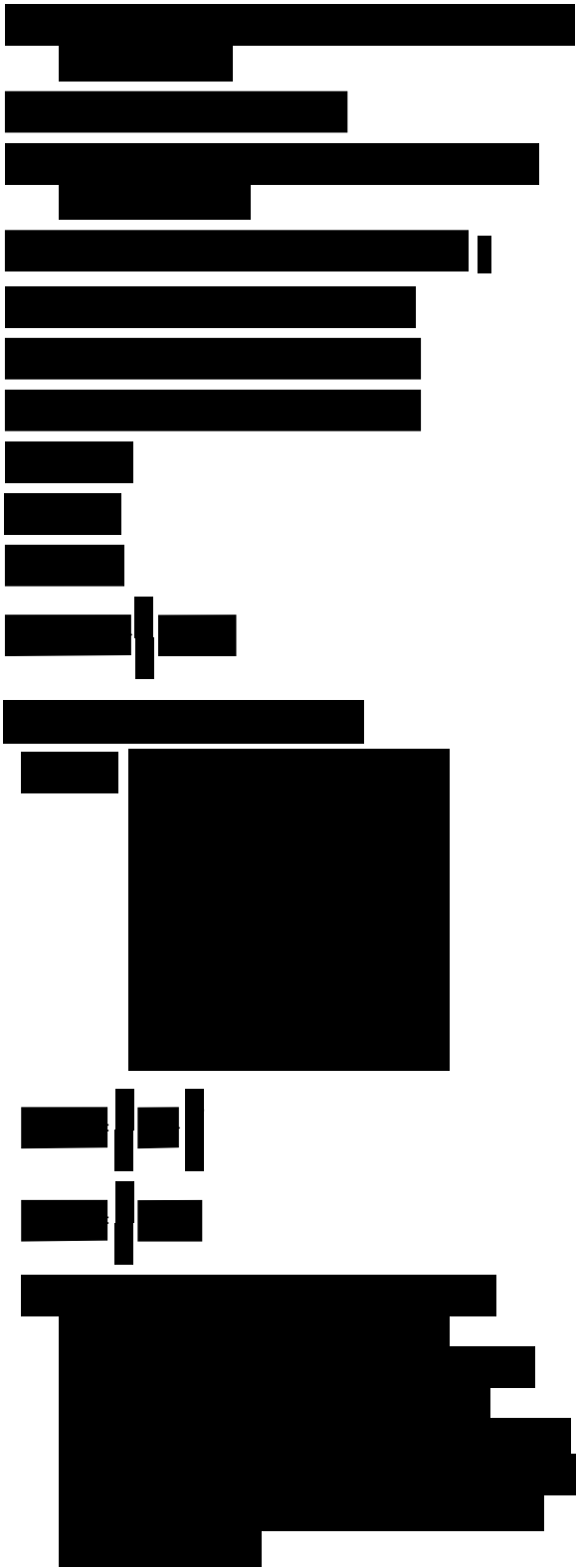
**Given:** figure



**Prove:** \_\_\_\_\_?

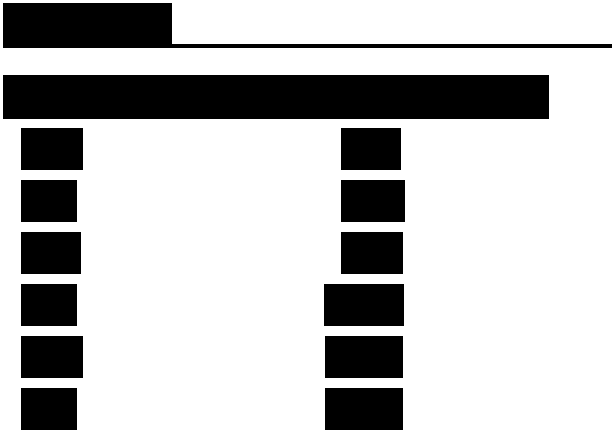
**Proof:**  $\angle PQR$  is a straight angle, so it measures  $180^\circ$ . By the Angle Addition Postulate,  $2u + 2v = 180$ . Then  $u + v = 90$  by the Division Property of Equality. Since  $m\angle PQX = u^\circ$  and  $m\angle ZQR = v^\circ$ ,  $m\angle PQX + m\angle ZQR = 90^\circ$ . So  $\angle PQX$  and  $\angle ZQR$  are complementary by the definition of complementary angles.

- F Def. of  $\perp$  segs.  
G  $\angle PQX$  and  $\angle ZQR$  are comp.  $\angle$ s  
H  $u + v = 90$   
J Def. of comp.  $\angle$ s



**Cumulative Test**

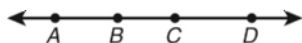
- 1. C
- 2. J
- 3. C
- 4. G
- 5. D
- 6. F
- 7. C
- 8. H
- 9. D
- 10. H
- 11. A
- 12. G
- 13. A
- 14. G
- 15. D
- 16. J
- 17. A
- 18. G
- 19. D
- 20. G
- 21. B
- 22. H
- 23. D
- 24. F
- 25. C
- 26. G
- 27. A
- 28. H
- 29. D
- 30. G
- 31. D
- 32. G
- 33. B
- 34. G
- 35. A
- 36. H
- 37. D
- 38. G



# Cumulative Test

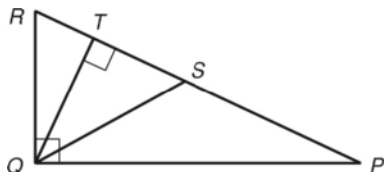
## Choose the best answer.

1. Which list shows all the segments on  $\overline{AC}$  that contain the point  $B$ ?

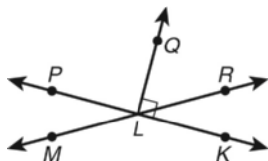


- A  $\overline{AC}$   
 B  $\overline{AB}, \overline{BC}, \overline{BD}$   
 C  $\overline{AB}, \overline{AC}, \overline{AD}, \overline{BC}, \overline{BD}$   
 D  $\overline{AB}, \overline{AC}, \overline{AD}, \overline{BC}, \overline{BD}, \overline{CD}$
2.  $M$  is between  $R$  and  $S$ . If  $RM = 21$ ,  $RS = 15x - 3$ , and  $MS = 9x + 12$ , what is  $RS$ ?
- F 12                      H 87  
 G 66                      J 147
3.  $K$  is the midpoint of  $\overline{VW}$ . If  $KV = 3x$  and  $KW = 5x - 10$ , what is  $VW$ ?
- A 7.5                      C 22.5  
 B 15                      D 30

4. Which is an obtuse angle?



- F  $\angle PQR$                       H  $\angle R$   
 G  $\angle PSQ$                       J  $\angle P$
5. Which angle is supplementary to  $\angle RLK$ ?



- A  $\angle RLQ$                       C  $\angle RLM$   
 B  $\angle RLP$                       D  $\angle PLM$

6. Two vertical angles are also complementary. What is the measure of one of the two vertical angles?

- F  $90^\circ$                       H  $45^\circ$   
 G  $50^\circ$                       J  $25^\circ$

7. The area of a square is 16 square units. What is the perimeter?

- A 4 units                      C 16 units  
 B 8 units                      D 32 units

8. The midpoint of a segment is  $(-8, 5)$ . If one endpoint is  $(0, 1)$ , what is the other endpoint?

- F  $(-16, 9)$                       H  $(-4, 2)$   
 G  $(8, -3)$                       J  $(-4, 3)$

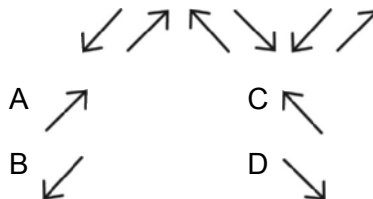
9. To the nearest tenth, what is the distance between  $(7, -4)$  and  $(-3, -1)$ ?

- A 5                      C 20.5  
 B 10.4                      D 54.5

10. Which coordinate pair represents the image of  $(9, 10)$  reflected over the  $x$ -axis?

- F  $(9, -10)$                       H  $(-9, -10)$   
 G  $(-9, 10)$                       J  $(10, 9)$

11. What is the next figure in the pattern?



12. For which statement is the converse false?

- F If Mary can swim, then she can swim the crawl.  
 G If it is raining outside, then the temperature is above freezing.  
 H If Greg has two children, then he has one son and one daughter.  
 J If Carolyn can stand up, then she can walk.



**CHAPTER**  
**4**

**Cumulative Test**  
*continued*

13. What is the contrapositive of the statement?  
If a triangle has at least two congruent angles, then it is an isosceles triangle.
- A If a triangle has no congruent angles, then it is not an isosceles triangle.
  - B If a triangle is an isosceles triangle, then it has at least two congruent angles.
  - C If a triangle does not have at least two congruent angles, then it is an isosceles triangle.
  - D If a triangle is not an isosceles triangle, then it does not have at least two congruent angles.
14. Which is a counterexample of the statement?  
If an animal has wings, then it can fly.
- F penguin                      H duck
  - G robin                              J rabbit
15. If Jenny drives a car, then she drives a Chevy. If Jenny is Tina's aunt, then she drives a car. Tina has an aunt.  
Which is a logical conclusion by the Law of Syllogism?
- A If Jenny is Tina's aunt, then she drives a Chevy.
  - B Tina drives a Chevy.
  - C If Jenny drives a Chevy, then she is Tina's aunt.
  - D Tina drives a car.
16. Which conditional statement can be used to write a true biconditional?
- F If a number is divisible by 6, then it is divisible by 3.
  - G If an angle is formed by two opposite rays, then the angle is a straight angle.
  - H If the month is August in Kansas, then the season is summer.
  - J If you are in California, then the nearest ocean is to the west.

17. Which equation can be solved by using the Subtraction Property of Equality?
- A  $10x = 90$                       C  $x + 13 = -1$
  - B  $-\frac{x}{3} = 4$                           D  $x^2 = 8$
18. If  $\overline{AB} \cong \overline{CD}$  and  $\overline{CD} \cong \overline{EF}$ , why is  $\overline{AB} \cong \overline{EF}$ ?
- F Reflexive Property of Congruence
  - G Transitive Property of Congruence
  - H Symmetric Property of Congruence
  - J Segment Addition Postulate

19. Which completes the proof?

**Given:**  $m\angle TKV = m\angle UKW$



**Prove:**  $m\angle TKU = m\angle VKW$

**Proof:**

Statements	Reasons
1. $m\angle TKV = m\angle UKW$	1. Given
2. _____ ? _____	2. Reflex. Prop. of =
3. $m\angle TKV = m\angle TKU + m\angle UKV$	3. $\angle$ Add. Post.
4. $m\angle UKW = m\angle VKW + m\angle VKU$	4. $\angle$ Add. Post.
5. $m\angle TKU + m\angle UKV = m\angle VKW + m\angle VKU$	5. Subst. Prop of =
6. $m\angle TKU = m\angle VKW$	6. Subtr. Prop. of =

- A Substitution Property of =
- B  $m\angle VKW + m\angle TKU$
- C  $m\angle TKW = m\angle WKT$
- D  $m\angle UKV = m\angle VKU$

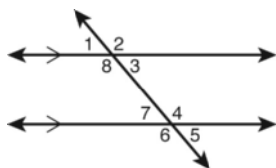
**CHAPTER**

**4**

**Cumulative Test**

*continued*

20. Which angle is the alternate interior angle with  $\angle 4$ ?



- F  $\angle 1$                       H  $\angle 7$
- G  $\angle 5$                       J  $\angle 8$

21. What completes the proof?

**Given:**  $6(4x - 9) = 18$

**Prove:**  $x = 3$

**Proof:**

By the \_\_\_\_\_,  $24x - 54 = 18$ . Then, by the Addition Property of Equality,  $24x = 72$ . Finally, by the Division Property of Equality,  $x = 3$ .

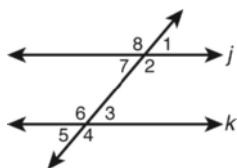
- A Distributive Property
- B Multiplication Property of Equality
- C Subtraction Property of Equality
- D Substitution Property of Equality

22. Which completes the statement?

The floor and ceiling of a room represent planes that are \_\_\_\_\_.

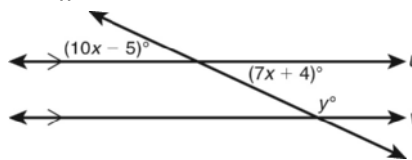
- F skew
- G parallel
- H perpendicular
- J intersecting but not perpendicular

23. Which information CANNOT be used to prove that  $j \parallel k$ ?



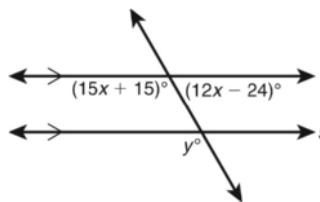
- A  $\angle 7 \cong \angle 3$
- B  $\angle 7$  is supplementary to  $\angle 6$ .
- C  $\angle 1 \cong \angle 5$
- D  $\angle 1$  is supplementary to  $\angle 2$ .

24. If  $u \parallel v$ , what is the value of  $y$ ?



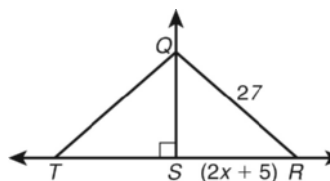
- F 58                              H 142
- G 122                            J 155

25. If  $r \parallel s$ , what is the value of  $y$ ?



- A 18                              C 120
- B 60                              D 162

26. What are all the possible values for  $x$ ?



- F  $-\frac{5}{2} < x < 11$               H  $x > 11$
- G  $x < -\frac{5}{2}, x > 11$           J  $x < -\frac{5}{2}$

27. What is the slope of a line that passes through the points  $(3, 2)$  and  $(7, -12)$ ?

- A  $-\frac{7}{2}$                               C  $-\frac{2}{7}$
- B  $-1$                               D  $1$

28. A given line has a slope of  $\frac{3}{8}$ . What is the slope of a line that is parallel to it?

- F  $-\frac{3}{8}$                               H  $\frac{8}{3}$
- G  $\frac{3}{8}$                               J  $-\frac{8}{3}$

# Cumulative Test

## continued

29. What is the equation of the line that passes through  $(-8, 8)$  and has a slope of 3?

- A  $y = 8x - 3$       C  $y - 8 = 3(x + 8)$   
 B  $y = -8x + 3$       D  $y + 8 = 3(x + 8)$

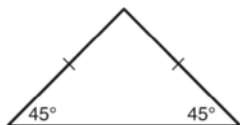
30. The graph of which line is perpendicular to the graph of  $y = -2x + 1$ ?

- F  $y = 2x + 1$       H  $y = -2x + 6$   
 G  $y = \frac{1}{2}x + 1$       J  $y = -\frac{1}{2}x + 6$

31. The measures of two angles of a triangle are  $18^\circ$  and  $62^\circ$ . Which type of triangle is it?

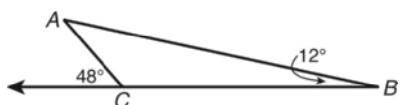
- A acute      C obtuse  
 B equiangular      D right

32. Which best describes the triangle?



- F acute isosceles      H acute scalene  
 G right isosceles      J right scalene

33. What is  $m\angle A$ ?

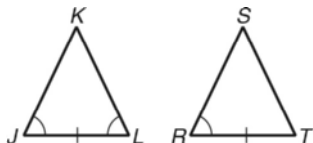


- A  $12^\circ$       C  $48^\circ$   
 B  $36^\circ$       D  $50^\circ$

34. If  $\triangle PQR \cong \triangle STU$ , which angle is congruent to  $\angle U$ ?

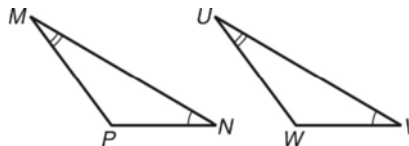
- F  $\angle P$       H  $\angle R$   
 G  $\angle Q$       J  $\angle S$

35. What information would allow you to prove  $\triangle JKL \cong \triangle RST$  by SAS?



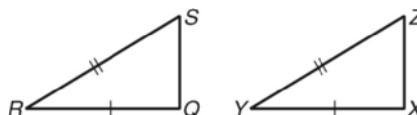
- A  $\angle L \cong \angle T$       C  $\overline{LK} \cong \overline{TS}$   
 B  $\angle K \cong \angle S$       D  $\overline{JK} \cong \overline{RS}$

36. Which information would you need for the shortest proof that  $\triangle MNP \cong \triangle UVW$  by ASA?



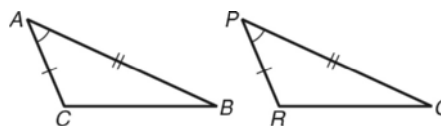
- F  $\angle P \cong \angle W$       H  $\overline{MP} \cong \overline{UW}$   
 G  $\overline{MN} \cong \overline{UV}$       J  $\overline{NP} \cong \overline{VW}$

37. What would allow you to prove  $\triangle QRS \cong \triangle XYZ$  by HL?



- A  $\angle QS \cong \angle XZ$   
 B  $\angle R \cong \angle Y$   
 C  $\angle Q \cong \angle X$   
 D  $\angle Q$  and  $\angle X$  are right angles.

