

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Evaluate the algebraic expression for the given value or values of the variable(s).

1) $8x + 3$; $x = 2$ 1) _____
 A) 32 B) 19 C) 13 D) 11

2) $3x + 6$; $x = -3$ 2) _____
 A) -15 B) -3 C) 3 D) 15

3) $2(x + 3) + 17$; $x = -11$ 3) _____
 A) 55 B) 1 C) -21 D) -1

4) $4x^2 + 8y$; $x = 7$ and $y = 9$ 4) _____
 A) 856 B) 380 C) 2052 D) 268

5) $(x + 4y)^2$; $x = 2$ and $y = 2$ 5) _____
 A) 20 B) 100 C) 36 D) 10

6) $6 + 5(x - 2)^3$; $x = 4$ 6) _____
 A) 88 B) 16 C) -34 D) 46

7) $x^2 - 3(x - y)$; $x = 8$ and $y = 2$ 7) _____
 A) 38 B) 46 C) -82 D) 42

8) $\frac{7(x + 1)}{2x + 4}$; $x = 5$ 8) _____
 A) 3 B) $\frac{7}{2}$ C) 6 D) 2

9) $\frac{y - 2x}{3x + xy}$; $x = -4$ and $y = 1$ 9) _____
 A) $-\frac{9}{16}$ B) $-\frac{1}{16}$ C) $\frac{7}{16}$ D) $\frac{7}{8}$

Solve.

10) The formula $C = \frac{5}{9}(F - 32)$ expresses the relationship between Fahrenheit temperature, F, and Celsius temperature, C. Use the formula to convert 86°F to its equivalent temperature on the Celsius scale. 10) _____
 A) 97°C B) 66°C C) 6°C D) 30°C

- 11) A stone is dropped from a tower that is 740 feet high. The formula $h = 740 - 16t^2$ describes the stone's height above the ground, h , in feet, t seconds after it was dropped. What is the stone's height 5 seconds after it is released? 11) _____
 A) 315 ft B) 350 ft C) 365 ft D) 340 ft
- 12) If a rock falls from a height of 70 meters above the ground, the height H (in meters) after x seconds can be approximated using the formula $H = 70 - 4.9x^2$. What is the height of the rock after 3 seconds? 12) _____
 A) 25.9 m B) -146.09 m C) 55.3 m D) 585.9 m
- 13) As the relative humidity increases, the temperature seems higher than it is. The formula $T = 0.101x + 82.57$ approximates the apparent temperature for an actual temperature of 90°F , where x is the relative humidity. What is the apparent temperature (to the nearest degree) for a relative humidity of 80%? 13) _____
 A) 83°F B) 163°F C) 667°F D) 91°F
- 14) The winning times (in seconds) in a speed-skating event for men can be represented by the formula $T = 46.97 - 0.099x$, where x represents the year, with $x = 0$ corresponding to 1920. (For example in 1992, x would be $1992 - 1920 = 72$.) According to the formula, what was the winning time in 1997? Round to the nearest hundredth. 14) _____
 A) 40.34 sec B) 41.33 sec C) 3609.07 sec D) 39.35 sec
- 15) It is estimated that y , the number of items of a particular commodity (in millions) sold in the United States in year x , where x represents the number of years since 1990, is given by the formula $y = 1.23x + 4.5$. That is, $x = 0$ represents 1990, $x = 1$ represents 1991, and so on. According to the formula, how many items sold in 1996? 15) _____
 A) 11.88 millions B) 34.38 millions C) 4.5 millions D) 13.11 millions

Find the intersection of the two sets.

- 16) $\{1, 7, 4, 9\} \cap \{4, 6, 1\}$ 16) _____
 A) $\{1\}$ B) $\{1, 4, 9, 7, 6\}$ C) $\{1, 4\}$ D) $\emptyset$
- 17) $\{1, 3, 9\} \cap \{5, 6\}$ 17) _____
 A) $\{1, 5, 9, 3, 6\}$ B) $\emptyset$ C) $\{1, 9\}$ D) $\{3, 9\}$
- 18) $\{6, 8, 9, 11\} \cap \emptyset$ 18) _____
 A) $\{6, 8, 9, 11\}$ B) $\emptyset$ C) $\{9, 11\}$ D) $\{6, 8\}$

Find the union of the two sets.

- 19) $\{1, 4, 8, 11\} \cup \{1, 4, 13\}$ 19) _____
 A) $\{1, 4\}$ B) $\{1, 4, 8, 11, 13\}$ C) $\emptyset$ D) $\{8, 11, 13\}$
- 20) $\{1, 11\} \cup \{1, 4, 9\}$ 20) _____
 A) $\{1, 4, 9, 11\}$ B) $\{4, 9, 11\}$ C) $\{1\}$ D) $\emptyset$
- 21) $\{4, 6, 7, 9\} \cup \emptyset$ 21) _____
 A) $\{4, 6\}$ B) $\emptyset$ C) $\{4, 6, 7, 9\}$ D) $\{7, 9\}$

List all numbers from the given set B that are members of the given Real Number subset.

22) $B = \{6, \sqrt{7}, -11, 0, 0.\overline{9}, \sqrt{9}\}$ Integers 22) _____
 A) $6, 0, \sqrt{9}$ B) $6, 0$ C) $6, -11, 0, \sqrt{9}$ D) $6, -11, 0$

23) $B = \{17, \sqrt{7}, -15, 0, 0.\overline{7}, \sqrt{9}\}$ Whole numbers 23) _____
 A) $17, 0, \sqrt{9}$ B) $17, 0$ C) $17, -15, 0, \sqrt{9}$ D) $17, -15, 0$

24) $B = \{17, \sqrt{5}, -18, 0, 0.\overline{8}, \sqrt{4}\}$ Natural numbers 24) _____
 A) $17, \sqrt{4}$ B) $17, 0$ C) $17, 0, \sqrt{4}$ D) 17

25) $B = \{14, \sqrt{6}, -19, 0, \frac{5}{6}, \sqrt{16}, 0.\overline{8}, 0.62\}$ Rational numbers 25) _____
 A) $14, -19, 0, \frac{5}{6}, \sqrt{16}, 0.62, 0.\overline{8}$ B) $\sqrt{6}, \sqrt{16}$
 C) $\sqrt{6}, \frac{5}{6}, 0.62$ D) $14, 0, \sqrt{16}$

26) $B = \{3, \sqrt{8}, -15, 0, \frac{4}{5}, \sqrt{4}, 0.\overline{6}, 0.7\}$ Irrational numbers 26) _____
 A) $\sqrt{8}$ B) $\sqrt{8}, \sqrt{4}, 0.7$ C) $\sqrt{8}, 0.\overline{6}$ D) $\sqrt{8}, \sqrt{4}, 0.\overline{6}$

27) $B = \{5, \sqrt{8}, 0, \frac{5}{6}, \sqrt{16}, -0.\overline{9}, 0.17, -11\}$ Real numbers 27) _____
 A) $5, \sqrt{8}, \frac{5}{6}, \sqrt{16}, -0.\overline{9}, 0.17, -11$ B) $5, 0, \frac{5}{6}, -0.\overline{9}, 0.17, -11$
 C) $5, \sqrt{8}, 0, \frac{5}{6}, \sqrt{16}, 0.17$ D) $5, \sqrt{8}, 0, \frac{5}{6}, \sqrt{16}, -0.\overline{9}, 0.17, -11$

Determine whether the statement is true or false.

28) $12 > 21$ 28) _____
 A) True B) False

29) $14 \geq 4$ 29) _____
 A) True B) False

30) $-26 < 0$ 30) _____
 A) True B) False

31) $19 < -8$ 31) _____
 A) True B) False

32) $16 \leq 11$ 32) _____
 A) True B) False

33) $-7 \leq 7$ 33) _____
 A) False B) True

- 34) $12 > 2$ 34) _____
 A) True B) False
- 35) $-2 \geq 6$ 35) _____
 A) False B) True
- 36) $-\pi \geq -\pi$ 36) _____
 A) True B) False
- 37) $\pi < 3$ 37) _____
 A) False B) True

Rewrite the expression without absolute value bars.

- 38) $|9|$ 38) _____
 A) 0 B) 18 C) 9 D) -9
- 39) $|-7|$ 39) _____
 A) 14 B) 7 C) -7 D) 0
- 40) $\frac{10}{|1|}$ 40) _____
 A) 1 B) -10 C) 10 D) -1
- 41) $|\sqrt{6} - 17|$ 41) _____
 A) $17 - \sqrt{6}$ B) 11 C) $\sqrt{6} - 17$ D) -11
- 42) $|3 + (-8)|$ 42) _____
 A) -11 B) 11 C) 5 D) -5
- 43) $||-4| - |-8||$ 43) _____
 A) 12 B) -12 C) -4 D) 4
- 44) $||-1| + |-4||$ 44) _____
 A) -5 B) -3 C) 5 D) 3

Evaluate the expression for the given values of x and y.

- 45) $\frac{|x|}{x} + \frac{|y|}{y}$; $x = 2$ and $y = -1$ 45) _____
 A) 0 B) 2 C) -1 D) 1

Express the distance between the given numbers using absolute value. Then find the distance by evaluating the absolute value expression.

- 46) 38 and 96 46) _____
 A) $-|38 + 96| = -134$ B) $|38 - 96| = 58$
 C) $|38 + 96| = 134$ D) $-|96 - 38| = -58$
- 47) -59 and -73 47) _____
 A) $|(-73) + (-59)| = -132$ B) $|(-73) - (-59)| = -14$
 C) $|(-59) - (-73)| = 14$ D) $-(-59) + (-73) = 132$

48) 89 and -90

- A) $|-89 + (-90)| = 1$
C) $|89 + (-90)| = -1$

- B) $|(-90) - 89| = -179$
D) $|89 - (-90)| = 179$

48) _____

49) 33.2 and 45.5

- A) $|33.2 - 45.5| = 12.3$
C) $|-33.2 + 45.5| = -78.7$

- B) $|45.5 - 33.2| = -12.3$
D) $|33.2 + 45.5| = 78.7$

49) _____

50) -45.1 and 40.5

- A) $|40.5 + (-45.1)| = -85.6$
C) $|40.5 - (-45.1)| = -4.6$

- B) $|-45.1 - 40.5| = 85.6$
D) $|-45.1 + (-40.5)| = 4.6$

50) _____

51) 8.2 and 17.9

- A) $|8.2 - 17.9| = 9.7$
C) $|17.9 - 8.2| = -9.7$

- B) $-|8.2 + 17.9| = -26.1$
D) $|17.9 + 8.2| = 26.1$

51) _____

State the name of the property illustrated.

52) $6 + (-9) = (-9) + 6$

- A) Distributive property of multiplication over addition
B) Associative property of addition
C) Commutative property of addition
D) Identity property of addition

52) _____

53) $17 \cdot (6 + 3) = 17 \cdot 6 + 17 \cdot 3$

- A) Commutative property of multiplication
B) Distributive property of multiplication over addition
C) Commutative property of addition
D) Associative property of multiplication

53) _____

54) $18 + (15 + 9) = (18 + 15) + 9$

- A) Identity property of addition
B) Commutative property of addition
C) Associative property of addition
D) Distributive property of multiplication over addition

54) _____

55) $(5 + 9) + 6 = (9 + 5) + 6$

- A) Associative property of addition
B) Distributive property of multiplication over addition
C) Inverse property of addition
D) Commutative property of addition

55) _____

56) $7 \cdot (2 \cdot 12) = 7 \cdot (12 \cdot 2)$

- A) Commutative property of multiplication
B) Distributive property of multiplication over addition
C) Associative property of multiplication
D) Identity property of multiplication

56) _____

57) $(6 + 1) + (3 + 16) = (3 + 16) + (6 + 1)$ 57) _____
 A) Inverse property of addition
 B) Distributive property of multiplication over addition
 C) Commutative property of addition
 D) Associative property of addition

58) $7 \cdot (18 \cdot 1) = (18 \cdot 1) \cdot 7$ 58) _____
 A) Associative property of multiplication
 B) Distributive property of multiplication over addition
 C) Identity property of multiplication
 D) Commutative property of multiplication

59) $(1 \cdot 14) \cdot 5 = 1 \cdot (14 \cdot 5)$ 59) _____
 A) Associative property of multiplication
 B) Commutative property of multiplication
 C) Identity property of multiplication
 D) Distributive property of multiplication over addition

60) $5(x + 3) = 5x + 5 \cdot 3$ 60) _____
 A) Commutative property of multiplication
 B) Associative property of multiplication
 C) Distributive property of multiplication over addition
 D) Identity property of multiplication

61) $6(-6 + 4) = -36 + 24$ 61) _____
 A) Associative property of multiplication
 B) Commutative property of multiplication
 C) Associative property of addition
 D) Distributive property of multiplication over addition

62) $-7(2 + 5) = -14 + (-35)$ 62) _____
 A) Associative property of multiplication
 B) Distributive property of multiplication over addition
 C) Associative property of addition
 D) Commutative property of multiplication

63) $\frac{1}{(x + 2)}(x + 2) = 1, x \neq -2$ 63) _____
 A) Commutative property of multiplication
 B) Inverse property of addition
 C) Identity property of multiplication
 D) Inverse property of multiplication

64) $(x + 8) + [- (x + 8)] = 0$ 64) _____
 A) Identity property of multiplication
 B) Inverse property of addition
 C) Commutative property of addition
 D) Inverse property of multiplication

Simplify the algebraic expression.

65) $-9(5r + 8) + 2(10r + 9)$ 65) _____
 A) $-25r + 8$ B) $-25r - 54$ C) $-4r - 1$ D) $-117r$

66) $(9z + 10) - (2z - 8)$

A) $11z + 18$

B) $7z - 18$

C) $7z + 2$

D) $7z + 18$

66) _____

67) $-3(2x - 10) - 4x + 9$

A) $10x + 39$

B) $-10x + 39$

C) $-10x - 21$

D) $2x + 39$

67) _____

Write the algebraic expression without parentheses.

68) $-(73w)$

A) $-73 - w$

B) $-73w$

C) $73w$

D) $73 - w$

68) _____

69) $-7(-5z)$

A) $-35z$

B) $35z$

C) $35 - 7z$

D) $35 + z$

69) _____

70) $-(6x - 2)$

A) $12x$

B) $6x - 2$

C) $-6x - 2$

D) $-6x + 2$

70) _____

71) $-(-7 + 7y)$

A) $49y$

B) $7 + 7y$

C) $7 - 7y$

D) $-7 + 7y$

71) _____

72) $-(6z - 7w + 3y)$

A) $-6z - 7w - 3y$

B) $-6z + 7w + 3y$

C) $-6z + 7w - 3y$

D) $-6z - 7w + 3y$

72) _____

73) $\frac{1}{5}(5x) + [(-3x) + (3x)]$

A) x

B) $7x$

C) 1

D) $-5x$

73) _____

Evaluate the exponential expression.

74) $3^3 \cdot 10$

A) $27,000$

B) 90

C) 270

D) 37

74) _____

75) $(-7)^3$

A) 21

B) -343

C) 343

D) -21

75) _____

76) -3^4

A) -81

B) 81

C) -12

D) 12

76) _____

77) 9^0

A) 0

B) -1

C) 1

D) 9

77) _____

78) $(-7)^0$

A) 1

B) -1

C) 7

D) 0

78) _____

79) -6^0

A) 1

B) 0

C) -1

D) 6

79) _____

80) 3^{-4} 80) _____
 A) -81 B) 81 C) $\frac{1}{81}$ D) $\frac{1}{12}$

81) $(-3)^{-4}$ 81) _____
 A) $-\frac{1}{81}$ B) -81 C) 81 D) $\frac{1}{81}$

82) -2^{-4} 82) _____
 A) -16 B) $\frac{1}{8}$ C) 16 D) $-\frac{1}{16}$

83) $9^6 \cdot 9^9$ 83) _____
 A) 9^{54} B) 81^{54} C) 9^{15} D) 81^{15}

84) $(4^2)^3$ 84) _____
 A) 1024 B) 4096 C) 48 D) 24

85) $(4^2)^{-3}$ 85) _____
 A) -24 B) $\frac{1}{1024}$ C) -48 D) $\frac{1}{4096}$

86) $5^{-3} \cdot 5$ 86) _____
 A) $\frac{1}{25}$ B) 125 C) 25 D) $\frac{1}{125}$

87) $5^6 \cdot 5^{-7}$ 87) _____
 A) $-\frac{1}{5}$ B) $\frac{1}{5}$
 C) -5 D) 1.220703125e+09

88) $\frac{4^4}{4^2}$ 88) _____
 A) 240 B) $\frac{1}{16}$ C) 2 D) 16

Simplify the exponential expression.

