Post-Test Answer Key Name Key

Class (circle one): Trig (Geometry) Algebra 2 Date _____

1. A
2. D
3. C
4. C
5. C
6. C
7. A
8. C
9. B
10. D
11. B
12. C
13. A
14. B
15. skip
16. B or D
17. B
18. C
19. A
20. B
21. D
22. B
23. A
24. D
25. D
26. B
27. A
28. A
29. B
30. C
31. D
32. B
33. D
34. D
35. C
36. C
37. D
38. D
39. C
40. B
41. B
42. D
43. A
44. C
45. D
46. B
47. A
48. C
49. A
50. D
51. B
52. B
53. 5
54. A
55. B
56. C
57. A
58. D
59. D
60. B
61. D
62. D
63. A
64. C
65. skip
66. D
67. C
68. B
69. C
70. ~~
71. ~~
72. ~~
73. ~~
74. ~~
75. ~~
76. ~~
77. ~~
78. ~~
79. ~~
80. ~~

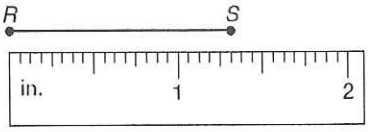
Geometry Pre Test September 2014

Enter the correct letter on your answer sheet.

PLEASE DO NOT WRITE ON TEST.

Key

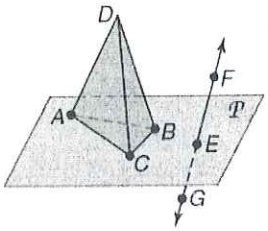
1. Find the length of $\overline{RS}$.



A. $1\frac{5}{16}$ in. B. $1\frac{3}{8}$ in.

C. $1\frac{7}{16}$ in. D. $1\frac{5}{8}$ in.

For Questions 2 and 3, use the figure at the right.



2. Which three points in the figure are collinear?

A. A, B, D B. E, C, A

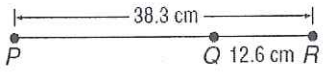
C. A, B, C D. F, E, G

3. Name the intersection of the plane $\mathcal{P}$ and the plane that contains points B, C, and D.

A. point B B. $\overline{BD}$

C. $\overline{BC}$ D. triangle BCD

4. Find the length of $\overline{PQ}$.

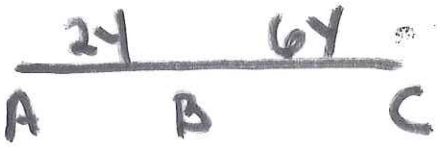


38.3 - 12.6

A. 50.9 cm B. 46.3 cm

C. 25.7 cm D. 21.3 cm

5. Find y if B is between A and C, AB is $2y$, BC is $6y$, and AC is 48.



A. 24 B. 8 C. 6 D. 4

6. Find the distance between $P(2, 8)$ and $Q(5, 3)$.

A. 9 B. $\sqrt{18}$ C. $\sqrt{34}$ D. $\sqrt{170}$

$\sqrt{(8-3)^2 + (2-5)^2} = \sqrt{25+9} = \sqrt{34}$

7. Find the coordinates of the midpoint of $\overline{LB}$ if $L(8, 5)$ and $B(-6, 2)$.

A. $\left(1, 3\frac{1}{2}\right)$ B. $\left(2, 1\frac{1}{2}\right)$ C. $\left(7, 3\frac{1}{2}\right)$ D. $\left(7, 1\frac{1}{2}\right)$

$\frac{5+2}{2} = \frac{7}{2} = 3.5$

$\frac{8+(-6)}{2} = 1$

Use the picture below and to the right to answer questions #8 - #12.

8. Which pair of angles are supplementary?

A. $\angle ABE, \angle CBD$ B. $\angle ABC, \angle ABD$ C. $\angle ABC, \angle CBD$ D. $\angle ABC, \angle EBD$

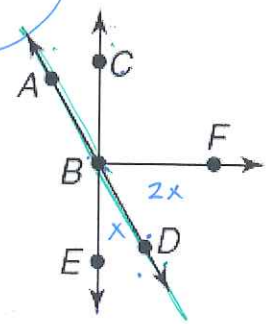
9. Which angle is a vertical angle to $\angle ABE$?

