Name: _____

Date: _____

Period: _____

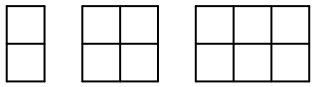
Geometry Cumulative Study Guide

Test 4

Numeric Response

1. Point F lies on $\overline{EG}$ between E and G. $EF = 2$ and $EG = 14$. Find FG.

2. Look at the progression of the pattern below and formulate a conjecture regarding the number of squares there will be in the fifth step of this pattern.

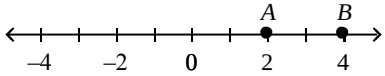


3. Find the perimeter, in meters, of a triangle with congruent side lengths all equal to 5 meters.

4. Find the distance between the points (1, –12) and (9, –6).

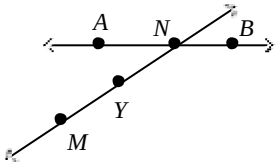
5. A right triangle has a hypotenuse of 65 inches and one leg that measures 60 inches. What is the length of the third side in inches?

6. On the number line below, what is the midpoint of A and B?

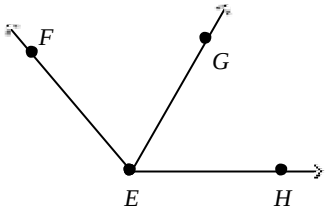


Problem

7. What is the intersection of $\overleftrightarrow{AB}$ and $\overleftrightarrow{MY}$ in the diagram below?

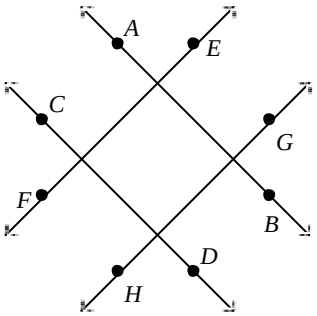


8. Name three rays in the diagram below.

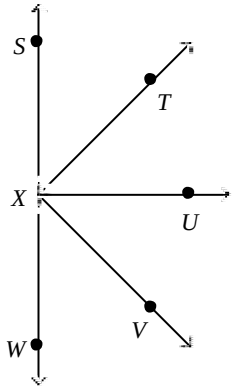


9. Points X and Y lie on plane E. Does line $\overleftrightarrow{XY}$ lie in plane E? Justify your answer using a postulate.

10. In the figure below, $\overleftrightarrow{EF} \parallel \overleftrightarrow{GH}$, $\overleftrightarrow{CD} \perp \overleftrightarrow{GH}$, and $\overleftrightarrow{AB} \perp \overleftrightarrow{GH}$. What is the relationship between $\overleftrightarrow{AB}$ and $\overleftrightarrow{EF}$?

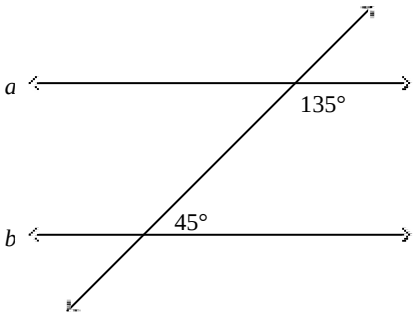


11. Identify two sets of adjacent angles and one linear pair in the diagram below.

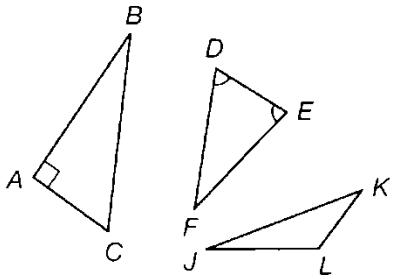


12. Identify the hypothesis and conclusion of the conditional statement below.
If $3x + 7 = 22$, then $x = 5$.

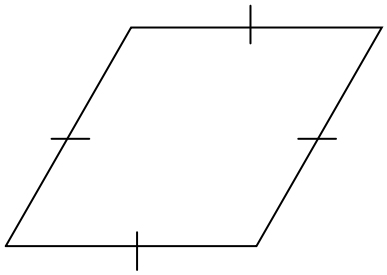
13. Prove that lines *a* and *b* are parallel.



14. In the diagram, which triangle is obtuse?



15. Name the polygon below. Determine whether it is equiangular, equilateral, regular, irregular, or more than one of these.

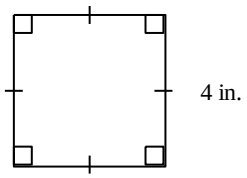


16. Write the equation of the line that has slope −2 and passes through (–4, –5).

17. Identify the hypothesis and the conclusion in the statement below. Then write the negation of each.
If a number is divisible by 2, then the number is even.

18. In the right triangle *RST*, $m\angle S = 78°$ and the right angle is at vertex *R*. Find the measure of $\angle T$.

19. Determine the perimeter and area of the square below.



20. Use a truth table to represent the statement, "If $x^2 \le 9$, then $x \le 3$." Interpret the table for this statement.