89) $x \cdot x^6$ 89) _____
 A) x^6 B) $2x^6$ C) $2x^7$ D) x^7

90) $x^{-4}y$ 90) _____
 A) $-x^4y$ B) $\frac{y}{x^4}$ C) $\frac{1}{x^4y}$ D) $-\frac{y}{x^4}$

- 91) x^5y^0 91) _____
 A) 1 B) x^5 C) $\frac{1}{x^5}$ D) 0
- 92) $x^5 \cdot x^3$ 92) _____
 A) x^{15} B) $15x$ C) $8x$ D) x^8
- 93) $x^9 \cdot x^{-3}$ 93) _____
 A) x^6 B) $-x^6$ C) $\frac{1}{x^6}$ D) $-\frac{1}{x^6}$
- 94) $x^{-5} \cdot x^2$ 94) _____
 A) $\frac{1}{x^3}$ B) $-\frac{1}{x^3}$ C) $-x^3$ D) x^3
- 95) $(x^2)^7$ 95) _____
 A) $7x^{14}$ B) x^{14} C) x^9 D) $7x^2$
- 96) $(x^{-3})^6$ 96) _____
 A) $-3x^{18}$ B) $-x^{18}$ C) $\frac{1}{x^{18}}$ D) $-3x^6$
- 97) $(x^4)^{-6}$ 97) _____
 A) $-6x^{24}$ B) $-6x^4$ C) $-x^{24}$ D) $\frac{1}{x^{24}}$
- 98) $(x^{-5})^{-3}$ 98) _____
 A) $\frac{1}{x^8}$ B) $-x^8$ C) $\frac{1}{x^{15}}$ D) x^{15}
- 99) $\frac{x^{14}}{x^4}$ 99) _____
 A) x^{18} B) x^{10} C) x^6 D) $\frac{1}{x^{10}}$
- 100) $\frac{x^2}{x^5}$ 100) _____
 A) $\frac{1}{x^3}$ B) x^3 C) $-\frac{1}{x^3}$ D) $-x^3$

- 101) $\frac{x^{-7}}{x^2}$ 101) _____
 A) x^9 B) $\frac{1}{x^5}$ C) $\frac{1}{x^9}$ D) $\frac{1}{x^{14}}$
- 102) $\frac{x^{-5}}{y^{-2}}$ 102) _____
 A) $\frac{y^2}{x^5}$ B) $\frac{1}{x^5y^2}$ C) $\frac{x^5}{y^2}$ D) x^5y^2
- 103) $(2x)^4$ 103) _____
 A) $8x$ B) $16x$ C) $8x^4$ D) $16x^4$
- 104) $(-5x)^2$ 104) _____
 A) $-10x$ B) $25x^2$ C) $-10x^2$ D) $25x$
- 105) $(5x^4)^2$ 105) _____
 A) $25x^4$ B) $5x^8$ C) $25x^8$ D) $5x^6$
- 106) $-8y^0$ 106) _____
 A) -7 B) 1 C) -8 D) 0
- 107) $(7b)^0$ 107) _____
 A) b B) 1 C) 7 D) 0
- 108) $(x^9y)^4$ 108) _____
 A) $x^{13}y^5$ B) $x^{13}y$ C) $x^{36}y^4$ D) $x^{36}y$
- 109) $(6x^9)(7x^6)$ 109) _____
 A) $-42x^{54}$ B) $-42x^{15}$ C) $42x^{54}$ D) $42x^{15}$
- 110) $(-5x^3y)(-9x^6y^5)$ 110) _____
 A) $45x^9y^6$ B) $-14x^9y^5$ C) $-45x^9y^5$ D) $45x^{18}y^5$
- 111) $\frac{4x^7}{x^5}$ 111) _____
 A) $4x^{12}$ B) $16x^2$ C) $8x$ D) $4x^2$
- 112) $\frac{14x^{13}}{2x^4}$ 112) _____
 A) x^9 B) x^8 C) $7x^8$ D) $7x^9$

- 113) $\frac{-48x^7}{8x^{12}}$ 113) _____
 A) $\frac{-6}{x^5}$ B) $-6x^4$ C) $-6x^5$ D) $\frac{-6}{x^4}$
- 114) $\left(\frac{x}{4}\right)^3$ 114) _____
 A) $\frac{x^4}{256}$ B) $\frac{x^3}{4}$ C) $\frac{x}{4}$ D) $\frac{x^3}{64}$
- 115) $\left(-\frac{4}{x}\right)^2$ 115) _____
 A) $\frac{16}{x^2}$ B) $-\frac{16}{x^2}$ C) $\frac{4}{x^2}$ D) $\frac{16}{x}$
- 116) $\left(\frac{x^3}{4}\right)^2$ 116) _____
 A) $\frac{x^6}{4}$ B) $\frac{x^5}{16}$ C) $\frac{x^5}{4}$ D) $\frac{x^6}{16}$
- 117) $\left(\frac{-3x}{y}\right)^2$ 117) _____
 A) $\frac{-6x}{y}$ B) $\frac{9x}{y^2}$ C) $\frac{-6x^2}{y^2}$ D) $\frac{9x^2}{y^2}$
- 118) $\frac{x^{13}y^9}{x^{10}y^2}$ 118) _____
 A) x^2y^6 B) x^3y^7 C) xy^7 D) x^2y^7
- 119) $\frac{48x^{12}y^{10}}{8x^4y^2}$ 119) _____
 A) $6x^7y^8$ B) x^8y^8 C) $6x^8y^8$ D) $6x^7y^7$
- 120) x^2y^{-5} 120) _____
 A) y^5x^2 B) $\frac{x^2}{y^5}$ C) $y^{11}x^2$ D) $\frac{x^2}{y^{11}}$
- 121) $3x^{-8}y^5$ 121) _____
 A) $\frac{y^5}{3x^8}$ B) $\frac{3y^5}{x^8}$ C) $\frac{3}{x^8y^5}$ D) $\frac{3x^8}{y^5}$

$$122) \frac{x^8 y^{-5}}{z^{-9}} \quad 122) \underline{\hspace{2cm}}$$

$$A) \frac{x^8 z^5}{y^9}$$

$$B) \frac{z^9}{x^8 y^5}$$

$$C) \frac{x^8 z^9}{y^5}$$

$$D) \frac{y^5}{x^8 z^9}$$

$$123) \frac{35x^{11}y^{15}}{5x^{10}y^{-10}} \quad 123) \underline{\hspace{2cm}}$$

$$A) 7xy^5$$

$$B) 7x^{21}y^{25}$$

$$C) 7xy^{25}$$

$$D) 35xy^{25}$$

$$124) \frac{-36x^{13}y^{13}z^7}{4x^8y^6z^6} \quad 124) \underline{\hspace{2cm}}$$

$$A) -9x^4y^6z$$

$$B) -9x^5y^7z$$

$$C) x^5y^7z$$

$$D) -9x^5y^7$$

$$125) \left(\frac{-25x^{12}y^{10}}{5x^2y^3} \right)^0 \quad 125) \underline{\hspace{2cm}}$$

$$A) x^{10}y^7$$

$$B) 0$$

$$C) 1$$

$$D) -5x^{10}y^7$$

$$126) (-11x^8y^8)^2 \quad 126) \underline{\hspace{2cm}}$$

$$A) 121x^{16}y^{16}$$

$$B) 121x^{10}y^{10}$$

$$C) -121x^{16}y^{16}$$

$$D) -11x^{16}y^{16}$$

$$127) (6x^8)^{-2} \quad 127) \underline{\hspace{2cm}}$$

$$A) 36x^{16}$$

$$B) \frac{1}{36x^{16}}$$

$$C) \frac{36}{x^{16}}$$

$$D) \frac{1}{6x^{16}}$$

$$128) (x^{-4}y^6)^{-1} \cdot 1 \quad 128) \underline{\hspace{2cm}}$$

$$A) \frac{y^5}{x^{-5}}$$

$$B) \frac{x^{-5}}{y^5}$$

$$C) \frac{x^4}{y^6}$$

$$D) \frac{1}{x^4y^6}$$

$$129) (2x^{-7}y^4z^{-8})^{-1} \quad 129) \underline{\hspace{2cm}}$$

$$A) \frac{x^7z^8}{2y^4}$$

$$B) \frac{y^5}{-2x^8z^9}$$

$$C) \frac{y^5}{2x^8z^9}$$

$$D) \frac{x^7z^8}{-2y^{-4}}$$

$$130) \left(\frac{2x^3y^4}{z^4} \right)^2 \quad 130) \underline{\hspace{2cm}}$$

$$A) \frac{4x^5y^6}{z^6}$$

$$B) \frac{2x^6y^8}{z^6}$$

$$C) \frac{2x^6y^8}{z^8}$$

$$D) \frac{4x^6y^8}{z^8}$$

$$131) \left(\frac{-12x^{10}y^7}{6x^{14}y^{-2}} \right)^3 \quad 131) \underline{\hspace{2cm}}$$

A) $\frac{8y^{27}}{x^{12}}$ B) $\frac{-8y^{27}}{x^{12}}$ C) $\frac{-8}{x^{12}y^{27}}$ D) $\frac{-8y^{15}}{x^{12}}$

$$132) \left(\frac{x^{-3}}{y^6} \right)^{-3} \quad 132) \underline{\hspace{2cm}}$$

A) $\frac{1}{x^9y^{18}}$ B) $\frac{x^{-6}}{y^3}$ C) $\frac{y^3}{x^{-6}}$ D) x^9y^{18}

$$133) \left(\frac{4x^3}{y^2} \right)^{-5} \quad 133) \underline{\hspace{2cm}}$$

A) $\frac{1024x^{15}}{y^{10}}$ B) $\frac{y^{10}}{1024x^{15}}$ C) $\frac{1024y^{10}}{x^{15}}$ D) $\frac{y^2}{1024x^{15}}$

$$134) \frac{(4x^4)^3}{x^{15}} \quad 134) \underline{\hspace{2cm}}$$

A) $\frac{4}{x^3}$ B) $\frac{64}{x^{27}}$ C) $\frac{64}{x^3}$ D) $\frac{64}{x^8}$

$$135) (-4x^4y^{-5})(2x^{-1}y) \quad 135) \underline{\hspace{2cm}}$$

A) $\frac{-2x^3}{y^4}$ B) $\frac{-8x^3}{y^4}$ C) $-8x^3y^6$ D) $\frac{-8x^5}{y^6}$

$$136) \frac{2^{-8}x^{-4}y^2}{2^{-5}x^{-7}y^4} \quad 136) \underline{\hspace{2cm}}$$

A) $\frac{x^3}{8y^2}$ B) $\frac{1}{8x^7y^2}$ C) $\frac{8}{x^3y^2}$ D) $\frac{3x^3}{y^2}$

$$137) \left(\frac{xy^5}{x^3y} \right)^{-2} \quad 137) \underline{\hspace{2cm}}$$

A) $\frac{y^8}{x^4}$ B) $\frac{1}{x^8y^{12}}$ C) $\frac{x^4}{y^8}$ D) $\frac{1}{x^5y^{11}}$

$$138) \left(\frac{12x^{-5}y^{-3}z^4}{3xy^{-3}z^{-4}} \right)^{-1} \quad 138) \underline{\hspace{2cm}}$$

A) $\frac{4x^6}{z^8}$ B) $\frac{x^6}{4z^8}$ C) $\frac{x^6y^6}{4z^8}$ D) $\frac{x^4}{4z^8}$

Write the number in decimal notation without the use of exponents.

- | | | | | | |
|-----------------------------|----------------|-----------------|----------------|-----------------|------------|
| 139) 9×10^{-3} | A) 9000 | B) 0.09 | C) 0.009 | D) 900 | 139) _____ |
| 140) 2×10^3 | A) 0.002 | B) 2000 | C) 0.0002 | D) 20,000 | 140) _____ |
| 141) 1.19×10^7 | A) 11,900,000 | B) 83.3 | C) 1,190,000 | D) 119,000,000 | 141) _____ |
| 142) 7.34×10^{-4} | A) 0.000734 | B) -734,000 | C) 0.00734 | D) 0.0000734 | 142) _____ |
| 143) 2.714×10^{-6} | A) 0.000002714 | B) 0.00002714 | C) -2,714,000 | D) 0.0000002714 | 143) _____ |
| 144) -7.84×10^7 | A) -7,840,000 | B) -784,000,000 | C) -78,400,000 | D) 78,400,000 | 144) _____ |
| 145) -7.1039×10^5 | A) -71,039 | B) -710,390 | C) -7,103,900 | D) -355.195 | 145) _____ |

Write the number in scientific notation.

- | | | | | | |
|---------------------|----------------------------|--------------------------|----------------------------|-----------------------------|------------|
| 146) 7,781,440 | A) 7.78144×10^1 | B) 7.78144×10^6 | C) 7.78144×10^7 | D) 7.78144×10^{-6} | 146) _____ |
| 147) 36,000 | A) 3.6×10^{-4} | B) 3.6×10^3 | C) 3.6×10^4 | D) 3.6×10^{-3} | 147) _____ |
| 148) 52,000,000 | A) 5.2×10^{-7} | B) 5.2×10^7 | C) 5.2×10^6 | D) 5.2×10^{-6} | 148) _____ |
| 149) 8,546,930 | A) 8.54693×10^1 | B) 8.54693×10^6 | C) 8.54693×10^7 | D) 8.54693×10^{-6} | 149) _____ |
| 150) 0.000576 | A) 5.76×10^{-3} | B) 5.76×10^4 | C) 5.76×10^{-4} | D) 5.76×10^{-5} | 150) _____ |
| 151) 0.00002686 | A) 2.686×10^4 | B) 2.686×10^5 | C) 2.686×10^{-4} | D) 2.686×10^{-5} | 151) _____ |
| 152) 0.000000041701 | A) 4.1701×10^{-9} | B) 4.1701×10^8 | C) 4.1701×10^{-8} | D) 4.1701×10^{-7} | 152) _____ |

Perform the indicated computation. Write the answer in scientific notation.

153) $(9 \times 10^{-8})(2.1 \times 10^{-7})$ 153) _____
 A) 18.9×10^{-14} B) 1.89×10^{-14} C) 1.89×10^{56} D) 189×10^{-15}

154) $(2 \times 10^5)(3.6 \times 10^8)$ 154) _____
 A) 72×10^{13} B) 7.2×10^{14} C) 7.2×10^{40} D) 7.2×10^{13}

155) $\frac{10 \times 10^{-8}}{2 \times 10^{-3}}$ 155) _____
 A) 10×10^{-5} B) 5×10^{-5} C) 5×10^{-11} D) 10×10^{-11}

156) $\frac{14.05 \times 10^7}{5 \times 10^{-8}}$ 156) _____
 A) 5.62×10^{-1} B) 2.81×10^{-1} C) 5.62×10^{15} D) 2.81×10^{15}

157) $\frac{8.37 \times 10^{-3}}{3.1 \times 10^{-8}}$ 157) _____
 A) 5.4×10^{-11} B) 5.4×10^5 C) 2.7×10^{-11} D) 2.7×10^5

158) $\frac{80,000,000,000}{0.000004}$ 158) _____
 A) 2×10^{15} B) 4×10^{15} C) 4×10^{16} D) 2×10^{16}

159) $\frac{0.00016 \times 0.0003}{0.0008}$ 159) _____
 A) 48×10^{-6} B) 48×10^6 C) 6×10^5 D) 6×10^{-5}

Solve. Express the result in scientific notation. If necessary, round the decimal factor to two decimal places.

160) In a state with a population of 9,000,000 people, the average citizen spends \$6,000 on housing each year. What is the total spent on housing for the state? 160) _____
 A) $\$54 \times 10^{11}$ B) $\$5.4 \times 10^{10}$ C) $\$5.4 \times 10^9$ D) $\$54 \times 10^{10}$

161) Approximately 4×10^3 employees of a certain company average \$30,000 each year in salary. What is the total amount earned by all the employees of this company per year? 161) _____
 A) $\$1.2 \times 10^8$ B) $\$12 \times 10^8$ C) $\$12 \times 10^9$ D) $\$1.2 \times 10^9$

Evaluate the expression or indicate that the root is not a real number.

162) $\sqrt{4}$ 162) _____
 A) 16 B) $\frac{1}{4}$
 C) 2 D) Not a real number

163) $-\sqrt{361}$			163) _____
A) 19		B) -180	
C) -19		D) Not a real number	

164) $\sqrt{-144}$			164) _____
A) 12		B) 20,736	
C) $\frac{12}{144}$		D) Not a real number	

165) $\sqrt{64 + 36}$			165) _____
A) 100	B) $\sqrt{28}$	C) 10	D) 14

166) $\sqrt{169 - 25}$			166) _____
A) 144	B) 17	C) $\sqrt{119}$	D) 12

167) $\sqrt{64} + \sqrt{36}$			167) _____
A) $\sqrt{28}$	B) 10	C) 14	D) 100

168) $\sqrt{(3)^2}$			168) _____
A) $\frac{1}{9}$		B) 81	
C) 3		D) Not a real number	

169) $\sqrt{(-14)^2}$			169) _____
A) 196		B) -14	
C) 14		D) Not a real number	

Use the product rule to simplify the expression.

170) $\sqrt{18}$			170) _____
A) 6	B) $3\sqrt{2}$	C) 4	D) $2\sqrt{3}$

171) $\sqrt{26}$			171) _____
A) $2\sqrt{13}$	B) $13\sqrt{2}$	C) 13	D) $\sqrt{26}$

172) $\sqrt{18}$			172) _____
A) $\sqrt{18}$	B) $9\sqrt{2}$	C) $3\sqrt{2}$	D) 6

173) $\sqrt{180x^2}$			173) _____
A) $180x$	B) $6 x \sqrt{5}$	C) $6\sqrt{5x}$	D) $5x^2\sqrt{6}$

174) $\sqrt{486x^2}$			174) _____
A) $9\sqrt{6x^2}$	B) $9\sqrt{6}$	C) $9x^2\sqrt{6}$	D) $9 x \sqrt{6}$

- 175) $\sqrt{14x} \cdot \sqrt{28x}$ 175) _____
 A) $14\sqrt{2x}$ B) $14x^2\sqrt{2}$ C) $14\sqrt{2x^2}$ D) $14|x|\sqrt{2}$
- 176) $\sqrt{2x^2} \cdot \sqrt{6x}$ 176) _____
 A) $2|x|\sqrt{3}$ B) $2x^2\sqrt{3x}$ C) $2|x|\sqrt{3x}$ D) $2|x|\sqrt{3x^2}$

Solve the problem.

- 177) Racing cyclists use the algebraic expression $4\sqrt{x}$ to determine the maximum speed, in miles per hour, to turn a corner of radius x , in feet, without tipping over. Find the maximum speed at which a cyclist should travel around a corner of radius 18 feet without tipping over. Write the answer in simplified radical form. 177) _____
 A) $\frac{4(4 + \sqrt{2})}{x}$ miles per hour B) $16\sqrt{2}$ miles per hour
 C) $16 + \sqrt{2}$ miles per hour D) $12\sqrt{2}$ miles per hour
- 178) The formula $v = \sqrt{2.5r}$ models the safe maximum speed, v , in miles per hour, at which a car can travel on a curved road with radius of curvature, r , in feet. A highway crew measures the radius of curvature at an exit ramp as 360 feet. What is the maximum safe speed? 178) _____
 A) 36 miles per hour B) 35 miles per hour
 C) 30 miles per hour D) 27 miles per hour
- 179) The formula $v = \sqrt{20L}$ can be used to estimate the speed of a car, v , in miles per hour, based on the length, L , in feet, of its skid marks upon sudden braking on a dry asphalt road. If a car is involved in an accident and its skid marks measure 125 feet, at what estimated speed was the car traveling when it applied its brakes just prior to the accident? 179) _____
 A) 45 miles per hour B) 50 miles per hour
 C) 60 miles per hour D) 55 miles per hour
- 180) The average height of a boy in the United States, from birth through 60 months, can be modeled by $y = 2.9\sqrt{x} + 20.1$ where y is the average height, in inches, of boys who are x months of age. What would be the expected difference in height between a child 36 months of age and a child 25 months of age? 180) _____
 A) 43.1 inches B) 17.4 inches C) 2.9 inches D) 4.9 inches

Use the quotient rule to simplify the expression.

- 181) $\sqrt{\frac{1}{4}}$ 181) _____
 A) $\frac{1}{2}$ B) 2 C) $\frac{1}{16}$ D) 4
- 182) $\sqrt{\frac{9}{16}}$ 182) _____
 A) $\frac{3}{4}$ B) $\frac{\sqrt{3}}{4}$ C) $\frac{\sqrt{3}}{\sqrt{4}}$ D) 0

$$183) \frac{\sqrt{54x^3}}{\sqrt{6x}} \quad 183) \underline{\hspace{2cm}}$$

A) $3|x|\sqrt{6}$

B) $\frac{3x^2}{\sqrt{6}}$

C) $3|x|$

D) $6x^2$

$$184) \frac{\sqrt{56x^4}}{\sqrt{2x}} \quad 184) \underline{\hspace{2cm}}$$

A) $\frac{x^2\sqrt{56}}{2}$

B) $2|x|\sqrt{x}$

C) $2|x|\sqrt{7x}$

D) $56x^3$

Solve the problem.

