GEOMETRY - FIRST SEMESTER - REVIEW

Objective Short Answer

    Write an equation in slope-intercept form of the line having the given slope and *y*-intercept or given points. Then graph the line.

1. *m*: 4.5, (0, 0.25)

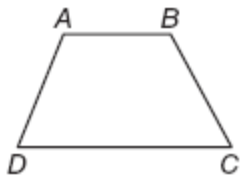2. $m: -\dfrac{7}{9}, \left(0, -\dfrac{1}{2}\right)$

    Find the measures of the sides of △*KPL* and classify each triangle by its sides.

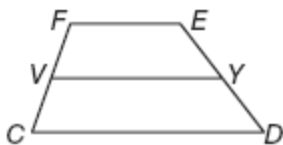3. *K*(5, –3), *P*(3, 4), *L*(–1, 1)

4. *K*(–2, –6), *P*(–4, 0), *L*(3, –1)

    Construct the segment that represents the distance indicated.

5. *A* to $\overleftrightarrow{DC}$

    ALGEBRA For trapezoid *FEDC*, *V* and *Y* are midpoints of the legs.

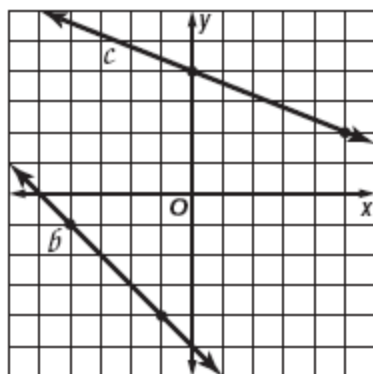6. If *m*∠*F* = 140 and *m*∠*E* = 125, find *m*∠*D*.

GEOMETRY - FIRST SEMESTER - REVIEW

Find the range for the measure of the third side of a triangle given the measures of two sides.

7. 25 yd and 38 yd

8. 42 m and 6 m

Write an equation in slope-intercept form for each line shown or described.

9. parallel to line b, contains (3, –2)

10. perpendicular to line c, contains (–2, –4)
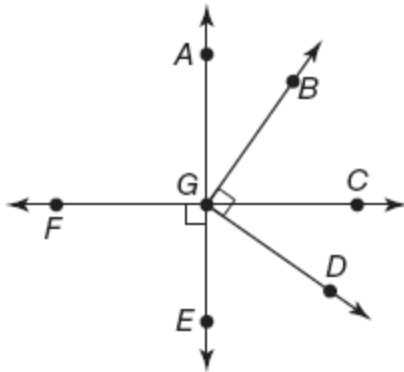
11. line c

12. $m = -\dfrac{4}{9}$, $b = 2$

GEOMETRY - FIRST SEMESTER - REVIEW

Determine the truth value of each conditional statement. If *true*, explain your reasoning. If *false*, give a counterexample.

13. If a and b are negative, then $a + b$ is also negative.

14. If two triangles have equivalent angle measures, then they are congruent.

ALGEBRA Use the figure.

15. If $m\angle BGC = 16x - 4$ and $m\angle CGD = 2x + 13$, find the value of x so that $\angle BGD$ is a right angle.
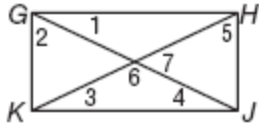
16. If $m\angle FGE = 5x + 10$, find the value of x so that $\overleftrightarrow{FC} \perp \overleftrightarrow{AE}$.

Make a conjecture about the next item in each sequence.

17. $-2, 1, -\dfrac{1}{2}, \dfrac{1}{4}, -\dfrac{1}{8}$

GEOMETRY - FIRST SEMESTER - REVIEW

Quadrilateral *GHJK* is a rectangle. Find each measure if *m*∠1 = 37.
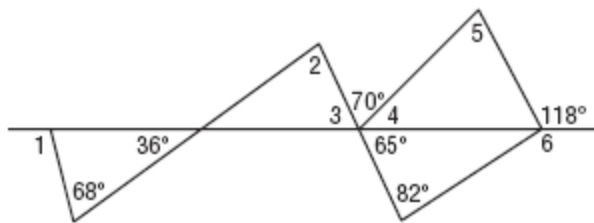

18. *m*∠5

19. *m*∠2

Is it possible to form a triangle with the given side lengths? If not explain why not.
20. 8, 9, 17

ALGEBRA Find the value of *x* and *KL* if *K* is between *J* and *L*.
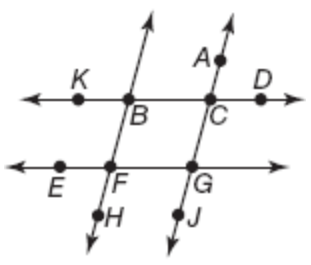21. $JK = 2x$, $KL = x + 2$, and $JL = 5x - 10$

Find each measure.

