Geometry Cumulative Study Guide

Test 5
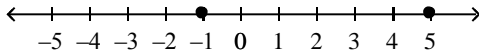
Numeric Response

1. Find the distance between the points on the number line.

$$-5 \quad -4 \quad -3 \quad -2 \quad -1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5$$

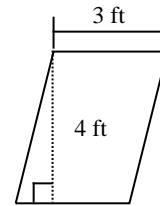2. A triangular garden plot has one side measuring 9.8 feet, a second side measuring 13.7 feet, and a third side measuring 17.6 feet. How much fencing, in feet, is required to surround the garden plot?
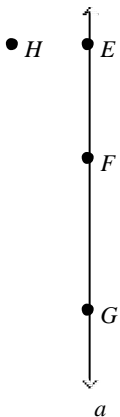
3. Find the slope of the line below.
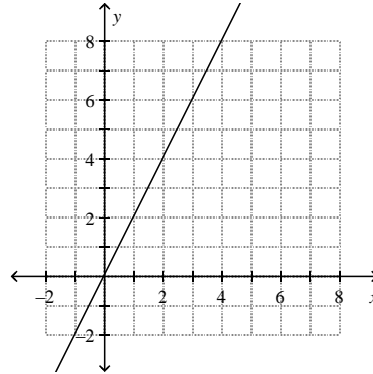
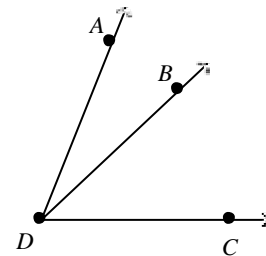4. Find the area, in square feet, of the parallelogram below.

Problem

5. Name three collinear points and three noncollinear points in the diagram below.
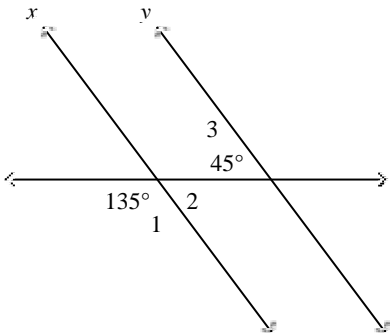

6. $m\angle ADB = 25°$ and $m\angle BDC = 43°$. Find $m\angle ADC$. Classify $\angle ADC$.

7. Ben made the conjecture that the expression $2n + 1$ will always result in a prime number. Show that this conjecture is true for $n = 1, 2,$ and 3, but not for $n = 4$.

8. Use the formula $F° = \dfrac{9}{5}(C°) + 32°$ to find the temperature in degrees Celsius when it is $77°F$.

9. Prove that lines x and y in this figure are parallel.

10. Find a counterexample to the conjecture below.

    If an animal has no legs, then it is a snake.

11. For each numbered angle in the polygon, determine whether it is an interior angle or an exterior angle.
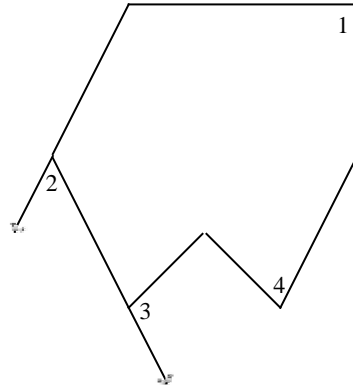
12. Consider the conditional statement " If $x = 5$, then $x^2 = 25$. " State the hypothesis and conclusion of this statement and write its converse. If the original statement is true, is the converse true?

13. Find the measure of $\angle A$ in $\triangle ABC$.
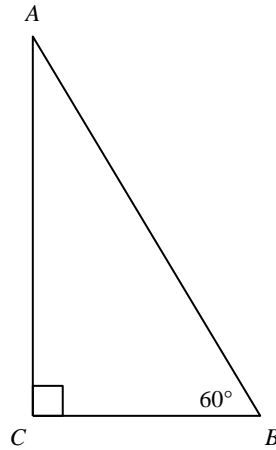
14. Determine the perimeter and area of the rectangle below.