185) The time, in seconds, that it takes an object to fall a distance d , in feet, is given by the algebraic expression $\sqrt{\frac{d}{16}}$. Find how long it will take a ball dropped from the top of a building 38 feet tall to hit the ground. Write the answer in simplified radical form. 185)

A) $\frac{6+\sqrt{2}}{4}$ seconds

B) $\frac{\sqrt{38}}{4}$ seconds

C) $\frac{6\sqrt{2}}{4}$ seconds

D) $\frac{\sqrt{38}}{16}$ seconds

Add or subtract terms whenever possible.

186) $2\sqrt{6} + 5\sqrt{6}$ 186)
 A) $7\sqrt{12}$ B) $-3\sqrt{6}$ C) $7\sqrt{6}$ D) $10\sqrt{12}$

187) $6\sqrt{3} + 2\sqrt{75}$ 187)
 A) $16\sqrt{3}$ B) $-16\sqrt{3}$ C) $4\sqrt{3}$ D) $8\sqrt{3}$

188) $3\sqrt{2x} - 8\sqrt{2x}$ 188)
 A) $-5x\sqrt{4}$ B) $-24\sqrt{4x}$ C) $-5\sqrt{2x}$ D) $11\sqrt{2}$

189) $-5\sqrt{3} + 9\sqrt{27}$ 189)
 A) $4\sqrt{3}$ B) $32\sqrt{3}$ C) $-22\sqrt{3}$ D) $22\sqrt{3}$

190) $-8\sqrt{24} + 7\sqrt{216} - 6\sqrt{54}$ 190)
 A) $76\sqrt{6}$ B) $-76\sqrt{6}$ C) $8\sqrt{6}$ D) $-8\sqrt{6}$

191) $\sqrt{100} + \sqrt{50} + \sqrt{144} + \sqrt{242}$ 191)
 A) $146\sqrt{2} + 22$ B) $16\sqrt{2} + \sqrt{100} + \sqrt{144}$
 C) $16\sqrt{2} + 22$ D) $\sqrt{50} + \sqrt{242} + 22$

192) $\sqrt{6x} - 7\sqrt{216x} - 2\sqrt{96x}$ 192)
 A) $-49\sqrt{6x}$ B) $-9\sqrt{6x}$ C) $-49\sqrt{318x}$ D) $-9\sqrt{318x}$

Rationalize the denominator.

193) $\frac{1}{\sqrt{23}}$ 193) _____
 A) $\sqrt{23}$ B) $\frac{1 + \sqrt{23}}{23}$ C) $1 + \sqrt{23}$ D) $\frac{\sqrt{23}}{23}$

194) $\frac{11}{\sqrt{11}}$ 194) _____
 A) 1 B) $\sqrt{11}$ C) $11\sqrt{11}$ D) 11

195) $\frac{\sqrt{121}}{\sqrt{6}}$ 195) _____
 A) $\frac{121\sqrt{6}}{6}$ B) $11\sqrt{6}$ C) $\frac{11\sqrt{6}}{6}$ D) 47

196) $\frac{\sqrt{49}}{\sqrt{3}}$ 196) _____
 A) $\frac{7\sqrt{3}}{3}$ B) 16 C) $\frac{49\sqrt{3}}{3}$ D) $7\sqrt{3}$

197) $\frac{\sqrt{3}}{\sqrt{13}}$ 197) _____
 A) $\frac{\sqrt{39}}{169}$ B) $\frac{\sqrt{39}}{13}$ C) $\sqrt{3}$ D) $\sqrt{39}$

198) $\frac{2}{3 - \sqrt{10}}$ 198) _____
 A) $\frac{2}{3} - \frac{2}{\sqrt{10}}$ B) $\frac{6 - 2\sqrt{10}}{-1}$ C) $\frac{6 + 2\sqrt{10}}{7}$ D) $\frac{6 + 2\sqrt{10}}{-1}$

199) $\frac{\sqrt{2}}{\sqrt{11} + 2}$ 199) _____
 A) $\frac{\sqrt{22} - 2\sqrt{2}}{13}$ B) $\frac{\sqrt{22} + 2\sqrt{2}}{7}$ C) $\frac{\sqrt{22} - 2\sqrt{2}}{7}$ D) $\frac{3\sqrt{22} + 11\sqrt{22}}{2}$

200) $\frac{2}{4 - \sqrt{7}}$ 200) _____
 A) $\frac{8 - 2\sqrt{7}}{9}$ B) $\frac{2}{4} - \frac{2}{\sqrt{7}}$ C) $\frac{8 + 2\sqrt{7}}{3}$ D) $\frac{8 + 2\sqrt{7}}{9}$

201) $\frac{6}{\sqrt{5} + \sqrt{11}}$ 201) _____
 A) $\sqrt{6}$ B) $\sqrt{11} + \sqrt{5}$ C) $\sqrt{11} - \sqrt{5}$ D) $\sqrt{5} - \sqrt{11}$

Evaluate the radical expressions or indicate that the root is not a real number.

202) $\sqrt[5]{243}$ 202) _____
 A) -3 B) 3
 C) 243 D) not a real number

203) $\sqrt[3]{(-4)^3}$ 203) _____
 A) -4 B) -64
 C) 4 D) not a real number

204) $\sqrt[4]{81}$ 204) _____
 A) -3 B) 81
 C) 3 D) not a real number

205) $\sqrt[4]{(-5)^4}$ 205) _____
 A) 625 B) 5
 C) -5 D) not a real number

Simplify the radical expression.

206) $\sqrt[3]{x^7}$ 206) _____
 A) $x\sqrt[3]{x}$ B) $x^2\sqrt[3]{x^2}$ C) $x\sqrt[3]{x^2}$ D) $x^2\sqrt[3]{x}$

207) $\sqrt[3]{30} \cdot \sqrt[3]{36}$ 207) _____
 A) $\sqrt[6]{1080}$ B) $6\sqrt[3]{5}$ C) $6\sqrt[3]{30}$ D) $\sqrt[3]{1080}$

Add or subtract terms whenever possible.

208) $7\sqrt[3]{16} + \sqrt[3]{128}$ 208) _____
 A) $18\sqrt[3]{2}$ B) $11\sqrt[3]{2}$ C) $7\sqrt[3]{144}$ D) $8\sqrt[3]{144}$

209) $y\sqrt[3]{24x} - \sqrt[3]{375xy^3}$ 209) _____
 A) $(y+1)\sqrt[3]{380}$ B) $y\sqrt[3]{-370xy^3}$
 C) $-3y\sqrt[3]{3x}$ D) $2y\sqrt[3]{3x} - 24\sqrt[3]{3xy^3}$

Evaluate the expression without using a calculator.

210) $121^{1/2}$ 210) _____
 A) 11 B) 5.5 C) 22 D) 44

211) $81^{1/4}$ 211) _____
 A) 36 B) 12 C) 243 D) 3

212) $27^{4/3}$ 212) _____
 A) 243 B) 2187 C) 729 D) 81

213) $25^{-3/2}$ 213) _____
 A) -125 B) $\frac{1}{125}$ C) 125 D) $-\frac{1}{125}$

Simplify using properties of exponents.

214) $(3x^{2/3})(7x^{1/4})$ 214) _____
 A) $21x^{1/4}$ B) $21x^{11/7}$ C) $21x^{2/3}$ D) $21x^{11/12}$

215) $\frac{70x^{3/4}}{10x^{1/3}}$ 215) _____
 A) $7x^{5/12}$ B) $60x^{1/6}$ C) $7x^{5/4}$ D) $7x^{1/6}$

216) $(9x^6y^{10})^{1/2}$ 216) _____
 A) $3x^3y^5$ B) $\frac{3}{2}x^3y^5$ C) $81x^{12}y^{10}$ D) $9x^3y^5$

Simplify by reducing the index of the radical.

217) $\sqrt[10]{x^8}$ 217) _____
 A) $\sqrt{x^4}$ B) $\sqrt[5]{x^4}$ C) $\sqrt{x}$ D) $\sqrt[5]{x}$

218) $\sqrt[8]{25x^2}$ 218) _____
 A) $\sqrt[4]{5x}$ B) $\frac{1}{625x}$ C) $\sqrt{5x}$ D) $5\sqrt[4]{5x}$

Solve the problem.

219) The algebraic expression $0.07d^{3/2}$ describes the duration of a storm, in hours, whose diameter is d miles. Use a calculator to determine the duration of a storm with a diameter of 10 miles. Round to the nearest hundredth. 219) _____
 A) 0.22 hours B) 0.59 hours C) 2.21 hours D) 31.62 hours

Is the algebraic expression a polynomial? If it is, write the polynomial in standard form.

220) $2x^{-1} - 3 + 7x$ 220) _____
 A) Yes; $7x + 2x^{-1} - 3$ B) No

221) $6x + 9 + 3x^2$ 221) _____
 A) Yes; $3x^2 + 6x + 9$ B) No

$$222) \frac{2x - 5}{x}$$

222) _____

A) No

B) Yes; $\frac{5}{x} - 2$

$$223) x^2 + x^4 - x^3 - 7$$

223) _____

A) Yes; $x^4 - x^3 + x^2 - 7$

B) No

Find the degree of the polynomial.

$$224) 4x + 8x^9 + 6$$

224) _____

A) degree 4

B) degree 10

C) degree 8

D) degree 9

$$225) -9x + 5x^3 + 4x^2 - 2$$

225) _____

A) degree 5

B) degree 2

C) degree 3

D) degree 4

$$226) 10x^4 - 6x^3 + 3x - 5x^5 - 2$$

226) _____

A) degree 10

B) degree 5

C) degree 3

D) degree 4

$$227) x^4 - 8x^3y^6 + 7xy - 12x + 10$$

227) _____

A) degree 9

B) degree 15

C) degree -8

D) degree 4

Perform the indicated operations. Write the resulting polynomial in standard form.

$$228) (8x^7 - 8x^5 - 5x) + (2x^7 - 6x^5 - 7x)$$

228) _____

A) $10x^7 - 14x^5 - 12x$

B) $10x - 14x^7 - 12x^5$

C) $-16x^{13}$

D) $-3x^7 + 2x^5 - 15x$

$$229) (2x^5 + 7x^4 + 9x^3 + 6) + (8x^5 + 9x^4 + 3x^3 + 3)$$

229) _____

A) $15x^5 + 15x^4 + 5x^3 + 15$

B) $38x^{24} + 9$

C) $10x^{10} + 16x^8 + 12x^6 + 9$

D) $10x^5 + 16x^4 + 12x^3 + 9$

$$230) (-2x^7 + 14x^4 - 20) + (5x^7 + 14x^4 + 17)$$

230) _____

A) $3x^7 + 28x^4 - 3$

B) $3x^7 + 28x^4 + 37$

C) $28x^{11}$

D) $3x^7 + 16x^4 + 37$

$$231) (-2x^4 - 3x^3 + 7x^2 + 6) + (6x^4 + 8x^3 - 5x^2 + 5)$$

231) _____

A) $4x^4 + 5x^3 + 2x^2 + 11$

B) $4x^4 + 11x^3 - 12x^2 - 1$

C) $8x^4 + 11x^3 - 12x^2 - 1$

D) $8x^4 + 11x^3 - 12x^2 + 11$

$$232) (2x^6 + 2x^5 + 3) - (7x^6 - 11x^5 - 20)$$

232) _____

A) $-5x^6 + 13x^5 + 23$

B) $31x^{11}$

C) $-5x^6 + 9x^5 - 17$

D) $-5x^6 + 13x^5 - 17$

$$233) (8x^6 - 8x^5 - 4x^4 - 1) - (5x^6 - 3x^5 + 6x^4 + 3)$$

233) _____

A) $13x^6 - 11x^5 + 2x^4 - 4$

B) $3x^6 - 5x^5 - 10x^4 - 4$

C) $13x^6 - 11x^5 + 2x^4 + 2$

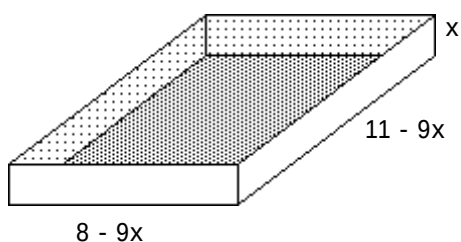
D) $3x^6 - 11x^5 + 2x^4 + 2$

- 234) $(7x^5 + 9x^2 + 5) - (3x^5 + 5x^2 - 5)$ 234) _____
 A) $4x^5 + 4x^2 + 10$ B) $4x^5 + 4x^2 + 0$ C) $18x^7$ D) $4x^5 + 12x^2 + 0$
- 235) $(5x^2 + 4x + 7) + (2x^2 + 3x - 7) - (5x + 2)$ 235) _____
 A) $7x^2 + 2x - 2$ B) $5x^2 + 2x - 2$ C) $7x^2 + 2x + 2$ D) $5x^2 + 2x + 2$
- Find the product.
- 236) $(x + 4)(x^2 - 4x + 16)$ 236) _____
 A) $x^3 + 8x^2 + 8x + 64$ B) $x^3 + 64$
 C) $x^3 - 8x^2 - 8x + 64$ D) $x^3 - 64$
- 237) $(x - 12)(x^2 + 4x - 7)$ 237) _____
 A) $x^3 - 8x^2 - 55x + 84$ B) $x^3 + 16x^2 + 55x + 84$
 C) $x^3 - 8x^2 - 41x - 84$ D) $x^3 + 16x^2 + 41x - 84$
- 238) $(x + 10)(x^2 + 3x - 4)$ 238) _____
 A) $x^3 + 13x^2 + 26x - 40$ B) $x^3 + 13x^2 + 34x - 40$
 C) $x^4 + 10x^3 + 3x^2 + 26x - 40$ D) $x^3 + 13x^2 + 34x + 40$
- 239) $(x + 4)(3x^2 + 6x + 7)$ 239) _____
 A) $15x^3 + 30x^2 + 35x$ B) $72x^4 + 3x^3 + 168x^2 + 28$
 C) $3x^3 + 12x^2 + 24x + 28$ D) $3x^3 + 18x^2 + 31x + 28$
- 240) $(6x - 1)(x^2 - 4x + 1)$ 240) _____
 A) $6x^3 - 23x^2 + 2x - 1$ B) $6x^3 + 25x^2 - 10x + 1$
 C) $6x^3 - 24x^2 + 6x + 1$ D) $6x^3 - 25x^2 + 10x - 1$
- 241) $(x + 8)(x + 4)$ 241) _____
 A) $x^2 + 12x + 12$ B) $x^2 + 11x + 32$ C) $x^2 + 32x + 12$ D) $x^2 + 12x + 32$
- 242) $(4x + 9)(x + 5)$ 242) _____
 A) $x^2 + 45x + 29$ B) $x^2 + 29x + 28$ C) $4x^2 + 29x + 45$ D) $4x^2 + 28x + 45$
- 243) $(2x + 1)(7x + 8)$ 243) _____
 A) $9x^2 + 23x + 23$ B) $9x^2 + 23x + 8$ C) $14x^2 + 23x + 23$ D) $14x^2 + 23x + 8$
- 244) $(2x^2 - 5)(9x^2 - 4)$ 244) _____
 A) $18x^2 - 53x + 20$ B) $18x^4 - 53x^2 - 53$
 C) $18x^4 - 53x^2 + 20$ D) $11x^4 - 53x^2 + 20$
- 245) $(3x^3 + 4)(x^2 + 5)$ 245) _____
 A) $3x^5 + 19x^3 + 20$ B) $3x^5 + 15x^3 + 4x^2 + 20$
 C) $3x^6 + 15x^3 + 4x^2 + 20$ D) $3x^5 + 19x^2 + 20$

Solve the problem.

246) Write a polynomial in standard form that represents the volume of the open box.

246) _____



A) $9x^3 - 171x^2 + 88x$

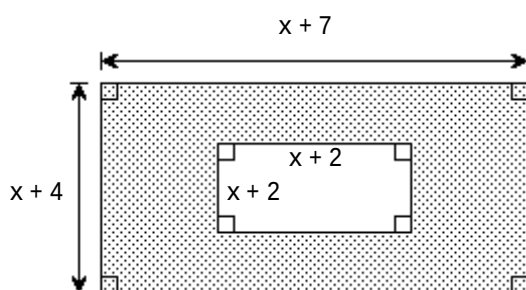
B) $81x^2 - 171x + 88$

C) $81x^3 - 171x^2 + 88x$

D) $81x^3 + 171x^2 + 88x$

247) Write a polynomial in standard form that represents the area of the shaded region.

247) _____



A) $15x + 32$

B) $-7x - 24$

C) $7x + 24$

D) $x^2 + 24x + 24$

Find the product.