38. Given the figure, why is  $\overline{BC} \cong \overline{QR}$ ?



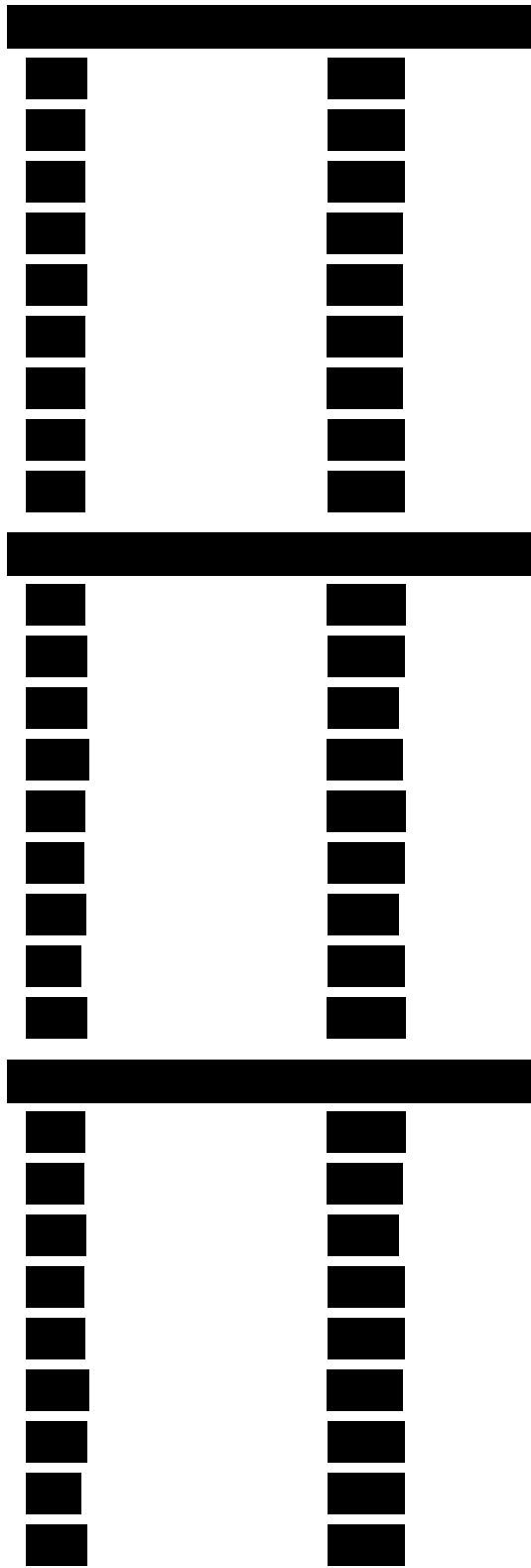
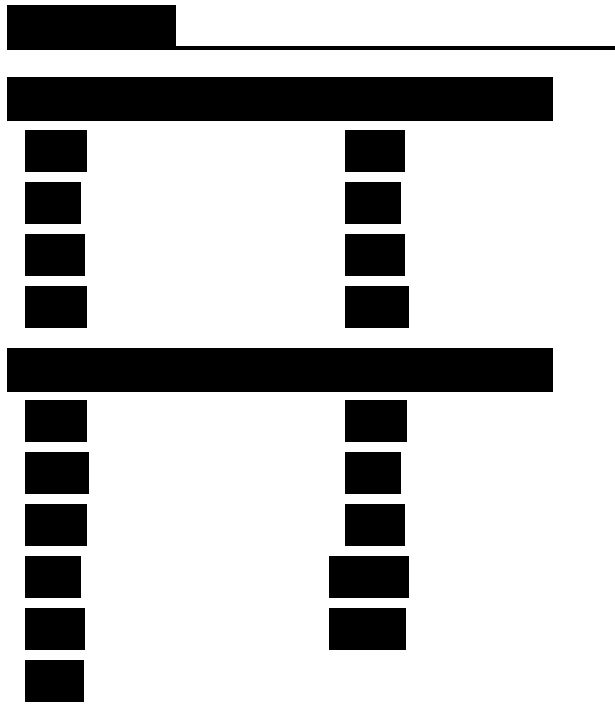
- F SAS      H AAS  
 G ASA      J CPCTC

39. For a coordinate proof concerning an isosceles triangle, which coordinates might be easiest to use?

- A  $(0, 0), (2a, 0), (a, b)$   
 B  $(0, 0), (a, b), (2a, 2b)$   
 C  $(a, a), (b, b), (c, c)$   
 D  $(a, b), (c, d), (e, f)$

**Cumulative Test**

- |       |       |       |
|-------|-------|-------|
| 1. C  | 14. F | 27. A |
| 2. H  | 15. A | 28. G |
| 3. D  | 16. G | 29. C |
| 4. G  | 17. C | 30. G |
| 5. B  | 18. G | 31. C |
| 6. H  | 19. D | 32. G |
| 7. C  | 20. J | 33. B |
| 8. F  | 21. A | 34. H |
| 9. B  | 22. G | 35. D |
| 10. F | 23. D | 36. G |
| 11. C | 24. J | 37. D |
| 12. G | 25. C | 38. J |
| 13. D | 26. F | 39. A |



## Cumulative Test

## Choose the best answer.

1. Which of
- $\overline{PQ}$
- and
- $\overline{QR}$
- contains
- $P$
- ?



- A  $\overline{PQ}$  only      C Both  
 B  $\overline{QR}$  only      D Neither
2.  $K$  is between  $J$  and  $L$ .  $JK = 3x - 5$ , and  $KL = 2x + 1$ . If  $JL = 16$ , what is  $JK$ ?
- F 7      H 9  
 G 8      J 13
3.  $\overline{SU}$  bisects  $\angle RST$ . If  $m\angle RST = (8x + 15)^\circ$  and  $m\angle RSU = 5x^\circ$ , what is  $m\angle RST$ ?
- A  $25^\circ$       C  $50^\circ$   
 B  $37.5^\circ$       D  $75^\circ$
4. If the complement of an angle measures  $22^\circ$ , what is the measure of its supplement?
- F  $68^\circ$       H  $112^\circ$   
 G  $78^\circ$       J  $158^\circ$
5. The perimeter of a square is 8 meters. What is its area?
- A  $4 \text{ m}^2$       C  $16 \text{ m}^2$   
 B  $8 \text{ m}^2$       D  $64 \text{ m}^2$
6. What is the area of a circle whose diameter is 3 centimeters?
- F  $1.5\pi \text{ cm}^2$       H  $6\pi \text{ cm}^2$   
 G  $2.25\pi \text{ cm}^2$       J  $36\pi \text{ cm}^2$
7. The midpoint of a segment is  $(2, -5)$ , and one of the endpoints is  $(3, 6)$ . Where is the other endpoint?
- A  $(1, -16)$       C  $(2.5, 0.5)$   
 B  $(4, 17)$       D  $(0.5, 5.5)$

8. Where is the image of  $(-6, 2)$  reflected across the graph of  $y = -x$ ?
- F  $(2, -6)$       H  $(2, 6)$   
 G  $(-2, -6)$       J  $(-2, 6)$
9. What is the next term in the sequence?  
 $729, -243, 81, -27, \dots$
- A  $-9$       C 3  
 B  $-3$       D 9
10. For which conditional statement  $(p \rightarrow q)$  is its converse  $(q \rightarrow p)$  false?
- F If a fruit has seeds inside, then it is an orange.  
 G If Meg lives in Egypt, then she lives in Africa.  
 H If the day is between Monday and Wednesday, then it is Tuesday.  
 J If the car will not start, then it is out of gas.
11. For which conditional statement  $(p \rightarrow q)$  is its inverse  $(\sim p \rightarrow \sim q)$  false?
- A If a point is a midpoint of a segment, then it divides the segment into two congruent segments.  
 B If Mike does not become an airplane pilot, then he will not learn how to fly a plane.  
 C If you see a zebra, then you must be in a zoo.  
 D If the biggest holiday of the month is Thanksgiving, then the month is November.
12. Which justifies the statement?  
 If  $\angle 1 \cong \angle 2$  and  $\angle 2 \cong \angle 3$ , then  $\angle 1 \cong \angle 3$ .
- F Transitive Property of Congruence  
 G Substitution  
 H Symmetric Property of Congruence  
 J Reflexive Property of Congruence

# Cumulative Test

## continued

13. Which is the most logical conclusion by the Law of Syllogism?

If one of the angles of a triangle is obtuse, then the other two angles are acute. If a triangle is an obtuse triangle, then one of its angles is obtuse. A triangle has two acute angles.

- A The triangle is obtuse.
- B The other angle in the triangle is obtuse.
- C The triangle is not obtuse.
- D None of these are valid conclusions.

14. Which is a true biconditional statement?

- F Four points are coplanar if and only if they are noncollinear.
- G Two angles are complementary if and only if the sum of their measures is  $90^\circ$ .
- H A side of a triangle is a hypotenuse if and only if it is the longest side of a triangle.
- J A figure has an endpoint if and only if the figure is a segment.

15. Complete the proof.

**Given:**  $x = -5$

**Prove:**  $2(x + 5) = 0$

**Proof:**

Statements	Reasons
1. $x = -5$	1. Given
2. $x + 5 = 0$	2. Add. Prop. of =
3. $2(x + 5) = 0$	3. _____

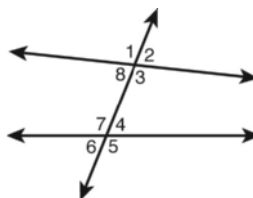
- A Multiplication Property of Equality
- B Transitive Property of Equality
- C Subtraction Property of Equality
- D Reflexive Property of Equality

16. Complete the statement.

Two lines are parallel if the same-side interior angles are \_\_\_\_\_ angles.

- F complementary
- G supplementary
- H congruent
- J corresponding

17. Which angles are alternate interior angles?

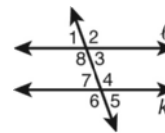


- A  $\angle 1$  and  $\angle 4$
- B  $\angle 1$  and  $\angle 5$
- C  $\angle 3$  and  $\angle 4$
- D  $\angle 3$  and  $\angle 7$

18. Complete the proof.

**Given:**  $k \parallel \ell$

**Prove:**  $\angle 1$  and  $\angle 6$  are supplementary.



**Proof:**

Statements	Reasons
1. $k \parallel \ell$	1. Given
2. $\angle 1 \cong \angle 5$	2. _____
3. $m\angle 1 = m\angle 5$	3. Def. of $\cong$
4. $\angle 5$ and $\angle 6$ are supplementary.	4. Linear Pair Thm.
5. $m\angle 5 + m\angle 6 = 180^\circ$	5. Def. of supp. $\angle$ s
6. $m\angle 1 + m\angle 6 = 180^\circ$	6. Subst.
7. $\angle 1$ and $\angle 6$ are supplementary.	7. Def. of supp. $\angle$ s

- F Alternate Exterior Angle Theorem
- G Alternate Interior Angle Theorem
- H Same-Side Interior Angle Theorem
- J Corresponding Angle Theorem

CHAPTER

5

Cumulative Test

continued

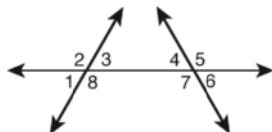
19. A line passes through the points (5, -8) and (6, 2). What is the slope?

A -10                      C  $\frac{1}{10}$   
 B  $-\frac{6}{11}$                   D 10

20. Complete the paragraph proof.

**Given:**  $\angle 2 \cong \angle 5$

**Prove:**  $\angle 1 \cong \angle 4$



**Proof:**

It is given that  $\angle 2 \cong \angle 5$ . By the Linear Pair Theorem,  $m\angle 2 + m\angle 1 = 180^\circ$  and \_\_\_\_\_. By the Congruent Supplements Theorem,  $\angle 1 \cong \angle 4$ .

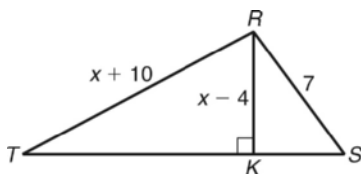
F  $m\angle 2 + m\angle 3 = 180^\circ$

G  $m\angle 4 + m\angle 7 = 180^\circ$

H  $m\angle 4 + m\angle 5 = 180^\circ$

J  $m\angle 6 + m\angle 7 = 180^\circ$

21. Find all values for  $x$ .



A  $x < 11$                       C  $4 < x < 11$

B  $0 < x < 11$                   D  $x > -3$

22. What is the slope of the line

perpendicular to  $y = -\frac{3}{2}x + 9$ ?

F  $\frac{3}{2}$                                   H  $-\frac{2}{3}$

G  $\frac{2}{3}$                                   J  $-\frac{3}{2}$

23. What is the equation of the line that passes through (0, -2) and (4, 6)?

A  $y = 2x - 2$                   C  $y = x - 2$

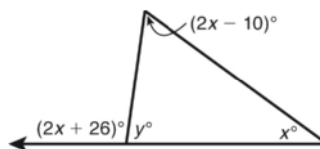
B  $y = \frac{1}{2}x - 2$                   D  $y = -2x + 2$

24. Three sides of a triangle are shown. Which triangle is acute?

F 3, 4, 5                      H 4, 5, 6

G 5, 12, 13                  J 4, 7, 10

25. Find  $y$ .



A  $36^\circ$                               C  $128^\circ$

B  $82^\circ$                               D  $134^\circ$

26. Which line coincides with the graph of  $6x - 10y = 30$ ?

F  $y = \frac{3}{5}x - 3$                   H  $y = \frac{3}{5}x + 5$

G  $y = \frac{5}{3}x - 3$                   J  $y = \frac{5}{3}x + 5$

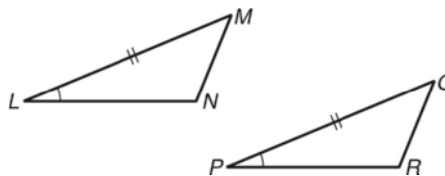
27. Complete the statement.

If  $\angle U \cong \angle P$ ,  $\angle S \cong \angle Q$ ,  $\angle T \cong \angle R$ ,  $\overline{UT} \cong \overline{PR}$ ,  $\overline{US} \cong \overline{PQ}$ , and  $\overline{ST} \cong \overline{QR}$ , then  $\triangle PQR \cong$  \_\_\_\_\_.

A  $\triangle RQP$                       C  $\triangle TUS$

B  $\triangle STU$                       D  $\triangle UST$

28. What is the least information needed to prove the triangles congruent by SSS?



F  $\angle M \cong \angle Q$                   H  $\overline{LN} \cong \overline{PR}$  and

$\overline{MN} \cong \overline{QR}$

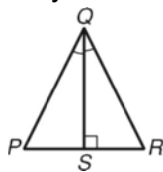
G  $\overline{LN} \cong \overline{PR}$                   J  $\overline{LN} \cong \overline{QR}$  and

$\overline{MN} \cong \overline{PR}$

# Cumulative Test

*continued*

29. Why is  $\triangle PQS \cong \triangle RQS$ ?

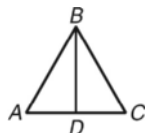


- A SAS
- B ASA
- C AAA
- D HL

30. Complete the proof.

**Given:**  $\triangle ABC$  is equilateral, and  $\overline{BD}$  is an altitude.

**Prove:**  $\overline{BD}$  bisects  $\overline{AC}$ .



**Proof:**

By definition of equilateral,  $\overline{AB} \cong \overline{CB}$ , and by the Reflexive Property of Congruence,  $\overline{BD} \cong \overline{BD}$ . Since  $\overline{BD}$  is an altitude,  $\angle BDA$  and  $\angle BDC$  are right angles. So  $\triangle BDA$  and  $\triangle BDC$  are right  $\triangle$ s and  $\triangle BDA \cong \triangle BDC$  by HL.

Therefore,  $\overline{AD} \cong \overline{CD}$  by \_\_\_\_\_. By definition of bisector,  $\overline{BD}$  bisects  $\overline{AC}$ .

- F HL
- G SAS
- H ASA
- J CPCTC

31. **Given:**  $TUVW$  is a rectangle.

**Prove:**  $TV = UW$

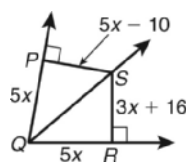
For an analytic proof, which is the best placement of the rectangle in the coordinate plane?

- A  $T(0, 0), U(a, b), V(0, c), W(-a, c - b)$
- B  $T(0, 0), U(a, 0), V(a, b), W(0, b)$
- C  $T(a, b), U(a + b, 0), V(a + b, c), W(0, c)$
- D  $T(0, 0), U(a, 0), V(a, a), W(0, a)$

32. One of the base angles of an isosceles triangle is  $40^\circ$ . Which is the triangle classification according to its angles?

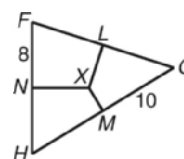
- F acute
- G right
- H obtuse
- J equiangular

33.  $\overline{QS}$  bisects  $\angle PQR$ . What is  $QR$ ?



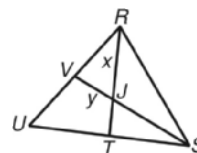
- A 65
- B 50
- C 40
- D 15

34.  $\overline{XL}$ ,  $\overline{XM}$ , and  $\overline{XN}$  are perpendicular bisectors. The perimeter of  $\triangle FGH$  is 54. What is  $FG$ ?



- F 36
- G 27
- H 18
- J 9

35.  $\overline{SV}$  and  $\overline{RT}$  are medians. What is  $JS - JT$ ?



- A  $x - y$
- B  $2x - 3y$
- C  $2y - \frac{1}{2}x$
- D  $\frac{1}{2}x - 2y$

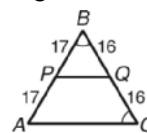
36. In  $\triangle JKL$ ,  $JK > JL > KL$ . Which is the correct order of the angles from smallest measure to largest?

- F  $\angle J, \angle L, \angle K$
- G  $\angle J, \angle K, \angle L$
- H  $\angle K, \angle L, \angle J$
- J  $\angle L, \angle K, \angle J$

37. Two sides of a  $30^\circ$ - $60^\circ$ - $90^\circ$  triangle are 9 and 18. What is the length of the third side?

- A  $9\sqrt{2}$
- B  $9\sqrt{3}$
- C  $18\sqrt{2}$
- D  $18\sqrt{3}$

38.  $\overline{PQ}$  is a midsegment. What is  $PQ$ ?