A. $\angle DBE$ B. $\angle CBD$ C. $\angle ABC$ D. $\angle EBA$

10. If $m\angle CBF = 6x + 18$, find x so that $CB \perp BF$.

A. 90 B. 45 C. 18 D. 12

$6x+18=90$
$6x=72$
$x=12$



11. Find $m\angle ABC$ if $m\angle ABC = 4x + 9$ and $m\angle EBD = 7x - 9$.

A. 6 B. 33 C. 45 D. 73

$4x+9=7x-9$
$18=3x$
$x=6$
$4(6)+9$
33

12. Find $m\angle FBD$ if $\angle FBD$ and $\angle DBE$ are complementary and $m\angle FBD$ is twice $m\angle DBE$.

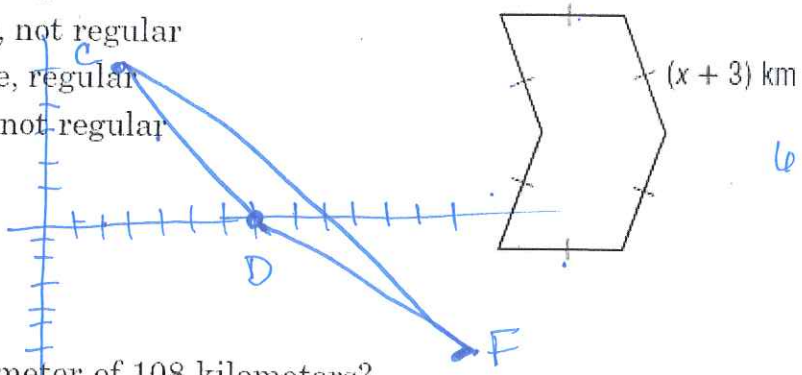
A. 30 B. 45
C. 60 D. 90

$2x+x=90$
$3x=90$
$x=30$

Use the polygon picture at the right to answer #13 and #14.

13. Which describes this figure?

A. hexagon, concave, not regular
B. pentagon, concave, regular
C. hexagon, convex, not regular
D. not a polygon

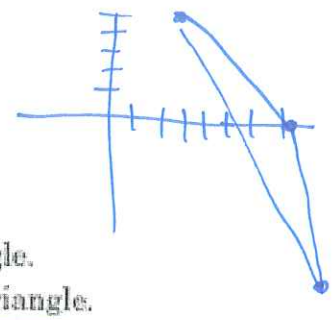


6 sides

14. What is x for a perimeter of 108 kilometers?

A. 53 B. 15 C. 18 D. 105

$6(x+3)=108$
$x+3=18$
$x=15$



15. Given $C(2, 5)$, $D(7, 0)$, and $F(13, -6)$, which of the following is a true conjecture?

A. $\triangle CDF$ is a right triangle. B. $\triangle CDF$ is an isosceles triangle.
C. $\triangle CDF$ is an equilateral triangle. D. C, D, and F do not form a triangle.

$CD=\sqrt{25+25}=\sqrt{50}$ $CF=\sqrt{11^2+11^2}=\sqrt{242}$ $DF=\sqrt{36+36}=\sqrt{72}$

16. **Given:** $|n|$ is a positive number. **Conjecture:** n is a negative number. Which of the following would be a counterexample?

A. -10 B. 0 C. -1 D. 10

17. If p is true and q is false, what is the truth value of p and q?

A. true B. false C. 0 D. 1

18. Identify the conclusion of the statement *Sue will watch the Rose Bowl if today is January 1st.*

A. today is January 1st
B. today is not January 1st
C. Sue will watch the Rose Bowl
D. Sue will not watch the Rose Bowl

19. Which law can be used to determine that statement (3) is a valid conclusion to statements (1) and (2)?

(1) If an angle is acute, then it cannot be obtuse.
(2) $\angle A$ is acute.
(3) $\angle A$ cannot be obtuse.

A. Law of Detachment
B. Law of Syllogism
C. Law of Converse
D. Statement (3) does not follow.

20. Which law can be used to determine that statement (3) is a valid conclusion of statements (1) and (2)?

(1) If a figure has 4 right angles, then the figure is a rectangle.
(2) A rectangle has 2 pairs of parallel sides.
(3) If a figure has 4 right angles, then the figure has 2 pair of parallel sides.

A. Law of Detachment
B. Law of Syllogism
C. Law of Converse
D. Statement (3) does not follow.

21. Identify the inverse of the statement.

If $x = 5$, then $x + 8 = 13$.