248) $(x + 5)(x - 5)$

248) _____

A) $x^2 - 10x - 25$

B) $x^2 - 25$

C) $x^2 + 10x - 25$

D) $x^2 - 10$

249) $(11x + 2)(11x - 2)$

249) _____

A) $121x^2 - 4$

B) $121x^2 + 44x - 4$

C) $121x^2 - 44x - 4$

D) $x^2 - 4$

250) $(4 + 3x)(4 - 3x)$

250) _____

A) $16 - 24x - 9x^2$

B) $16 + 24x - 9x^2$

C) $9x^2 - 16$

D) $16 - 9x^2$

251) $(5x^2 + 4x)(5x^2 - 4x)$

251) _____

A) $10x^4 - 8x^2$

B) $25x^4 - 16x^2$

C) $25x^4 - 40x^3 - 16x^2$

D) $25x^4 + 40x^3 - 16x^2$

252) $(1 + x^5)(1 - x^5)$

252) _____

A) $1 - x^{25}$

B) $2 - x^{25}$

C) $1 - x^{10}$

D) $2 - x^{10}$

253) $(5 - y^3)(5 + y^3)$

253) _____

A) $25 - y^9$

B) $25 - y^3$

C) $25 - y^6$

D) $y^6 - 25$

- 254) $(x + 2)^2$ 254) _____
 A) $4x^2 + 4x + 4$ B) $x^2 + 4$ C) $x^2 + 4x + 4$ D) $x + 4$
- 255) $(x - 15)^2$ 255) _____
 A) $x^2 - 30x + 225$ B) $x^2 + 225$
 C) $x + 225$ D) $225x^2 - 30x + 225$
- 256) $(4x + 3)^2$ 256) _____
 A) $4x^2 + 9$ B) $16x^2 + 24x + 9$ C) $16x^2 + 9$ D) $4x^2 + 24x + 9$
- 257) $(9x - 7)^2$ 257) _____
 A) $81x^2 + 49$ B) $9x^2 + 49$
 C) $9x^2 - 126x + 49$ D) $81x^2 - 126x + 49$
- 258) $(3x^2 + 10)^2$ 258) _____
 A) $9x^4 + 60x^2 + 100$ B) $3x^4 + 60x^2 + 100$
 C) $9x^4 + 100$ D) $9x^2 + 60x + 100$
- 259) $(8x^2 - 11)^2$ 259) _____
 A) $64x^4 + 176x^2 + 121$ B) $64x^4 - 176x^2 + 121$
 C) $64x^4 - 176x^2 - 121$ D) $64x^2 - 176x + 121$
- 260) $(9 + 5x)^2$ 260) _____
 A) $81 + 90x + 5x^2$ B) $81x^2 + 90x + 25$ C) $81 + 25x^2$ D) $81 + 90x + 25x^2$
- 261) $(4 - 3x)^2$ 261) _____
 A) $16 - 24x + 9x^2$ B) $16 - 24x - 9x^2$ C) $16 + 9x^2$ D) $16x^2 - 24x + 9$
- 262) $(x - 5)^3$ 262) _____
 A) $x^3 - 15x^2 + 75x - 125$ B) $x^3 - 15x^2 + 35x - 125$
 C) $x^3 - 5x^2 + 35x - 125$ D) $x^3 - 15x^2 + 15x - 125$
- 263) $(4x + 3)^3$ 263) _____
 A) $16x^2 + 24x + 9$ B) $64x^3 + 144x^2 + 108x + 27$
 C) $16x^6 + 12x^3 + 729$ D) $64x^3 + 144x^2 + 144x + 27$
- 264) $(3x - 4)^3$ 264) _____
 A) $27x^3 - 108x^2 + 144x - 64$ B) $9x^2 - 24x + 16$
 C) $27x^3 - 108x^2 + 108x - 64$ D) $27x^3 + 108x^2 + 144x + 64$

Perform the indicated operations.

- 265) $(-3x^2y - xy) + (5x^2y + 6xy)$ 265) _____
 A) $8x^2y + 5xy$ B) $2x^2y + 7xy$ C) $2x^2y + 5xy$ D) $8x^2y + 7xy$
- 266) $(8x^2y - 9xy + 3) + (-7x^2y + 7xy - 5)$ 266) _____
 A) $-2x^3y^2 - 2$ B) $-x^2y - 16xy + 8$
 C) $15x^2y + 16xy + 8$ D) $x^2y - 2xy - 2$
- 267) $(9x^4y^2 - 8x^2y^2 + 12xy) + (4x^4y^2 - 11x^2y^2 + 5xy)$ 267) _____
 A) $13x^4y^2 + 19x^2y^2 + 17xy$ B) $19x^4y^2 - 13x^2y^2 + 17xy$
 C) $13x^4y^2 - 19x^2y^2 + 17xy$ D) $-19x^4y^2 + 13x^2y^2 + 17xy$
- 268) $(x^3 + 7xy - 3y^2) - (8x^3 + 3xy + y^2)$ 268) _____
 A) $-7x^3 + 4xy - 4y^2$ B) $-7x^3 + 4xy - 2y^2$
 C) $9x^3 + 4xy - 4y^2$ D) $7x^3 - 4xy - 2y^2$
- 269) $(7x^4 + 9xy - y^3) - (x^4 + 3xy + 9y^3)$ 269) _____
 A) $6x^4 + 6xy - 8y^3$ B) $6x^4 + 6xy - 10y^3$
 C) $8x^4 + 7xy + 8y^3$ D) $7x^4 + 6xy - 10y^3$
- 270) $(9x^4y^2 + 5x^3y + 6y) - (11x^4y^2 + 10x^3y + 2y + 4x)$ 270) _____
 A) $-2x^4y^2 + 5x^3y + 4y - 4x$ B) $-2x^4y^2 - 5x^3y + 4y - 4x$
 C) $20x^4y^2 + 15x^3y + 8y + 4x$ D) $-2x^4y^2 - 5x^3y + 4y + 4x$

Find the product.

- 271) $(x - 7y)(x + 4y)$ 271) _____
 A) $x^2 - 3xy - 28y^2$ B) $x^2 - 6xy - 28y^2$ C) $x^2 - 3xy - 3y^2$ D) $x - 3xy - 28y$
- 272) $(x + 4y)(4x - 11y)$ 272) _____
 A) $x^2 + 5xy + 5y^2$ B) $4x^2 + 5xy - 44y^2$
 C) $4x^2 + 5xy + 5y^2$ D) $x^2 + 5xy - 44y^2$
- 273) $(4xy - 3)(8xy + 7)$ 273) _____
 A) $32x^2y^2 + 4xy + 4$ B) $32x^2y^2 + 4xy - 21$
 C) $12x^2y^2 + 4xy + 4$ D) $12x^2y^2 + 4xy - 21$
- 274) $(7x + 9y)^2$ 274) _____
 A) $49x^2 + 126xy + 81y^2$ B) $7x^2 + 126xy + 81y^2$
 C) $7x^2 + 81y^2$ D) $49x^2 + 81y^2$
- 275) $(9x - 5y)^2$ 275) _____
 A) $81x^2 + 25y^2$ B) $81x^2 - 90xy + 25y^2$
 C) $9x^2 - 90xy + 25y^2$ D) $9x^2 + 25y^2$

276) $(x + y)(x^2 - xy + y^2)$ 276) _____
 A) $x^3 + y^3$ B) $x^3 + 2x^2y + 2xy^2 + y^3$
 C) $x^3 - 2x^2y - 2xy^2 + y^3$ D) $x^3 - y^3$

277) $(x^2y^2 + 7)^2$ 277) _____
 A) $x^2y^2 + 14xy + 49$ B) $x^4y^4 + 7x^2y^2 + 49$
 C) $x^4y^4 + 14x^2y^2 + 49$ D) $x^4y^4 + 49$

278) $(7x + 4y)(7x - 4y)$ 278) _____
 A) $49x^2 - 56xy - 16y^2$ B) $7x^2 - 4y^2$
 C) $49x^2 + 56xy - 16y^2$ D) $49x^2 - 16y^2$

279) $(7xy^2 - 3y)(7xy^2 + 3y)$ 279) _____
 A) $7x^2y^4 - 3y^2$ B) $49x^2y^4 - 9y^2$
 C) $49x^2y^4 - 42xy^3 - 9y^2$ D) $49x^2y^4 + 42xy^3 - 9y^2$

Factor out the greatest common factor.

280) $3x - 27$ 280) _____
 A) $3x(-9)$ B) $3x(x - 9)$ C) $3(x - 9)$ D) $3(x - 27)$

281) $5x^2 - 15x$ 281) _____
 A) $5(x^2 - 3x)$ B) $5x(x - 3)$ C) $x(5x - 15)$ D) $5x(x - 3x)$

282) $21x^4 - 6x^3 + 15x^2$ 282) _____
 A) $3(7x^4 - 2x^3 + 5x^2)$ B) $3x^2(7x^2 - 2x + 5)$
 C) $x^2(21x^2 - 6x + 15)$ D) $3x(7x^3 - 2x^2 + 5x)$

283) $x(x + 8) + 9(x + 8)$ 283) _____
 A) $(x^2 + 8x) + (9x + 72)$ B) $9x(x + 8)$
 C) $8x(x + 9)$ D) $(x + 8)(x + 9)$

284) $x(5x + 4) + 2(5x + 4)$ 284) _____
 A) $(5x + 4)(x + 2)$ B) $2x(5x + 4)$ C) $(5x + 2)(x + 4)$ D) $(5x + 4)(x - 2)$

285) $x^2(x - 13) - (x - 13)$ 285) _____
 A) $(x - 13)(x^2 - 1)$ B) $x^2(x - 13)$
 C) $(x - 13)(x^2 + 1)$ D) $(x^3 - 13x^2) - (x - 13)$

Factor by grouping. Assume any variable exponents represent whole numbers.

286) $x^3 - 4x^2 - 2x + 8$ 286) _____
 A) $(x - 2)(x^2 - 4)$ B) $(x - 4)(x^2 - 2)$ C) $(x + 4)(x^2 + 2)$ D) $(x - 4)(x - 2)$

287) $x^3 + 8x - 5x^2 - 40$ 287) _____
 A) $(x - 5)(x^2 + 8)$ B) $(x - 5)(x + 8)$ C) $(x - 5)(x^2 - 8)$ D) $(x + 5)(x^2 + 8)$

288) $5x^3 - 10x^2 + 8x - 16$	A) $(x + 2)(5x^2 + 8)$	B) $(x - 2)(5x + 8)$	C) $(x - 2)(5x^2 - 8)$	D) $(x - 2)(5x^2 + 8)$	288) _____
Factor the trinomial, or state that the trinomial is prime.					
289) $x^2 - 13x + 42$	A) $(x + 7)(x + 1)$	B) $(x + 7)(x - 6)$	C) $(x - 7)(x - 6)$	D) prime	289) _____
290) $x^2 - 6x + 8$	A) $(x + 2)(x + 1)$	B) $(x + 2)(x - 4)$	C) $(x - 2)(x - 4)$	D) prime	290) _____
291) $x^2 - 5x + 6$	A) $(x + 2)(x + 1)$	B) $(x - 2)(x - 3)$	C) $(x + 2)(x - 3)$	D) prime	291) _____
292) $x^2 + 5x - 24$	A) $(x - 8)(x + 3)$	B) $(x + 8)(x - 3)$	C) $(x - 8)(x + 1)$	D) prime	292) _____
293) $x^2 - x - 72$	A) $(x + 8)(x - 9)$	B) $(x + 1)(x - 17)$	C) $(x + 9)(x - 8)$	D) prime	293) _____
294) $x^2 - x - 40$	A) $(x - 5)(x + 8)$	B) $(x - 40)(x + 1)$	C) $(x + 5)(x - 8)$	D) prime	294) _____
295) $5x^2 + 22x + 8$	A) $(5x + 2)(5x + 4)$	B) $(5x + 2)(x + 4)$	C) $(5x + 4)(x + 2)$	D) prime	295) _____
296) $7x^2 - 41x + 30$	A) $7(x - 6)(x - 5)$	B) $(7x - 6)(x - 5)$	C) $(7x - 6)(7x + 5)$	D) $(7x + 5)(x - 6)$	296) _____
297) $7x^2 - 23x - 20$	A) $(7x - 4)(x + 5)$	B) $(7x + 5)(x - 4)$	C) $(7x - 5)(x + 4)$	D) prime	297) _____
298) $7x^2 + 32x + 15$	A) $(7x + 3)(x - 5)$	B) $(7x + 5)(x - 3)$	C) $(7x - 3)(x + 5)$	D) prime	298) _____
299) $12x^2 + 25x + 12$	A) $(4x - 3)(3x - 4)$	B) $(4x + 3)(3x + 4)$	C) $(12x + 3)(x + 4)$	D) prime	299) _____
300) $20x^2 - 27x + 9$	A) $(20x + 3)(x + 3)$	B) $(5x - 3)(4x - 3)$	C) $(5x + 3)(4x + 3)$	D) prime	300) _____
301) $15x^2 + 14x - 8$	A) $(3x + 4)(5x - 2)$	B) $(15x + 4)(x - 2)$	C) $(3x - 4)(5x + 2)$	D) prime	301) _____
302) $x^2 - 2xy - 15y^2$	A) $(x + 5y)(x + y)$	B) $(x - 5y)(x + 3y)$	C) $(x + 5y)(x + 3y)$	D) prime	302) _____

- 303) $6x^2 + 7xy + y^2$ 303) _____
 A) $(6x + y)(x + y)$ B) $(6x + y)(x + 6y)$ C) $(6x - y)(x - y)$ D) prime
- 304) $5x^2 - 27xy - 18y^2$ 304) _____
 A) $y(5x + 3)(x - 6)$ B) $(5x + 3y)(x - 6y)$
 C) $(5x + 6y)(x - 3y)$ D) prime
- 305) $12x^2 + 17xy + 6y^2$ 305) _____
 A) $(3x - 2y)(4x - 3y)$ B) $(3x + 2y)(4x + 3y)$
 C) $(12x + 2y)(x + 3y)$ D) prime
- Factor the difference of two squares.
- 306) $x^2 - 100$ 306) _____
 A) $(x - 10)^2$ B) $(x + 10)^2$ C) $(x + 10)(x - 10)$ D) prime
- 307) $4x^2 - 81$ 307) _____
 A) $(2x + 9)^2$ B) $(2x + 9)(2x - 9)$ C) $(2x - 9)^2$ D) prime
- 308) $49x^2 - 36y^2$ 308) _____
 A) $(7x - 6y)^2$ B) $(7x + 6y)(7x - 6y)$
 C) $(7x + 6y)^2$ D) prime
- 309) $x^4 - 16$ 309) _____
 A) $(x^2 + 4)(x^2 + 4)$ B) $(x^2 - 4)(x^2 - 4)$
 C) $(x^2 + 4)(x + 2)(x - 2)$ D) prime
- 310) $(16x^4 - 1)$ 310) _____
 A) $(4x^2 + 1)(2x + 1)(2x - 1)$ B) $(2x + 1)^2(2x - 1)^2$
 C) $(4x^2 + 1)(4x^2 - 1)$ D) $(4x^2 + 1)(4x^2 + 1)$
- Factor the perfect square trinomial.
- 311) $x^2 - 16x + 64$ 311) _____
 A) $(x + 8)^2$ B) $(x - 8)^2$ C) $(x - 8)(x + 8)$ D) prime
- 312) $x^2 - 10x + 100$ 312) _____
 A) $(x + 10)(x - 10)$ B) $(x - 10)^2$ C) $(x + 10)^2$ D) prime
- 313) $144x^2 - 24x + 1$ 313) _____
 A) $(12x + 1)(12x - 1)$ B) $(12x - 1)^2$
 C) $(x - 12)^2$ D) prime

Factor using the formula for the sum or difference of two cubes.

- 314) $x^3 - 8$ 314) _____
 A) $(x + 8)(x^2 - 1)$ B) $(x - 2)(x^2 + 2x + 4)$
 C) $(x + 2)(x^2 - 2x + 4)$ D) prime
- 315) $x^3 + 8$ 315) _____
 A) $(x + 2)(x^2 + 4)$ B) $(x - 2)(x^2 + 2x + 4)$
 C) $(x + 2)(x^2 - 2x + 4)$ D) prime
- 316) $64x^3 - 1$ 316) _____
 A) $(4x + 1)(16x^2 - 4x + 1)$ B) $(4x - 1)(16x^2 + 1)$
 C) $(4x - 1)(16x^2 + 4x + 1)$ D) prime
- 317) $64x^3 + 1$ 317) _____
 A) $(4x + 1)(16x^2 - 4x + 1)$ B) $(4x - 1)(16x^2 + 4x + 1)$
 C) $(4x - 1)(16x^2 + 1)$ D) prime
- 318) $125x^3 + 27$ 318) _____
 A) $(5x + 3)(25x^2 + 9)$ B) $(5x - 3)(25x^2 + 15x + 9)$
 C) $(5x + 3)(25x^2 - 15x + 9)$ D) $(5x + 3)(25x^2 + 15x + 9)$
- 319) $125x^3 - 27$ 319) _____
 A) $(5x + 3)(25x^2 - 15x + 9)$ B) $(5x - 3)(25x^2 - 15x + 9)$
 C) $(5x - 3)(25x^2 + 15x + 9)$ D) $(5x - 3)(25x^2 + 9)$

Factor completely, or state that the polynomial is prime.

- 320) $4x^3 - 484x$ 320) _____
 A) $4(x + 11)(x^2 - 11x)$ B) $x(x + 11)(4x - 44)$
 C) $4x(x + 11)(x - 11)$ D) prime
- 321) $147x^2 - 108$ 321) _____
 A) prime B) $3(7x + 6)^2$
 C) $3(7x + 6)(7x - 6)$ D) $3(7x - 6)^2$
- 322) $2x^2 - 16x - 18$ 322) _____
 A) $2(x^2 - 8x - 9)$ B) $(x + 1)(2x - 18)$ C) $2(x + 1)(x - 9)$ D) $(2x + 2)(x - 9)$
- 323) $6x^4 - 96$ 323) _____
 A) $6(x^2 + 4)(x^2 - 4)$ B) $6(x + 2)^2(x - 2)^2$
 C) $6(x^2 + 4)(x + 2)(x - 2)$ D) prime

- 324) $x^3 - 4x^2 - 9x + 36$ 324) _____
 A) $(x - 4)(x - 3)^2$ B) $(x - 4)(x + 3)(x - 3)$
 C) $(x + 4)(x + 3)(x - 3)$ D) prime
- 325) $4x^2 - 4x - 24$ 325) _____
 A) $4(x + 2)(x - 3)$ B) prime C) $(4x + 8)(x - 3)$ D) $4(x - 2)(x + 3)$
- 326) $x^3 - 64x$ 326) _____
 A) $x(x - 8)^2$ B) $(x^2 + 8)(x - 8)$ C) $x(x + 8)(x - 8)$ D) prime
- 327) $25x^3 - 25x$ 327) _____
 A) $25x(x^2 + 1)$ B) $x(x + 5)(x - 5)$ C) $25x(x^2 - 1)$ D) $25x(x + 1)(x - 1)$
- 328) $x^2 + 4$ 328) _____
 A) $(x + 2)^2$ B) $(x + 2)(x - 2)$ C) $(x - 2)^2$ D) prime
- 329) $4x^3 - 4$ 329) _____
 A) $4(x^3 - 1)$ B) $4(x - 1)(x^2 + x + 1)$
 C) $4(x + 1)(x^2 - x + 1)$ D) prime
- 330) $2x^3 + 250$ 330) _____
 A) $2(x + 5)^3$ B) $2(x + 5)(x^2 - 5x + 25)$
 C) $2(x^3 + 125)$ D) prime
- 331) $y^5 - 256y$ 331) _____
 A) $y(y^2 + 16)(y + 4)(y - 4)$ B) $y(y^2 - 16)(y^2 - 16)$
 C) $y(y^2 + 16)(y^2 + 16)$ D) prime
- 332) $8x^5 - 8x$ 332) _____
 A) $8x(x^2 + 1)(x + 1)(x - 1)$ B) $8x(x^4 + 1)(x^2 + 1)(x + 1)(x - 1)$
 C) $8x(x^2 + 1)(x^2 - 1)$ D) prime
- 333) $27y^4 - 75y^2$ 333) _____
 A) $3(3y^2 + 5)(3y^2 - 5)$ B) $3y^2(3y - 5)^2$
 C) $3y^2(3y + 5)(3y - 5)$ D) prime
- 334) $49x^2 - 126x + 81 - 16y^2$ 334) _____
 A) $(7x + 9 + 4y)(7x - 9 - 4y)$ B) $(7x + 9 + 4y)(7x + 9 - 4y)$
 C) $(7x - 9 + 4y)(7x - 9 - 4y)$ D) prime
- 335) $169b^2x - 25y - 25x + 169b^2y$ 335) _____
 A) $(13bx - 5y)^2$ B) $(13b + 5)(13b - 5)(x + y)$
 C) $(13bx + 5y)(13bx - 5y)$ D) prime

336) $x^2y - 16y + 96 - 6x^2$

A) $(y + 6)(x + 4)(x - 4)$

C) $(y - 6)(x^2 + 16)$

B) $(y - 6)(x + 4)(x - 4)$

D) prime

336) _____

337) $2x^3 - 72a^2x + 12x^2 + 18x$

A) $2x(x + 3 + 6a)(x + 3 - 6a)$

C) $2x(x + 3 + 6a)(x - 3 - 6a)$

B) $2x(x + 3 + 6a)(x - 3 + 6a)$

D) prime

337) _____

Solve the problem.