- F 16
- G 17
- H 32
- J 34



[REDACTED]

**Cumulative Test**

- |       |       |
|-------|-------|
| 1. C  | 20. H |
| 2. F  | 21. C |
| 3. D  | 22. G |
| 4. H  | 23. A |
| 5. A  | 24. H |
| 6. G  | 25. B |
| 7. A  | 26. F |
| 8. J  | 27. D |
| 9. D  | 28. H |
| 10. G | 29. B |
| 11. C | 30. J |

- |       |       |
|-------|-------|
| 12. F | 31. B |
| 13. D | 32. H |
| 14. G | 33. A |
| 15. A | 34. H |
| 16. G | 35. C |
| 17. D | 36. G |
| 18. F | 37. B |
| 19. D | 38. G |

[REDACTED]

## Cumulative Test

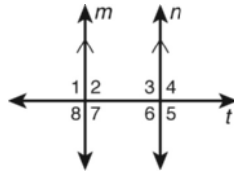
## Choose the best answer.

- $K$  is between  $P$  and  $Q$ . Suppose  $PQ = 10x - 16$ ,  $PK = 6x + 8$ , and  $KQ = 8$ . What is  $PQ$ ?  
A 8                      C 56  
B 16                      D 64
- $\overline{RL}$  bisects  $\angle SRA$ . Suppose  $m\angle LRA = 45^\circ$ . What type of angle is  $\angle SRA$ ?  
F acute                      H right  
G obtuse                      J straight
- An equilateral triangle has an area of  $9\sqrt{3}$  square inches. How many inches is the perimeter?  
A 9                      C 18  
B  $9\sqrt{3}$                       D  $18\sqrt{3}$
- The sum of the measures of two vertical angles is  $44^\circ$ . What is the measure of the supplement of one of those angles?  
F  $158^\circ$                       H  $68^\circ$   
G  $136^\circ$                       J  $46^\circ$
- The endpoints of a segment are  $W(0, -9)$  and  $S(10, 11)$ . What are the coordinates of the midpoint?  
A (5, 10)                      C  $(-5, -10)$   
B (5, 1)                      D  $(-5, -1)$
- To the nearest tenth, what is the distance between the points  $K(7, -1)$  and  $M(1, 4)$ ?  
F 4.7                      H 7.8  
G 5.5                      J 8.5
- What is the image of  $(5, -2)$  when it is reflected across the line  $y = -x$ ?  
A (2, 5)                      C  $(-2, 5)$   
B  $(-2, -5)$                       D (2,  $-5$ )
- What is the next number in the sequence?  
 $0, 1, -1, 3, -5, 11, -21, \dots$   
F  $-64$                       H 43  
G  $-43$                       J 64
- Which is a true conditional statement for the following sentence?  
A bird is a two-legged animal.  
A If a bird has two legs, then it is an animal.  
B If an animal has two legs, then it is a bird.  
C If a bird is an animal, then it has two legs.  
D If an animal is a bird, then it has two legs.
- For which conditional statement is the contrapositive true?  
F If a polygon has four sides, then it is a quadrilateral.  
G If a polygon has four sides, then it is not a quadrilateral.  
H If a polygon does not have four sides, then it is a quadrilateral.  
J If a polygon is a quadrilateral, then it does not have four sides.
- According to the Law of Detachment, which is a logical conjecture from these two statements?  
If the temperature is above  $95^\circ$  outside, then Vicki will run her air conditioner.  
The temperature is  $98^\circ$ .  
A The temperature is above  $95^\circ$ .  
B Vicki will not run her air conditioner.  
C The temperature is not  $95^\circ$ .  
D Vicki will run her air conditioner.
- Which biconditional statement is false?  
F Mack lives in Florida if and only if he lives in the United States.  
G The month is June if and only if it is between May and July.  
H Anita can open the lock if and only if she has the matching key.  
J Something is a foot long if and only if it measures 12 inches.

**CHAPTER**  
**6**

**Cumulative Test**  
*continued*

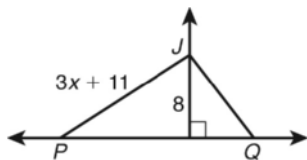
13. If  $2x + 8 = 0$ , what justifies  $2(x + 4) = 0$ ?  
 A Multiplication Property of Equality  
 B Division Property of Equality  
 C Transitive Property of Equality  
 D Distributive Property
14. Suppose  $3x - 9 = 12$ . Which is true because of the Division Property of Equality?  
 F  $3x = 21$                       H  $3x = 3$   
 G  $x - 3 = 4$                       J  $x - 3 = 12$
15. In the diagram,  $m\angle 1 = (7x + 22)^\circ$  and  $m\angle 4 = (9x - 2)^\circ$ .



What is  $m\angle 8$ ?

- A  $74^\circ$                                   C  $92^\circ$   
 B  $88^\circ$                                   D  $106^\circ$
16. **Given:**  $m \parallel n$
- 
- What are all the parallel relationships?  
 F  $m \parallel n$  only  
 G  $k \parallel m, k \parallel n, m \parallel n$   
 H  $l \parallel m, l \parallel n, m \parallel n$   
 J  $k \parallel l, m \parallel n$

17. What are all possible values for  $x$ ?



- A  $x < 8$                                   C  $x > -1$   
 B  $x > 8$                                   D  $-1 < x < 8$

18. A line passes through  $(-4, -9)$  and  $(2, -7)$ . What is its slope?  
 F  $\frac{1}{8}$                                       H 3  
 G  $\frac{1}{3}$                                       J 8
19. What is the slope of a line that is parallel to the line whose equation is  $y - 10 = -4(x + 1)$ ?  
 A  $-10$                                   C  $-\frac{1}{4}$   
 B  $-4$                                       D  $\frac{1}{4}$

20. Which is an equation of the line that passes through  $(0, 2)$  and has a slope of 9?

- F  $y = -9x - 2$                       H  $y = -9x + 2$   
 G  $y = 9x + 2$                       J  $y = 9x - 2$

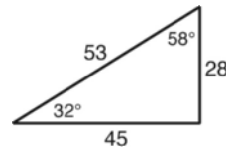
21. Which line coincides with the graph of  $3x - 5y = 15$ ?

- A  $y = \frac{3}{5}x - 3$                       C  $y = \frac{3}{5}x - 5$   
 B  $y = -\frac{5}{3}x - 3$                       D  $y = -\frac{5}{3}x - 5$

22. One base angle of an isosceles triangle measures  $25^\circ$ . What is the measure of the vertex angle?

- F  $155^\circ$   
 G  $130^\circ$   
 H  $65^\circ$   
 J  $40^\circ$

23. Which best describes the triangle?

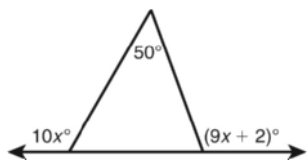


- A scalene acute  
 B isosceles acute  
 C scalene right  
 D isosceles right

**CHAPTER**  
**6**

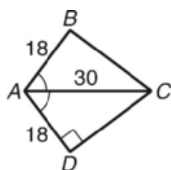
**Cumulative Test**  
*continued*

24. What is the value of  $x$ ?



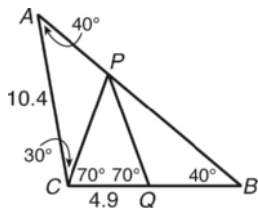
- F 2                      H 12  
G 5                      J 19

25. What is  $m\angle B$ ?



- A  $24^\circ$                       C  $54^\circ$   
B  $30^\circ$                       D  $90^\circ$

26. What is  $PB$ ?



- F 10.4                      H 15.3  
G 14.7                      J 15.9

27. Which completes the statement?  
The point of concurrency of the perpendicular bisectors of a right triangle is on the \_\_\_\_\_ of the triangle.

- A inside                      C outside  
B right angle                      D hypotenuse

28. The hypotenuse of an isosceles right triangle is 6. What is its area?

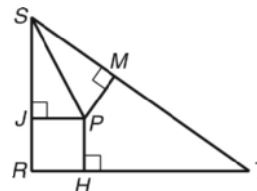
- F 4.5                      H 18  
G 9                      J 36

29. If  $\triangle YTR \cong \triangle KWP$ , which need NOT be true?

- A  $\angle R \cong \angle P$                       C  $\angle K \cong \angle Y$   
B  $\overline{RT} \cong \overline{WK}$                       D  $\overline{RY} \cong \overline{PK}$

30. **Given:**

$PR = 8\sqrt{2}$ ,  
 $\overline{PM} \perp \overline{ST}$ ,  
 $\overline{PJ} \perp \overline{SR}$ ,  
 $\overline{PH} \perp \overline{RT}$ ,



$\overline{SP}$  bisects  $\angle RST$ ,  
and  $m\angle SRP = m\angle TRP = 45^\circ$ .  
What is  $PM$ ?

- F  $\sqrt{2}$                       H 8  
G  $4\sqrt{2}$                       J  $8\sqrt{2}$

31.  $\triangle JKL$  is an equilateral triangle. Its medians intersect at  $W$ . If  $KW = 12\sqrt{3}$ , what is the length of the median that  $\overline{KW}$  is on?

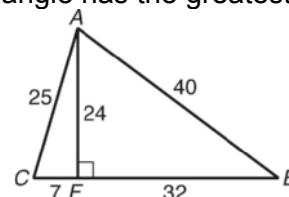
- A  $8\sqrt{3}$                       C  $24\sqrt{3}$   
B  $18\sqrt{3}$                       D  $36\sqrt{3}$

32. In  $\triangle QRS$ ,  $X$ ,  $Y$ , and  $Z$  are the midpoints of  $\overline{QR}$ ,  $\overline{RS}$ , and  $\overline{QS}$ , respectively.

$m\angle Q = a^\circ$  and  $m\angle R = b^\circ$ .  
What is  $m\angle YXZ$ ?

- F  $a^\circ$                       H  $(a + b)^\circ$   
G  $b^\circ$                       J  $(180 - a - b)^\circ$

33. Which angle has the greatest measure?



- A  $\angle CAB$   
B  $\angle B$   
C  $\angle C$   
D  $\angle AFB$

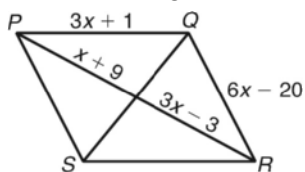
34. Four angles of a pentagon measure  $30^\circ$ ,  $73^\circ$ ,  $150^\circ$ , and  $112^\circ$ . What is the measure of the fifth angle?

- F  $5^\circ$   
G  $65^\circ$   
H  $85^\circ$   
J  $175^\circ$

**CHAPTER**  
**6**

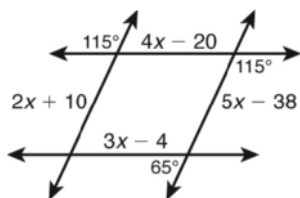
**Cumulative Test**  
*continued*

35.  $PQRS$  is a parallelogram. What is  $PR$ ?



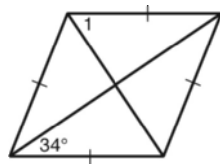
- A 23                      C 28  
B 26                      D 30

36. If possible, find a value for  $x$ .



- F 15                      H 18  
G 16                      J Not here

37. What is the measure of  $\angle 1$ ?

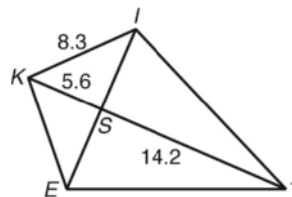


- A  $34^\circ$                       C  $68^\circ$   
B  $56^\circ$                       D  $112^\circ$

38. Quadrilateral  $RSTU$  is a parallelogram. Which is the LEAST additional information needed to prove that  $RSTU$  is a rectangle?

- F Both pairs of opposite sides are congruent, and all angles are right angles.  
G All four angles are right angles.  
H The diagonals are congruent, and one angle is a right angle.  
J  $\angle T$  is a right angle.

39.  $KITE$  is a kite, and  $\overline{KT}$  bisects  $\angle EKI$  and  $\angle ETI$ . To the nearest tenth, what is the area of  $\triangle SET$ ?



- A 58.9                      C 39.8  
B 43.5                      D 23.2

40. Three angles of a trapezoid measure  $72^\circ$ ,  $108^\circ$  and  $63^\circ$ . What is the measure of the fourth angle?

- F  $9^\circ$                       H  $117^\circ$   
G  $18^\circ$                       J  $135^\circ$

41. The graph of which equation is perpendicular to the graph of  $4x + 3y = 12$ ?

- A  $y = \frac{3}{4}x + 9$                       C  $y = \frac{4}{3}x + 9$   
B  $y = -\frac{3}{4}x + 9$                       D  $y = -\frac{4}{3}x + 9$

42. The graph of which equation coincides with the graph of  $5x - 2y = 10$ ?

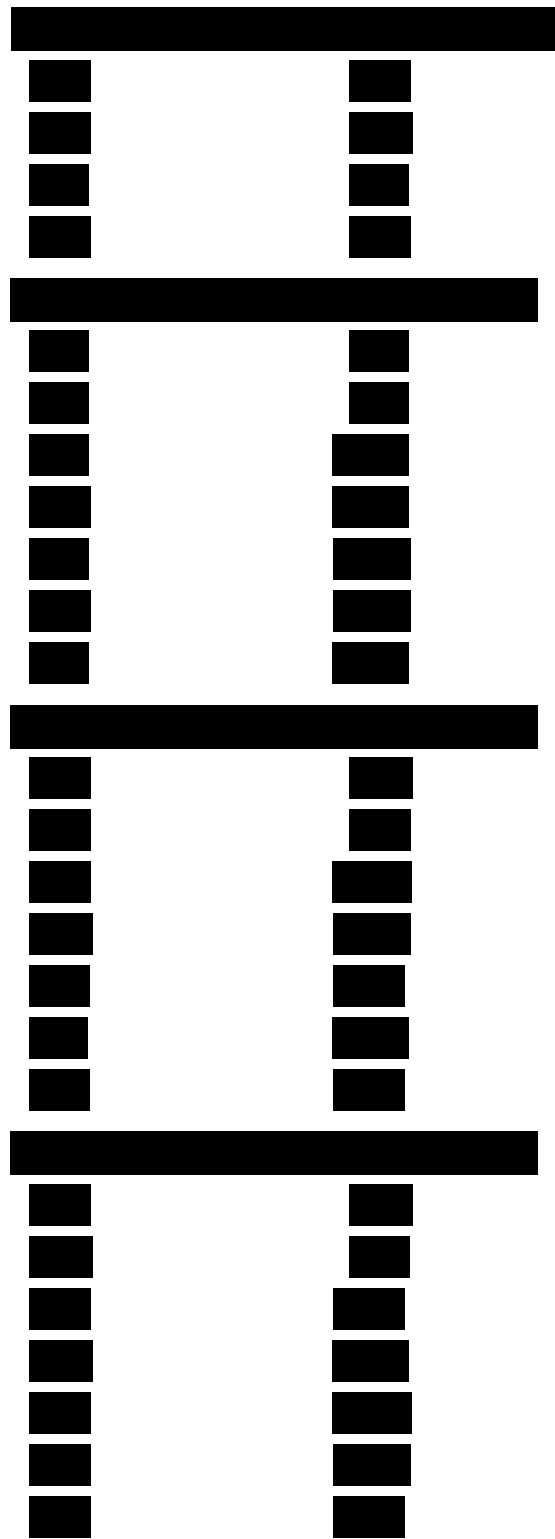
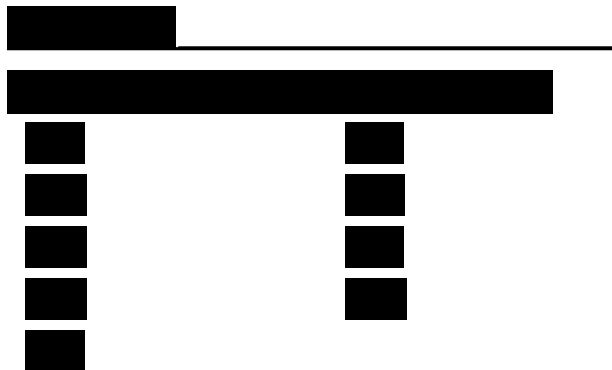
- F  $y + 5 = \frac{5}{2}(x + 4)$   
G  $y + 5 = -\frac{5}{2}(x + 4)$   
H  $y - 5 = \frac{5}{2}(x - 4)$   
J  $y - 5 = -\frac{5}{2}(x - 4)$

43. An exterior angle of a triangle measures  $48^\circ$ . One of the remote interior angles measures  $16^\circ$ . What is the measure of the other remote interior angle?

- A  $32^\circ$                       C  $116^\circ$   
B  $64^\circ$                       D  $148^\circ$

**Cumulative Test**

- |       |       |
|-------|-------|
| 1. D  | 23. C |
| 2. H  | 24. H |
| 3. C  | 25. D |
| 4. F  | 26. F |
| 5. B  | 27. D |
| 6. H  | 28. G |
| 7. D  | 29. B |
| 8. H  | 30. H |
| 9. D  | 31. B |
| 10. F | 32. J |
| 11. D | 33. D |
| 12. F | 34. J |
| 13. D | 35. D |
| 14. G | 36. G |
| 15. B | 37. B |
| 16. J | 38. J |
| 17. C | 39. B |
| 18. G | 40. H |
| 19. B | 41. A |
| 20. G | 42. H |
| 21. A | 43. A |
| 22. G |       |



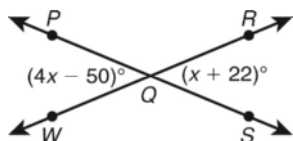
# Cumulative Test

## Choose the best answer.

1. Which is the measure of a right angle?

- A  $80^\circ$                       C  $100^\circ$   
 B  $90^\circ$                       D  $180^\circ$

2. What is the measure of  $\angle PQW$ ?



- F  $44.4^\circ$                       H  $46.0^\circ$   
 G  $45.6^\circ$                       J  $63.6^\circ$

3. The length and width of a rectangle are  $(x + 3)$  and  $(x - 4)$ , respectively. The area is 120 square units. What is the perimeter of the rectangle?

- A 21 units                      C 42 units  
 B 23 units                      D 46 units

4. The circumference of a circle is  $16\pi$  meters. What is the area of the circle?

- F  $8\pi \text{ m}^2$                       H  $256\pi \text{ m}^2$   
 G  $64\pi \text{ m}^2$                       J  $1024\pi \text{ m}^2$

5. One endpoint of  $\overline{VX}$  is  $V(8, -10)$ , and its midpoint is  $M(0, 2)$ . What are the coordinates of  $X$ ?