A. If $x + 8 = 13$, then $x = 5$.
B. $x = 5$ and $x + 8 = 13$.
C. If $x + 8 \neq 13$, then $x5$.
D. If $x \neq 5$, then $x + 8 \neq 13$.

22. Identify the contrapositive of the following statement.

If $x = 2$, then $x + 3 = 5$.

A. If $x + 3 = 5$, then $x = 2$.
B. If $x + 3 \neq 5$, then $x \neq 2$.
C. If $x \neq 2$. then $x + 3 \neq 5$.
D. $x = 2$ and $x + 3 = 5$.

23. Choose the property that justifies the statement $m\angle A = m\angle A$.

A. Reflexive **B.** Symmetric **C.** Transitive **D.** Substitution

24. Choose the property that justifies the following statement.
If $x = 2$ and $x + y = 3$, then $2 + y = 3$.

A. Reflexive **B.** Symmetric **C.** Transitive **D.** Substitution

25. What property belongs in reason #4 in the proof below?

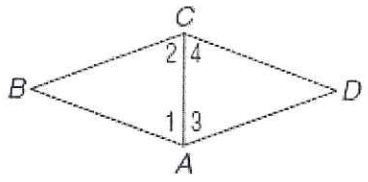
If $2x - 7 = 4$, then $x = \frac{11}{2}$.

Statements	Reasons
1. $2x - 7 = 4$	1. Given
2. $2x - 7 + 7 = 4 + 7$	2. Addition Property
3. $2x = 11$	3. Substitution
4. $\frac{2x}{2} = \frac{11}{2}$	4. _____
5. $x = \frac{11}{2}$	5. Substitution

A. Transitive Property
B. Multiplication Property
C. Congruence Property
D. Division Property

26. What belongs in reason #4 in the proof below?

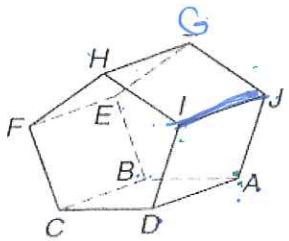
Given: $\overline{AC}$ bisects $\angle BAD$.
$\overline{AC}$ bisects $\angle BCD$.
$\angle 1 \cong \angle 2$
Prove: $\angle 3 \cong \angle 4$



Statements	Reasons
1. $\overline{AC}$ bisects $\angle BAD$.	1. Given
2. $\overline{AC}$ bisects $\angle BCD$.	2. Given
3. $\angle 1 \cong \angle 2$	3. Given
4. $\angle 1 \cong \angle 3$ and $\angle 2 \cong \angle 4$	4.
5. $\angle 3 \cong \angle 4$	5.

A. Transitive Property
B. Definition of Angle Bisector
C. Definition of Congruence
D. Angle Addition Postulate

Use the picture to the right for #34 & 35.



