Geometry Cumulative Study Guide

Test 8
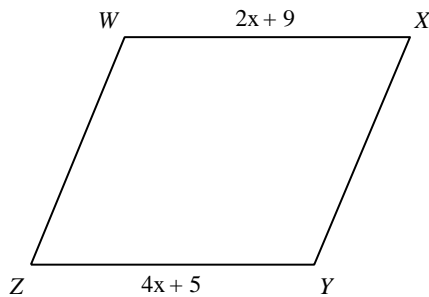
**Numeric Response**

1. A rectangular plot of land has a length of 3.5 miles and a width of 8.5 miles. What is the area, in square miles, of the plot of land?

2. A circle has a diameter of 11 inches. What is the area, in square inches, of the circle to the nearest square inch? Use 3.14 for π.

3. *WXYZ* is a parallelogram. Find the value of *x*.

4. The diagram shows the floor of a living room. What area, in square feet, of carpet will be needed to cover the floor?
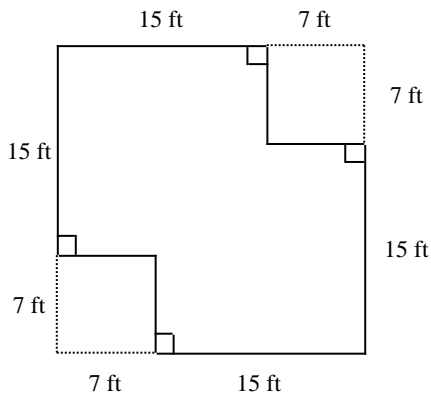
Problem

5. Write the inverse of the statement below. Is the statement true? Is the inverse of the statement true?

If a number ends in an even number, then it is divisible by 2.

6. In the right triangle *CDE*, $\angle E$ measures $57°$ and the right angle is at vertex *C*. Find $m\angle D$.

7. Write the biconditional of the statement and its converse.

If you live in Chicago, then you live in Illinois.

Is it true? Explain why or why not.

8. Use the Law of Syllogism to write a valid set of conditional statements for the following three statements in the form "If *p*, then *q*. If *q*, then *r*. If *p*, then *r*."

p: Peter goes to bed early.
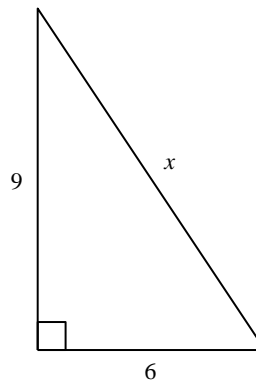*q*: Peter will be rested for his game.
r: Peter will play well.

9. Solve the equation below. Provide a justification for each step.

$5(x - 2) = x - 6$
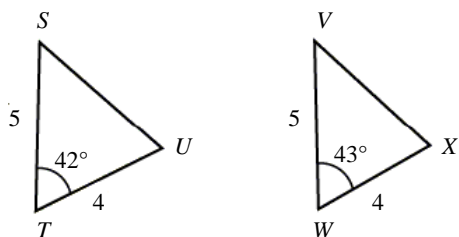
10. For $\triangle EFG$, $EF = 18$, $FG = 13$, $EG = 25$. For $\triangle ABC$, $AB = 18$, $AC = 13$, $BC = 25$. Write the congruency statement for the triangles.

11. What is the included angle of $\overrightarrow{YU}$ and $\overrightarrow{YL}$?

12. Find the value of *x* in the triangle below. Write your answer in simplified radical form.

13. Compare the measures of $\overline{SU}$ and $\overline{VX}$.

S

5

42°

U

4

T

V

5

43°

X

4

W

14. Use the given paragraph proof to write a two-column proof.

Given: Triangle *XYZ* is a right triangle.
  $\angle Z$ is a right angle.

Prove: $\angle X$ and $\angle Y$ are complementary angles.

Triangle *XYZ* is a right triangle, and $\angle Z$ is a right angle. So, $m\angle Z = 90°$ by the definition of a right angle. By the Triangle Sum Theorem, $m\angle X + m\angle Y + m\angle Z = 180°$. By the Subtraction Property of Equality, $m\angle X + m\angle Y + m\angle Z - m\angle Z = 180° - m\angle Z$. So, $m\angle X + m\angle Y = 90°$. Therefore, $\angle X$ and $\angle Y$ are complementary angles by the definition of complementary angles.