3.5 cm

5.0 cm

15. State the converse of the statement:
If a number is divisible by 2, then it is even.
Determine whether the statement and its converse are true.

16. Use detachment or syllogism to draw a valid conclusion to the following statement. Identify which law was used in reaching the conclusion.
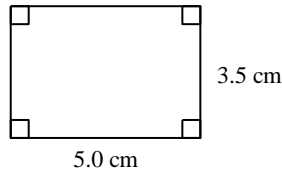*If the length of a rectangle is increased, then the perimeter will increase.*
The length of the rectangle is increased by 5.

17. Use deductive reasoning to form a "Therefore" concluding statement from the given statements below.

   All eligible maidens in the kingdom were invited to the hall.

   Cinderalla is an eligible maiden in the kingdom.

18. Name the circle. Identify a diameter, a radius, and the center of the circle.
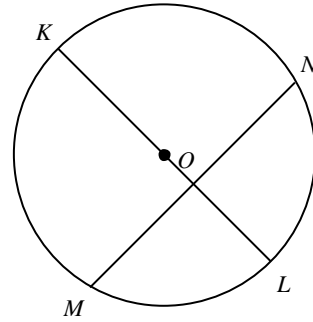
19. Solve the equation $3(x + 2) = x + 2$. Provide a justification for each step.

20. Identify the corresponding angles and sides for $\triangle ABC$ and $\triangle EFG$.

Geometry Cumulative Study Guide Test 5
Answer Section

NUMERIC RESPONSE

1. ANS: 6

    PTS: 1   REF: Lesson 9: Finding Length: Distance Formula
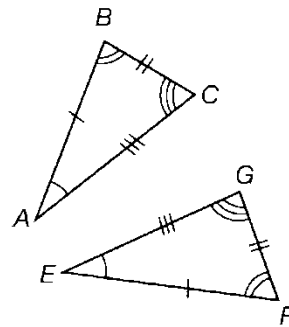   NAT: NCTM NO.3a   TOP: Cumulative Test 5
    MSC: Geom_S01_00074
2. ANS: 41.1

    PTS: 1   REF: Lesson 13: Introduction to Triangles
    NAT: NCTM G.1a   TOP: Cumulative Test 5   MSC: Geom_S02_00072
3. ANS: 2

    PTS: 1   REF: Lesson 16: Finding Slopes and Equations of Lines
    NAT: NCTM A.4   TOP: Cumulative Test 5   MSC: Geom_S02_00074
4. ANS: 12

    PTS: 1   REF: Lesson 22: Finding Areas of Quadrilaterals
    NAT: NCTM M.2b   TOP: Cumulative Test 5
    MSC: Geom_S03_00057

PROBLEM

5. ANS:
    Points E, F, and G are collinear. Points F, G, and H are noncollinear.

    PTS: 1   REF: Lesson 1: Points, Lines, and Planes   NAT: NCTM R.1a
    TOP: Cumulative Test 5   MSC: Geom_S01_00084
6. ANS:
    $m\angle ADC = 68°$; acute

    PTS: 1   REF: Lesson 3: Angles   NAT: NCTM G.1d
    TOP: Cumulative Test 5   MSC: Geom_S01_00097
7. ANS:
    For $n = 1$: $2(1) + 1 = 3$; 3 is prime.
    For $n = 2$: $2(2) + 1 = 5$; 5 is prime.
    For $n = 3$: $2(3) + 1 = 7$; 7 is prime.
    For $n = 4$: $2(4) + 1 = 9$; 9 is not prime.

    PTS: 1   REF: Lesson 7: Using Inductive Reasoning
    NAT: NCTM RP.1c   TOP: Cumulative Test 5
    MSC: Geom_S01_00120
8. ANS:
    25°C

    PTS: 1   REF: Lesson 8: Using Formulas in Geometry

NAT: NCTM A.2b   TOP: Cumulative Test 5   MSC: Geom_S01_00123

9. ANS:
Sample: Angles 1 and 2 form a linear pair. Therefore they are supplementary angles. Using definition of supplementary angles, since $m\angle 1 = 135°$, then $m\angle 2 = 45°$. Since $m\angle 2 = m\angle 3$, then $m\angle 2 \cong m\angle 3$. Angles 2 and 3 are alternate interior angles, so by the Converse of the Alternate Interior Angles Theorem, lines x and y are parallel.