34. Which segment is skew to $\overline{IJ}$?

A. $\overline{GH}$ B. $\overline{AJ}$
C. $\overline{HI}$ D. $\overline{AB}$

35. Which plane is parallel to plane CDF?

A. BEF B. HIJ
C. ABE D. ABC

36. The intersection of two planes could be a _____.

A. segment B. plane
C. line D. point

Use the picture to the right for #37 - #44

37. If $m\angle 4 = 7x - 20$ and $m\angle 8 = 5x + 18$, find x so that $p \parallel q$.

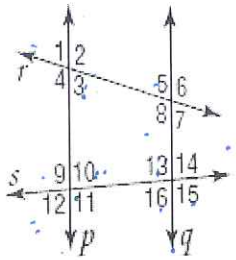
A. -19 B. -1 C. 1 D. 19

$7x - 20 = 5x + 18$

$2x = 38$

$x = 19$

38. Describe the relationship between the following angles:



$\angle 9$ and $\angle 13$

A. alternate exterior B. alternate interior
C. consecutive interior D. corresponding

39. Describe the relationship between the following angles:

$\angle 3$ and $\angle 10$

A. alternate exterior B. alternate interior
C. consecutive interior D. corresponding

40. If $p \parallel q$ by the Consecutive Interior Angles Theorem, which angle pair must be supplementary?

A. $\angle 3$ and $\angle 10$ B. $\angle 3$ and $\angle 8$ C. $\angle 8$ and $\angle 13$ D. $\angle 15$ and $\angle 16$

41. Given $p \parallel q$ and $m\angle 3 = 75$, find $m\angle 5$.

A. 15 B. 75 C. 105 D. 120

42. Given $p \parallel q$ and $m\angle 10 = 3x - 7$ and $m\angle 13 = 4x - 9$, find x.

A. -2 B. 2 C. 16 D. 28

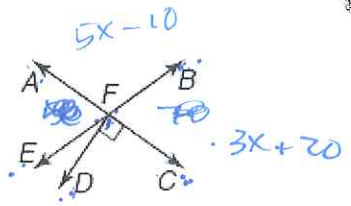
$3x - 7 + 4x - 9 = 180$

$7x = 196$ $x = 28$

27. What property belongs in reason #5 in the proof from #26?

A. Substitution
B. Definition of Angle Bisector
C. Definition of Congruence
D. Reflexive Property

Use the picture to the right for #28 - #30.



28. If m∠AFE = 56, find m∠BFC.

A. 56
B. 34
C. 124
D. 146

29. If $m\angle BFC = 70$, find $m\angle EFD$.

A. 10
B. 20
C. 35
D. 70

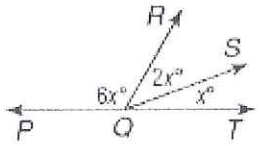
90+70 = 160

30. If $m\angle AFB = 5x - 10$ and $m\angle BFC = 3x + 20$, find x.

A. 10
B. 15
C. 21.25
D. 3.75

5x − 10 + 3x + 20 = 180
8x + 10 = 180
8x = 170
x = 21.25

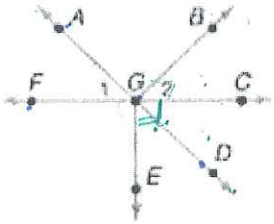
31. Find x.



6x + 2x + x = 180
9x = 180
x = 20

A. 22.5
B. 10
C. 30
D. 20

32. Which of the following best describes $\angle AGF$?



A. Obtuse
B. Acute
C. Right
D. Straight

33. Name a pair of angles that are adjacent and complementary in the picture in #32.

A. $\angle FGE$
B. $\angle BGC$ and $\angle CGD$
C. $\angle FGA$ and $\angle AGB$
D. $\angle CGD$ and $\angle DGE$

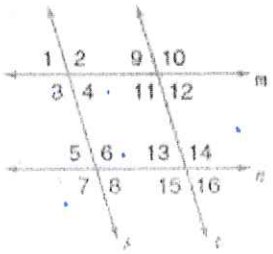
43. Given $\angle 1 \cong \angle 5$, which postulate or theorem justifies that $p \parallel q$?

A. Corresponding Angles Postulate
B. Consecutive Interior Angles Theorem
C. Alternate Exterior Angles Theorem
D. Alternate Interior Angles Theorem

44. If $\angle 12 \cong \angle 14$, which postulate or theorem justifies that $p \parallel q$?

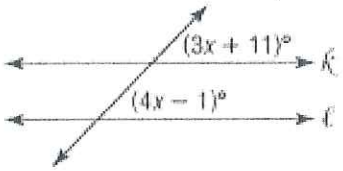
A. Corresponding Angles Postulate
B. Consecutive Interior Angles Theorem
C. Alternate Exterior Angles Theorem

45. Refer to the figure below. Which statement is false?



A. m is a transversal for s and t.
B. $\angle 3$ and $\angle 6$ are alternate interior angles.
C. $\angle 7$ and $\angle 14$ are alternate exterior angles.
D. $\angle 4$ and $\angle 9$ are corresponding angles.

46. Find x so that $k \parallel \ell$.

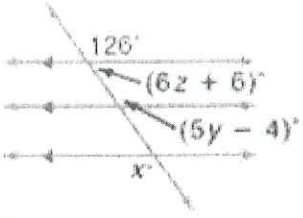


A. 24.3
B. 12
C. 45.3
D. 10

$3x + 11 = 4x - 1$

$12 = x$

47. Determine the value of z.



$6z + 132 = 180$

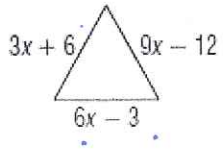
$6z = 48$

$z = 8$

A. 8
B. 6
C. 20
D. 48

$3x+6 = 6x-3$
$9 = 3x$ $x = 3$

48. What is the length of the sides of this equilateral triangle?



A. 42 B. 30
C. 15 D. 12

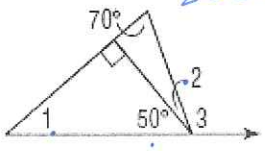
Use the picture at the right for #49 & 50.