338) A department store is having a clearance sale. The price on a television is reduced by 38%. That sale price is then reduced by another 38%. If x is the television's original price, the sale price can be represented by $(x - 0.38x) - 0.38(x - 0.38x)$. With these two reductions, at what percentage of the original price is the television being sold? Use the factored, simplified form of the expression to answer the question.

A) 76%

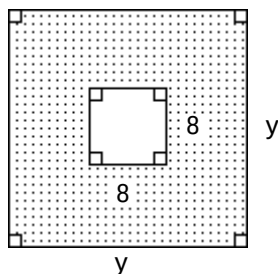
B) 38.44%

C) 62%

D) 24%

338) _____

339) Write an expression for the area of the shaded region and express it in factored form.



A) $(y + 8)(y - 8)$

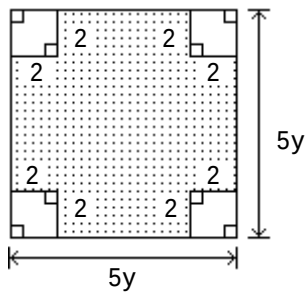
B) $y^2 + 64$

C) $(y - 8)^2$

D) $(y + 8)^2$

339) _____

340) Write an expression for the area of the shaded region and express it in factored form.



A) $(5y + 4)(5y - 4)$

B) $(5y - 2)^2$

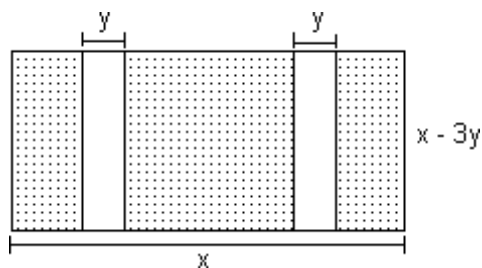
C) $(5y - 4)^2$

D) $(5y + 2)(5y - 2)$

340) _____

341) Write an expression for the area of the shaded region and express it in factored form.

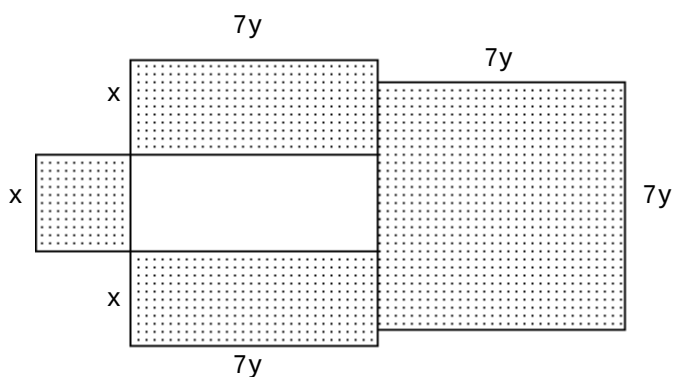
341) _____



- A) $(x - 5y)^2$ B) $(x - y)(x - 3y)$ C) $5(x - y)^2$ D) $(x - 2y)(x - 3y)$

342) Write an expression for the area of the shaded region and express it in factored form.

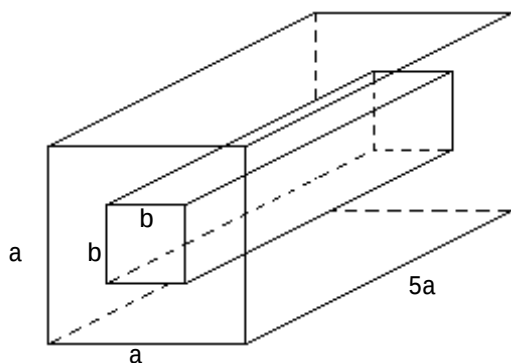
342) _____



- A) $x^2 + 14xy + 49y^2$ B) $x^2 + 7xy + 49y^2$
C) $(x + 7y)^2$ D) $7(x + y)^2$

343) Find the formula for the volume of the region outside the smaller rectangular solid and inside the larger rectangular solid. Express the volume in factored form.

343) _____



- A) $(5a + b)(5a - b)$ B) $5a(a^2 - b^2)$ C) $5a(a^2 + b^2)$ D) $5a(a + b)(a - b)$

Factor and simplify the algebraic expression.

344) $x^{4/5} - x^{1/5}$

344) _____

- A) $x^{4/5}(1 - x^{3/5})$ B) $x^{1/5}(x^4 - 1)$ C) $x^{1/5}(x^{3/5} - 1)$ D) $x(x^{3/5} - 1)$

345) $7x^{-4/5} + 63x^{1/5}$

A) $\frac{9+x}{7x^{1/5}}$

B) $\frac{1+9x^{1/5}}{7x^{4/5}}$

C) $\frac{1+7x}{9x^{4/5}}$

D) $\frac{7(9x+1)}{x^{4/5}}$

345) _____

346) $(x+9)^{1/4} + (x+9)^{3/4}$

A) $(x+9)^{1/4} (1 + (x+9)^{1/2})$

C) $(x+9)^{1/2} ((x+9)^{1/2} + 1)$

B) $(x+9)^{1/2} (1 + (x+9)^{1/4})$

D) $(x+9)^{1/2} (1 + (x+9)^{3/2})$

346) _____

347) $(x+4)^{2/5} - (x+4)^{12/5}$

A) $(x+4)(-x^2 - 8x + 15)$

C) $(x+4)((x+4)^{2/5} - (x+4)^{12/5})$

B) $(x+4)^{12/5} ((x+4)^{1/6} - 1)$

D) $(x+4)^{2/5} (-x^2 - 8x - 15)$

347) _____

348) $(x+5)^{-1/5} + (x+5)^{-6/5}$

A) $\frac{(x+6)}{(x+5)^{6/5}}$

C) $\frac{(x+6)}{(x+5)^{1/5}}$

B) $(x+5)^{6/5}(x+6)$

D) $(x+5)^{-1/5} + (x+5)^{-6/5}$

348) _____

349) $(x+7)^{-1/3} - (x+7)^{-2/3}$

A) $\frac{(x+7)^{1/3} - 1}{(x+7)^{1/3}}$

C) $\frac{(x+7)^{1/3} - 1}{(x+7)^{2/3}}$

B) $\frac{x+6}{(x+7)^{2/3}}$

D) $(x+7)^{-1/3} - (x+7)^{-2/3}$

349) _____

Find all numbers that must be excluded from the domain of the rational expression.

350) $\frac{8}{x-6}$

A) $x \neq -8$

B) $x \neq -6$

C) $x \neq 0$

D) $x \neq 6$

350) _____

351) $\frac{7}{x+8}$

A) $x \neq 0$

B) $x \neq -8$

C) $x \neq 8$

D) $x \neq -7$

351) _____

352) $\frac{x+2}{x^2-81}$

A) $x \neq -2$

B) $x \neq 9, x \neq -9$

C) $x \neq 9$

D) $x \neq 81$

352) _____

353) $\frac{x-9}{x^2-64}$

A) $x \neq 64$

B) $x \neq 8, x \neq -8$

C) $x \neq \frac{9}{64}$

D) $x \neq 8$

353) _____

$$354) \frac{x - 7}{x^2 + 15x + 56}$$

$$A) x \neq 7$$

$$B) x \neq -7, x \neq -8$$

$$C) x \neq 7, x \neq 8$$

$$D) x \neq 0$$

354) _____

$$355) \frac{x - 7}{x^2 + 3x - 28}$$

$$A) x \neq 0$$

$$B) x \neq -7, x \neq 4$$

$$C) x \neq 7$$

$$D) x \neq -4, x \neq 7$$

355) _____

$$356) \frac{x + 7}{x^2 - 13x + 42}$$

$$A) x \neq 6, x \neq 7$$

$$B) x \neq -6, x \neq -7$$

$$C) x \neq -7$$

$$D) x \neq 0$$

356) _____

Simplify the rational expression. Find all numbers that must be excluded from the domain of the simplified rational expression.

$$357) \frac{3x + 2}{6x^2 + 19x + 10}$$

$$A) \frac{3x}{2x + 5}, x \neq -\frac{5}{2}$$

$$B) \frac{3x + 2}{2x + 19}, x \neq -\frac{19}{2}$$

$$C) \frac{3x + 2}{6x^2 + 19x + 10}, x \neq -\frac{5}{2}, x \neq -\frac{2}{3}$$

$$D) \frac{1}{2x + 5}, x \neq -\frac{5}{2}, x \neq -\frac{2}{3}$$

357) _____

$$358) \frac{x^2 + 9x + 20}{x^2 + 13x + 40}$$

$$A) \frac{x + 4}{x + 8}, x \neq -8, -5$$

$$B) -\frac{x^2 + 9x + 20}{x^2 + 13x + 40}, x \neq -8, -5$$

$$C) \frac{9x + 1}{13x + 2}, x \neq -\frac{2}{13}$$

$$D) \frac{9x + 20}{13x + 40}, x \neq -\frac{40}{13}$$

358) _____

$$359) \frac{3x^2 - 33x + 54}{x - 9}$$

$$A) \frac{1}{x - 9}, x \neq 9$$

$$B) \frac{3x^2 - 33x + 54}{x - 9}, x \neq 9$$

$$C) 3x - 6, x \neq 9$$

$$D) 3x^2 - 39, \text{ no restrictions on } x$$

359) _____

Provide an appropriate response.

360) The rational expression $\frac{120x}{100-x}$ describes the cost, in millions of dollars, to inoculate x percent of the current population of cattle against a particular virus. Choose which of the following statements are true with regard to this mathematical model. 360) _____

- I. The expression will be undefined when $x = 100$.
- II. The cost of inoculating 70 percent of cattle is 100 million dollars more than the cost of inoculating 60 percent of cattle.
- III. This expression will calculate inoculation costs for any population of cattle, no matter what the size.

- A) Only II and III are true.
- B) Only I and III are true.
- C) All three statements are true.
- D) Only I and II are true.

Multiply or divide as indicated.

361) $\frac{5x}{10x+5} \cdot \frac{8x+4}{3}$ 361) _____

- A) $\frac{x}{3}$
- B) $\frac{4x}{3}$
- C) $\frac{4}{3}$
- D) $\frac{4x}{15}$

362) $\frac{2x-2}{x} \cdot \frac{4x^2}{9x-9}$ 362) _____

- A) $\frac{8x^3 - 8x^2}{9x^2 - 9x}$
- B) $\frac{9}{8x}$
- C) $\frac{8x}{9}$
- D) $\frac{18x^2 + 36x + 18}{4x^3}$

363) $\frac{6x+2}{2x+10} \cdot \frac{x+5}{24x+8}$ 363) _____

- A) $\frac{1}{4}$
- B) $\frac{x+5}{8(x-5)}$
- C) 8
- D) $\frac{1}{8}$

364) $\frac{x^3+1}{x^3-x^2+x} \cdot \frac{5x}{-20x-20}$ 364) _____

- A) $-\frac{1}{4}$
- B) $-\frac{x^3+1}{4(x+1)}$
- C) $\frac{x+1}{4(-x-1)}$
- D) $-\frac{x^2+1}{4}$

365) $\frac{x^2+13x+42}{x^2+x-42} \cdot \frac{x^2-49}{x^2-x-42}$ 365) _____

- A) $\frac{x+6}{x-7}$
- B) $\frac{x-7}{x+6}$
- C) $\frac{x-7}{x-6}$
- D) $\frac{x+7}{x-6}$

- 366) $\frac{x^2 + 13x + 36}{x^2 + 15x + 54} \cdot \frac{x^2 + 6x}{x^2 - 2x - 24}$ 366) _____
 A) $\frac{x}{x - 6}$ B) $\frac{x(x + 6)}{x - 6}$ C) $\frac{1}{x - 6}$ D) $\frac{x}{x^2 + 15x + 54}$
- 367) $\frac{x^2 + 7x + 10}{x^2 + 8x + 15} \cdot \frac{x^2 + 3x}{x^2 + 10x + 16}$ 367) _____
 A) $\frac{x}{x^2 + 8x + 15}$ B) $\frac{x^2 + 3x}{x + 8}$ C) $\frac{1}{x + 8}$ D) $\frac{x}{x + 8}$
- 368) $\frac{x^2 + 16x + 64}{x^2 + 10x + 16} \cdot \frac{x^2 + 5x + 6}{x^2 + 11x + 24}$ 368) _____
 A) 1 B) $\frac{x + 2}{x + 3}$ C) $\frac{x + 8}{x + 2}$ D) $\frac{1}{x + 3}$
- 369) $\frac{x^2 - 15x + 44}{x^2 - 13x + 42} \cdot \frac{x^2 - 8x + 7}{x^2 - 16x + 55}$ 369) _____
 A) $\frac{(x + 4)(x + 1)}{(x + 6)(x + 5)}$ B) $\frac{(x - 4)}{(x - 5)}$
 C) $\frac{(x^2 - 15x + 44)(x^2 - 8x + 7)}{(x^2 - 13x + 42)(x^2 - 16x + 55)}$ D) $\frac{(x - 4)(x - 1)}{(x - 6)(x - 5)}$
- 370) $\frac{3x + 15}{8} \div \frac{4x + 20}{20}$ 370) _____
 A) $\frac{3}{40}$ B) $\frac{7x + 35}{28}$ C) $\frac{15}{8}$ D) $\frac{3x + 15}{32x}$
- 371) $\frac{21x - 21}{10} \div \frac{7x - 7}{90}$ 371) _____
 A) $\frac{9(21x - 21)}{7x - 7}$ B) 27 C) $\frac{1}{27}$ D) $\frac{147(x - 1)^2}{900}$
- 372) $\frac{(y - 9)^2}{4} \div \frac{4y - 36}{16}$ 372) _____
 A) $y - 9$ B) $\frac{1}{y - 9}$ C) $\frac{(y - 9)^3}{16}$ D) $\frac{4(y - 9)^2}{4y - 36}$
- 373) $\frac{1}{x + 6} \div \frac{3}{x^2 - 36}$ 373) _____
 A) $\frac{x + 6}{3}$ B) $\frac{x - 6}{3}$ C) $\frac{3}{x - 6}$ D) $x - 6$

$$374) \frac{(x+6)^2}{x-6} \div \frac{x^2-36}{6x-36}$$

374) _____

A) $\frac{(x+6)^3}{6(x-6)}$

B) $\frac{12(x^2+36)}{x^2-36}$

C) $\frac{(x+6)^2}{(x-6)^2}$

D) $\frac{6(x+6)}{x-6}$

$$375) \frac{x^2-8x+16}{9x-36} \div \frac{3x-12}{27}$$

375) _____

A) 27

B) 1

C) $\frac{(x-4)^2}{81}$

D) $\frac{x^2-8x+16}{(x-4)^2}$

$$376) \frac{x^2+11x+28}{x^2+13x+42} \div \frac{x^2+4x}{x^2+14x+48}$$

376) _____

A) $x+8$

B) $\frac{x+8}{x}$

C) $\frac{x}{x^2+13x+42}$

D) $\frac{x+8}{x^2+6x}$

$$377) \frac{x^2+8x+15}{x^2+9x+18} \div \frac{x^2+5x}{x^2+4x-12}$$

377) _____

A) $x-2$

B) $\frac{x-2}{x^2+6x}$

C) $\frac{x-2}{x}$

D) $\frac{x}{x^2+9x+18}$

$$378) \frac{3x^2+5x-28}{2x-6} \cdot \frac{x^2-3x}{9x^2-49} \div \frac{7x+28}{3x^3}$$

378) _____

A) $\frac{14}{3x^4(3x+7)}$

B) $\frac{3x^4}{14(3x+7)}$

C) $\frac{3x^3}{14(3x+7)}$

D) $\frac{7(x+4)^2}{6x^2(3x+7)}$

Add or subtract as indicated.