- A  $(-8, 14)$                       C  $(4, -4)$   
 B  $(8, -6)$                       D  $(-4, 4)$

6. The endpoints of a segment are  $R(-9, -3)$  and  $S(3, 5)$ . How many units long is  $\overline{RS}$ ?

- F  $\sqrt{208}$                       H  $\sqrt{40}$   
 G  $\sqrt{52}$                       J  $\sqrt{13}$

7. What is the term that immediately precedes 24?

- $\dots, 24, 29, 34, 39, 44, \dots$   
 A 23                              C 20  
 B 22                              D 19

8. Which conditional statement is true?

- F If the month is not April, then the season is summer.  
 G If the land is not rocky, then the land is flat.  
 H If today is not Wednesday, then it is a day from Thursday to Tuesday.  
 J If you do not see a polar bear, then you must not be in Alaska.

9. What is the inverse of the statement?

If radishes are blue, then horses cannot talk.

- A If radishes are blue, then horses can talk.  
 B If horses cannot talk, then radishes are blue.  
 C If radishes are not blue, then horses can talk.  
 D If horses can talk, then radishes are not blue.

10. Given: No one can enter Martin's tree house without knowing his secret password. Martin let Gary into his tree house.

What logical conclusion can be drawn according to the Law of Detachment?

- F The password must now be changed.  
 G Only Martin and Gary know the secret password.  
 H Martin knows Gary's secret password.  
 J Gary knows Martin's secret password.

11. The graph of which line is parallel to the graph of  $y - 1 = -7(x + 2)$ ?

- A  $y = -7x - 13$               C  $y = \frac{1}{7}x + 6$   
 B  $y = -7x$                       D  $y = -\frac{1}{7}x - 6$

**CHAPTER**  
**7**

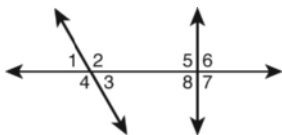
**Cumulative Test**  
*continued*

12. Which does not have the same truth value as the statement?  
Two polygons are congruent if and only if all their corresponding parts are congruent.
- F If all the corresponding parts of two polygons are congruent, then the polygons are congruent.
  - G If not all the corresponding parts of two polygons are congruent, then the polygons are not congruent.
  - H If two polygons are congruent, then all their corresponding parts are congruent.
  - J If two polygons are not congruent, then all their corresponding parts are congruent.

13. If  $8x + y = 14$  and  $8x = 4$ , then why is  $4 + y = 14$ ?

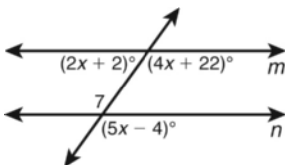
- A Substitution Property of Equality
- B Symmetric Property of Equality
- C Addition Property of Equality
- D Subtraction Property of Equality

14. Identify the kind of angle pair represented by  $\angle 4$  and  $\angle 6$ .



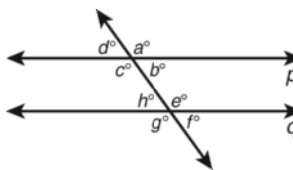
- F alternate interior angles
- G alternate exterior angles
- H corresponding angles
- J same-side interior angles

15. In the figure,  $m \parallel n$ . What is the measure of  $\angle 7$ ?



- A  $30^\circ$
- B  $31^\circ$
- C  $106^\circ$
- D  $126^\circ$

16. Which could you use to prove  $p \parallel q$ ?



- F  $a = h$
- G  $h = f$
- H  $d + g = 180$
- J  $c + e = 180$

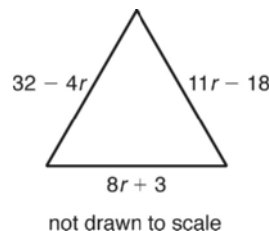
17. The hypotenuse of a right triangle is  $(10x - 8)$  and one of the legs is  $(6x + 2)$ . Find all possible values for  $x$ .

- A  $-\frac{2}{3} < x < \frac{5}{2}$
- B  $x > -\frac{2}{3}$
- C  $x > 0$
- D  $x > \frac{5}{2}$

18. What is the slope of the line that passes through  $(10, -3)$  and  $(-1, 2)$ ?

- F  $-9$
- G  $-\frac{11}{5}$
- H  $-\frac{5}{11}$
- J  $-\frac{1}{9}$

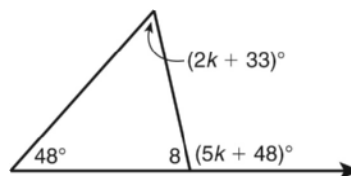
19. The perimeter of the triangle is 122 feet.



Classify the triangle according to its sides.

- A scalene
- B equilateral
- C isosceles
- D right

20. What is the measure of  $\angle 8$ ?



- F  $73^\circ$
- G  $77^\circ$
- H  $84^\circ$
- J  $94.5^\circ$



**CHAPTER**  
**7**

**Cumulative Test**  
*continued*

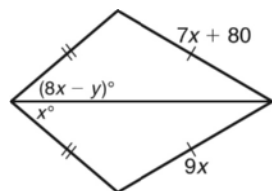
21. Two angles of a triangle measure  $29^\circ$  and  $43^\circ$ . What is the measure of the third angle?

A  $18^\circ$                       C  $78^\circ$   
B  $28^\circ$                       D  $108^\circ$

22. Joni joined three straws measuring 15, 20, and 30 centimeters to form a triangle. Then she drew a second triangle congruent to the straw triangle by using segments 15, 20, and 30 centimeters long. Which did she use?

F SSS                      H HL  
G SAS                      J ASA

23. What is the value of  $y$ ?



A 360                      C 70  
B 280                      D 40

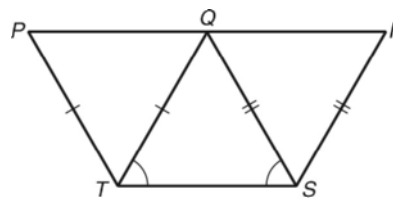
24. Mark wants to use coordinate proof to determine whether or not the diagonals of a square are congruent. Which is the best position for the square in the coordinate plane?

F one vertex at  $(0, 0)$ , one vertex in Quadrant I, one vertex in Quadrant II, and the fourth vertex on the positive  $y$ -axis  
G all four vertices in Quadrant I  
H one vertex in each of the four quadrants  
J one vertex at  $(0, 0)$ , one vertex on the positive  $y$ -axis, another vertex on the positive  $x$ -axis, and the fourth vertex in Quadrant I

25. The midsegment of an equilateral triangle measures 6 yards. What is the perimeter of the triangle?

A 6 yd                      C 18 yd  
B 9 yd                      D 36 yd

26. Which conclusion can be drawn from the given facts in the diagram?

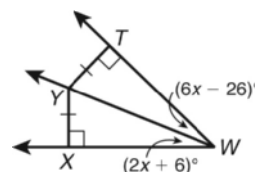


F  $\overline{TQ}$  bisects  $\angle PTS$ .  
G  $\angle TQS \cong \angle RQS$   
H  $\overline{PT} \cong \overline{RS}$   
J  $TS = PQ$

27. Which equation represents the perpendicular bisector of the segment whose endpoints are  $(0, -6)$  and  $(8, 10)$ ?

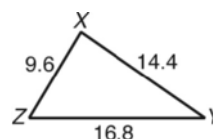
A  $2x + y = -6$   
B  $y - 2 = -\frac{1}{2}(x - 4)$   
C  $y - 2 = 2(x + 4)$   
D  $y - 10 = -\frac{1}{2}(x - 8)$

28. What is the measure of  $\angle TWX$ ?



F  $22^\circ$                       H  $42^\circ$   
G  $44^\circ$                       J  $84^\circ$

29. Which list shows the angles in order from greatest measure to least measure?



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

30. Which shows the side lengths of an obtuse triangle?

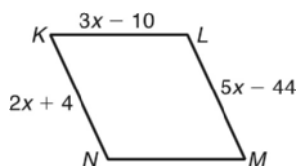
F 12, 20, 30              H 12, 20, 20  
G 12, 20, 21              J 12, 18, 20

**CHAPTER**  
**7**

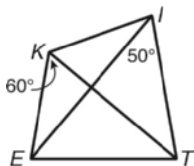
**Cumulative Test**  
*continued*

31. The altitude of an equilateral triangle measures  $8\sqrt{3}$ . What is the length of one side?  
 A 4                                      C 16  
 B 8                                        D  $16\sqrt{3}$
32. Each exterior angle of a regular polygon measures  $45^\circ$ . What is the name of the polygon?  
 F pentagon                              H octagon  
 G hexagon                                J nonagon
33. One angle of a parallelogram measures  $30^\circ$ . What is the measure of the angle opposite it?  
 A  $30^\circ$                                     C  $120^\circ$   
 B  $60^\circ$                                     D  $150^\circ$

34. What is the most descriptive name for a quadrilateral in which each diagonal is an angle bisector of two angles?  
 F parallelogram    H kite  
 G rectangle            J rhombus
35.  $KLMN$  is a parallelogram. What is the length of  $\overline{MN}$ ?

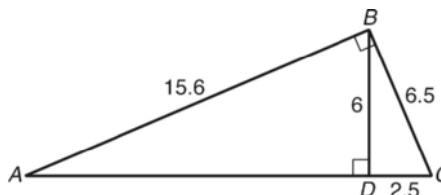


- A 32                                      C 38  
 B 36                                      D 41
36.  $KITE$  is a kite. What is  $m\angle ITE$ ?

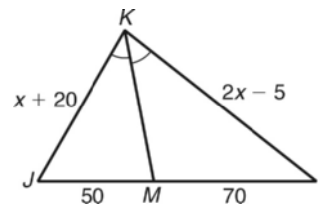


- F  $30^\circ$                                     H  $80^\circ$   
 G  $40^\circ$                                     J  $120^\circ$
37. Given that  $10x - 11y = 9y$ , what is the ratio of  $x$  to  $y$  in simplest form?  
 A  $-2 : 1$                                 C  $2 : 1$   
 B  $-1 : 2$                                 D  $1 : 2$

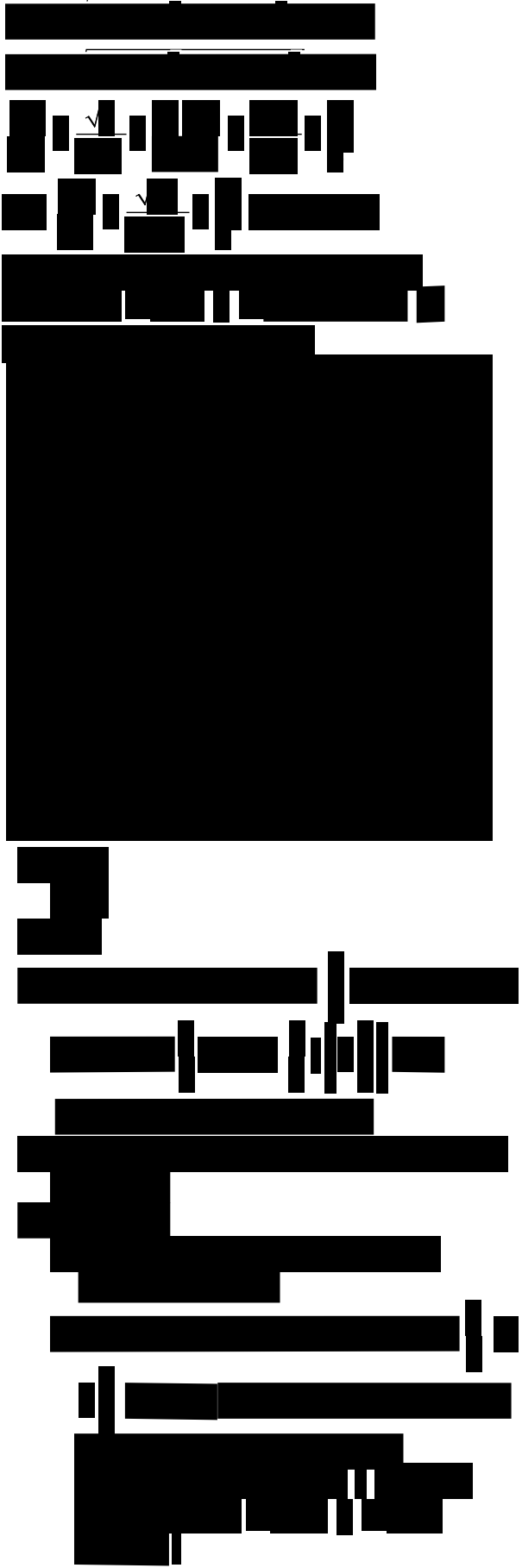
38. The midsegment of a trapezoid measures 18 inches. One of the bases of the trapezoid measures 15 inches. What is the measure of the other base?  
 F 3 in.                                    H 30 in.  
 G 21 in.                                 J 33 in.
39.  $B$  is located on  $\overline{AC}$  such that  $AB : BC = 5 : 8$ . If  $AB = 40$ , what is  $BC$ ?  
 A 1.6                                      C 40  
 B 25                                        D 64
40. What is  $AD$ ?



- F 2.5                                      H 11.9  
 G 6                                         J 14.4
41. What is  $KJ$ ?

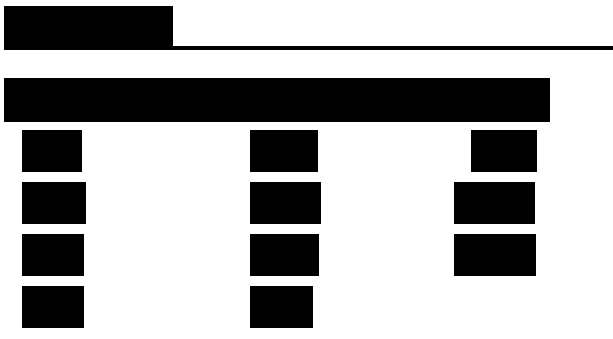


- A 55                                      C 67  
 B 65                                      D 75
42. The shadow of a 5-foot boy is 18 feet at the same time the shadow of a building is 99 feet. How tall is the building?  
 F 9 ft                                      H 356 ft  
 G 27.5 ft                                J 405 ft
43. The coordinates of a triangle are  $K(-4, 8)$ ,  $L(0, 6)$ , and  $M(-1, -7)$ . What are the coordinates of the image of  $M$  after a dilation with scale factor 0.8?  
 A  $M(-0.2, -6.2)$   
 B  $M(-1.8, -7.8)$   
 C  $M(-0.8, -5.6)$   
 D  $M(-1.25, -8.75)$



**Cumulative Test**

- 1. B
- 2. H
- 3. D
- 4. G
- 5. A
- 6. F
- 7. D
- 8. H
- 9. C
- 10. J
- 11. B
- 12. J
- 13. A
- 14. G
- 15. D
- 16. H
- 17. D
- 18. H
- 19. C
- 20. G
- 21. D
- 22. F
- 23. B
- 24. J
- 25. D
- 26. H
- 27. B
- 28. G
- 29. B
- 30. F
- 31. C
- 32. H
- 33. A
- 34. J
- 35. C
- 36. H
- 37. C
- 38. G
- 39. D
- 40. J
- 41. D
- 42. G
- 43. C



## Cumulative Test

## Choose the best answer.

1.  $P$ ,  $W$ , and  $K$  are collinear, and  $W$  is between  $P$  and  $K$ .  $PW = 10x$ ,  $WK = 2x + 7$ , and  $PW - WK = 6x + 11$ .

What is  $PK$ ?

- A 25                      C 90  
B 65                      D 115

2.  $\overline{RM}$  bisects  $\angle VRQ$ . If  $m\angle MRQ = 82^\circ$ , what is  $m\angle VRM$ ?

- F  $41^\circ$                       H  $98^\circ$   
G  $82^\circ$                       J  $164^\circ$

3. The measure of the complement of an angle is  $59^\circ$ . What is the measure of the supplement of the angle?

- A  $31^\circ$                       C  $121^\circ$   
B  $39^\circ$                       D  $149^\circ$

4. What is the midpoint of the segment whose endpoints are  $(17, 1)$  and  $(-9, 3)$ ?

- F  $(8, 4)$                       H  $(13, -1)$   
G  $(4, 2)$                       J  $(26, -2)$

5. To the nearest tenth, what is the distance between the points  $(-12, 9)$  and  $(6, 10)$ ?

- A 16.3                      C 19.9  
B 18.0                      D 21.4

6. Which is the image of  $(-4, 7)$  rotated  $180^\circ$  about the origin?

- F  $(4, -7)$                       H  $(-4, 7)$   
G  $(7, -4)$                       J  $(-7, 4)$

7. What is the next letter in the series?

a b d g k p . . .

- A q                              C v  
B u                              D z

8. If  $7k = 12$  and  $6c = 7k$ , which is true by the Transitive Property of Equality?

- F  $c = 2$                       H  $7k = 7k$   
G  $7k = 6c$                       J  $6c = 12$

9. Which statement has a true contrapositive?

- A If exactly two angles of a triangle are acute, then the triangle is an acute triangle.  
B If two angles of a triangle are congruent, then the sides opposite them are congruent.  
C If the sum of two angles of a triangle is more than  $90^\circ$ , then one of the two angles is obtuse.  
D If no two angles of a triangle are congruent, then the triangle is not scalene.

10. Given: If two angles of a triangle are congruent, then the triangle is isosceles. If a triangle is isosceles, then two altitudes of the triangle are congruent. Which conjecture is valid by the Law of Syllogism?

- F If two angles of a triangle are congruent, then the triangle is isosceles.  
G If two altitudes of a triangle are congruent, then the triangle is isosceles.  
H If two angles of a triangle are congruent, then two altitudes of the triangle are congruent.  
J If two altitudes of a triangle are congruent, then the base angles of the triangle are congruent.