Geometry Cumulative Study Guide Test 4
Answer Section

NUMERIC RESPONSE

1. ANS: 12

   PTS: 1 REF: Lesson 2: Segments NAT: NCTM NO.3a
   TOP: Cumulative Test 4 MSC: Geom_S01_00059
2. ANS: 10

   PTS: 1 REF: Lesson 7: Using Inductive Reasoning
   NAT: NCTM RP.1b TOP: Cumulative Test 4
   MSC: Geom_S01_00064
3. ANS: 15

   PTS: 1 REF: Lesson 8: Using Formulas in Geometry
   NAT: NCTM G.1a TOP: Cumulative Test 4 MSC: Geom_S01_00069
4. ANS: 10

   PTS: 1 REF: Lesson 9: Finding Length: Distance Formula
   NAT: NCTM G.1d TOP: Cumulative Test 4 MSC: Geom_S01_00073
5. ANS: 25

   PTS: 1 REF: Investigation 2: Proving the Pythagorean Theorem
   NAT: NCTM G.1d TOP: Cumulative Test 4 MSC: Geom_S02_00069
6. ANS: 3

   PTS: 1 REF: Lesson 11: Finding Midpoints NAT: NCTM NO.3a
   TOP: Cumulative Test 4 MSC: Geom_S02_00070

PROBLEM

7. ANS:
   Point *N*

   PTS: 1 REF: Lesson 1: Points, Lines, and Planes NAT: NCTM R.1a
   TOP: Cumulative Test 4 MSC: Geom_S01_00083
8. ANS:
   $\overrightarrow{EF}$, $\overrightarrow{EG}$, and $\overrightarrow{EH}$

   PTS: 1 REF: Lesson 3: Angles NAT: NCTM R.1a
   TOP: Cumulative Test 4 MSC: Geom_S01_00096
9. ANS:
   Postulate 8 says that if two points lie on a plane, then the line containing the points lies in the plane. Since points *X* and *Y* lie on plane *E*, then line $\overleftrightarrow{XY}$ lies on plane *E*.

PTS: 1 REF: Lesson 4: Postulates and Theorems About Points, Lines, and Planes
NAT: NCTM G.1c TOP: Cumulative Test 4 MSC: Geom_S01_00106

10. ANS:
$\overleftrightarrow{AB} \perp \overleftrightarrow{EF}$

PTS: 1 REF: Lesson 5: More Theorems About Lines and Planes
NAT: NCTM G.1b TOP: Cumulative Test 4 MSC: Geom_S01_00113

11. ANS:
There are many adjacent angles in the diagram. Two possible sets are $\angle SXT$, $\angle TXU$ and $\angle TXU$, $\angle UXV$. There are also several linear pairs. One is $\angle SXV$ and $\angle VXW$.

PTS: 1 REF: Lesson 6: Identifying Pairs of Angles
NAT: NCTM R.1a TOP: Cumulative Test 4 MSC: Geom_S01_00117

12. ANS:
Hypothesis: $3x + 7 = 22$; conclusion: $x = 5$

PTS: 1 REF: Lesson 10: Using Conditional Statements
NAT: NCTM RP.1b TOP: Cumulative Test 4
MSC: Geom_S01_00128

13. ANS:
The lines are parallel by the Converse of the Same-Side Interior Angles Theorem (Theorem 12-3).

PTS: 1 REF: Lesson 12: Proving Lines Parallel NAT: NCTM RP.1d
TOP: Cumulative Test 4 MSC: Geom_S02_00083

14. ANS:
Triangle JKL is obtuse, because it has one obtuse angle L.

PTS: 1 REF: Lesson 13: Introduction to Triangles
NAT: NCTM G.1a TOP: Cumulative Test 4 MSC: Geom_S02_00087

15. ANS:
Quadrilateral; Equilateral and irregular.

PTS: 1 REF: Lesson 15: Introduction to Polygons
NAT: NCTM G.1a TOP: Cumulative Test 4 MSC: Geom_S02_00094

16. ANS:
$y = -2x - 13$

PTS: 1 REF: Lesson 16: Finding Slopes and Equations of Lines
NAT: NCTM A.4 TOP: Cumulative Test 4 MSC: Geom_S02_00097

17. ANS:
Hypothesis: a number is divisible by 2.
Conclusion: the number is even.
Negation of Hypothesis: a number is not divisible by 2.
Negation of Conclusion: the number is not even.

PTS: 1 REF: Lesson 17: More Conditional Statements
NAT: NCTM RP.1c TOP: Cumulative Test 4
MSC: Geom_S02_00098

18. ANS:
$m\angle T = 12°$

PTS: 1 REF: Lesson 18: Triangle Theorems NAT: NCTM G.1d
TOP: Cumulative Test 4 MSC: Geom_S02_00104

19. ANS:
Perimeter: 16 inches; Area: 16 square inches

PTS: 1 REF: Lesson 19: Introduction to Quadrilaterals
NAT: NCTM M.2b TOP: Cumulative Test 4
MSC: Geom_S02_00110

20. ANS:
Sample:

Hypothesis $x^2 \leq 9$	Conclusion $x \leq 3$	Statement If $x^2 \leq 9$, then $x \leq 3$.
T	T	T
T	F	F
F	T	T
F	F	T

The statement is only false when the hypothesis is true but the conclusion is false. For the statement "If $x^2 \leq 9$, then $x \leq 3$," this is impossible. Therefore, the statement is always true.

PTS: 1 REF: Lesson 20: Interpreting Truth Tables
NAT: NCTM RP.1d TOP: Cumulative Test 4
MSC: Geom_S02_00113