$$379) \frac{7x+4}{7x+8} + \frac{7x+12}{7x+8}$$

379) _____

A) $\frac{8x+9}{7x+8}$

B) $\frac{2}{7x+8}$

C) 1

D) 2

$$380) \frac{x^2-10x}{x^2+9x} + \frac{x^2+x}{x^2+9x}$$

380) _____

A) $\frac{x-9}{x+9}$

B) $\frac{2x-9}{x+9}$

C) $\frac{-9}{x+9}$

D) $\frac{2x+9}{x+9}$

$$381) \frac{x^2-9x}{x-4} + \frac{20}{x-4}$$

381) _____

A) $x-5$

B) $x+5$

C) $\frac{x^2-9x+20}{x-4}$

D) $x-4$

- 382) $\frac{10x + 2}{x^2 + 2x - 48} + \frac{-8 - 9x}{x^2 + 2x - 48}$ 382) _____
 A) $\frac{1}{x^2 + 2x - 48}$ B) $\frac{1}{x + 8}$ C) $\frac{x + 6}{x^2 + 2x - 48}$ D) $\frac{1}{x - 6}$
- 383) $\frac{x^2 + 14}{x^2 - 6x - 16} + \frac{7x - 4}{x^2 - 6x - 16}$ 383) _____
 A) $\frac{x + 5}{x^2 - 6x - 16}$ B) $\frac{x + 2}{x - 8}$ C) $\frac{(x - 2)(x - 5)}{(x + 2)(x - 8)}$ D) $\frac{x + 5}{x - 8}$
- 384) $\frac{3x}{x - 2} - \frac{6}{x - 2}$ 384) _____
 A) 3 B) $\frac{3x - 6}{x - 4}$ C) $3x$ D) $\frac{1}{3}$
- 385) $\frac{x - 4}{x - 8} - \frac{2x - 5}{x - 8}$ 385) _____
 A) $\frac{x - 1}{x - 8}$ B) $-\frac{x + 1}{x - 8}$ C) $\frac{x + 1}{x - 8}$ D) $-\frac{x - 1}{x - 8}$
- 386) $\frac{3x}{x^2 - 7x + 10} - \frac{6}{x^2 - 7x + 10}$ 386) _____
 A) $\frac{3(x + 2)}{(x - 2)(x - 5)}$ B) $\frac{3}{x - 5}$ C) $\frac{3}{x - 2}$ D) $\frac{3(x - 2)}{(x + 2)(x - 5)}$
- 387) $\frac{10x + 5}{x^2 + 13x + 36} - \frac{9x + 1}{x^2 + 13x + 36}$ 387) _____
 A) $\frac{x - 4}{x^2 + 13x + 36}$ B) $\frac{1}{x + 4}$ C) $\frac{1}{x + 9}$ D) $\frac{1}{x^2 + 13x + 36}$
- 388) $\frac{3}{x} + \frac{7}{x - 6}$ 388) _____
 A) $\frac{10x - 18}{x(6 - x)}$ B) $\frac{10x - 18}{x(x - 6)}$ C) $\frac{18x - 10}{x(6 - x)}$ D) $\frac{18x - 10}{x(x - 6)}$
- 389) $\frac{4}{x + 3} - \frac{2}{x - 3}$ 389) _____
 A) $\frac{2}{(x + 3)(x - 3)}$ B) $\frac{2x + 18}{(x + 3)(x - 3)}$ C) $\frac{2x - 6}{(x + 3)(x - 3)}$ D) $\frac{2x - 18}{(x + 3)(x - 3)}$
- 390) $\frac{6}{x - 7} + \frac{14}{7 - x}$ 390) _____
 A) $-\frac{20}{x - 7}$ B) $\frac{20}{x - 7}$ C) $\frac{8}{x - 7}$ D) $-\frac{8}{x - 7}$

$$391) \frac{2}{x-7} - \frac{8}{7-x} \quad 391) \underline{\hspace{2cm}}$$

A) $\frac{70-10x}{(x-7)(7-x)}$ B) $\frac{10}{7-x}$ C) $\frac{10}{x-7}$ D) $\frac{-6}{x-7}$

$$392) \frac{3}{x^2-3x+2} + \frac{5}{x^2-1} \quad 392) \underline{\hspace{2cm}}$$

A) $\frac{30x-7}{(x-1)(x+1)(x-2)}$ B) $\frac{8x-7}{(x-1)(x-2)}$
 C) $\frac{7x-8}{(x-1)(x+1)(x-2)}$ D) $\frac{8x-7}{(x-1)(x+1)(x-2)}$

$$393) \frac{x}{x^2-16} - \frac{3}{x^2+5x+4} \quad 393) \underline{\hspace{2cm}}$$

A) $\frac{x^2-2x+12}{(x-4)(x+4)(x+1)}$ B) $\frac{x^2-2}{(x-4)(x+4)(x+1)}$
 C) $\frac{x^2-2x+12}{(x-4)(x+4)}$ D) $\frac{x^2+2x+12}{(x-4)(x+4)(x+1)}$

$$394) \frac{x+5}{x^2+6x+8} + \frac{5x-2}{x^2+7x+12} \quad 394) \underline{\hspace{2cm}}$$

A) $\frac{6x^2+16x+11}{(x-4)(x-2)(x-3)}$ B) $\frac{6x+3}{2x^2+13x+20}$
 C) $6x+3$ D) $\frac{6x^2+16x+11}{(x+4)(x+2)(x+3)}$

$$395) \frac{3x}{x+1} + \frac{4}{x-1} - \frac{6}{x^2-1} \quad 395) \underline{\hspace{2cm}}$$

A) $\frac{3x-2}{x+1}$ B) $\frac{3x-2}{x-1}$ C) $\frac{3x}{x-1}$ D) $\frac{x+1}{x-1}$

Solve the problem.

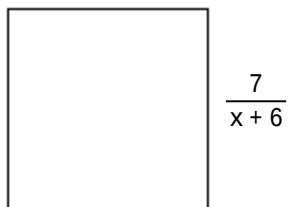
$$396) \text{ Doctors use the rational expression } \frac{DA}{A+12} \quad 396) \underline{\hspace{2cm}}$$

to determine the dosage of a drug prescribed for children. In this expression, A = child's age and D = adult dosage. What is the difference in the child's dosage for a 12-year-old child and a 4-year-old child? Express the answer as a single rational expression in terms of D.

A) $\frac{15}{2}D$ B) $\frac{1}{4}D$ C) $\frac{1}{2}D$ D) $\frac{1}{3}D$

397) Express the perimeter of the square as a single rational expression.

397) _____



A) $\frac{28}{x+6}$

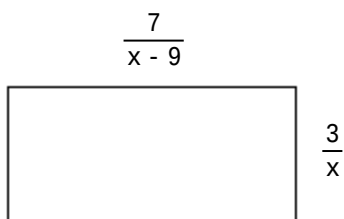
B) $\frac{28}{x+24}$

C) $\frac{7}{x+24}$

D) $\frac{28}{x+12}$

398) Express the perimeter of the rectangle as a single rational expression.

398) _____



A) $\frac{10x - 27}{x(x-9)}$

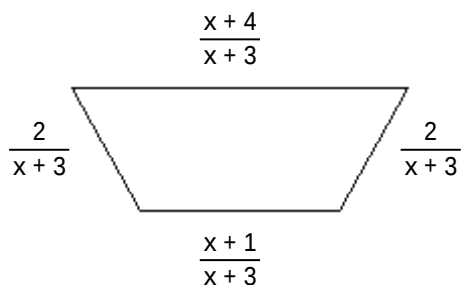
B) $\frac{20x - 54}{x(x-9)}$

C) $\frac{20x - 54}{x(9-x)}$

D) $\frac{10x - 27}{x(9-x)}$

399) Express the perimeter of the trapezoid as a single rational expression.

399) _____



A) $\frac{4x+9}{x+3}$

B) $\frac{x+9}{x+3}$

C) $x+6$

D) $\frac{2x+9}{x+3}$

Simplify the complex rational expression.

400) $\frac{\frac{x}{4} - 1}{x-4}$

400) _____

A) -4

B) $x-4$

C) $\frac{1}{4}$

D) $\frac{4}{x-4}$

$$401) \frac{1 - \frac{5}{x}}{1 + \frac{5}{x}} \quad 401) \underline{\hspace{2cm}}$$

A) $x - 5$

B) $\frac{x+5}{x-5}$

C) $\frac{x-5}{x+5}$

D) $x + 5$

$$402) \frac{\frac{10}{x} + 1}{\frac{10}{x} - 1} \quad 402) \underline{\hspace{2cm}}$$

A) 10

B) $x^2 + 10$

C) $\frac{10+x}{10-x}$

D) $\frac{x^2}{x^2 + 10}$

$$403) \frac{1 - \frac{1}{x}}{8 + \frac{1}{x}} \quad 403) \underline{\hspace{2cm}}$$

A) $\frac{x+1}{8x-1}$

B) $\frac{8x+1}{x-1}$

C) $\frac{x-1}{8x+1}$

D) $\frac{x-1}{8x}$

$$404) \frac{4 + \frac{2}{x}}{\frac{x}{4} + \frac{1}{8}} \quad 404) \underline{\hspace{2cm}}$$

A) $\frac{x}{16}$

B) 1

C) 16

D) $\frac{16}{x}$

$$405) \frac{x - \frac{x}{x+9}}{x+8} \quad 405) \underline{\hspace{2cm}}$$

A) $\frac{x^2}{x+9}$

B) $\frac{x}{x-9}$

C) $\frac{x}{x+9}$

D) $\frac{x}{x+8}$

$$406) \frac{\frac{x}{x-6} + 1}{\frac{27}{x^2-36} + 1} \quad 406) \underline{\hspace{2cm}}$$

A) $\frac{2x+12}{x-3}$

B) $\frac{2x-12}{x-3}$

C) $\frac{x+6}{x+3}$

D) $\frac{2x+12}{x+3}$

$$407) \frac{\frac{\frac{4}{3x-1} - 4}{\frac{4}{3x-1} + 4}}{\quad} \quad 407) \underline{\hspace{2cm}}$$

A) $\frac{2+3x}{3x}$ B) $\frac{2-3x}{3x}$ C) $\frac{2-x}{x}$ D) $\frac{3x}{2-3x}$

$$408) \frac{\frac{\frac{1}{x+6}}{3}}{x^2-36} \quad 408) \underline{\hspace{2cm}}$$

A) $\frac{x-6}{3}$ B) $x-6$ C) $\frac{x+6}{3}$ D) $\frac{3}{x-6}$

$$409) \frac{\frac{\frac{25y^2-64x^2}{xy}}{\frac{5}{x}-\frac{8}{y}}}{\quad} \quad 409) \underline{\hspace{2cm}}$$

A) $\frac{xy}{5x+8y}$ B) $8x+5y$ C) $5x+8y$ D) $\frac{8x+5y}{xy}$

$$410) \frac{\frac{\frac{2}{x^2-4x-12} - \frac{1}{x-6}}{\frac{1}{x+2} + 1}}{\quad} \quad 410) \underline{\hspace{2cm}}$$

A) $\frac{x}{x^2-5x-18}$ B) -1 C) $-\frac{x}{x^2-3x-18}$ D) $-\frac{x}{x^2-4x-12}$

Solve the problem.

411) The average speed on a round-trip commute having a one-way distance d is given by the complex rational expression 411) $\underline{\hspace{2cm}}$

$$\frac{2d}{\frac{d}{r_1} + \frac{d}{r_2}},$$

in which r_1 and r_2 are the speeds on the outgoing and return trips, respectively. Fred and Michael both drove to campus averaging 35 miles per hour and each returned home on the same route he used going and averaged 50 miles per hour. Fred's one-way route was 7 miles longer than Michael's. Simplify the complex rational expression and answer the question: How does Fred's overall average speed compare with Michael's?

- A) Fred's average speed is the same as Michael's.
- B) Fred's average speed is higher than Michael's.
- C) Not enough information is given to answer the question.
- D) Fred's average speed is lower than Michael's.

Simplify the expression.

$$412) \frac{\sqrt{x} - \frac{1}{2\sqrt{x}}}{\sqrt{x}}$$

412) _____

A) $x^2 - \frac{1}{2x}$

B) $1 - \frac{1}{2x}$

C) $1 - \frac{1}{2}$

D) $\frac{\sqrt{x} - \frac{1}{2\sqrt{x}}}{\sqrt{x}}$

$$413) \frac{\frac{x^2}{\sqrt{x^2+8}} - \sqrt{x^2+8}}{x^2}$$

413) _____

A) $\frac{8}{x^2\sqrt{x^2+8}}$

B) $\frac{-8}{x^2\sqrt{x^2+8}}$

C) $\frac{2x^2+8}{x^2\sqrt{x^2+8}}$

D) $\frac{\frac{x^2}{\sqrt{x^2+8}} - \sqrt{x^2+8}}{x^2}$

$$414) \frac{\sqrt{3-x^2} + \frac{x^2}{\sqrt{3-x^2}}}{3-x^2}$$

414) _____

A) $\frac{3+2x^2}{(3-x^2)^{3/2}}$

B) $\frac{\sqrt{3-x^2} + \frac{x^2}{\sqrt{3-x^2}}}{3-x^2}$

C) $\frac{1+x^2}{(3-x^2)^{3/2}}$

D) $\frac{3}{(3-x^2)^{3/2}}$

$$415) \frac{\frac{1}{\sqrt{x+7}} - \frac{1}{\sqrt{x}}}{7}$$

415) _____

A) $\frac{1}{7\sqrt{x+7}} - \frac{1}{7\sqrt{x}}$

B) $\frac{\sqrt{7}}{7\sqrt{x}\sqrt{x+7}}$

C) $\frac{\frac{1}{\sqrt{x+7}} - \frac{1}{\sqrt{x}}}{7}$

D) $\frac{1}{7}$

Rationalize the numerator.

416) $\frac{\sqrt{x+7} - \sqrt{x}}{7}$ 416) _____

A) $\frac{2\sqrt{x+7}}{7\sqrt{x+7} + \sqrt{x}}$

B) $\frac{\sqrt{x+7} - \sqrt{x}}{7}$

C) $\frac{\sqrt{x+7} + \sqrt{x}}{7}$

D) $\frac{1}{\sqrt{x+7} + \sqrt{x}}$

417) $\frac{\sqrt{x} - \sqrt{y}}{x^2 - y^2}$ 417) _____

A) $\frac{1}{(x+y)(\sqrt{x} + \sqrt{y})}$

B) $\frac{1}{x+y}$

C) $\frac{x^2 - y^2}{x^2 + y^2}$

D) $\frac{1}{(x+y)(\sqrt{x} - \sqrt{y})}$

Solve the linear equation.

418) $4x - 10 = 26$ 418) _____

A) {32}

B) {16}

C) {36}

D) {9}

419) $7x - (5x - 1) = 2$ 419) _____

A) $\left\{-\frac{1}{2}\right\}$

B) $\left\{\frac{1}{12}\right\}$

C) $\left\{-\frac{1}{12}\right\}$

D) $\left\{\frac{1}{2}\right\}$

420) $10x + 1 = 9x + 7$ 420) _____

A) {-6}

B) {-8}

C) {8}

D) {6}

421) $15t - 9 = 3t - 3$ 421) _____

A) $\left\{-\frac{1}{2}\right\}$

B) $\left\{-\frac{5}{4}\right\}$

C) $\left\{\frac{1}{2}\right\}$

D) $\left\{-\frac{18}{5}\right\}$

422) $-9x - 7 = 9 + 4x$ 422) _____

A) $\left\{\frac{13}{16}\right\}$

B) $\left\{-\frac{16}{13}\right\}$

C) $\left\{-\frac{5}{2}\right\}$

D) $\left\{-\frac{13}{16}\right\}$

423) $6x - 1 = 7(x + 9)$ 423) _____

A) {-64}

B) {-62}

C) {64}

D) {62}

424) $6(x + 1) + 11 = 5(x + 2) + 10$ 424) _____

A) {7}

B) {3}

C) {12}

D) {17}

425) $27 - (2y + 1) = 3(y - 2) + 3y$ 425) _____

A) {8}

B) $\left\{\frac{15}{4}\right\}$

C) $\left\{\frac{1}{4}\right\}$

D) {4}

426) $8y + 4(3 + y) = 3(y - 4) + 10y$ 426) _____

A) {-24}

B) {24}

C) {-7}

D) {7}

- 427) $(3x - 1) - 3 = 4(x + 6)$
 A) {22} B) {28} C) {10} D) {- 28} 427) _____
- 428) $-7x - 7 - 2(x + 1) = 2x - 7$
 A) $\left\{\frac{12}{11}\right\}$ B) $\left\{-\frac{2}{11}\right\}$ C) $\left\{\frac{12}{7}\right\}$ D) $\left\{-\frac{2}{7}\right\}$ 428) _____
- 429) $6[-5x - 6 + 2(x + 1)] = -3x + 4$
 A) $\left\{-\frac{28}{15}\right\}$ B) $\left\{\frac{44}{5}\right\}$ C) $\left\{\frac{44}{15}\right\}$ D) $\left\{-\frac{28}{5}\right\}$ 429) _____
- 430) $\frac{x}{3} = \frac{x}{4} + 6$
 A) {72} B) {24} C) {12} D) {18} 430) _____
- 431) $\frac{x}{4} = \frac{x}{7} + \frac{7}{4}$
 A) $\left\{\frac{3}{49}\right\}$ B) 0 C) $\left\{\frac{49}{3}\right\}$ D) $\left\{-\frac{7}{4}\right\}$ 431) _____
- 432) $\frac{x}{6} + \frac{4}{3} = \frac{x - 2}{3}$
 A) {12} B) {10} C) {6} D) {8} 432) _____
- 433) $\frac{x + 6}{2} - 1 = \frac{x - 6}{7}$
 A) $\left\{\frac{40}{9}\right\}$ B) $\left\{-\frac{53}{5}\right\}$ C) $\left\{-\frac{16}{5}\right\}$ D) {- 8} 433) _____
- 434) $28 - \frac{x}{9} = \frac{x}{5}$
 A) {-196} B) $\left\{\frac{392}{45}\right\}$ C) {2} D) {90} 434) _____
- 435) $\frac{2x}{5} = \frac{x}{3} + 4$
 A) {-120} B) {-60} C) {120} D) {60} 435) _____
- 436) $\frac{5x}{3} - x = \frac{x}{18} - \frac{7}{6}$
 A) $\left\{-\frac{21}{11}\right\}$ B) $\left\{-\frac{21}{13}\right\}$ C) $\left\{\frac{21}{13}\right\}$ D) $\left\{\frac{21}{11}\right\}$ 436) _____
- 437) $\frac{x + 9}{3} = \frac{37}{12} - \frac{x - 2}{4}$
 A) {-15} B) {1} C) {0} D) {37} 437) _____

$$438) \frac{x-27}{-9} + \frac{x+2}{2} = x+7$$

438) _____

A) $\left\{-\frac{54}{11}\right\}$

B) $\{-18\}$

C) $\left\{-\frac{162}{11}\right\}$

D) $\left\{-\frac{90}{11}\right\}$

First, write the value or values of the variable that make a denominator zero. Then solve the equation.

$$439) \frac{8}{x} = \frac{1}{2x} + 45$$

439) _____

A) none; $\{3\}$

B) $0; \left\{\frac{1}{6}\right\}$

C) $0, 2; \left\{\frac{17}{30}\right\}$

D) $0; \{6\}$

$$440) \frac{1}{x} + 3 = \frac{5}{2x} + \frac{13}{4}$$

440) _____

A) none; $\left\{-\frac{1}{6}\right\}$

B) $0, 2, 4; \{-6\}$

C) $0; \left\{-\frac{1}{6}\right\}$

D) $0; \{-6\}$

$$441) \frac{x-8}{3x} + 9 = \frac{x+6}{x}$$

441) _____

A) $0; \left\{-\frac{17}{2}\right\}$

B) $0; \left\{\frac{26}{25}\right\}$

C) none; $\left\{\frac{14}{27}\right\}$

D) $0, 3; \left\{\frac{26}{25}\right\}$

$$442) \frac{30}{x-7} + 5 = \frac{15}{x-7}$$

442) _____

A) $7; \emptyset$

B) $-7; \{16\}$

C) $7; \{4\}$

D) $-7; \{4\}$

$$443) \frac{21}{7x-7} + \frac{1}{7} = \frac{3}{x-1}$$

443) _____

A) $1; \{1\}$

B) $1; \emptyset$

C) $-1, 7; \{1, 7\}$

D) $7; \{1\}$

$$444) \frac{7}{x+1} + \frac{3}{x-1} = \frac{6}{(x+1)(x-1)}$$

444) _____

A) $-1; \{1\}$

B) $-1, 1; \{2\}$

C) $-1, 1; \emptyset$

D) none; $\{1\}$

Solve the rational equation.

$$445) \frac{x}{x-1} + 3 = \frac{1}{x-1}$$

445) _____

A) $\emptyset$

B) $\{-1\}$

C) $\{1\}$

D) $\{-1, 1\}$

$$446) \frac{1}{x-4} + \frac{1}{4x-16} = \frac{5}{4}$$

446) _____

A) $\{1\}$

B) $\{5\}$

C) $\{-3\}$

D) $\{25\}$

$$447) \frac{2}{x-5} + \frac{3}{5-x} = \frac{9}{x+3}$$

447) _____

A) $\{6\}$

B) $\left\{\frac{21}{5}\right\}$

C) $\{3\}$

D) $\left\{-\frac{21}{5}\right\}$

$$448) \frac{x}{2x+2} = \frac{2x-3}{x+1} - \frac{2x}{4x+4} \quad 448) \underline{\hspace{2cm}}$$

A) $\left\{\frac{3}{2}\right\}$ B) $\{-3\}$ C) $\{3\}$ D) $\left\{-\frac{12}{5}\right\}$

$$449) \frac{5}{y+4} - \frac{2}{y-4} = \frac{5}{y^2-16} \quad 449) \underline{\hspace{2cm}}$$

A) $\{11\}$ B) $\{\sqrt{21}\}$ C) $\{33\}$ D) $\{-11\}$

$$450) \frac{1}{x+7} + \frac{4}{x+5} = \frac{-2}{x^2+12x+35} \quad 450) \underline{\hspace{2cm}}$$

A) $\{-7\}$ B) $\{0\}$ C) $\{5\}$ D) $\emptyset$

$$451) \frac{m+8}{m^2-5m+4} - \frac{8}{m^2-2m+1} = \frac{m-8}{m^2-5m+4} \quad 451) \underline{\hspace{2cm}}$$

A) $\{-2\}$ B) $\{2\}$ C) $\{-56\}$ D) $\{-16\}$

Solve the problem.

$$452) \text{ The formula } C = \frac{21,000 + 260x}{x} \text{ models the average cost per unit, } C, \text{ for Electrostuff to} \quad 452) \underline{\hspace{2cm}}$$

manufacture x units of Electrogadget IV. How many units must the company produce to have an average cost per unit of \$460?