22. *m*∠3

23. *m*∠1
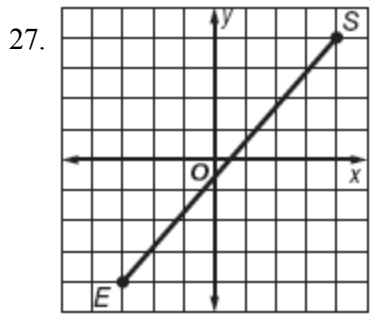
24. *m*∠6

GEOMETRY - FIRST SEMESTER - REVIEW

Given the following information, determine which lines, if any, are parallel. State the postulate or theorem that justifies your answer.
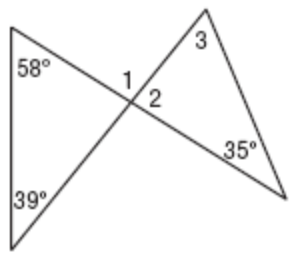

25. $\angle CBF \cong \angle GFH$

26. $m\angle BCG + m\angle FGC = 180$

Find the distance between each pair of points.
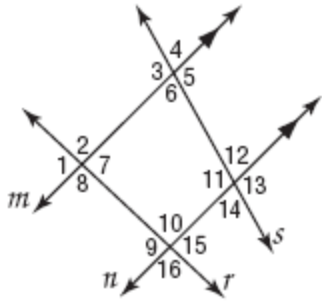
27.

Find each measure.

28. $m\angle 2$

GEOMETRY - FIRST SEMESTER - REVIEW

29. $m\angle 3$

In the figure, $m\angle 2 = 92$, and $m\angle 12 = 74$. Find the measure of each angle. Tell which postulate(s) or theorem(s) you used.
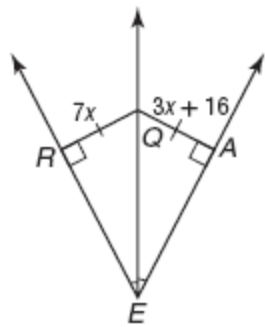

30. $\angle 9$

Find the sum of the measures of the interior angles of each convex polygon.

31. 11-gon

32. 14-gon

Find each measure.

33. QA

GEOMETRY - FIRST SEMESTER - REVIEW

Determine whether the following statements are *always*, *sometimes*, or *never* true. Explain.

34. The intersection of two planes contains at least two points.

Use the Law of Syllogism to draw a valid conclusion from each set of statements, if possible. If no valid conclusion can be drawn, write *no valid conclusion*.

35. If two angles form a linear pair, then the two angles are supplementary. If two angles are supplementary, then the sum of their measures is 180.

36. If a hurricane is Category 5, then winds are greater than 155 miles per hour. If winds are greater than 155 miles per hour, then trees, shrubs, and signs are blown down.

Classify each triangle in the figure below by its angles and sides.
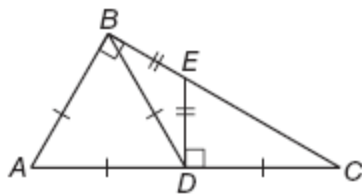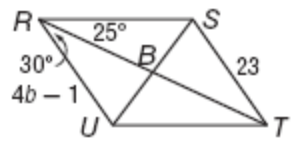

37. $\triangle ABC$

Classify the relationship between each pair of angles as *alternate interior*, *alternate exterior*, *corresponding*, or *consecutive interior* angles.
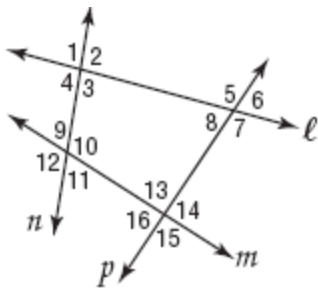
38. $\angle 7$ and $\angle 13$
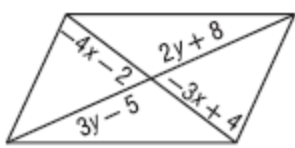
GEOMETRY - FIRST SEMESTER - REVIEW