PTS: 1   REF: Lesson 12: Proving Lines Parallel   NAT: NCTM RP.1c
TOP: Cumulative Test 5   MSC: Geom_S02_00084

10. ANS:
Sample: a fish

PTS: 1   REF: Lesson 14: Disproving Conjectures with Counterexamples
NAT: NCTM RP.1d   TOP: Cumulative Test 5
MSC: Geom_S02_00090

11. ANS:
$\angle 1$ and $\angle 4$ are interior; $\angle 2$ and $\angle 3$ are exterior

PTS: 1   REF: Lesson 15: Introduction to Polygons
NAT: NCTM G.1a   TOP: Cumulative Test 5   MSC: Geom_S02_00095

12. ANS:
Hypothesis: $x = 5$; Conclusion: $x^2 = 25$; Converse: If $x^2 = 25$, then $x = 5$.
The converse is not necessarily true.

PTS: 1   REF: Lesson 17: More Conditional Statements
NAT: NCTM RP.1c   TOP: Cumulative Test 5
MSC: Geom_S02_00099

13. ANS:
$m\angle A = 30°$

PTS: 1   REF: Lesson 18: Triangle Theorems   NAT: NCTM G.1d
TOP: Cumulative Test 5   MSC: Geom_S02_00105

14. ANS:
Perimeter: 17 centimeters;
Area: 17.5 square centimeters

PTS: 1   REF: Lesson 19: Introduction to Quadrilaterals
NAT: NCTM M.2b   TOP: Cumulative Test 5
MSC: Geom_S02_00111

15. ANS:
Converse: *If a number is even, then it is divisible by 2.*

The original statement and its converse are true.

PTS: 1   REF: Lesson 20: Interpreting Truth Tables
NAT: NCTM RP.1b   TOP: Cumulative Test 5
MSC: Geom_S02_00114

16. ANS:
Therefore, the perimeter of the rectangle will increase.
The Law of Detachment is used.

PTS: 1 REF: Lesson 21: Laws of Detachment and Syllogism
NAT: NCTM RP.1d TOP: Benchmark Test 5
MSC: Geom_S03_00071

17. ANS:
Therefore, Cinderalla was invited to the ball.

PTS: 1 REF: Lesson 21: Laws of Detachment and Syllogism
NAT: NCTM RP.1b TOP: Cumulative Test 5
MSC: Geom_S03_00072

18. ANS:
The circle is $\odot O$. $\overline{KL}$ is a diameter. $\overline{KO}$ and $\overline{LO}$ are both radii. The center of the circle is point O.

PTS: 1 REF: Lesson 23: Introduction to Circles NAT: NCTM G.1a
TOP: Cumulative Test 5 MSC: Geom_S03_00079

19. ANS:

$3(x + 2) = x + 2$	Given
$3x + 6 = x + 2$	Distributive Property
$2x = -4$	Subtraction Property of Equality
$x = -2$	Division Property of Equality

PTS: 1 REF: Lesson 24: Algebraic Proofs NAT: NCTM A.2b
TOP: Cumulative Test 5 MSC: Geom_S03_00080

20. ANS:
$\angle A$ corresponds to $\angle E$, $\angle B$ corresponds to $\angle F$, and $\angle C$ corresponds to $\angle G$. $\overline{AB}$ corresponds to $\overline{EF}$, $\overline{AC}$ corresponds to $\overline{EG}$, and $\overline{BC}$ corresponds to $\overline{FG}$.

PTS: 1 REF: Lesson 25: Triangle Congruence: SSS
NAT: NCTM G.1b TOP: Cumulative Test 5 MSC: Geom_S03_00086