A) 130 units B) 105 units C) 81 units D) 106 units

$$453) \text{ Suppose a cost-benefit model is given by } y = \frac{2703x}{100-x}, \text{ where } y \text{ is the cost for removing } x \text{ percent of} \quad 453) \underline{\hspace{2cm}}$$

a given pollutant. What percent of pollutant can be removed for \$38,000?

A) 93.4% B) 107.7% C) 584.3% D) 9.3%

$$454) \text{ The U.S. Maritime Administration estimated that the cost per ton of building an oil tanker could be} \quad 454) \underline{\hspace{2cm}}$$

represented by the model $y = \frac{110,000}{x+230}$, where y is the cost in dollars per ton and x is the tons (in thousands). What size of oil tanker (in thousands of tons) can be built for \$200 per ton?

A) 32 thousand tons B) 780 thousand tons
C) 256 thousand tons D) 320 thousand tons

Solve the formula for the specified variable.

$$455) A = \frac{1}{2}bh \quad \text{for } b \quad 455) \underline{\hspace{2cm}}$$

A) $b = \frac{Ah}{2}$ B) $b = \frac{h}{2A}$ C) $b = \frac{2A}{h}$ D) $b = \frac{A}{2h}$

$$456) S = 2\pi rh + 2\pi r^2 \quad \text{for } h \quad 456) \underline{\hspace{2cm}}$$

A) $h = 2\pi(S - r)$ B) $h = S - r$ C) $h = \frac{S - 2\pi r^2}{2\pi r}$ D) $h = \frac{S}{2\pi r} - 1$

- 457) $V = \frac{1}{3}Bh$ for h 457) _____
- A) $h = \frac{B}{3V}$ B) $h = \frac{3B}{V}$ C) $h = \frac{V}{3B}$ D) $h = \frac{3V}{B}$
- 458) $F = \frac{9}{5}C + 32$ for C 458) _____
- A) $C = \frac{5}{F - 32}$ B) $C = \frac{9}{5}(F - 32)$ C) $C = \frac{F - 32}{9}$ D) $C = \frac{5}{9}(F - 32)$
- 459) $A = \frac{1}{2}h(a + b)$ for a 459) _____
- A) $a = \frac{hb - 2A}{h}$ B) $a = \frac{A - hb}{2h}$ C) $a = \frac{2Ab - h}{h}$ D) $a = \frac{2A - hb}{h}$
- 460) $d = rt$ for t 460) _____
- A) $t = dr$ B) $t = \frac{d}{r}$ C) $t = \frac{r}{d}$ D) $t = d - r$
- 461) $P = 2L + 2W$ for W 461) _____
- A) $W = P - 2L$ B) $W = \frac{P - 2L}{2}$ C) $W = \frac{P - L}{2}$ D) $W = P - L$
- 462) $A = P(1 + nr)$ for n 462) _____
- A) $n = \frac{P - A}{Pr}$ B) $n = \frac{A}{r}$ C) $n = \frac{A - P}{Pr}$ D) $n = \frac{Pr}{A - P}$
- 463) $I = Prt$ for P 463) _____
- A) $P = \frac{r - 1}{It}$ B) $P = \frac{r - I}{1 + t}$ C) $P = r - It$ D) $P = \frac{I}{rt}$
- 464) $\frac{1}{a} + \frac{1}{b} = \frac{1}{c}$ for c 464) _____
- A) $c = \frac{ab}{a + b}$ B) $c = a + b$ C) $c = \frac{a + b}{ab}$ D) $c = ab(a + b)$
- 465) $P = \frac{A}{1 + rt}$ for r 465) _____
- A) $r = \frac{P - A}{1 + t}$ B) $r = \frac{P - 1}{At}$ C) $r = P - At$ D) $r = \frac{A - P}{Pt}$
- 466) $A = \frac{1}{2}h(B + b)$ for B 466) _____
- A) $B = 2A - bh$ B) $B = \frac{2A - bh}{h}$ C) $B = \frac{A - bh}{h}$ D) $B = \frac{2A + bh}{h}$

467) $P = s_1 + s_2 + s_3$ for s_3 467) _____
 A) $s_3 = P + s_1 - s_2$ B) $s_3 = P - s_1 - s_2$ C) $s_3 = P + s_1 + s_2$ D) $s_3 = s_1 + s_2 - P$

468) $I = \frac{nE}{nr + R}$ for n 468) _____
 A) $n = \frac{IR}{E - Ir}$ B) $n = \frac{IR}{Ir + E}$ C) $n = \frac{-R}{Ir - E}$ D) $n = IR(Ir - E)$

Solve the absolute value equation or indicate that the equation has no solution.

469) $|x| = 8$ 469) _____
 A) $\{-8, 8\}$ B) $\{-8\}$ C) $\{64\}$ D) $\{8\}$

470) $|x + 4| = 8$ 470) _____
 A) $\{-12, 4\}$ B) $\{-4\}$ C) $\emptyset$ D) $\{12, 4\}$

471) $|x + 7| = 2$ 471) _____
 A) $\{5, 9\}$ B) $\{-5\}$ C) $\emptyset$ D) $\{-9, -5\}$

472) $|5x + 6| = 4$ 472) _____
 A) $\emptyset$ B) $\left\{\frac{2}{5}, 2\right\}$ C) $\left\{-\frac{1}{3}, -\frac{5}{3}\right\}$ D) $\left\{-\frac{2}{5}, -2\right\}$

473) $3|x - 3| = 18$ 473) _____
 A) $\{3, -9\}$ B) $\{9, -3\}$ C) $\{3\}$ D) $\emptyset$

474) $|x + 2| + 8 = 15$ 474) _____
 A) $\emptyset$ B) $\{-9, 5\}$ C) $\{-5, 9\}$ D) $\{5\}$

475) $|6x + 4| + 2 = 7$ 475) _____
 A) $\left\{-\frac{9}{4}, \frac{1}{4}\right\}$ B) $\left\{-\frac{1}{6}, \frac{3}{2}\right\}$ C) $\left\{-\frac{3}{2}, \frac{1}{6}\right\}$ D) $\emptyset$

476) $|7x + 9| - 1 = -4$ 476) _____
 A) $\left\{-\frac{6}{7}, \frac{12}{7}\right\}$ B) $\left\{-\frac{12}{7}\right\}$ C) $\left\{-\frac{12}{7}, \frac{6}{7}\right\}$ D) $\emptyset$

477) $\left|8 - \frac{3}{4}x\right| = 6$ 477) _____
 A) $\left\{\frac{56}{3}, \frac{8}{3}\right\}$ B) $\{-14, 2\}$ C) $\left\{-\frac{56}{3}, \frac{8}{3}\right\}$ D) $\{2, 14\}$

478) $\left|1 - \frac{4}{3}x\right| + 3 = 11$ 478) _____
 A) $\left\{-\frac{21}{4}\right\}$ B) $\left\{-\frac{21}{4}, \frac{27}{4}\right\}$ C) $\left\{-\frac{28}{3}\right\}$ D) $\left\{\frac{21}{4}, -\frac{27}{4}\right\}$

Solve the equation by factoring.

479) $x^2 = x + 30$ 479) _____
 A) {5, 6} B) {-5, 6} C) {-5, -6} D) {1, 30}

480) $x^2 + 8x - 20 = 0$ 480) _____
 A) {10, 2} B) {10, -2} C) {-10, 1} D) {-10, 2}

481) $6x^2 + 19x + 15 = 0$ 481) _____
 A) $\left\{-\frac{5}{3}, -\frac{3}{2}\right\}$ B) $\left\{-\frac{5}{6}, -\frac{1}{5}\right\}$ C) $\left\{\frac{5}{3}, -\frac{3}{2}\right\}$ D) $\left\{\frac{5}{3}, \frac{3}{2}\right\}$

482) $6x^2 - 53x = 9$ 482) _____
 A) {-6, 9} B) $\left\{\frac{1}{53}, -\frac{1}{6}\right\}$ C) $\left\{-\frac{1}{6}, 9\right\}$ D) $\left\{-\frac{1}{6}, 6\right\}$

483) $4x^2 - 2x = 0$ 483) _____
 A) {0} B) $\left\{0, \frac{1}{2}\right\}$ C) $\left\{\frac{1}{2}, -\frac{1}{2}\right\}$ D) $\left\{-\frac{1}{2}, 0\right\}$

484) $2x(x - 2) = 7x^2 - 5x$ 484) _____
 A) {0} B) $\left\{0, \frac{1}{5}\right\}$ C) {0, 5} D) $\left\{-\frac{1}{5}, 0\right\}$

485) $7 - 7x = (4x + 9)(x - 1)$ 485) _____
 A) {-4, 1} B) $\left\{1, -\frac{9}{4}\right\}$ C) {1} D) {-1, 4}

486) $-6x - 2 = (3x + 1)^2$ 486) _____
 A) $\left\{-\frac{1}{3}\right\}$ B) $\emptyset$ C) $\left\{-1, -\frac{1}{3}\right\}$ D) $\left\{\frac{1}{3}, 1\right\}$

Solve the quadratic equation by the square root property.

487) $5x^2 = 180$ 487) _____
 A) {0} B) $\{-6\sqrt{5}, 6\sqrt{5}\}$ C) {-6, 6} D) {-5, 5}

488) $3x^2 = 33$ 488) _____
 A) {16.5} B) {12} C) $\{-\sqrt{11}, \sqrt{11}\}$ D) {-11, 11}

489) $6x^2 + 5 = 221$ 489) _____
 A) {-7, 7} B) {6} C) {-6, 6} D) {110.5}

490) $(x - 6)^2 = 4$ 490) _____
 A) {10} B) {-8, 4} C) {4, 8} D) {-2, 2}

- 491) $(2x - 1)^2 = 81$
 A) $\{-5, 4\}$ B) $\{-4, 5\}$ C) $\{-10, 8\}$ D) $\{-8, 10\}$ 491) _____
- 492) $(2x + 2)^2 = 16$
 A) $\{1, 3\}$ B) $\{-3, 1\}$ C) $\{0, 1\}$ D) $\{-9, 9\}$ 492) _____
- 493) $3(x - 8)^2 = 6$
 A) $\{8 - \sqrt{2}, 8 + \sqrt{2}\}$ B) $\{6, 10\}$
 C) $\{-10, -6\}$ D) $\{-8 - \sqrt{2}, -8 + \sqrt{2}\}$ 493) _____
- 494) $(2x + 3)^2 = 5$
 A) $\{-4, 1\}$ B) $\left\{\frac{-3 - \sqrt{5}}{2}, \frac{-3 + \sqrt{5}}{2}\right\}$
 C) $\left\{\frac{\sqrt{5} - 3}{2}, \frac{\sqrt{5} + 3}{2}\right\}$ D) $\left\{\frac{3 - \sqrt{5}}{2}, \frac{3 + \sqrt{5}}{2}\right\}$ 494) _____
- 495) $(7x - 1)^2 = 20$
 A) $\left\{-\frac{19}{7}, 3\right\}$ B) $\left\{\frac{1 - 2\sqrt{5}}{7}, \frac{1 + 2\sqrt{5}}{7}\right\}$
 C) $\{-2\sqrt{7}, 2\sqrt{7}\}$ D) $\left\{\frac{-1 - 2\sqrt{5}}{7}, \frac{-1 + 2\sqrt{5}}{7}\right\}$ 495) _____
- Solve the quadratic equation by completing the square.
- 496) $x^2 + 8x - 33 = 0$
 A) $\{-\sqrt{33}, \sqrt{33}\}$ B) $\{-11, -22\}$ C) $\{-11, 3\}$ D) $\{-3, 11\}$ 496) _____
- 497) $x^2 + 16x = -43$
 A) $\{-8 - \sqrt{21}, -8 + \sqrt{21}\}$ B) $\{-16 + \sqrt{43}\}$
 C) $\{8 + \sqrt{21}\}$ D) $\{8 - \sqrt{43}, 8 + \sqrt{43}\}$ 497) _____
- 498) $x^2 + 12x + 26 = 0$
 A) $\{6 + \sqrt{10}\}$ B) $\{-6 - \sqrt{10}, -6 + \sqrt{10}\}$
 C) $\{6 - \sqrt{26}, 6 + \sqrt{26}\}$ D) $\{-12 + \sqrt{26}\}$ 498) _____
- 499) $x^2 + 4x - 9 = 0$
 A) $\{2 + \sqrt{13}\}$ B) $\{-2 - 1\sqrt{13}, -2 + 1\sqrt{13}\}$
 C) $\{-1 - \sqrt{13}, -1 + \sqrt{13}\}$ D) $\{-2 - \sqrt{13}, -2 + \sqrt{13}\}$ 499) _____
- 500) $x^2 - 12x - 5 = 0$
 A) $\{-6 - \sqrt{41}, -6 + \sqrt{41}\}$ B) $\{12 - \sqrt{149}, 12 + \sqrt{149}\}$
 C) $\{6 - \sqrt{41}, 6 + \sqrt{41}\}$ D) $\{6 - \sqrt{5}, 6 + \sqrt{5}\}$ 500) _____

501) $z^2 + 18z + 63 = 0$

- A) $\{9 + 3\sqrt{7}, 9 - 3\sqrt{7}\}$
 C) $\{9 + 3\sqrt{2}\}$

- B) $\{-9 + 3\sqrt{2}, -9 - 3\sqrt{2}\}$
 D) $\{-18 + 3\sqrt{7}\}$

501) _____

502) $x^2 + 8x = 24$

- A) $\{-2\sqrt{10}, 2\sqrt{10}\}$
 C) $\{-4 - 2\sqrt{20}, -4 + 2\sqrt{20}\}$

- B) $\{2\sqrt{10} - 4, 2\sqrt{10} + 4\}$
 D) $\{-4 - 2\sqrt{10}, -4 + 2\sqrt{10}\}$

502) _____

503) $x^2 + 3x - 9 = 0$

- A) $\left\{\frac{-3 - 3\sqrt{5}}{2}\right\}$
 C) $\left\{\frac{-3 - 3\sqrt{5}}{2}, \frac{-3 + 3\sqrt{5}}{2}\right\}$

- B) $\{-3 - 3\sqrt{5}, -3 + 3\sqrt{5}\}$
 D) $\left\{\frac{3 + 3\sqrt{5}}{2}\right\}$

503) _____

504) $3x^2 - 2x - 6 = 0$

- A) $\left\{\frac{-1 - \sqrt{19}}{3}, \frac{-1 + \sqrt{19}}{3}\right\}$
 C) $\left\{-6, \frac{20}{3}\right\}$

- B) $\left\{\frac{3 - \sqrt{19}}{9}, \frac{3 + \sqrt{19}}{9}\right\}$
 D) $\left\{\frac{1 - \sqrt{19}}{3}, \frac{1 + \sqrt{19}}{3}\right\}$

504) _____

Solve the quadratic equation using the quadratic formula.