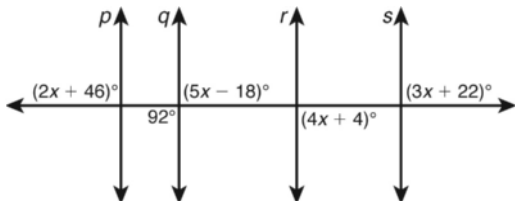
11. Which biconditional statement is false?

- A  $x = 1$  if and only if  $x^2 = 1$ .  
B Three points are collinear if and only if one point is between the other two.  
C An angle is a straight angle if and only if its sides are opposite rays.  
D A polygon is a triangle if and only if it has exactly three sides.

**CHAPTER**  
**8**

**Cumulative Test**  
*continued*

12. Which statement is true?

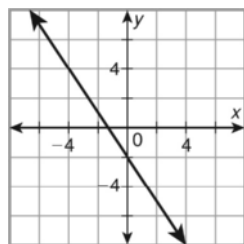


- F  $r \parallel s$                       H  $q \parallel s$   
 G  $q \parallel r$                       J  $p \parallel q$
13. What is the slope of the line that passes through (11, 7) and (3, 8)?

- A -8                                  C  $\frac{14}{12}$   
 B  $-\frac{1}{8}$                               D  $\frac{15}{14}$
14. What is the slope of a line parallel to a line whose slope is  $-\frac{5}{2}$ ?

- F  $-\frac{5}{2}$                               H  $\frac{2}{5}$   
 G  $-\frac{2}{5}$                               J  $\frac{5}{2}$

15. Which is an equation of the line in the graph?



- A  $y - 2 = -\frac{3}{2}x$                   C  $y + 2 = -\frac{3}{2}x$   
 B  $y - 2 = \frac{2}{3}x$                   D  $y + 2 = \frac{2}{3}x$
16. The graph of which equation intersects the graph of  $y = -5x + 6$  in one point?
- F  $y - 5 = 5(x + 1)$   
 G  $5x + y = -3$   
 H  $10x + 2y = 3$   
 J  $y - 5 = -5(x + 1)$

17. Which segment lengths are the lengths of the sides of a scalene triangle?
- A 7, 7, 7                          C 2, 3, 3  
 B 4, 5, 8                          D 5, 5, 6

18. One angle of an obtuse triangle measures  $16^\circ$ . Which could be another angle measure of the triangle?

- F  $89^\circ$                               H  $74^\circ$   
 G  $80^\circ$                               J  $4^\circ$

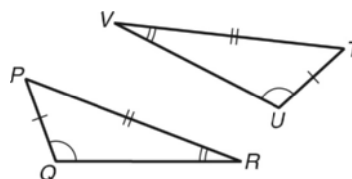
19. The sum of the measures of two angles of a triangle is  $90^\circ$ . Which type of triangle is it?

- A right                              C equilateral  
 B obtuse                              D acute

20. A base angle of an isosceles triangle measures  $32^\circ$ . What is the measure of the exterior angle at the vertex?

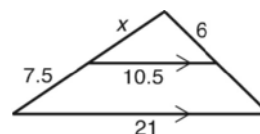
- F  $16^\circ$                               H  $64^\circ$   
 G  $32^\circ$                               J  $116^\circ$

21. Which CANNOT be used to justify the statement  $\triangle PQR \cong \triangle TUV$ ?



- A SSS                              C AAS  
 B SAS                              D ASA
22. A base angle of an isosceles triangle measures  $(3x + 9)^\circ$ . The vertex angle measures  $12x^\circ$ . What is the measure of the vertex angle?
- F  $12^\circ$                               H  $132^\circ$   
 G  $108^\circ$                               J  $156^\circ$

23. What is the value of  $x$ ?



- A 3  
 B 6  
 C 7.5  
 D 10.5

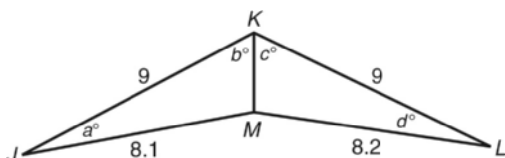
**CHAPTER**  
**8**

**Cumulative Test**  
*continued*

24. In  $\triangle RST$ ,  $m\angle S = 49^\circ$  and  $m\angle T = 52^\circ$ . Which list shows the side lengths from least to greatest?

F  $ST, RT, RS$       H  $RT, RS, ST$   
G  $ST, RS, RT$       J  $RT, ST, RS$

25. Which inequality MUST be true?



A  $a > d$                   C  $b < c$   
B  $c < b$                   D  $a < d$

26. Which segment measures could be the lengths of the sides of an acute triangle?

F 10, 15, 16      H 11,  $5\sqrt{6}$ , 18  
G 10, 12,  $2\sqrt{61}$       J 11, 60, 61

27. The hypotenuse of a  $30^\circ$ - $60^\circ$ - $90^\circ$  triangle measures  $10\sqrt{3}$  inches. What is the measure of the longer leg?

A 5 in.                  C 10 in.  
B  $5\sqrt{3}$  in.              D 15 in.

28. One leg of a  $45^\circ$ - $45^\circ$ - $90^\circ$  triangle measures 12 centimeters. What is the length of the hypotenuse?

F  $4\sqrt{3}$  cm              H  $12\sqrt{2}$  cm  
G  $6\sqrt{2}$  cm              J  $12\sqrt{3}$  cm

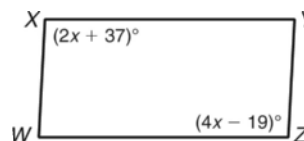
29. What is the measure of one interior angle of a regular polygon that has 40 sides?

A  $9^\circ$                       C  $140^\circ$   
B  $40^\circ$                     D  $171^\circ$

30. The diagonals of a rhombus are congruent. What is the best name for the figure?

F parallelogram      H rectangle  
G rhombus              J square

31. In  $\square WXYZ$ , find  $m\angle W$ .



A  $87^\circ$                   C  $91^\circ$   
B  $89^\circ$                   D  $93^\circ$

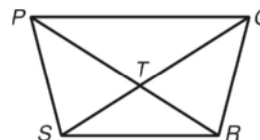
32. One diagonal of a square divides the other into two segments measuring  $8\sqrt{2}$  and  $2y$ . What is the perimeter of the square?

F  $16\sqrt{2} + 2y$       H  $32 + 2y\sqrt{2}$   
G  $32 + 2y$               J 64

33. One of the diagonals of a kite bisects two of the angles into  $50^\circ$  and  $44^\circ$  angles. What is the measure of one of the other angles of the kite?

A  $4^\circ$                       C  $86^\circ$   
B  $8^\circ$                       D  $172^\circ$

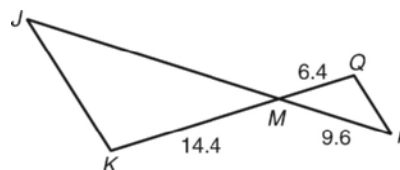
34. The figure  $PQRS$  is an isosceles trapezoid with  $\overline{PS} \cong \overline{QR}$ .



Which statement is NOT true?

F  $\triangle PTS \cong \triangle QTR$   
G  $\triangle PQT \cong \triangle RTS$   
H  $\triangle PSR \cong \triangle QRS$   
J  $\triangle PQS \cong \triangle QPR$

35. In the figure,  $\triangle JMK \sim \triangle RMQ$ . What is  $JM$ ?

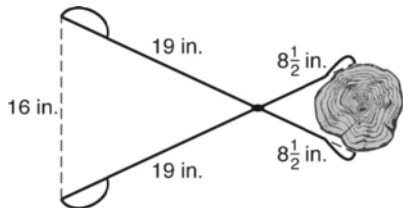


A 9.6                      C 14.4  
B 11.2                    D 21.6

**CHAPTER**  
**8**

**Cumulative Test**  
*continued*

36. Raoul uses tongs to adjust logs in his fireplace. He opens the handles of the tongs 16 inches to move a log.

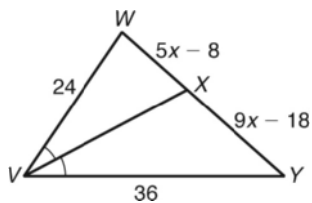


To the nearest inch, how wide is the log?

- F 6 in.                      H 10 in.  
G 7 in.                      J 36 in.
37. Drake wants to reduce an 8-inch by 10-inch photo so that the width is 5 inches. What will be the measure of the length?

- A 4 in.                      C 7 in.  
B  $6\frac{1}{4}$  in.                      D 16 in.

38. What is  $WY$ ?



- F 24                      H 34  
G 30                      J 36
39. The shadow of a 6-foot man is 8 feet. At the same time, how long a shadow would a 90-foot monument cast?

- A  $6\frac{2}{5}$  in.                      C 67 ft 6 in.  
B 1 ft  $10\frac{1}{2}$  in.                      D 120 ft

40. A porch in an architectural plan is 15 inches long. If the scale in inches to feet is 2 : 3, how long will the actual porch be?

- F 2.5 ft                      H 22.5 ft  
G 10 ft                      J 60 ft

41. An altitude divides the hypotenuse of a right triangle into two segments measuring 3.6 and 6.4 centimeters. What is the length of the altitude?

- A 4.8 cm                      C 10 cm  
B 5 cm                      D 23.04 cm

42. One angle of a right triangle measures  $27.4^\circ$ . The adjacent leg measures 7 yards. To the nearest tenth of a yard, what is the measure of the hypotenuse?

- F 3.6 yd                      H 7.9 yd  
G 6.2 yd                      J 15.2 yd

43. To the nearest tenth, the sides of a right triangle measure 56, 33, and 65. To the nearest degree, what is the measure of the smallest angle?

- A  $30^\circ$                       C  $32^\circ$   
B  $31^\circ$                       D  $58^\circ$

44. A helicopter pilot sights a landmark at an angle of depression of  $22^\circ$ . The altitude of the helicopter is 1450 feet. To the nearest foot, what is the horizontal distance from the helicopter to the landmark?

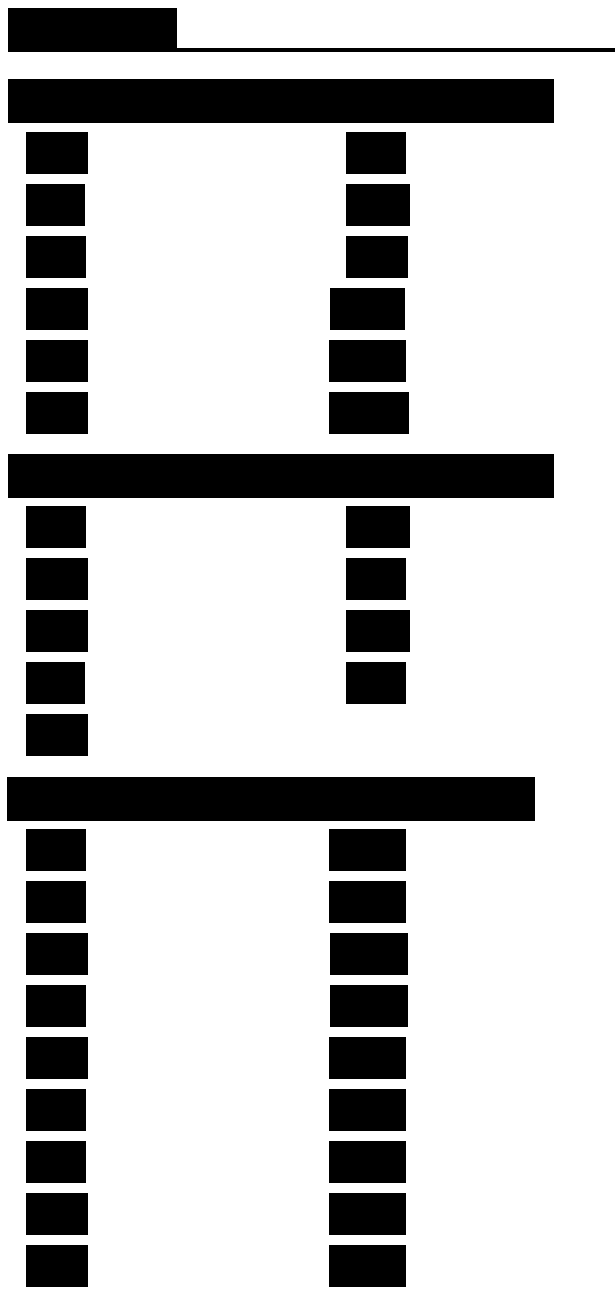
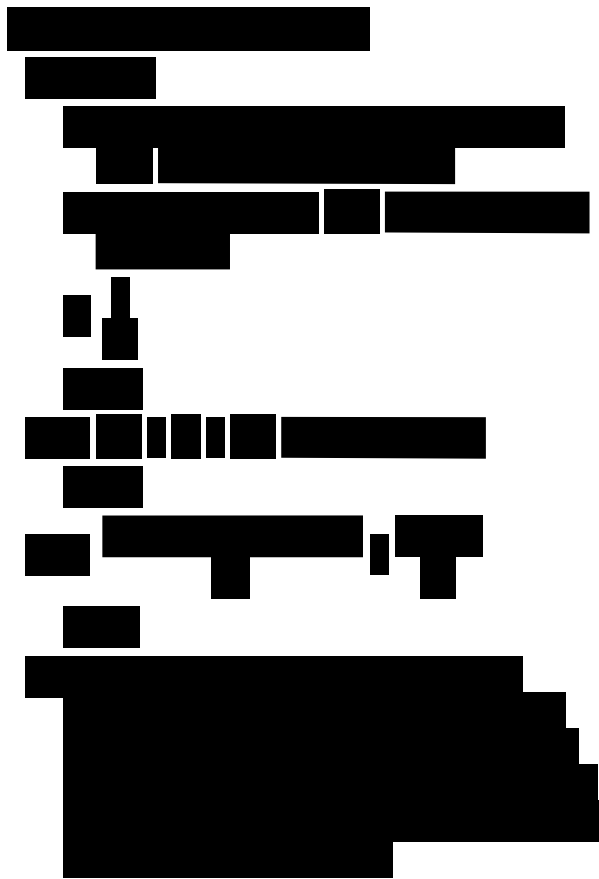
- F 543 ft                      H 3589 ft  
G 586 ft                      J 3871 ft

45. Two sides of a triangular field measure 11.1 meters and 13 meters. The included angle measures  $98^\circ$ . Find the measure of the third side to the nearest tenth of a meter.

- A 2.5 m                      C 18.2 m  
B 15.9 m                      D 48.4 m

46. A motorboat heads N  $15^\circ$  W to cross a river flowing 7.25 miles per hour due east. The boat travels at the speed necessary to head due north. To the nearest mile per hour, how fast is the motorboat traveling?

- F 2 mi/h                      H 27 mi/h  
G 8 mi/h                      J 28 mi/h



**Cumulative Test**

- |       |       |       |
|-------|-------|-------|
| 1. D  | 17. B | 32. J |
| 2. G  | 18. J | 33. C |
| 3. D  | 19. A | 34. G |
| 4. G  | 20. H | 35. D |
| 5. B  | 21. A | 36. G |
| 6. F  | 22. G | 37. B |
| 7. C  | 23. C | 38. G |
| 8. J  | 24. H | 39. D |
| 9. B  | 25. C | 40. H |
| 10. H | 26. F | 41. A |
| 11. A | 27. D | 42. H |
| 12. H | 28. H | 43. B |
| 13. B | 29. D | 44. H |
| 14. F | 30. J | 45. C |
| 15. C | 31. A | 46. J |
| 16. F |       |       |



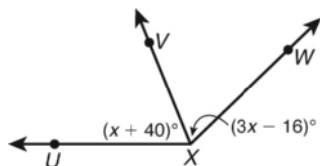
# Cumulative Test

## Choose the best answer.

1. Point  $P$  is the midpoint of  $\overline{RS}$ . If  $RP = 2x + 1$  and  $RS = 5x - 2$ , what is  $PS$ ?

A 3                      C 6  
B 4                      D 9

2. Given that  $\overline{XV}$  bisects  $\angle UXW$ , what is  $m\angle UXW$ ?



F  $28^\circ$                       H  $152^\circ$   
G  $136^\circ$                       J  $158^\circ$

3. The midpoint of a segment is  $(8, -4)$ . One endpoint is  $(2, -10)$ . What is the other endpoint of the segment?

A  $(12, -24)$               C  $(18, 18)$   
B  $(-4, -16)$               D  $(14, 2)$

4. What is the distance between  $(11, -3)$  and  $(12, 12)$ ?

F  $\sqrt{610}$                       H  $4\sqrt{2}$   
G  $\sqrt{226}$                       J 4

5. Which point is the image of  $(-7, 1)$  reflected across the  $y$ -axis?

A  $(7, 1)$                       C  $(7, -1)$   
B  $(-7, 1)$                       D  $(-7, -1)$

6. Which is next in the sequence?  
 $360, 180, 60, 15, \dots$

F 3                              H 3.75  
G 5                              J 7.5

7. If  $x = 9$ , why is  $x^2 - 10 = 9^2 - 10$ ?

A Substitution Property  
B Addition Property of Equality  
C Subtraction Property of Equality  
D Multiplication Property of Equality

8. Which is the inverse of the statement? If it rains, then the race will be postponed.

F If the race is postponed, then it will rain.  
G If the race is not postponed, then it will not rain.  
H If it does not rain, then the race will not be postponed.  
J If it is sunny, then the race will occur.

9. Given: If Hanna is not home, then she has left for school.

Hanna is not home.

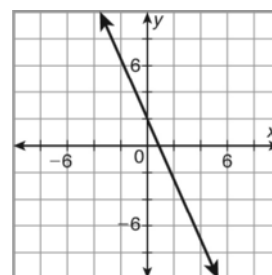
Which of the following conjectures is valid by the Law of Detachment?

A Hanna is at school.  
B Hanna has left for school.  
C Hanna will be home later.  
D Hanna is not home.

10. Which conditional statement has a true hypothesis and false conclusion?

F If 7 comes before 6, then 8 follows 7.  
G If a number is divisible by 4, then it is also divisible by 2.  
H If 11 is a multiple of 5, then it is a prime number.  
J If a number is divisible by 3, then it is not an even number.