15. Find the centroid of $\triangle EFG$ with vertices at *E* (–4, 1), *F* (2, 3), and *G* (–4, –1).

16. Determine whether the triangle below is a right triangle.

19

13

14
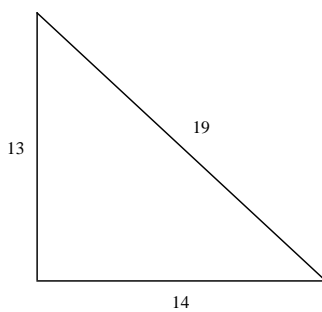
17. Rosa must design a flag that will be exactly the same size as the triangle below. The flag will contain a right angle. Rosa knows that she only needs to pick two other dimensions to make sure that the flag is congruent to the triangle. List all the pairs of dimensions Rosa could use to ensure the flag is exactly the same size and shape as the triangle. For each pair of dimensions, write which triangle congruence theorem applies.

C

A

B
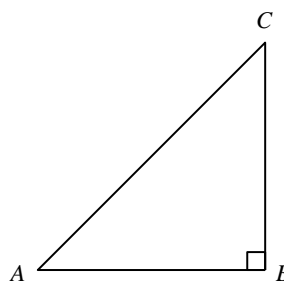
18. Are the lines $y = x + 3$ and $y = -2 + x$ parallel, perpendicular, or neither?

19. Using the diagram below, find *YZ* if *XW* = 14, *ZW* = 10, and *XY* = 2.

W

X

Y

Z
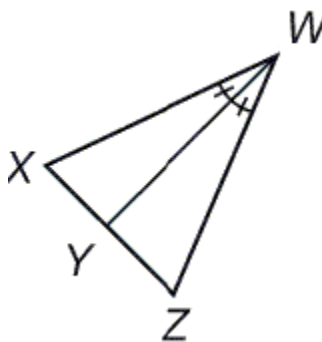
20. Decide whether each set of side lengths could form a valid triangle:
(6, 14, 16), (8, 13, 12), and (9, 13, 18)

Cumulative Study Guide Test 8 Geometry
Answer Section

NUMERIC RESPONSE

1. ANS: 29.75

    PTS: 1   REF: Lesson 22: Finding Areas of Quadrilaterals
    NAT: NCTM M.2b   TOP: Cumulative Test 8
    MSC: Geom_S03_00059
2. ANS: 95

    PTS: 1   REF: Lesson 23: Introduction to Circles   NAT: NCTM M.2b
    TOP: Cumulative Test 8   MSC: Geom_S03_00065
3. ANS: 2

    PTS: 1   REF: Lesson 34: Properties of Parallelograms
    NAT: NCTM A.2b TOP: Cumulative Test 8   MSC: Geom_S04_00058
4. ANS: 386

    PTS: 1   REF: Lesson 40: Finding Perimeters and Areas of Composite Figures
    NAT: NCTM M.2b   TOP: Cumulative Test 8
    MSC: Geom_S04_00062

PROBLEM

5. ANS:
    If a number does not end in an even number, then it is not divisible by 2. Both the statement and it inverse are true.

    PTS: 1   REF: Lesson 17: More Conditional Statements
    NAT: NCTM RP.1b   TOP: Cumulative Test 8
    MSC: Geom_S02_00102
6. ANS:
    33°

    PTS: 1   REF: Lesson 18: Triangle Theorems   NAT: NCTM G.1d
    TOP: Cumulative Test 8   MSC: Geom_S02_00109
7. ANS:
    You live in Chicago if and only if you live in Illinois. For the biconditional to be true, both the statement and its converse must be true. In this case, the converse, if you live in Illinois then you live in Chicago, is not true, so the biconditional is not true.

PTS: 1   REF: Lesson 20: Interpreting Truth Tables
NAT: NCTM RP.1b   TOP: Cumulative Test 8
MSC: Geom_S02_00115

8. ANS:
If p, then q: If Peter goes to bed early, then he will be rested for his game. AND if q, then r:
If Peter is rested for his game, then he will play well. THEN If p, then r:
If Peter goes to bed early, then he will play well.