ALGEBRA Use □RSTU to find each measure or value.
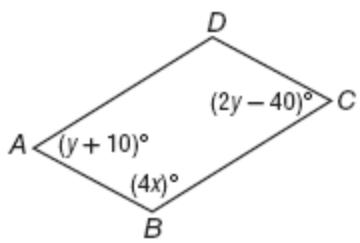

39. $m\angle TUR = $ _____

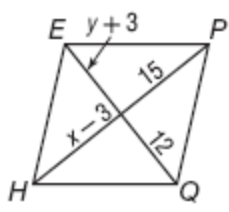**ALGEBRA Find x and y so that the quadrilateral is a parallelogram.**

40.

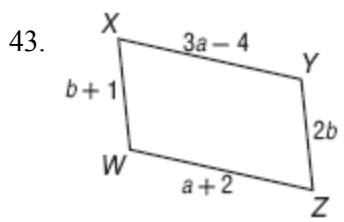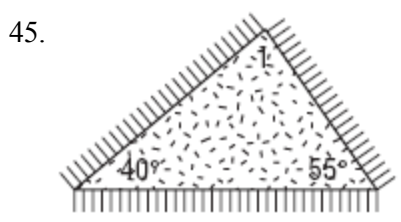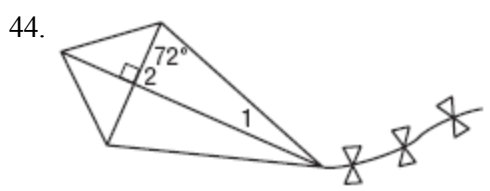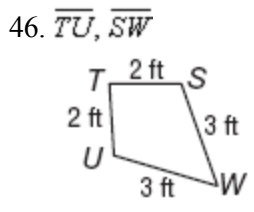**ALGEBRA Find the value of each variable.**

41.

42.

GEOMETRY - FIRST SEMESTER - REVIEW

43.

Find the measure of each numbered angle.

44.

45.

Determine whether each pair of segments is congruent.

46. $\overline{TU}, \overline{SW}$

GEOMETRY - FIRST SEMESTER - REVIEW

47. $\overline{AD}, \overline{BC}$
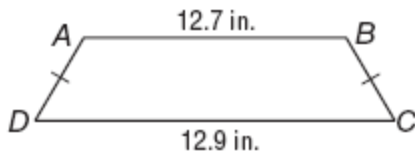
48. $\overline{GF}, \overline{FE}$

ALGEBRA For each triangle, find x and the measure of each side.

49. $\triangle LMN$ is an isosceles triangle, with $LM = LN$, $LM = 3x - 2$, $LN = 2x + 1$, and $MN = 5x - 2$.

50. $\triangle FGH$ is an equilateral triangle with $FG = x + 5$, $GH = 3x - 9$, and $FH = 2x - 2$.

Find the value of the variable(s) in each figure. Explain your reasoning.

51.

GEOMETRY - FIRST SEMESTER - REVIEW
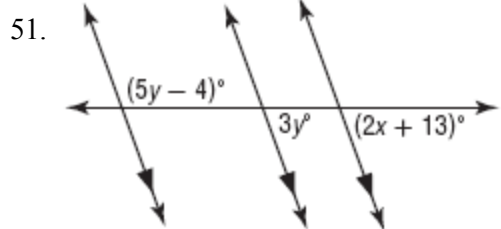
Refer to the figure below to identify each of the following.
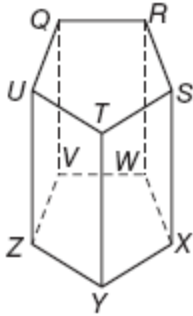
52. all segments that intersect $\overline{QU}$

53. all segments that are skew to $\overline{VW}$

PRYZ **is a rhombus. If** *RK* **= 5,** *RY* **= 13 and** *m*∠*YRZ* **= 67, find each measure.**
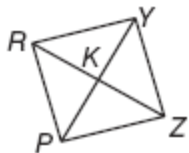
54. *m*∠*YKZ*

GEOMETRY - FIRST SEMESTER - REVIEW

In $\triangle MIV$, Z is the centroid, $MZ = 6$, $YI = 18$, and $NZ = 12$. Find each measure.
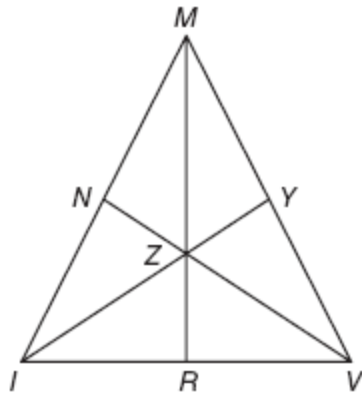
55. *ZR*

VISUALIZATION Name the geometric term(s) modeled by each object.