11. Which best represents the graph shown?



A  $y = -\frac{4}{9}x + 2$   
B  $y = -\frac{4}{9}x - 2$   
C  $y = -\frac{9}{4}x + 2$   
D  $y = -\frac{9}{4}x - 2$

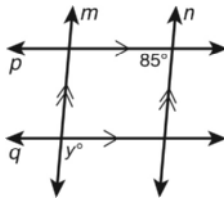
**CHAPTER**  
**9**

**Cumulative Test**

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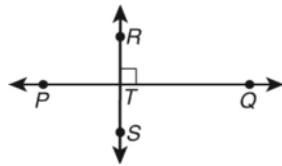
12. If  $m \parallel n$  and  $p \parallel q$ , then what is the value of  $y$ ?

- F  $85^\circ$
- G  $95^\circ$
- H  $165^\circ$
- J  $175^\circ$



13.  $\overline{PQ} \perp \overline{RS}$  at  $T$ . Which statement is NOT necessarily true?

- A  $\overline{TR}$  bisects  $\angle PTQ$ .
- B  $PT = TQ$
- C  $\angle RTP \cong \angle PTS$
- D  $m\angle RTP = 90^\circ$

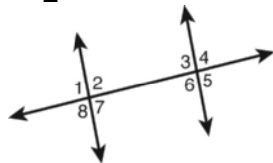


14. What is the slope of the line that passes through  $(13, 0)$  and  $(-7, 4)$ ?

- F  $-5$
- G  $-\frac{1}{5}$
- H  $\frac{2}{3}$
- J  $\frac{3}{2}$

15. Which describes  $\angle 3$  and  $\angle 7$ ?

- A alternate interior angles
- B alternate exterior angles
- C same-side interior angles
- D corresponding angles



16. Which are angle measures of a right triangle?

- F  $60^\circ, 60^\circ, 60^\circ$
- G  $14^\circ, 83^\circ, 83^\circ$
- H  $27^\circ, 63^\circ, 90^\circ$
- J  $45^\circ, 55^\circ, 80^\circ$

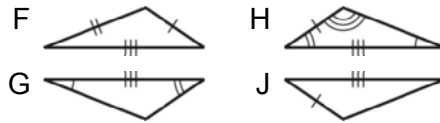
17. An exterior angle of a triangle measures  $100^\circ$ . Which could NOT be the measure of one of the two remote interior angles?

- A  $1^\circ$
- B  $80^\circ$
- C  $90^\circ$
- D  $100^\circ$

18. Given:



Which triangle is congruent to the given triangle by SSS?



19. From two different observation towers, a fire is sighted. Tower A is 8 miles from Tower B. The fire is  $N 72^\circ E$  in relation to Tower A and  $N 32^\circ W$  in relation to Tower B. Which triangle congruence statement justifies the unique location of the fire?

- A SAS
- B AAS
- C ASA
- D HL

20. What is the value of  $x$ ?

- F 20
- G 30
- H 40
- J 70

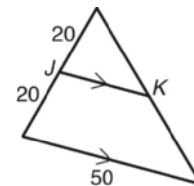


21. Which are the side lengths of an obtuse triangle?

- A 8, 11, 15
- B 8, 11, 11
- C 8, 9, 11
- D 8, 8, 11

22. What is  $JK$ ?

- F 20
- G 40
- H 25
- J 50



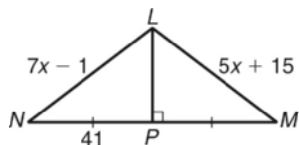
23. Two sides of a triangle are 15 inches and 18 inches long. Which is the least possible whole-number length of the third side?

- A 1 in.
- B 2 in.
- C 3 in.
- D 4 in.

**CHAPTER**  
**9**

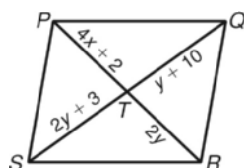
**Cumulative Test**  
*continued*

24.  $\overline{LP}$  is the perpendicular bisector of  $\overline{NM}$ . What is  $LM$ ?

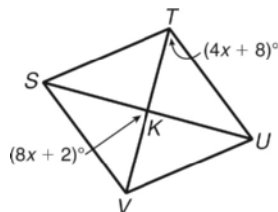


- F 45                      H 77.5  
G 55                      J 86
25. The hypotenuse of an isosceles right triangle measures 10 centimeters. To the nearest tenth of a centimeter, what is the length of one of the legs?
- A 5.8 cm                  C 14.1 cm  
B 7.1 cm                  D 17.3 cm
26. The sum of the measures of the interior angles of a regular polygon is  $1800^\circ$ . How many sides does the polygon have?
- F 8                          H 12  
G 10                        J 18

27.  $PQRS$  is a parallelogram. What is the value of  $x$ ?

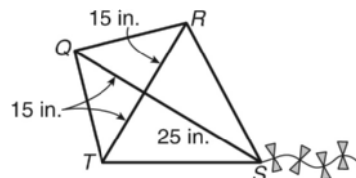


- A 3                          C 14  
B 4.5                        D 42
28.  $STUV$  is a rhombus. What is  $m\angle TUV$ ?
- F  $52^\circ$   
G  $56^\circ$   
H  $76^\circ$   
J  $90^\circ$



29. In quadrilateral  $JKLM$ ,  $JK = LM$ ,  $\overline{JK} \parallel \overline{LM}$ , and  $JL = KM$ . Which best describes the quadrilateral?
- A quadrilateral          C rhombus  
B rectangle                D square

30. A kite frame consists of two pieces of wood placed along the diagonals. Decorative binding will be placed along the perimeter of the kite. To the nearest tenth of an inch, how much binding is needed?

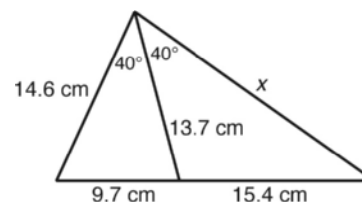


- F 70.0 in.                  H 100.7 in.  
G 90.4 in.                  J 140.0 in.
31. Troy is painting the U.S. Capitol Building on a museum wall. The actual building is 752 feet long and 288 feet tall. He will use the entire wall height, which is 16 feet. To the nearest half inch, how much width will he need?

- A  $6 \text{ ft } 1 \frac{1}{2} \text{ in.}$           C  $41 \text{ ft } 9 \frac{1}{2} \text{ in.}$   
B 29 ft                      D 13,536 ft

32. A fountain casts a shadow that is 24 feet long at the same time a child who is 4 feet 6 inches tall casts a shadow 18 feet long. To the nearest inch, how tall is the fountain?
- F 3 ft 5 in.                  H 6 ft 0 in.  
G 5 ft 5 in.                  J 10 ft 6 in.

33. To the nearest tenth, what is the value of  $x$ ?

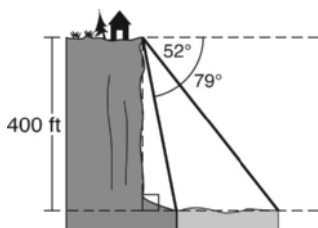


- A 9.2 cm                    C 20.3 cm  
B 12.2 cm                  D 23.2 cm

**CHAPTER**  
**9**

**Cumulative Test**  
*continued*

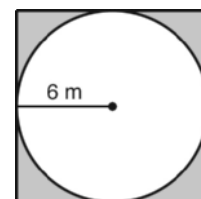
34. The vertices of a triangle are  $P(0, 0)$ ,  $Q(3, 7)$ , and  $R(-2, 5)$ . Which are vertices of a triangle similar to  $\triangle PQR$ ?
- F  $(0, 0)$ ,  $(15, 35)$ ,  $(-10, 25)$   
 G  $(0, 0)$ ,  $(6, 28)$ ,  $(-2, 20)$   
 H  $(0, 0)$ ,  $(12, 7)$ ,  $(-8, 5)$   
 J  $(1, 0)$ ,  $(4, 8)$ ,  $(-1, 5)$
35. What is  $\tan 34^\circ$  to the nearest hundredth?
- A 0.34                      C 0.67  
 B 0.56                      D 0.83
36. Three sides of a right triangle measure 5, 12, and 13 units. What is the measure of the smallest angle to the nearest degree?
- F  $23^\circ$                       H  $65^\circ$   
 G  $25^\circ$                       J  $67^\circ$
37. From the top of a canyon, the angle of depression to the far side of the river is  $52^\circ$ . The angle of depression to the near side of the river is  $79^\circ$ . The depth of the canyon is 400 feet. To the nearest foot, how wide is the river at the bottom of the canyon?



- A 104 ft                      C 235 ft  
 B 204 ft                      D 785 ft
38. Three sides of a triangle measure 8, 9, and 10 units. What is the measure of the largest angle to the nearest degree?
- F  $17^\circ$                       H  $72^\circ$   
 G  $18^\circ$                       J  $73^\circ$

39. A wind velocity is measured by the vector  $\langle 8, 3 \rangle$ . What is the direction of the vector to the nearest degree?
- A  $21^\circ$                       C  $68^\circ$   
 B  $22^\circ$                       D  $69^\circ$
40. The apothem of a 40-sided regular polygon is 11.4 meters. To the nearest square meter, what is its area if each side measures 1.9 meters?
- F  $266 \text{ m}^2$                       H  $532 \text{ m}^2$   
 G  $433 \text{ m}^2$                       J  $866 \text{ m}^2$
41. One angle of a rhombus measures  $60^\circ$ . Each side measures 28 inches. What is the area to the nearest square inch?
- A  $392 \text{ in}^2$                       C  $784 \text{ in}^2$   
 B  $679 \text{ in}^2$                       D  $1358 \text{ in}^2$
42. Two circular pools in a public park are enclosed by guard rails along their edges. The surface area of one pool is 16 times greater than that of the other. How much greater is the diameter of the larger pool?
- F 4 times                      H 16 times  
 G 8 times                      J 32 times
43. To the nearest tenth, what is the area of the polygon whose vertices are  $(4, 5)$ ,  $(8, -1)$ ,  $(-3, -3)$ , and  $(-3, 1)$ ?
- A  $40.0 \text{ units}^2$                       C  $51.0 \text{ units}^2$   
 B  $44.7 \text{ units}^2$                       D  $58.1 \text{ units}^2$

44. What is the shaded area to the nearest tenth?



- F  $30.9 \text{ m}^2$   
 G  $106.3 \text{ m}^2$   
 H  $181.7 \text{ m}^2$   
 J  $257.1 \text{ m}^2$

[REDACTED]

[REDACTED]

**Cumulative Test**

- |       |       |       |
|-------|-------|-------|
| 1. D  | 16. H | 31. C |
| 2. G  | 17. D | 32. H |
| 3. D  | 18. F | 33. D |
| 4. G  | 19. C | 34. F |
| 5. A  | 20. H | 35. C |
| 6. F  | 21. A | 36. F |
| 7. A  | 22. H | 37. C |
| 8. H  | 23. D | 38. H |
| 9. B  | 24. G | 39. A |
| 10. J | 25. B | 40. G |
| 11. C | 26. H | 41. B |
| 12. G | 27. A | 42. F |
| 13. B | 28. H | 43. C |
| 14. G | 29. B | 44. F |
| 15. A | 30. H |       |

**CHAPTER**  
**10**

# Cumulative Test

**Choose the best answer.**

- The length of a segment is  $6k$  units. The length from one endpoint to the midpoint is  $2k + 4$  units. What is the value of  $k$ ?  
 A 0.4 units                      C 2 units  
 B 1 unit                              D 4 units
- How much fencing is needed to enclose a circular tulip garden whose area is  $16\pi$  square meters?  
 F  $4\pi$  m                              H  $16\pi$  m  
 G  $8\pi$  m                              J  $32\pi$  m
- The endpoints of a segment are  $(10, -5)$  and  $(3, y)$ . What is a possible value of  $y$  if the segment length is 25?  
 A  $-5 + \sqrt{24}$                       C 19  
 B  $5 + \sqrt{24}$                         D 29
- What is the image of  $(-7, -9)$  after a reflection over the  $x$ -axis?  
 F  $(-7, 9)$                             H  $(9, -7)$   
 G  $(7, -9)$                           J  $(-9, 7)$
- What is the converse of the statement?  
 If Amy's thumb has not healed, then she won't play in the recital tonight.  
 A If Amy's thumb has healed, then she will play in the recital tonight.  
 B If Amy's thumb has healed, then she will not play in the recital tonight.  
 C If Amy plays in the recital tonight, then her thumb has healed.  
 D If Amy won't play in the recital tonight, then her thumb has not healed.
- What is the slope of the line whose equation is  $y + 9 = 4(x - 1)$ ?  
 F  $-4$                                       H  $\frac{1}{4}$   
 G  $-1$                                         J 4

- What is the missing justification in the proof?

**Given:**  $x - 7 = 8x + 14$

**Prove:**  $x = -3$

**Proof:**

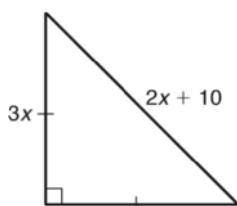
Statements	Reasons
1. $x - 7 = 8x + 14$	Given
2. $x = 8x + 21$	Add. Prop. of =
3. $-7x = 21$	_____ ? _____
4. $x = -3$	Div. Prop. of =

- A Multiplication Prop. of =  
 B Subtraction Prop. of =  
 C Transitive Prop. of =  
 D Reflexive Prop. of =
- Which biconditional statement has a different truth value than the others?  
 F  $x^2 = 9$  if and only if  $x = 3$ .  
 G  $3x = -12$  if and only if  $x = 4$ .  
 H  $x = 3$  if and only if  $x^2 = 9$ .  
 J  $x = -4$  if and only if  $5x + 1 = -19$ .
  - Samantha wants to prove that if two angles form a linear pair, then they are supplementary. She states that  $\angle P$  and  $\angle Q$  form a linear pair. What will be the last statement in her proof?  
 A  $\angle P$  and  $\angle Q$  form a linear pair.  
 B Definition of linear pair  
 C  $\angle P$  and  $\angle Q$  are supplementary.  
 D Definition of supplementary angles
  - Which coincides with  $y = -\frac{3}{8}x - 2$ ?  
 F  $y + 5 = -\frac{3}{8}(x + 8)$   
 G  $y - 5 = -\frac{3}{8}(x + 8)$   
 H  $y + 5 = -\frac{3}{8}(x - 8)$   
 J  $y - 5 = -\frac{3}{8}(x - 8)$

**CHAPTER**  
**10**

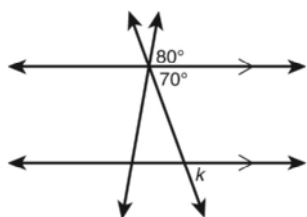
**Cumulative Test**  
*continued*

11. Which is true for  $x$ ?



- A  $x < 10$                       C  $x \leq 10$   
B  $x > 10$                       D  $x = 10$

12. What is the value of  $k$ ?



- F  $30^\circ$                       H  $70^\circ$   
G  $40^\circ$                       J  $80^\circ$

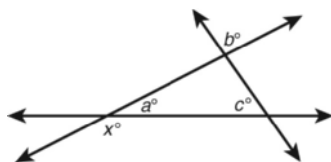
13. The slope of a line is  $-8$ . What is the slope of a line that is perpendicular to that line?

- A  $-8$                       C  $\frac{1}{8}$   
B  $-\frac{1}{8}$                       D  $8$

14. Which shows the angle measures of an acute triangle?

- F  $50^\circ-50^\circ-80^\circ$       H  $40^\circ-40^\circ-100^\circ$   
G  $5^\circ-15^\circ-160^\circ$     J  $40^\circ-50^\circ-90^\circ$

15. Which is the value of  $x$ ?



- A  $a - b + c$                       C  $a + c$   
B  $a + b$                           D  $b + c$

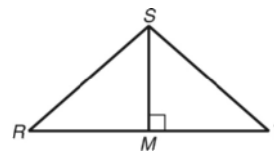
16. Which are the sides of a right triangle?

- F 9-60-61                      H 11-60-61  
G 10-60-61                      J 13-60-61

17. What reason is missing from the proof?

**Given:**  $\overline{RS} \cong \overline{TS}$ ,  $\overline{SM} \perp \overline{RT}$  at  $M$ .

**Prove:**  $\triangle RSM \cong \triangle TSM$

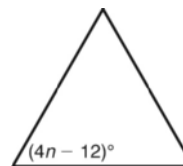


**Proof:**

Since  $\overline{SM} \perp \overline{RT}$ , then  $\angle SMR$  and  $\angle SMT$  are right angles. So,  $\angle SMR \cong \angle SMT$  because right angles are  $\cong$ . It's given that  $\overline{RS} \cong \overline{TS}$ , and  $\overline{SM} \cong \overline{SM}$  by the Reflexive Property of  $\cong$ . So,  $\triangle RSM \cong \triangle TSM$  by \_\_\_\_\_.

- A SSA                      C AAS  
B ASA                      D HL

18. The triangle is an equilateral triangle. What is the value of  $n$ ?



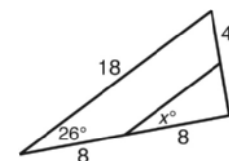
- F 3                              H 25.5  
G 18                          J 48

19. A resort swimming pool is in the shape of a scalene right triangle. The manager wants to set up a refreshment stand at the centroid of the triangle. Where will the refreshment stand be located?

- A outside the swimming pool  
B inside the swimming pool  
C on the hypotenuse  
D on the vertex of the right angle

20. What is the value of  $x$ ?

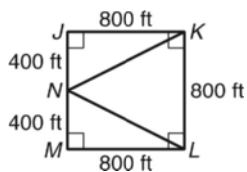
- F 13                              H 26  
G 18                              J 52



**CHAPTER**  
**10**

**Cumulative Test**  
*continued*

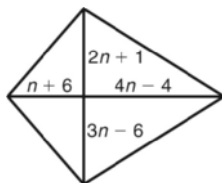
21. The figure shows the paths through a park. Which justifies the statement  $\triangle JKN \cong \triangle MLN$ ?