49. What is $m\angle 1$?

A. 40 B. 50 C. 70 D. 90

50. What is $m\angle 3$?

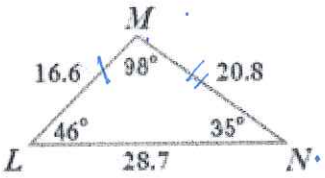
A. 40 B. 70 C. 90 D. 110

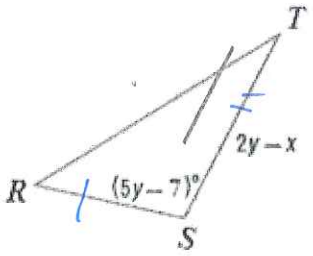


$2 = 20$

51.

In the diagram, $\triangle LMN \cong \triangle RST$. Find the values of x and y.





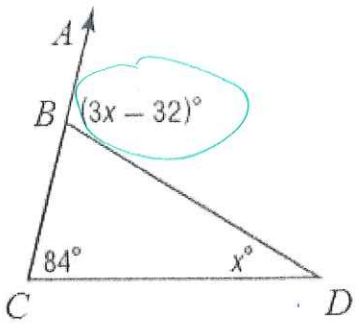
$5y - 7 = 98$
$5y = 105$
$y = 21$

$42 - x = 20.8$
$x = 21.2$

A. $x = 18, y = 15.6$
B. $x = 21, y = 21.2$
C. $x = 20, y = 24.2$
D. $x = 14, y = 13.8$

52.

Find the measure of $\angle ABD$ using the triangle shown.



$84 + x = 3x - 32$

$116 = 2x$

$x = 58$

A. 137°

B. 142°

C. 132°

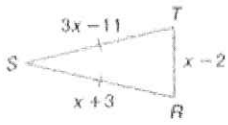
D. 129°

$3(58) - 32$

142

53.

Triangle RST is isosceles with $\angle S$ as the vertex angle. If $ST = 3x - 11$, $SR = x + 3$, and $RT = x - 2$, find RT.



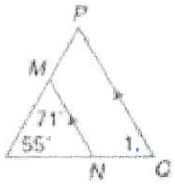
$3x - 11 = x + 3$

$2x = 14$

$x = 7$

$RT = 5$

54. If $\overline{MN}$ is parallel to $\overline{PQ}$, what is $m\angle 1$?



A. 54

B. 126

C. 71

D. 109

55. What is the slope of a line parallel to the line containing $(-6, 1)$ and $(3, -2)$?

A. -3

B. $-\frac{1}{3}$

C. $\frac{1}{3}$

D. 3

$-6 \quad 1$

$-3 \quad -2$

$-9 \quad 3$

$-\frac{1}{3}$

56.

Which is an equation of the line with slope 4 and a y-intercept -3?

A. $y = -3x + 4$ B. $y = -3x + \frac{3}{4}$ C. $y = 4x - 3$ D. $y = 4x - \frac{3}{4}$

57.

Which is an equation of the line with slope 2 that contains (3, 1)?

A. $y - 1 = 2(x - 3)$ B. $y + 1 = 2(x + 3)$

C. $y - 3 = 2(x - 1)$ D. $y - 3 = (x - 2)$

$(y - y_1) = m(x - x_1)$

$y - 1 = 2(x - 3)$

58.

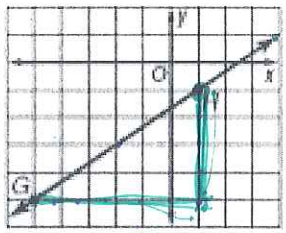
Find the slope of a line that is perpendicular to $\overline{GH}$.

A. $\frac{2}{3}$ B. $\frac{3}{2}$

C. $-\frac{2}{3}$ D. $-\frac{3}{2}$

$\frac{4}{6} = \frac{2}{3}$

$-3/2$



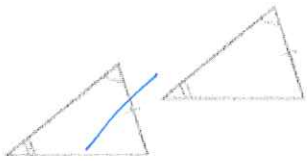
4

6

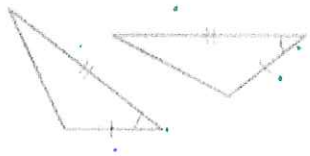
59.

Which pair of triangles is congruent by the ASA Postulate?

A.