56. tip of pin ⟶

Refer to the figure.
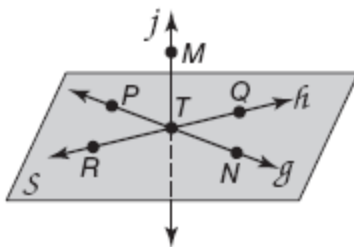
57. Name the plane that contains $\overleftrightarrow{TN}$ and $\overleftrightarrow{QR}$.

GEOMETRY - FIRST SEMESTER - REVIEW

Use the figure below to determine the relationship between the lengths of the given sides.
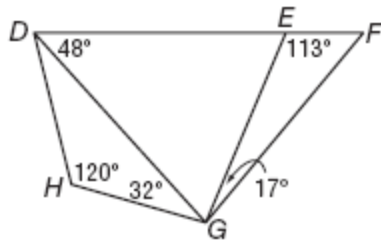
58. $\overline{DH}$, $\overline{GH}$

59. $\overline{DE}$, $\overline{EG}$

Determine whether each statement can be assumed from the figure. Explain.
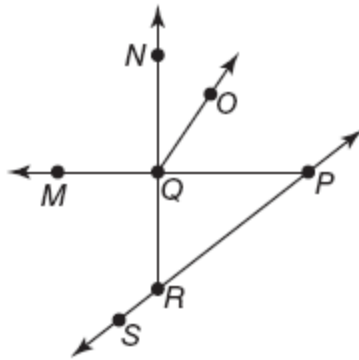
60. $\angle MQN$ and $\angle MQR$ are vertical angles.

61. $\angle NQO$ and $\angle OQP$ are complementary.

Classify each triangle as *acute*, *equiangular*, *obtuse*, or *right*.

62.

GEOMETRY - FIRST SEMESTER - REVIEW

In $\triangle ABC$, $CP = 30$, $EP = 18$, and $BF = 39$. Find each measure.
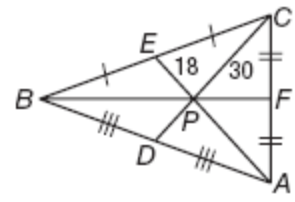
63. *PD*

64. *EA*

65. *FP*

Use the number line to find each measure.
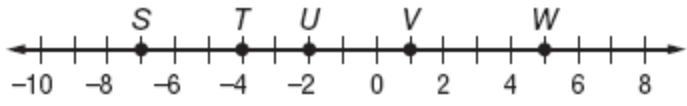
66. *VW*

Use the figure below to determine which angle has the greatest measure.
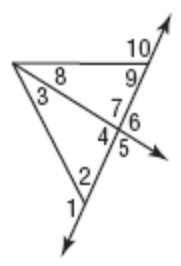
67. $\angle 4, \angle 8, \angle 9$

GEOMETRY - FIRST SEMESTER - REVIEW

68. ∠1, ∠3, ∠4

Point _A_ is the incenter of △_PQR_. Find each measure.
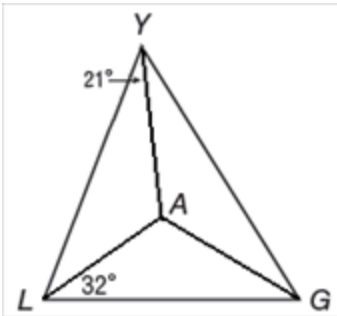
69. ∠_YGA_

70. ∠_YLA_

Write another name for each angle. Use the figure below.
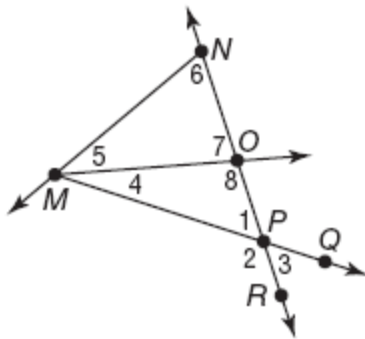
71. ∠_QPR_

Determine whether each conjecture is _true_ or _false_. Give a counterexample for any false conjecture.