- A SAS                      C ASA  
B SSS                      D HL
22. What is the value of  $x$ ?
- 
23. The measures of the interior angles of a polygon total  $1620^\circ$ . How many sides does the polygon have?
24. Maggie and Jon are racing around a city block shaped as a parallelogram. They start at the same corner and run in different directions to the far corner. Maggie runs 1000 meters along one side of the block and turns  $100^\circ$  onto the second leg of her run. Jon runs 800 meters along one side of the block. What angle does he turn to start the second leg of his run?

- F  $4\sqrt{3}$                       H  $12\sqrt{2}$   
G  $6\sqrt{2}$                       J  $12\sqrt{3}$
- A 6                      C 9  
B 7                      D 11
- F  $10^\circ$                       H  $90^\circ$   
G  $80^\circ$                       J  $100^\circ$

25. Which value for  $n$  makes the quadrilateral a kite?



- A 5                      C 7  
B 6                      D 8

26. One diagonal of a quadrilateral has endpoints  $(4, 6)$  and  $(-3, -1)$ . Its other diagonal has endpoints  $(-2, 5)$  and  $(3, 0)$ . Which is the most descriptive name for the quadrilateral?

- F rhombus                      H parallelogram  
G rectangle                      J square

27. Which statement is always true?

- A A parallelogram is a rhombus.  
B A square is a rhombus.  
C A rectangle is a rhombus.  
D A rhombus is a rectangle.

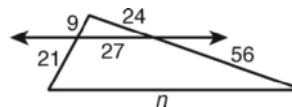
28. The ratio of the side lengths of a quadrilateral is  $4 : 3 : 8 : 5$ . Its perimeter is 120 centimeters. What is the length of the longest side?

- F 6 cm                      H 30 cm  
G 24 cm                      J 48 cm

29. An artist is cutting glass triangles for a mobile. The sides of one triangle measure 4.2 centimeters, 6 centimeters, and 9 centimeters. The sides of another triangle measure 14.7 centimeters, 21 centimeters, and 31.5 centimeters. Are the two triangles similar, and, if so, how?

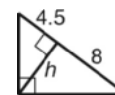
- A yes, by AA ~                      C yes, by SAS ~  
B yes, by SSS ~                      D no

30. What is the value of  $n$ ?



- F 39                      H 63  
G 54                      J 90

31. What is the value of  $h$ ?



- A 6                      C 10  
B 7.5                      D 12.5

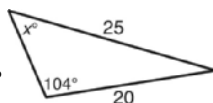


**CHAPTER**  
**10**

**Cumulative Test**

*continued*

32. Point  $P$  of  $\triangle PQR$  is  $(-6, 12)$ . What is the image of  $P$  after a dilation with a scale factor of  $\frac{3}{4}$ ?
- F  $(-2, 3)$                       H  $(-8, 16)$   
G  $(-4.5, 9)$                     J  $(-18, 48)$
33. A 5 foot 6 inch woman measured her shadow at 13 feet 9 inches. Then she measured the shadow of a flagpole at 125 feet. How tall is the flagpole?
- A 50 ft                              C 156 ft 3 in.  
B 116 ft 9 in.                    D 312 ft 6 in.
34. A wheelchair ramp makes an  $8^\circ$  angle with the ground. To the nearest tenth, what is the ramp length if it rises 0.4 m?
- F 0.3 m                              H 2.8 m  
G 0.4 m                              J 2.9 m
35. A hill has a grade of 6%. To the nearest degree, what is the angle that this hill makes with a horizontal line?
- A  $3^\circ$                                   C  $81^\circ$   
B  $6^\circ$                                   D  $87^\circ$
36. To the nearest degree, what is the value of  $x$ ?
- F  $11^\circ$                                   H  $51^\circ$   
G  $39^\circ$                                   J  $101^\circ$



39. What is the area, to the nearest tenth of a square centimeter, of a regular nonagon whose perimeter is 153 cm?
- A  $688.5 \text{ cm}^2$                     C  $1786.5 \text{ cm}^2$   
B  $1377 \text{ cm}^2$                     D  $3580.2 \text{ cm}^2$
40. The area of a polygon is 450 square units, and one of its sides measures 36 units. The area of a similar polygon is 300 square units. What is the length of the side corresponding to the 36-unit side in the other polygon?
- F 4 units                              H 24 units  
G 18 units                            J 54 units
41. A bus enters a station once every 12 minutes and waits there 1.5 minutes. What is the probability that the bus will be at the station when you arrive?
- A 0.025                              C 0.20  
B 0.125                              D 0.8
42. What is the length of the segment with endpoints  $(1, 0, 5)$  and  $(-2, 3, -1)$  to the nearest tenth?
- F 4.0                                  H 6.0  
G 5.1                                  J 7.3
43. The length, width, and height of a rectangular prism are 10 inches, 7 inches, and 4 inches, respectively. What is its surface area?
- A  $136 \text{ in}^2$                           C  $272 \text{ in}^2$   
B  $138 \text{ in}^2$                           D  $276 \text{ in}^2$
44. What is the surface area of a square pyramid if each side of the base is 18 meters and the height is 12 meters?
- F  $216 \text{ m}^2$                           H  $864 \text{ m}^2$   
G  $540 \text{ m}^2$                           J  $1008 \text{ m}^2$
45. To the nearest tenth of a centimeter, how tall is a cylinder with a radius of 6.4 cm and volume of  $1119.5 \text{ cm}^3$ ?
- A 8.7 cm                              C 27.8 cm  
B 26.1 cm                            D 58.3 cm



**Cumulative Test**

- |       |       |
|-------|-------|
| 1. D  | 24. J |
| 2. G  | 25. C |
| 3. C  | 26. F |
| 4. F  | 27. B |
| 5. D  | 28. J |
| 6. J  | 29. B |
| 7. B  | 30. J |
| 8. J  | 31. A |
| 9. C  | 32. G |
| 10. H | 33. A |
| 11. A | 34. J |
| 12. H | 35. A |
| 13. C | 36. H |
| 14. F | 37. A |
| 15. D | 38. H |
| 16. H | 39. C |
| 17. D | 40. H |
| 18. G | 41. B |
| 19. B | 42. J |
| 20. H | 43. D |
| 21. A | 44. H |
| 22. H | 45. A |
| 23. D |       |



**CHAPTER**  
**11**

**Cumulative Test**

**Choose the best answer.**

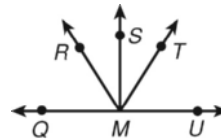
- An angle measures 42 degrees more than twice the measure of its complement. What is the measure of its complement?  
 A  $16^\circ$                       C  $46^\circ$   
 B  $26^\circ$                       D  $106^\circ$
- The circumference of a circle is 134.7 square centimeters. What is the diameter of the circle to the nearest tenth?  
 F 6.5 cm                      H 21.4 cm  
 G 13.1 cm                      J 42.9 cm
- $M$  is the midpoint of  $\overline{AB}$ .  $M$  has coordinates  $(-3, -8)$  and  $B$  has coordinates  $(-1, 6)$ . What are the coordinates of point  $A$ ?  
 A  $(-5, -22)$                       C  $(1, 20)$   
 B  $(-4, -1)$                       D  $(5, 22)$
- What are the coordinates of the image of  $(-3, -7)$  after the translation  $(x, y) \rightarrow (x - 9, y + 9)$ ?  
 F  $(-6, 16)$                       H  $(12, -2)$   
 G  $(6, -16)$                       J  $(-12, 2)$
- Which is the next number in the series?  $-1, 0, 3, 8, 15, 24, 35, \dots$   
 A 46                      C 59  
 B 48                      D 72
- Which is the contrapositive of the statement?  
 If  $x < 10$ , then  $y \geq -4$ .  
 F If  $x < -10$ , then  $y \geq 4$ .  
 G If  $y \geq 4$ , then  $x < -10$ .  
 H If  $x \geq 10$ , then  $y < -4$ .  
 J If  $y < -4$ , then  $x \geq 10$ .

- What is  $\sin 49^\circ$  to the nearest tenth?  
 A 0.7                      C 1.2  
 B 0.8                      D 1.3

- Ray wants to prove the following theorem.

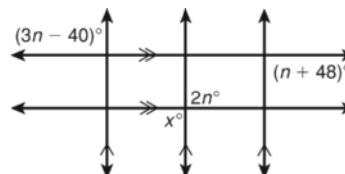
If two angles are complementary to two congruent angles, then the original two angles are congruent.

He draws this diagram.



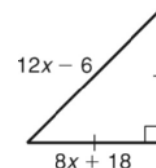
Which is the best given information?

- $\angle QMR \cong \angle UMT$
  - $\angle QMR$  and  $\angle RMS$  are complementary angles.  $\angle UMT$  and  $\angle TMS$  are complementary angles.
  - $\overline{SM} \perp \overline{QU}$ , and  $\angle UMT$  and  $\angle TMS$  are complementary angles.
  - $\angle QMR \cong \angle UMT$ ,  $\overline{SM} \perp \overline{QU}$
- What is the value of  $x$ ?



- 80                      C 92
  - 88                      D 96
- Which inequality shows all possible solutions for  $x$ ?

- $x > 6$
- $x \geq 6$
- $\frac{1}{2} < x < 6$
- $\frac{1}{2} < x \leq 6$



**CHAPTER**  
**11**

**Cumulative Test**  
*continued*

11. What is the slope of the line that passes through (7, 3) and (-2, 4)?

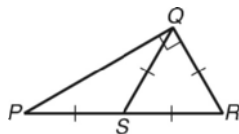
- A -9                      C  $\frac{5}{7}$   
B  $-\frac{1}{9}$                     D  $\frac{7}{5}$

12. Which line coincides with the graph of the line  $2x - 6y = 12$ ?

- F  $y = 2x - 2$           H  $y = -\frac{1}{3}x + 2$   
G  $y = -3x + 2$         J  $y = \frac{1}{3}x - 2$

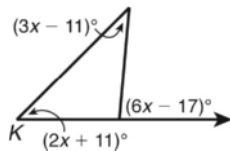
13. What is the classification of  $\triangle PQR$  according to its angles?

- A right  
B obtuse  
C acute  
D equiangular



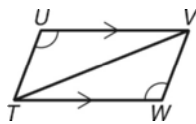
14. What is  $m\angle K$ ?

- F  $15^\circ$   
G  $25^\circ$   
H  $45^\circ$   
J  $55^\circ$



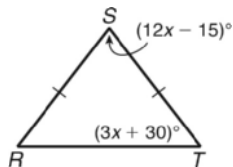
15. Which can be used to prove  $\triangle TUV \cong \triangle VWT$ ?

- A SAS  
B AAS  
C ASA  
D HL



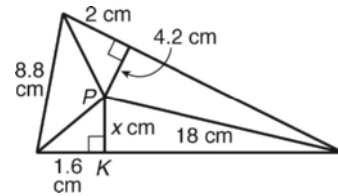
16. What is  $m\angle R$ ?

- F  $45^\circ$   
G  $52.5^\circ$   
H  $63^\circ$   
J  $75^\circ$



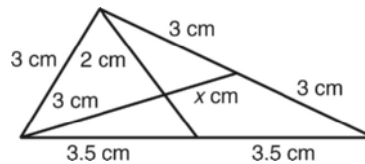
17. If  $P$  is the incenter, what is  $PK$ ?

- A 3.2 cm  
B 4.0 cm  
C 4.2 cm  
D 4.4 cm



18. What is  $x$ ?

- F 1 cm                      H 1.75 cm  
G 1.5 cm                    J 2 cm



19. Which could NOT be the length of the third side of a triangle if two of its sides measure 15 feet and 40 feet?

- A 20 ft                      C 40 ft  
B 30 ft                      D 50 ft

20. The lengths of the shortest and longest sides of an acute scalene triangle are 9 meters and 41 meters. Which could be the length of the third side?

- F 39 m                      H 41 m  
G 40.5 m                    J 42 m

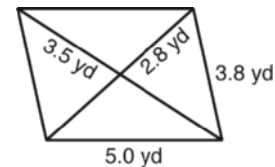
21. One exterior angle of a regular polygon measures  $24^\circ$ . What is the sum of the measures of the interior angles of the polygon?

- A  $360^\circ$                       C  $2340^\circ$   
B  $990^\circ$                       D  $3744^\circ$

22. A city park is in the shape of a parallelogram as shown. Two paths will be installed along the diagonals. What is the total length of the paths?

What is the total length of the paths?

- F 6.3 yd                      H 15.1 yd  
G 12.6 yd                    J 17.6 yd

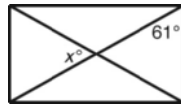


**CHAPTER**  
**11**

**Cumulative Test**

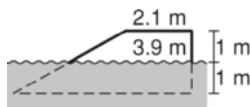
*continued*

23. The figure is a rectangle. What is  $x$ ?



- A 29                      C 61  
B 58                      D 90

24. A water slide in the middle of a water park pool has opposite sides in the shape of a trapezoid. Half of the slide is below water level. What is the length of the base of the slide?



- F 5.7 m                      H 7 m  
G 6 m                      J 7.8 m

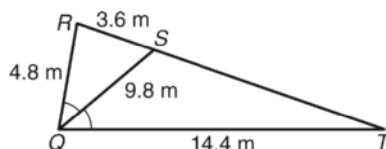
25. The ratio of the angle measures of a quadrilateral is  $4 : 9 : 5 : 6$ . What is the measure of the smallest angle?

- A  $4^\circ$                       C  $60^\circ$   
B  $15^\circ$                       D  $90^\circ$

26. Two American flags of different dimensions are properly folded into two similar isosceles right triangles. The ratio of the length of the legs of the smaller triangle to that of the larger triangle is  $4 : 5$ . If the length of the hypotenuse of the larger triangle is 2 feet, what is the length of the hypotenuse of the smaller triangle to the nearest tenth of a foot?

- F 0.1 ft                      H 1.6 ft  
G 0.6 ft                      J 2.5 ft

27. What is  $ST$ ?



- A 3.6 m                      C 9.8 m  
B 7.2 m                      D 10.8 m

28. A 5 foot 6 inch boy casts an 8-foot shadow at the same time a nearby building casts a 44-foot shadow. To the nearest foot, what is the height of the building?

- F 30 ft                      H 1000 ft  
G 64 ft                      J 1936 ft

29. What is the magnitude of the vector  $\langle 7, -4 \rangle$  to the nearest tenth?

- A 2.4                      C 8.1  
B 5.7                      D 9.0

30. The legs of a right triangle measure 14 and 25. To the nearest tenth of a degree, what is the measure of the angle opposite the shortest side?

- F  $29.2^\circ$                       H  $55.9^\circ$   
G  $34.1^\circ$                       J  $60.8^\circ$

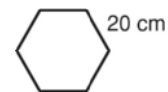
31. A forest ranger in a 100-foot observation tower sees a fire. The angle of depression to the fire is  $4^\circ$ . To the nearest foot, what is the horizontal distance between the tower and the fire?

- A 100 ft                      C 1433 ft  
B 1430 ft                      D 1434 ft

32. If  $2(x - 5) = 10$ , then what justifies the statement  $x - 5 = 5$ ?

- F Distributive Property  
G Associative Property of Equality  
H Transitive Property of Equality  
J Division Property of Equality

33. To the nearest tenth, what is the area of the regular hexagon?

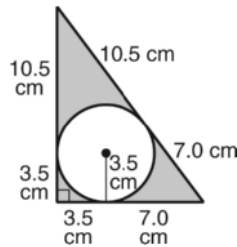


- A  $120.0 \text{ cm}^2$                       C  $519.6 \text{ cm}^2$   
B  $240.0 \text{ cm}^2$                       D  $1039.2 \text{ cm}^2$

**CHAPTER**  
**11**

**Cumulative Test**  
*continued*

34. To the nearest tenth, what is the area of the shaded region?



- F  $35.0 \text{ cm}^2$   
G  $44.0 \text{ cm}^2$   
H  $51.5 \text{ cm}^2$   
J  $112.0 \text{ cm}^2$
35. To the nearest tenth, what is the distance between the points  $(0, -1, 4)$  and  $(-3, 2, 0)$ ?

- A 3.6                      C 4.4  
B 4.0                      D 5.8
36. A radio station reports news and weather every 20 minutes for 4 minutes. If the radio is turned on at a random time, what is the probability that the news and weather report is NOT on?

- F 0.2                      H 0.6  
G 0.4                      J 0.8
37. The cross section of a three-dimensional figure is a circle. Which figure could it NOT be?

- A cone                      C prism  
B sphere                      D cylinder
38. The area of a parallelogram is 60 square inches. What is the area of the parallelogram if the base is multiplied by  $\frac{3}{4}$ ?

- F  $33\frac{3}{4} \text{ in}^2$                       H  $80 \text{ in}^2$   
G  $45 \text{ in}^2$                       J  $106\frac{2}{3} \text{ in}^2$
39. The surface area of a cylinder is 80 square centimeters. If the diameter and height of the cylinder are multiplied by  $\frac{4}{5}$ , what is the surface area of the new cylinder to the nearest tenth?

- A  $41.7 \text{ cm}^2$                       C  $62.5 \text{ cm}^2$   
B  $51.2 \text{ cm}^2$                       D  $64.0 \text{ cm}^2$

40. The radius and height of a cylinder are multiplied by 5. What is the effect on the volume?

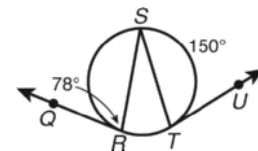
- F The volume is multiplied by  $\frac{1}{5}$ .  
G The volume is multiplied by 5.  
H The volume is multiplied by 25.  
J The volume is multiplied by 125.

41. To the nearest tenth, what is the area of a sector with a radius of 8 centimeters and a central angle of  $45^\circ$ ?