PTS: 1   REF: Lesson 21: Laws of Detachment and Syllogism
NAT: NCTM RP.1c   TOP: Cumulative Test 8
MSC: Geom_S03_00075

9. ANS:

$5(x-2) = x - 6$	Given
$5x - 10 = x - 6$	Distributive Property
$5x - 10 + 10 = x - 6 + 10$	Addition Property of Equality
$5x = x + 4$	Simplify
$5x - x = x + 4 - x$	Subtraction Property of Equality
$4x = 4$	Simplify
$\dfrac{4x}{4} = \dfrac{4}{4}$	Division Property of Equality
$x = 1$	Simplify

PTS: 1   REF: Lesson 24: Algebraic Proofs   NAT: NCTM A.2b
TOP: Cumulative Test 8   MSC: Geom_S03_00083

10. ANS:
$\triangle EFG \cong \triangle BAC$

PTS: 1   REF: Lesson 25: Triangle Congruence: SSS
NAT: NCTM CM.1d   TOP: Cumulative Test 8
MSC: Geom_S03_00088

11. ANS:
$\angle UYL$

PTS: 1   REF: Lesson 28: Triangle Congruence: SAS
NAT: NCTM G.1a   TOP: Cumulative Test 8   MSC: Geom_S03_00096

12. ANS:
$3\sqrt{13}$

PTS: 1   REF: Lesson 29: Using the Pythagorean Theorem
NAT: NCTM G.1d   TOP: Cumulative Test 8   MSC: Geom_S03_00100

13. ANS:
$VX > SU$

PTS: 1   REF: Investigation 4: Inequalities in Two Triangles

NAT: NCTM G.1b   TOP: Cumulative Test 8   MSC: Geom_S04_00069

14. ANS:

Statements	Reasons
1. $\triangle XYZ$ is a right triangle.	1. Given
2. $\angle Z$ is a right angle.	2. Given
3. $m\angle Z = 90°$	3. Definition of right angle
4. $m\angle X + m\angle Y + m\angle Z = 180°$	4. Triangle Sum Theorem
5. $m\angle X + m\angle Y + m\angle Z - m\angle Z = 180° - m\angle Z$	5. Subtraction Property of Equality
6. $m\angle X + m\angle Y = 180° - m\angle Z$	6. Simplify
7. $m\angle X + m\angle Y = 180° - 90°$	7. Substitution
8. $m\angle X + m\angle Y = 90°$	8. Simplify
9. $\angle X$ and $\angle Y$ are complementary angles.	9. Definition of complementary angles

PTS: 1   REF: Lesson 31: Flowchart and Paragraph Proofs
NAT: NCTM RP.1c   TOP: Cumulative Test 8
MSC: Geom_S04_00071

15. ANS:
(–2, 1)

PTS: 1   REF: Lesson 32: Altitudes and Medians of Triangles
NAT: NCTM G.1a   TOP: Cumulative Test 8   MSC: Geom_S04_00072

16. ANS:
The triangle is not a right triangle by the Converse of the Pythagorean Theorem.

PTS: 1   REF: Lesson 33: Converse of the Pythagorean Theorem
NAT: NCTM G.1a   TOP: Cumulative Test 8   MSC: Geom_S04_00074

17. ANS:
AB and $m\angle A$ (LA); AB and $m\angle C$ (LA); AC and $m\angle A$ (HA); AB and BC (LL); AC and BC (HL); BC and $m\angle A$ (LA); BC and $m\angle C$ (LA); AC and $m\angle C$ (HA); AC and AB (HL)

PTS: 1   REF: Lesson 36: Right Triangle Congruence Theorems
NAT: NCTM G.1b   TOP: Cumulative Test 8   MSC: Geom_S04_00083

18. ANS:
Parallel

PTS: 1   REF: Lesson 37: Writing Equations of Parallel and Perpendicular Lines
NAT: NCTM A.4   TOP: Cumulative Test 8   MSC: Geom_S04_00085

19. ANS:
$YZ = 1\dfrac{3}{7}$

PTS: 1   REF: Lesson 38: Perpendicular and Angle Bisectors of Triangles
NAT: NCTM G.1b   TOP: Cumulative Test 8   MSC: Geom_S04_00091

20. ANS:

yes, yes, and yes

PTS: 1 REF: Lesson 39: Inequalities in a Triangle
NAT: NCTM G.1a TOP: Cumulative Test 8 MSC: Geom_S04_00093