

**CHAPTER**  
**3**

# Cumulative Test

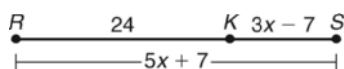
**Choose the best answer.**

- 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.

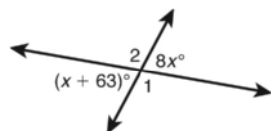
- How many different rays can be named using three collinear points  $P$ ,  $Q$ , and  $R$ ?
  - F 1                      H 3
  - G 2                      J 4

- 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

**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.

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

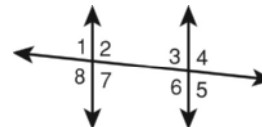
**Prove:**  $\angle 2$  is a right angle.

**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>

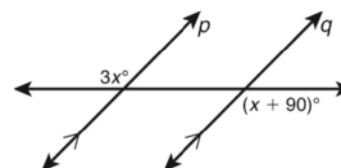
- A Definition of congruence
- B Definition of perpendicular
- C Definition of right angle
- D  $\angle 1$  is a right angle.

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



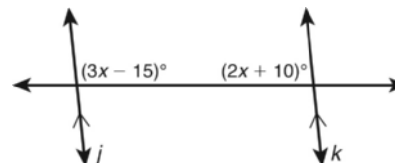
26. Which pair of angles are corresponding angles?
- F  $\angle 1$  and  $\angle 2$
  - G  $\angle 1$  and  $\angle 3$
  - H  $\angle 1$  and  $\angle 4$
  - J  $\angle 1$  and  $\angle 6$
27. Which completes the statement "Angles 6 and 7 are an example of \_\_\_\_\_ angles"?
- A same-side interior
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

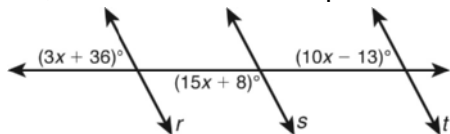


- A  $25^\circ$
- B  $37^\circ$
- C  $60^\circ$
- D  $84^\circ$

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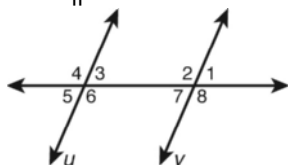
**Cumulative Test**  
*continued*

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



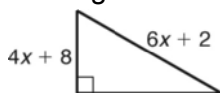
- F  $r \parallel s$  only      H  $s \parallel t$  only  
G  $r \parallel t$  only      J  $r \parallel s \parallel t$

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



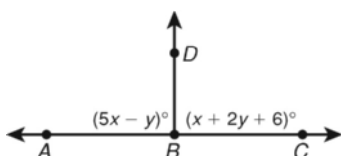
- A  $\angle 1$                       C  $\angle 3$   
B  $\angle 2$                       D  $\angle 4$

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

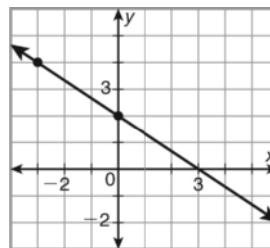
34. What is the slope of the line whose equation is  $2x - 6y = 0$ ?

- 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?



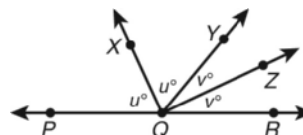
- F  $y + 4 = -\frac{2}{3}(x - 3)$   
G  $y + 3 = -\frac{2}{3}(x - 4)$   
H  $y - 4 = -\frac{2}{3}(x + 3)$   
J  $y - 3 = -\frac{2}{3}(x + 4)$

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

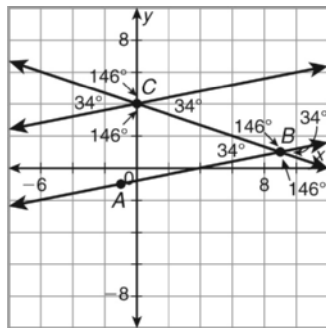
**Proof:**  $\angle PQR$  is a straight angle, so it measures  $180^\circ$ . By the Angle Addition Postulate,  $2u + 2v = 180$ . Then  $u + v = 90$  by the Division Property of Equality. Since  $m\angle PQX = u^\circ$  and  $m\angle ZQR = v^\circ$ ,  $m\angle PQX + m\angle ZQR = 90^\circ$ . So  $\angle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

10. The transversal is perpendicular to both parallel lines.
11.  $4x - 3 < 2x + 11; x < 7$
12. 2 intersecting lines form linear pair of  $\cong \sphericalangle \rightarrow$  lines  $\perp$
13. 2 lines  $\perp$  to same line  $\rightarrow$  2 lines  $\parallel$
14. horizontal line; all the same
15. Sample answer:  $x = 3, y = 0$
16. Sample answer:  $x = 6, y = 1$
17. False
18. True
19.  $y = 4$
20.  $y = -\frac{3}{2}x + 15$

### Performance Assessment

1, 3, 5.



2.  $y = \frac{1}{5}x - \frac{4}{5}$
4.  $y = \frac{1}{5}x + 4$
6. There are only two different angle measures, and they represent supplementary angles. The alternate interior angles are congruent, the alternate exterior angles are congruent, the corresponding angles are congruent, and the same-side interior angles are supplementary.

### Cumulative Test

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

### CHAPTER 4

#### Section Quiz: Lessons 4-1 Through 4-3

- |      |       |
|------|-------|
| 1. D | 7. A  |
| 2. J | 8. G  |
| 3. A | 9. C  |
| 4. J | 10. G |
| 5. D | 11. D |
| 6. J | 12. H |