72. If _S_, _T_, and _U_ are collinear and _ST_ = _TU_, then _T_ is the midpoint of $\overline{SU}$.

GEOMETRY - FIRST SEMESTER - REVIEW

Determine the slope of the line that contains the given points.

73. $B(-4, 4)$, $R(0, 2)$

Use the number line to find the coordinate of the midpoint of each segment.

74. $\overline{QR}$

Compare the given measures.

75. ST and SR
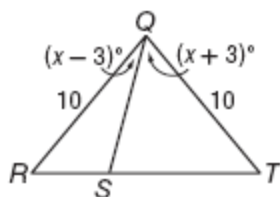
Determine whether $\overleftrightarrow{KM}$ and $\overleftrightarrow{ST}$ are *parallel*, *perpendicular*, or *neither*.

76. $K(-3, -7)$, $M(3, -3)$, $S(0, 4)$, $T(6, -5)$

GEOMETRY - FIRST SEMESTER - REVIEW

Find the slope of each line.
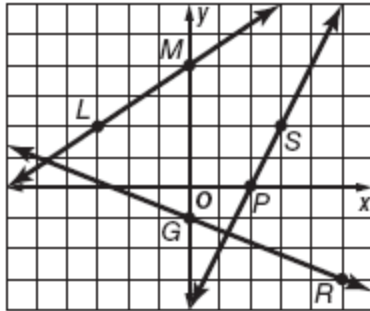
77. $\overleftrightarrow{LM}$

Find the measure of each interior angle.

78.
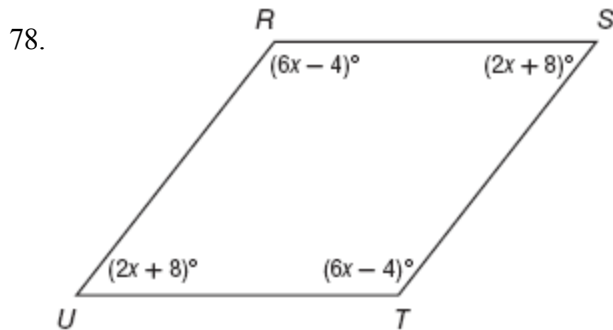
Find x so that $l \parallel m$. Identify the postulate or theorem you used.

79.
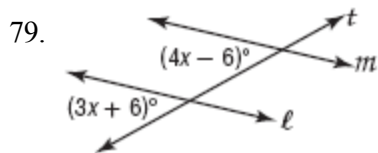
COORDINATE GEOMETRY Graph each figure with the given vertices and identify the figure. Then find the perimeter and area of the figure.

80. $S(0, 0)$, $T(3, -2)$, $U(8, 0)$

GEOMETRY - FIRST SEMESTER - REVIEW

Name the transversal that forms each pair of angles. Then identify the special name for the angle pair.
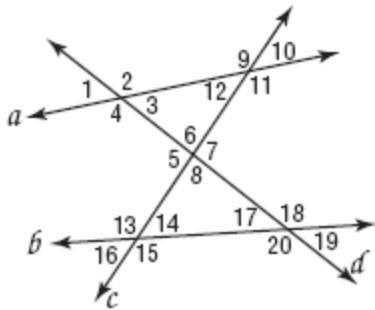
81. ∠13 and ∠19

82. ∠2 and ∠12

CHANGING DIMENSIONS Use the rectangle below.
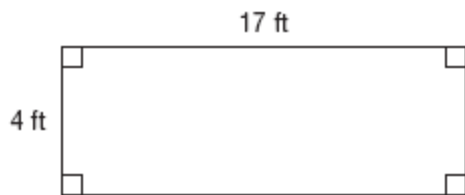
83. Suppose the length and width of the rectangle are doubled. What effect would this have on the perimeter?

COORDINATE GEOMETRY Find the coordinates of the orthocenter of the triangle with the given vertices.

84. $S(0, 0)$, $T(3, 3)$, $U(3, 6)$

85. $P(-1, 2)$, $Q(5, 2)$, $R(2, 1)$

COORDINATE GEOMETRY Find the distance from P to l.