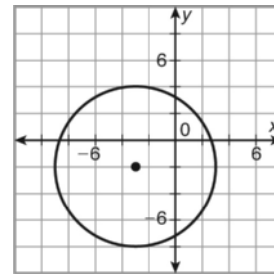
- A  $4.5 \text{ cm}^2$                       C  $50.3 \text{ cm}^2$   
B  $25.1 \text{ cm}^2$                       D  $100.5 \text{ cm}^2$

42. What is  $m\angle RST$ ?

- F  $27^\circ$   
G  $54^\circ$   
H  $76.5^\circ$   
J  $85.5^\circ$



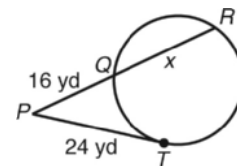
43. What is the equation for the graph of the circle?



- A  $(x - 3)^2 + (y - 2)^2 = 6$   
B  $(x + 3)^2 + (y + 2)^2 = 6$   
C  $(x - 3)^2 + (y - 2)^2 = 36$   
D  $(x + 3)^2 + (y + 2)^2 = 36$

44. What is  $x$ ?

- F 8 yd  
G 16 yd  
H 20 yd  
J 32 yd



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**Cumulative Test**

- |       |       |
|-------|-------|
| 1. A  | 23. B |
| 2. J  | 24. F |
| 3. A  | 25. C |
| 4. J  | 26. H |
| 5. B  | 27. D |
| 6. J  | 28. F |
| 7. B  | 29. C |
| 8. J  | 30. F |
| 9. B  | 31. B |
| 10. F | 32. J |
| 11. B | 33. D |
| 12. J | 34. F |
| 13. A | 35. D |
| 14. H | 36. J |
| 15. B | 37. C |
| 16. G | 38. G |
| 17. C | 39. B |
| 18. G | 40. J |
| 19. A | 41. B |
| 20. G | 42. F |
| 21. C | 43. D |
| 22. G | 44. H |

**CHAPTER**  
**12**

**Cumulative Test**

**Choose the best answer.**

1. The lengths of two adjacent sides of a parallelogram are  $(2x - 10)$  and  $(x + 10)$ . What is the perimeter of the parallelogram?

- A  $2x^2 + 10x - 100$
- B  $x - 20$
- C  $3x$
- D  $6x$

2. To the nearest tenth, what is the distance between the points  $(-8, -5)$  and  $(-1, 4)$ ?

- F 7.1                      H 11.4
- G 9.1                      J 12.7

3. What is the image of the point  $(-10, 6)$  after a  $90^\circ$  counterclockwise rotation?

- A  $(-10, -6)$               C  $(10, 6)$
- B  $(-6, -10)$              D  $(6, 10)$

4. What number comes next in the sequence?

1, 2, 6, 15, 31, 56, . . .

- F 57                      H 92
- G 81                      J 112

5. Which of the following is a true conditional statement?

- A If  $x < y$ , then  $|x| < |y|$ .
- B If  $x < y$ , then  $|x| > |y|$ .
- C If  $x < y$ , then  $-2x < -2y$ .
- D If  $x < y$ , then  $2x < 2y$ .

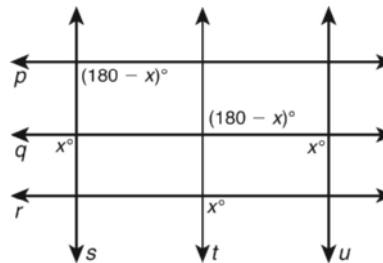
6. If  $\overline{MN} \cong \overline{PQ}$  and  $\overline{RS} \cong \overline{PQ}$ , which statement can be used to justify  $\overline{PQ} \cong \overline{RS}$ ?

- F Transitive Property of Congruence
- G Associative Property of Congruence
- H Symmetric Property of Congruence
- J Reflexive Property of Congruence

7. To the nearest tenth, what is the magnitude of the vector  $\langle 10, 10 \rangle$ ?

- A 0.0                      C 20.0
- B 14.1                     D 100.0

8. Which statement is NOT always true?



- F  $p \parallel q$                       H  $s \parallel t$
- G  $p \parallel r$                       J  $s \parallel u$

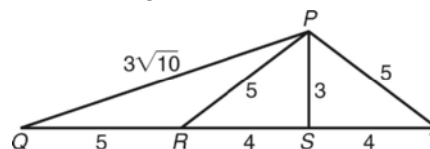
9. A line passes through the points  $(10, 1)$  and  $(-8, 5)$ . What is the slope of a line that is parallel to that line?

- A  $-\frac{9}{2}$                       C  $\frac{2}{9}$
- B  $-\frac{2}{9}$                       D  $\frac{9}{2}$

10. The graph of which line intersects the graph of  $y + 6 = \frac{3}{4}(x - 2)$  in exactly one point?

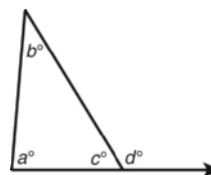
- F  $3x - 4y = 30$
- G  $3x - 4y = -30$
- H  $-3x + 4y = -30$
- J  $3x + 4y = 30$

11. Which triangle is NOT scalene?



- A  $\triangle PQR$                       C  $\triangle PQT$
- B  $\triangle PQS$                       D  $\triangle PST$

12. Which statement is always true?



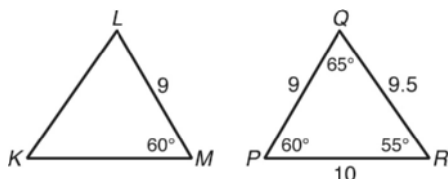
- F  $a + b + c = d$               H  $a - b = d$
- G  $a + b = d$                       J  $b + c = d$



**CHAPTER**  
**12**

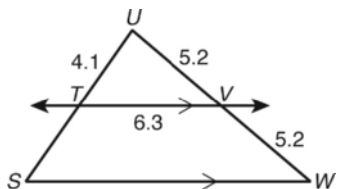
**Cumulative Test**  
*continued*

13. What information is needed to prove  $\triangle MLK \cong \triangle PQR$  by SAS?

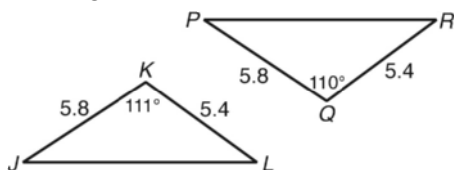


- A  $KM = 10$                       C  $KM = 9.5$   
 B  $KL = 10$                       D  $KL = 9.5$
14. An 8-foot ladder leans against a wall. A second 8-foot ladder is leaned against the same wall. Which will ensure that the two triangles formed are congruent by HL?
- F The two triangles are congruent by HL from the given information.  
 G The tops of the ladders form congruent angles with the wall.  
 H The bases of the ladders form congruent angles with the ground.  
 J The bases of the ladders are the same distance from the wall.

15. Given that  $UV = VW = 5.2$ ,  $TU = 4.1$ , and  $\overline{TV} \parallel \overline{SW}$ , what is the perimeter of quadrilateral  $STVW$ ?



- A 15.6                      C 28.2  
 B 23.0                      D 29.3
16. Which is a correct conclusion, based on the diagram?



- F  $m\angle J = m\angle P$       H  $JL < PR$   
 G  $m\angle J > m\angle P$       J  $JL > PR$

17. The size of a television screen is given by the length of the diagonal of the screen. The ratio of the width to the height of a plasma television screen is 16 : 9. To the nearest tenth of an inch, what is the height of a plasma television screen with a 50-inch diagonal?

- A 14.3 in.                      C 43.6 in.  
 B 24.5 in.                      D 128.6 in.

18. A traffic yield sign is in the shape of an equilateral triangle. If each side is 36 inches, what is the height of the sign to the nearest tenth of an inch?

- F 18.0 in.                      H 25.5 in.  
 G 20.8 in.                      J 31.2 in.

19. What is the measure of one exterior angle of a regular octagon?

- A  $8^\circ$                               C  $37.5^\circ$   
 B  $22.5^\circ$                       D  $45^\circ$

20. Which information is sufficient to prove that quadrilateral  $ABCD$  is a parallelogram?

- F The diagonals bisect each other.  
 G  $\angle A \cong \angle C$   
 H  $\angle A$  and  $\angle C$  are supplementary.  
 J  $AB = CD$

21. The vertices of a quadrilateral are  $(4, 6)$ ,  $(7, -2)$ ,  $(-1, -5)$ , and  $(-4, 3)$ . Which is the best classification for the quadrilateral?

- A parallelogram      C rectangle  
 B rhombus              D square

22. Which statement is NOT always true?

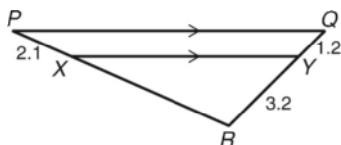
- F A rhombus is a square.  
 G A rhombus is a parallelogram.  
 H A square is a rectangle.  
 J A rectangle is a parallelogram.

**CHAPTER**  
**12**

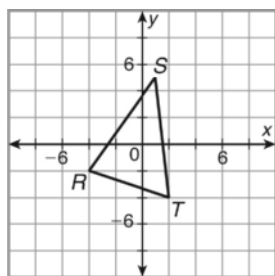
**Cumulative Test**  
*continued*

23. The ratio of the sides of a triangle is 3 : 5 : 6. If the longest side is 8 inches, what is the length of the shortest side?
- A 2.25 in.            C 4.5 in.  
B 4 in.                D 5 in.

24. What is  $PR$ ?

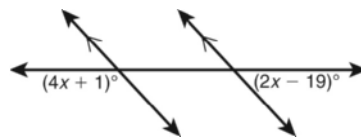


- F 4.1                    H 6.2  
G 5.6                    J 7.7
25. Ann is 5 feet 3 inches tall. To find the height of a lamppost, she measured her shadow to be 8 feet 9 inches and the lamppost's shadow to be 12 feet. To the nearest inch, what is the height of the lamppost?
- A 6 ft 3 in.            C 15 ft 0 in.  
B 7 ft 2 in.            D 20 ft 0 in.
26. Where is the image of  $T$  after a dilation with scale factor  $\frac{5}{2}$ ?

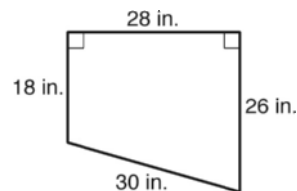


- F (4.5, 1.5)            H (5, -10)  
G (4.5, -6.5)         J (0.8, -1.6)
27. The altitude to the hypotenuse of a right triangle divides the hypotenuse into two segments measuring 11 centimeters and 5 centimeters. To the nearest tenth, what is the length of the shorter leg of the triangle?
- A 7.4 cm                C 12.1 cm  
B 8.9 cm                D 13.3 cm

28. What is the value of  $x$ ?



- F 9.5                    H 33  
G 18                    J 81
29. Two sides of a triangle measure 15 centimeters and 12 centimeters. The included angle measures  $64^\circ$ . To the nearest tenth, what is the length of the third side?
- A 6.0 cm                C 19.2 cm  
B 14.5 cm                D 23.0 cm
30. A skateboard ramp is 3.5 feet high and 6 feet long along the horizontal. To the nearest degree, what is the measure of the angle that the ramp makes with a horizontal line?
- F  $27^\circ$                     H  $60^\circ$   
G  $30^\circ$                     J  $63^\circ$
31. When Sandra lowered the venetian blind, it fell crooked and stopped as shown. What area of the window did the blind cover?



- A  $102 \text{ in}^2$                 C  $660 \text{ in}^2$   
B  $616 \text{ in}^2$                 D  $812 \text{ in}^2$
32. To the nearest whole number, what is the area of a regular octagon with a side length of 8 centimeters?
- F  $128 \text{ cm}^2$                 H  $309 \text{ cm}^2$   
G  $256 \text{ cm}^2$                 J  $618 \text{ cm}^2$

**CHAPTER**  
**12**

**Cumulative Test**  
*continued*

33. To the nearest tenth, what is the area of the polygon with vertices  $W(2, 2)$ ,  $X(4, -3)$ ,  $Y(0, -5)$ , and  $Z(-5, -1)$ ?

- A 32.5                      C 36.3  
B 35.5                      D 42.3

34. Which figure can be made from the net?

- F cube  
G triangular prism  
H cone  
J triangular pyramid



35. To the nearest tenth, what is the distance between the points  $(1, 0, -6)$  and  $(-4, -5, 3)$ ?

- A 5.7                      C 10.8  
B 10.7                     D 11.4

36. The area of a triangle is 10 square meters. What is the area of the triangle after its base is multiplied by 2 and its height is multiplied by 3?

- F  $60 \text{ m}^2$                 H  $360 \text{ m}^2$   
G  $300 \text{ m}^2$               J  $600 \text{ m}^2$

37. To the nearest tenth, what is the surface area of a right cone with a height of 10.1 centimeters and a diameter of 8.8 centimeters?

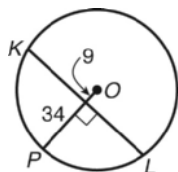
- A  $213.0 \text{ cm}^2$             C  $266.6 \text{ cm}^2$   
B  $246.0 \text{ cm}^2$             D  $613.6 \text{ cm}^2$

38. A hollow globe of the world is in the shape of a sphere. The diameter of the sphere is 22 inches. To the nearest cubic inch, how much air does the globe hold?

- F  $380 \text{ in}^3$                 H  $4181 \text{ in}^3$   
G  $507 \text{ in}^3$                 J  $5575 \text{ in}^3$

39. To the nearest tenth, what is  $KL$ ?

- A 26.3  
B 42.0  
C 52.6  
D 84.1

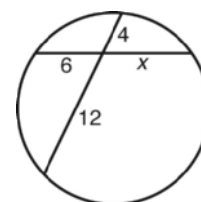


40. An arc in a circle with a radius of 15 meters measures  $48^\circ$ . What is the arc length to the nearest tenth?

- F 4 m                      H 48 m  
G 12.6 m                 J 112.5 m

41. What is the value of  $x$ ?

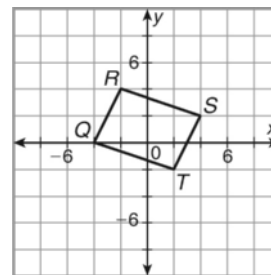
- A 2  
B 8  
C 10  
D 18



42. What is the equation of the circle that has a center at  $(11, -3)$  and that passes through the point  $(-1, 2)$ ?

- F  $(x + 11)^2 + (y - 3)^2 = 13$   
G  $(x - 11)^2 + (y + 3)^2 = 13$   
H  $(x + 11)^2 + (y - 3)^2 = 169$   
J  $(x - 11)^2 + (y + 3)^2 = 169$

**Use the figure for Exercises 43 and 44.**

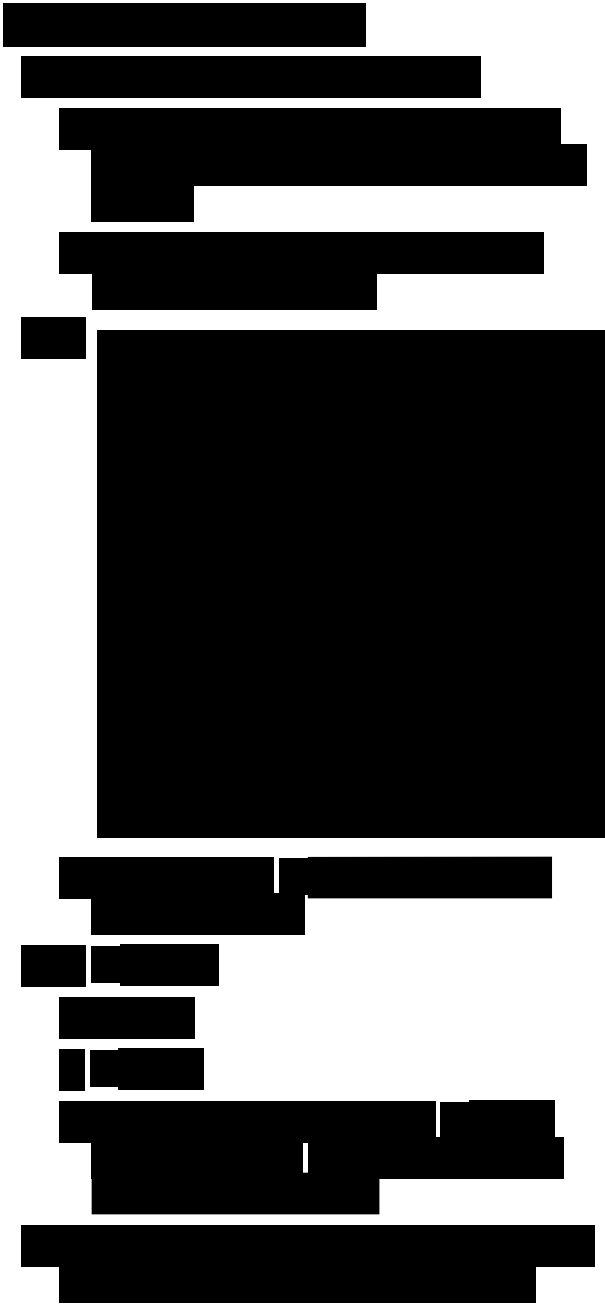


43. Quadrilateral  $QRST$  is translated along the vector  $\langle -4, 5 \rangle$  and then reflected across the  $y$ -axis. What are the coordinates of the final image of point  $T$  under this composite transformation?

- A  $(-6, -7)$                 C  $(8, -10)$   
B  $(-2, -3)$                 D  $(2, 3)$

44. Which of the following capital letters has both rotational and line symmetry?

- F N                      H W  
G T                      J X



**Cumulative Test**

- |       |       |       |
|-------|-------|-------|
| 1. D  | 16. J | 31. B |
| 2. H  | 17. B | 32. H |
| 3. B  | 18. J | 33. B |
| 4. H  | 19. D | 34. J |
| 5. D  | 20. F | 35. D |
| 6. H  | 21. D | 36. F |
| 7. B  | 22. F | 37. A |
| 8. H  | 23. B | 38. J |
| 9. B  | 24. J | 39. D |
| 10. J | 25. B | 40. G |
| 11. A | 26. H | 41. B |
| 12. G | 27. B | 42. J |
| 13. A | 28. H | 43. D |
| 14. J | 29. B | 44. J |
| 15. C | 30. G |       |