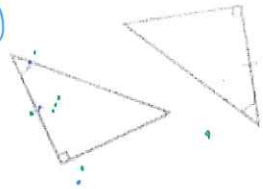


B.



C.

D.



60.

Which postulate or theorem can be used to prove that the two triangles shown are congruent?

A. SSS Postulate

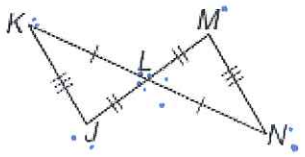
B. SAS Postulate

C. AAS Theorem

D. ASA Postulate

KLJ NLM

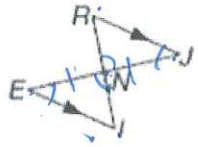
61. Which triangles are congruent in the figure?



A. $\triangle KLJ \cong \triangle MNL$ B. $\triangle JLK \cong \triangle NLM$

C. $\triangle JKL \cong \triangle LMN$ D. $\triangle JKL \cong \triangle MNL$

Use the proof below to answer questions #62 & 63.



Given: $\overline{RJ} \parallel \overline{EI}$; $\overline{RI}$ bisects $\overline{JE}$.
Prove: $\triangle RJN \cong \triangle IEN$

Statements	Reasons
1. $\overline{RJ} \parallel \overline{IE}$	1. Given
2. $\angle RJN \cong \angle IEN$ A	2. Alt int ∠'s ≅
3. $\overline{RI}$ bisects $\overline{JE}$.	3. Given
4. $\overline{JN} \cong \overline{EN}$ S	4. Definition of bisector
5. $\angle RNJ \cong \angle INE$ A	5. Vert. ∠ are ≅.
6. $\triangle RJN \cong \triangle IEN$	6.

62. What is the reason for statement 2 in the proof?

A. Isosceles Triangle Theorem B. same side interior angles

C. corresponding angles D. Alternate Interior Angle Theorem

63. What is the reason for statement 6?

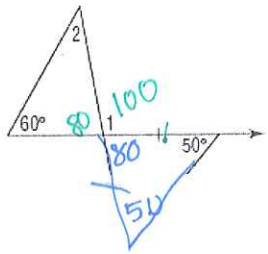
A. ASA B. AAS C. SAS D. SSS

Use the picture to the right for #64 & 65.

64. What is $m\angle 1$?

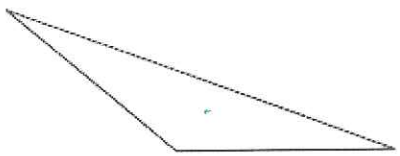
A. 50 B. 60

C. 100 D. 105



65.

66. What is the best classification for this triangle?



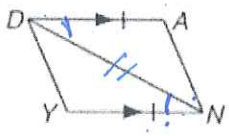
A. acute scalene

B. obtuse equilateral

C. acute isosceles

D. obtuse isosceles

Use the proof below to answer #67 & 68.



Given: $\overline{DA} \parallel \overline{YN}$; $\overline{DA} \cong \overline{YN}$
Prove: $\angle NDY \cong \angle DNA$

Statements	Reasons
1. $\overline{DA} \parallel \overline{YN}$	1. Given
2. $\angle ADN \cong \angle YND$	2. Alt. int. $\angle$s are $\cong$.
3. $\overline{DA} \cong \overline{YN}$	3. Given
4. $\overline{DN} \cong \overline{DN}$	4. Reflexive Property
5. $\triangle NDY \cong \triangle DNA$	5. ~~ASA~~ SAS
6. $\angle NDY \cong \angle DNA$	6. CPCTC

67.

What is the reason for statement 5?

A. ASA
B. AAS
C. SAS
D. SSS

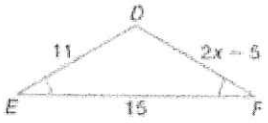
68.

What is the reason for statement 6?

A. Alt. int. $\angle$s are $\cong$.
B. CPCTC
C. Corr. angles are $\cong$.
D. Isosceles Triangle Theorem

69.

Find the value of x.



$2x - 5 = 11$
$2x = 16$
$x = 8$

A. 10
B. 3
C. 8
D. 9

70. Order the steps for writing an indirect proof.

(1) Show that the assumption leads to a contradiction of the hypothesis or some other fact, such as a postulate, theorem, or corollary.
(2) Assume that the conclusion is false.
(3) Point out that the assumption must be false and, therefore, the conclusion must be true.