86. Line l contains points $(-2, 0)$ and $(4, 8)$. Point P has coordinates $(5, 1)$.

GEOMETRY - FIRST SEMESTER - REVIEW

Refer to the figure.
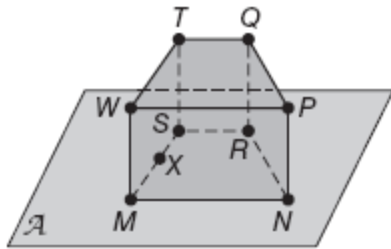
87. Are points *N*, *R*, *S*, and *W* coplanar? Explain.

88. Name three collinear points

Identify the type of congruence transformation shown as a *reflection*, *translation*, or *rotation*.

89.
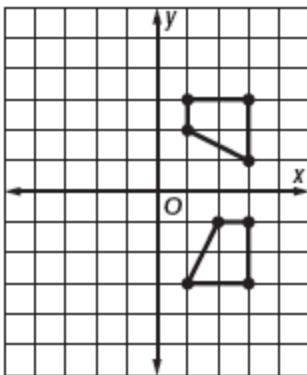
90. **BIOLOGY** If an organism is a parasite, then it survives by living on or in a host organism. If a parasite lives in or on a host organism, then it harms its host. What conclusion can you draw if a virus is a parasite?

GEOMETRY - FIRST SEMESTER - REVIEW

Find the measure of each numbered angle and name the theorems that justify your work.

91. $m\angle 4 = 2x - 5$
    $m\angle 5 = 4x - 13$
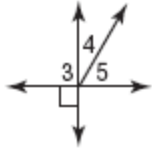
MNPQ **is a rhombus. If** $PQ = 3\sqrt{2}$ **and** *AP* **= 3, find each measure.**
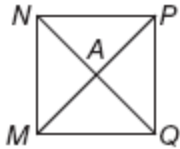
92. $m\angle MNP$

93. *AQ*

Make a conjecture about each value or geometric relationship.

94. $\angle ABC$ is a right angle.

Write an equation in point-slope form of the line having the given slope that contains the given point. Then graph the line.

95. $m: -\dfrac{6}{5}, (-5, -2)$

96. **PROFITS** After Take Two began renting DVDs at their video store, business soared. Between 2005 and 2010, profits increased at an average rate of $9000 per year. Total profits in 2010 were $45,000. If profits continue to increase at the same rate, what will the total profit be in 2014?

GEOMETRY - FIRST SEMESTER - REVIEW

Name the vertex of each angle. Use the figure below.
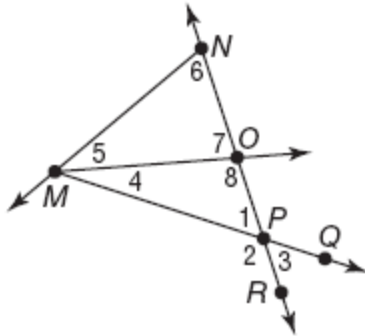
97. $\angle 3$

Use the Exterior Angle Inequality Theorem to list all angles that satisfy the stated condition.
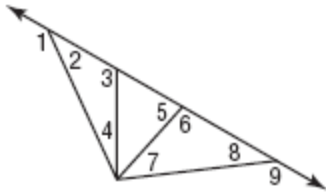
98. measures are less than $m\angle 3$

99. **CANOEING** Bronson and a friend are going to carry a canoe across a flat field to the bank of a straight canal. Describe the shortest path they can use.

GEOMETRY - FIRST SEMESTER - REVIEW

Name an angle or angle pair that satisfies each condition.

100. Name an angle not adjacent to, but complementary to ∠*FGC*.

GEOMETRY - FIRST SEMESTER - REVIEW

Answer Key

1. $y = 4.5x + 0.25$

2. $y = -\dfrac{7}{9}x - \dfrac{1}{2}$

3. $KP = \sqrt{53}$, $PL = 5$, $LK = 2\sqrt{13}$; scalene

4. $KP = 2\sqrt{10}$, $PL = 5\sqrt{2}$, $LK = 5\sqrt{2}$; isosceles

5.
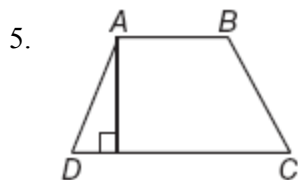
6. 55

7. 13 yd $< n <$ 63 yd

8. 36 m $< n <$ 48 m

9. $y = -x + 1$

10. $y = \dfrac{5}{2}x + 1$

11. $y = -\dfrac{2}{5}x + 4$

12. $y = -\dfrac{4}{9}x + 2$

13. True; when the hypothesis is true, the conclusion is also true, since the sum of two negative numbers is always negative.
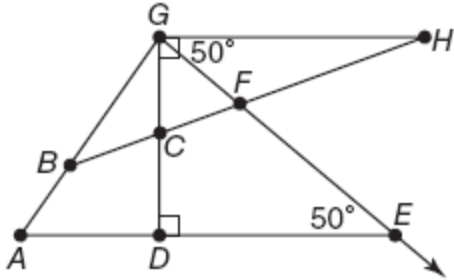
14. False; two triangles can have the angle measures 30, 60, and 90, but one triangle can have side lengths 3, 4, and 5, and the second can have side lengths 6, 8, and 10. The hypothesis of the conditional is true, but the conclusion is false. This counterexample shows that the conditional statement is false.

15. 4.5

16. 16

17. $\dfrac{1}{16}$

18. 53

19. 53

20. no; $8 + 9 = 17$

GEOMETRY - FIRST SEMESTER - REVIEW

21. 6; 8

22. 65

23. 104

24. 147

25. $\overleftrightarrow{BD} \parallel \overleftrightarrow{EG}$; Converse Corresponding Angles Theorem

26. $\overleftrightarrow{BD} \parallel \overleftrightarrow{EG}$; Converse Consecutive Interior Angles Theorem

27. $\sqrt{113} \approx 10.6$

28. 83

29. 62

30. 88; Corresponding Angles Theorem, Supplementary Angles

31. 1620

32. 2160

33. 28

34. Always; the intersection of two planes is a line, and a line contains at least two points.

35. If two angles form a linear pair, then the sum of their measures is 180.

36. If a hurricane is Category 5, then trees, shrubs, and signs are blown down.

37. right; scalene

38. alternate interior

39. 125

40. $x = -6$, $y = 13$

41. $x = 30$, $y = 50$

42. $x = 18$, $y = 9$

43. $a = 3$, $b = 1$

44. $m\angle 1 = 18$, $m\angle 2 = 90$

45. $m\angle 1 = 85$

46. no

47. yes

48. no

49. $x = 3$; $LM = 7$, $LN = 7$, $MN = 13$

GEOMETRY - FIRST SEMESTER - REVIEW

50. $x = 7$; $FG = 12$, $GH = 12$, $FH = 12$

51. $x = 28$, $y = 23$; Use corresponding and supplementary angles.

52. $\overline{QR}, \overline{QV}, \overline{TU}, \overline{UZ}$

53. $\overline{QU}, \overline{RS}, \overline{ST}, \overline{SX}, \overline{TU}, \overline{TY}, \overline{UZ}$

54. 90

55. 3

56. point

57. plane S

58. $\overline{DH} > \overline{GH}$

59. $\overline{DE} > \overline{EG}$

60. No; the angles are adjacent.

61. No; $m\angle NQP$ is not known to be 90°.

62. right

63. 15

64. 54

65. 13

66. 4

67. $\angle 4$

68. $\angle 1$

69. 37

70. 32

71. $\angle 3$

72. True

73. $-\dfrac{1}{2}$

74. -4

75. $ST > SR$

76. perpendicular

77. $\dfrac{2}{3}$

GEOMETRY - FIRST SEMESTER - REVIEW

78. $m\angle R = 128$, $m\angle S = 52$, $m\angle T = 128$, $m\angle U = 52$

79. 12; Corresponding Angles

80. triangle; 17.1 units; 8 square units

81. *b*; alternate exterior

82. *a*; alternate interior

83. The perimeter doubles.

84. (9, 0)

85. (2, –7)

86. 5

87. No; points *N*, *R*, and *S* lie in plane *A*, but point *W* does not.
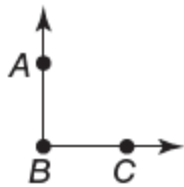
88. *S*, *X*, *M*

89. rotation

90. If a virus is a parasite, then it harms its host.

91. $m\angle 3 = 90$, $m\angle 4 = 31$, $m\angle 5 = 59$, Supplement and Complement Theorem

92. 90

93. 3

94. $\overrightarrow{BA} \perp \overrightarrow{BC}$

95. $y + 2 = -\dfrac{6}{5}(x + 5)$

96. $81,000

97. *P*

98. $\angle 5, \angle 7, \angle 8$

99. The shortest path would be a perpendicular segment from where they are to the bank of the canal.

100. $\angle FED$