505) $x^2 + 2x - 80 = 0$

- A) $\{-8, 10\}$ B) $\{10, 8\}$

- C) $\{-10, 8\}$ D) $\{-10, 1\}$

505) _____

506) $x^2 + 16x + 51 = 0$

- A) $\{8 + \sqrt{13}\}$
 C) $\{-8 - \sqrt{13}, -8 + \sqrt{13}\}$

- B) $\{-16 + \sqrt{51}\}$
 D) $\{8 - \sqrt{51}, 8 + \sqrt{51}\}$

506) _____

507) $x^2 + 4x = 7$

- A) $\{-1 - \sqrt{11}, -1 + \sqrt{11}\}$
 C) $\{-2 - 2\sqrt{11}, -2 + 2\sqrt{11}\}$

- B) $\{2 + \sqrt{11}\}$
 D) $\{-2 - \sqrt{11}, -2 + \sqrt{11}\}$

507) _____

508) $x^2 + 5x + 1 = 0$

- A) $\left\{\frac{-5 - \sqrt{21}}{2}, \frac{-5 + \sqrt{21}}{2}\right\}$
 C) $\left\{\frac{-5 - \sqrt{29}}{2}, \frac{-5 + \sqrt{29}}{2}\right\}$

- B) $\left\{\frac{5 - \sqrt{21}}{2}, \frac{5 + \sqrt{21}}{2}\right\}$
 D) $\left\{\frac{-5 - \sqrt{21}}{10}, \frac{-5 + \sqrt{21}}{10}\right\}$

508) _____

509) $2x^2 + 10x + 3 = 0$

- A) $\left\{\frac{-5 - \sqrt{31}}{2}, \frac{-5 + \sqrt{31}}{2}\right\}$
 C) $\left\{\frac{-5 - \sqrt{19}}{4}, \frac{-5 + \sqrt{19}}{4}\right\}$

- B) $\left\{\frac{-5 - \sqrt{19}}{2}, \frac{-5 + \sqrt{19}}{2}\right\}$
 D) $\left\{\frac{-10 - \sqrt{19}}{2}, \frac{-10 + \sqrt{19}}{2}\right\}$

509) _____

510) $4x^2 + x - 7 = 0$

A) $\left\{ \frac{-1 - \sqrt{113}}{2}, \frac{-1 + \sqrt{113}}{2} \right\}$
C) $\left\{ \frac{-1 - \sqrt{113}}{8}, \frac{-1 + \sqrt{113}}{8} \right\}$

B) $\left\{ \frac{1 - \sqrt{113}}{8}, \frac{1 + \sqrt{113}}{8} \right\}$

D) $\emptyset$

510) _____

511) $2x^2 = -4x - 1$

A) $\left\{ \frac{-2 - \sqrt{2}}{4}, \frac{-2 + \sqrt{2}}{4} \right\}$
C) $\left\{ \frac{-2 - \sqrt{2}}{2}, \frac{-2 + \sqrt{2}}{2} \right\}$

B) $\left\{ \frac{-2 - \sqrt{6}}{2}, \frac{-2 + \sqrt{6}}{2} \right\}$
D) $\left\{ \frac{-4 - \sqrt{2}}{2}, \frac{-4 + \sqrt{2}}{2} \right\}$

511) _____

Compute the discriminant. Then determine the number and type of solutions for the given equation.

512) $x^2 - 5x + 4 = 0$

A) 9; one real solution
C) -41; no real solution

B) 0; one real solution
D) 9; two unequal real solutions

512) _____

513) $x^2 + 4x + 4 = 0$

A) -16; two unequal real solutions
C) -16; no real solution

B) 0; one real solution
D) 16; two unequal real solutions

513) _____

514) $8x^2 = -5x - 2$

A) -89; no real solution
C) 0; one real solution

B) -39; no real solution
D) 89; two unequal real solutions

514) _____

Solve the quadratic equation by the method of your choice.

515) $(4x + 5)^2 = 4$

A) $\left\{ -\frac{3}{4}, 0 \right\}$

B) $\left\{ \frac{1}{4} \right\}$

C) $\left\{ -\frac{7}{4}, -\frac{3}{4} \right\}$

D) $\left\{ \frac{3}{4}, \frac{7}{4} \right\}$

515) _____

516) $6x^2 - 53x - 9 = 0$

A) $\left\{ -\frac{1}{6}, 6 \right\}$

B) $\left\{ -\frac{1}{6}, 9 \right\}$

C) $\{-6, 9\}$

D) $\left\{ -\frac{1}{6}, \frac{1}{53} \right\}$

516) _____

517) $4x^2 = 5x + 9$

A) $\left\{ \frac{4}{9}, -1 \right\}$

B) $\left\{ \frac{9}{4}, -1 \right\}$

C) $\left\{ \frac{4}{9}, 0 \right\}$

D) $\left\{ \frac{4}{9}, 1 \right\}$

517) _____

518) $9x^2 - 5 = 44x$

A) $\left\{ -\frac{1}{9}, 9 \right\}$

B) $\{-9, 5\}$

C) $\left\{ \frac{1}{44}, -\frac{1}{9} \right\}$

D) $\left\{ -\frac{1}{9}, 5 \right\}$

518) _____

519) $2x^2 - 32 = 0$

A) $\{-4\sqrt{2}, 4\sqrt{2}\}$

B) $\{-4, 4\}$

C) $\{0\}$

D) $\{-2, 2\}$

519) _____

520) $x^2 + 12x = -36$

A) $\{-\sqrt{6}\}$

B) $\{6\}$

C) $\{-6, 6\}$

D) $\{-6\}$

520) _____

521) $x^2 + 2x = 7$

A) $\{-1 - \sqrt{2}, -1 + \sqrt{2}\}$

C) $\{1 + \sqrt{2}\}$

B) $\{-1 - 4\sqrt{2}, -1 + 4\sqrt{2}\}$

D) $\{-2 - \sqrt{2}, -2 + \sqrt{2}\}$

521) _____

522) $2x^2 + 6x = -3$

A) $\left\{\frac{-6 - \sqrt{3}}{2}, \frac{-6 + \sqrt{3}}{2}\right\}$

C) $\left\{\frac{-3 - \sqrt{3}}{4}, \frac{-3 + \sqrt{3}}{4}\right\}$

B) $\left\{\frac{-3 - \sqrt{15}}{2}, \frac{-3 + \sqrt{15}}{2}\right\}$

D) $\left\{\frac{-3 - \sqrt{3}}{2}, \frac{-3 + \sqrt{3}}{2}\right\}$

522) _____

523) $4x^2 = -6x - 1$

A) $\left\{\frac{-3 - \sqrt{5}}{4}, \frac{-3 + \sqrt{5}}{4}\right\}$

C) $\left\{\frac{-3 - \sqrt{5}}{8}, \frac{-3 + \sqrt{5}}{8}\right\}$

B) $\left\{\frac{-6 - \sqrt{5}}{4}, \frac{-6 + \sqrt{5}}{4}\right\}$

D) $\left\{\frac{-3 - \sqrt{13}}{4}, \frac{-3 + \sqrt{13}}{4}\right\}$

523) _____

524) $7x^2 + 12x + 1 = 0$

A) $\left\{\frac{-12 - \sqrt{29}}{7}, \frac{-12 + \sqrt{29}}{7}\right\}$

C) $\left\{\frac{-6 - \sqrt{29}}{14}, \frac{-6 + \sqrt{29}}{14}\right\}$

B) $\left\{\frac{-6 - \sqrt{29}}{7}, \frac{-6 + \sqrt{29}}{7}\right\}$

D) $\left\{\frac{-6 - \sqrt{43}}{7}, \frac{-6 + \sqrt{43}}{7}\right\}$

524) _____

525) $4x^2 = 44$

A) $\{-11, 11\}$

B) $\{22\}$

C) $\{12\}$

D) $\{-\sqrt{11}, \sqrt{11}\}$

525) _____

526) $5x^2 - 10 = 0$

A) $\{\sqrt{2}\}$

B) $\left\{-\frac{\sqrt{10}}{5}, \frac{\sqrt{10}}{5}\right\}$

C) $\{-\sqrt{10}, \sqrt{10}\}$

D) $\{-\sqrt{2}, \sqrt{2}\}$

526) _____

527) $x^2 + 12x + 17 = 0$

A) $\{6 + \sqrt{19}\}$

C) $\{-12 + \sqrt{17}\}$

B) $\{-6 - \sqrt{19}, -6 + \sqrt{19}\}$

D) $\{6 - \sqrt{17}, 6 + \sqrt{17}\}$

527) _____

528) $(3x + 4)^2 = 7$

A) $\left\{-\frac{11}{3}, 1\right\}$

C) $\left\{\frac{-4 - \sqrt{7}}{3}, \frac{-4 + \sqrt{7}}{3}\right\}$

B) $\left\{\frac{\sqrt{7} - 4}{3}, \frac{\sqrt{7} + 4}{3}\right\}$

D) $\left\{\frac{4 - \sqrt{7}}{3}, \frac{4 + \sqrt{7}}{3}\right\}$

528) _____

529) $(x + 7)(x - 2) = 8$

A) $\left\{ \frac{-5 - \sqrt{113}}{2}, \frac{-5 + \sqrt{113}}{2} \right\}$
C) $\left\{ \frac{-5 - i\sqrt{113}}{2}, \frac{-5 + i\sqrt{113}}{2} \right\}$

B) $\left\{ \frac{5 - i\sqrt{113}}{2}, \frac{5 + i\sqrt{113}}{2} \right\}$
D) $\left\{ \frac{5 - \sqrt{113}}{2}, \frac{5 + \sqrt{113}}{2} \right\}$

529) _____

530) $\frac{x^2}{18} + x + \frac{35}{9} = 0$

A) $\{9 + \sqrt{11}\}$
C) $\{-9 - \sqrt{11}, -9 + \sqrt{11}\}$

B) $\{-18 + \sqrt{70}\}$
D) $\{9 - \sqrt{70}, 9 + \sqrt{70}\}$

530) _____

531) $\frac{1}{x+15} + \frac{1}{x} = \frac{1}{7}$

A) $\left\{ \frac{29 - \sqrt{421}}{2}, \frac{29 + \sqrt{421}}{2} \right\}$
C) $\left\{ \frac{-29 - \sqrt{421}}{2}, \frac{-29 + \sqrt{421}}{2} \right\}$

B) $\left\{ \frac{-1 - \sqrt{421}}{2}, \frac{-1 + \sqrt{421}}{2} \right\}$
D) $\left\{ \frac{1 - \sqrt{421}}{2}, \frac{1 + \sqrt{421}}{2} \right\}$

531) _____

532) $\frac{7}{x-5} + \frac{x}{x+5} = \frac{44}{x^2-25}$

A) $\{1 - \sqrt{10}, 1 + \sqrt{10}\}$
C) $\{1 - \sqrt{23}, 1 + \sqrt{23}\}$

B) $\{-1 - \sqrt{23}, -1 + \sqrt{23}\}$
D) $\{-1 - \sqrt{10}, -1 + \sqrt{10}\}$

532) _____

533) $\frac{y}{y+4} + \frac{8y+28}{y^2+7y+12} = \frac{4}{y+3}$

A) $\{4, 3\}$ B) $\emptyset$

C) $\{-3, -4\}$ D) $\{-6, 5\}$

533) _____

534) $7x^2 - \sqrt{3}x - 1 = 0$

A) $\left\{ \frac{\sqrt{3} - \sqrt{37}}{14}, \frac{\sqrt{3} + \sqrt{37}}{14} \right\}$
C) $\left\{ \frac{\sqrt{3} - 5i}{14}, \frac{\sqrt{3} + 5i}{14} \right\}$

B) $\left\{ \frac{\sqrt{3} - \sqrt{31}}{14}, \frac{\sqrt{3} + \sqrt{31}}{14} \right\}$
D) $\left\{ \frac{-\sqrt{3} - \sqrt{31}}{14}, \frac{-\sqrt{3} + \sqrt{31}}{14} \right\}$

534) _____

Solve the radical equation, and check all proposed solutions.

535) $\sqrt{x+3} = 5$

A) $\{64\}$ B) $\{22\}$

C) $\{25\}$ D) $\{28\}$

535) _____

536) $\sqrt{5x-4} = 4$

A) $\{16\}$ B) $\{4\}$

C) $\emptyset$ D) $\left\{ \frac{12}{5} \right\}$

536) _____

537) $\sqrt{x-3} = x-5$

A) $\{7\}$ B) $\{4\}$

C) $\{4, 7\}$ D) $\{-7\}$

537) _____

538) $\sqrt{7x + 44} = x$ 538) _____
 A) $\{-4, 11\}$ B) $\emptyset$ C) $\{11\}$ D) $\left\{-\frac{22}{3}\right\}$

539) $\sqrt{26x + 39} = x + 8$ 539) _____
 A) $\{4\}$ B) $\{-5\}$ C) $\{-4\}$ D) $\{5\}$

540) $x - 9 = \sqrt{4x + 9}$ 540) _____
 A) $\{9\}$ B) $\{4, 18\}$ C) $\{18\}$ D) $\emptyset$

541) $\sqrt{24x + 24} - 7 = x$ 541) _____
 A) $\{4\}$ B) $\{5\}$ C) $\{-4\}$ D) $\{-5\}$

542) $x - \sqrt{3x - 2} = 4$ 542) _____
 A) $\{2, 9\}$ B) $\{1, 2\}$ C) $\{-1\}$ D) $\{9\}$

543) $\sqrt{2x} + 12 = x + 8$ 543) _____
 A) $\{2, 8\}$ B) $\left\{-4, \frac{4}{3}\right\}$ C) $\{8\}$ D) $\{-4\}$

Solve the problem.

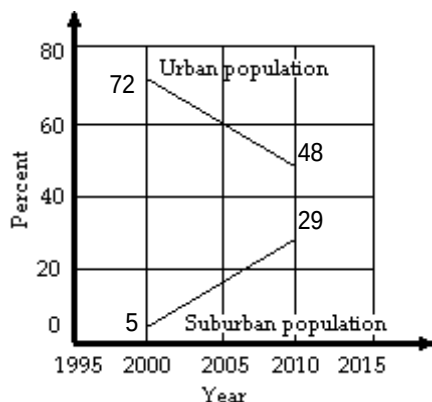
544) For a culture of 90,000 bacteria of a certain strain, the number of bacteria N that will survive x hours is modeled by the formula $N = 9000\sqrt{100 - x}$. After how many hours will 54,000 bacteria survive? 544) _____
 A) 64 hr B) 94 hr C) 36 hr D) 46 hr

545) The formula $L = 6.75\sqrt{x} + 12$ models the amount, L , in billions of dollars of new student loans x years after 1993. According to the model, in what year is the amount loaned expected to reach \$39 billion? 545) _____
 A) 2014 B) 2012 C) 2013 D) 2009

546) A local race for charity has taken place since 1993. In 1993, the winning speed was 5.5 miles per hour. The winning speed increased, on average, by 0.16 miles per hour each year in the period 1993-1998. If this trend continues, in which year is the winning speed predicted to be 7.26 mph? 546) _____
 A) 2006 B) 2004 C) 2003 D) 2005

547) The following graph shows that more and more people in a certain country are moving from urban areas to the suburbs. In 2000, the percentage of the population living in urban areas was 72 and this percentage decreased by 2.4 each year, on average, in the period 2000-2010. In 2000, the percentage of the population living in the suburbs was 5 and this percentage increased by 2.4 each year, on average, in the period 2000-2010. Assuming this trend continues, estimate the year in which the percentage of the population living in urban areas will be equal to the percentage living in the suburbs.

547) _____



A) 2015

B) 2014

C) 2019

D) 2011

548) A car rental agency charges \$250 per week plus \$0.25 per mile to rent a car. How many miles can you travel in one week for \$400?

548) _____

A) 350 mi

B) 600 mi

C) 1600 mi

D) 575 mi

549) A train ticket in a certain city is \$3.00. People who use the train also have the option of purchasing a frequent rider pass for \$15.75 each month. With the pass, each ticket costs only \$2.25. Determine the number of times in a month the train must be used so that the total monthly cost without the pass is the same as the total monthly cost with the pass.

549) _____

A) 23 times

B) 20 times

C) 22 times

D) 21 times

550) You inherit \$10,000 with the stipulation that for the first year the money must be invested in two stocks paying 6% and 11% annual interest, respectively. How much should be invested at each rate if the total interest earned for the year is to be \$800?

550) _____

A) \$6000 invested at 6%; \$4000 invested at 11%

B) \$7000 invested at 6%; \$3000 invested at 11%

C) \$4000 invested at 6%; \$6000 invested at 11%

D) \$5000 invested at 6%; \$5000 invested at 11%

551) You inherit \$70,000 from a very wealthy grandparent, with the stipulation that for the first year, the money must be invested in two stocks paying 4% and 10% annual interest, respectively. How much should be invested at each rate if the total interest earned for the year is to be \$4000?

551) _____

A) \$40,000 invested at 4%; \$30,000 invested at 10%

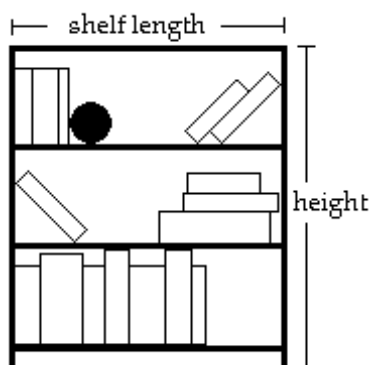
B) \$20,000 invested at 4%; \$50,000 invested at 10%

C) \$30,000 invested at 4%; \$40,000 invested at 10%

D) \$50,000 invested at 4%; \$20,000 invested at 10%

- 552) A bookcase is to be constructed as shown in the figure below. The height of the bookcase is 3 feet longer than the length of a shelf. If 24 feet of lumber is available for the entire unit (including the shelves, but NOT the back of the bookcase), find the length and height of the unit.

552) _____



- A) length: 10.5 ft; height: 13.5 ft
C) length: 4.5 ft; height: 7.5 ft

- B) length: 3 ft; height: 6 ft
D) length: 3 ft; height: 9 ft

- 553) An auto repair shop charged a customer \$355 to repair a car. The bill listed \$55 for parts and the remainder for labor. If the cost of labor is \$30 per hour, how many hours of labor did it take to repair the car?

553) _____

A) 9 hr

B) 11 hr

C) 10.5 hr

D) 10 hr

- 554) After a 13% price reduction, a boat sold for \$21,750. What was the boat's price before the reduction? (Round to the nearest cent, if necessary.)

554) _____

A) \$25,000

B) \$167,307.69

C) \$24,577.50

D) \$2827.50

- 555) Inclusive of a 6.6% sales tax, a diamond ring sold for \$2665.00. Find the price of the ring before the tax was added. (Round to the nearest cent, if necessary.)

555) _____

A) \$2840.89

B) \$2500

C) \$2489.11

D) \$175.89

- 556) The selling price of a lamp is \$270. If the markup is 30% of the dealer's cost, what is the dealer's cost of the lamp?

556) _____

A) \$207.69

B) \$8.10

C) \$2619.00

D) \$81.00

- 557) The perimeter of a rectangle is 40 cm. The length is 12 cm longer than the width. Find the dimensions.

557) _____

A) Width: 8 cm; length: 20 cm

B) Width: 4 cm; length: 16 cm

C) Width: 11 cm; length: 23 cm

D) Width: 4 cm; length: 12 cm

- 558) The length of a rectangular room is 2 feet longer than twice the width. If the room's perimeter is 208 feet, what are the room's dimensions?

558) _____

A) Width: 68 ft; length: 140 ft

B) Width: 34 ft; length: 70 ft

C) Width: 51 ft; length: 53 ft

D) Width: 39 ft; length: 80 ft

- 559) A diagonal crosswalk at an intersection of First Street and Grand Avenue is the hypotenuse of a triangle in which crosswalks across each street are the legs. First Street is 28 feet wide and Grand Avenue is 48 feet wide. How much shorter is the distance traveled by pedestrians using the diagonal crosswalk rather than using both crosswalks that form the legs of the triangle?

559) _____

A) 20 ft

B) 7.6 ft

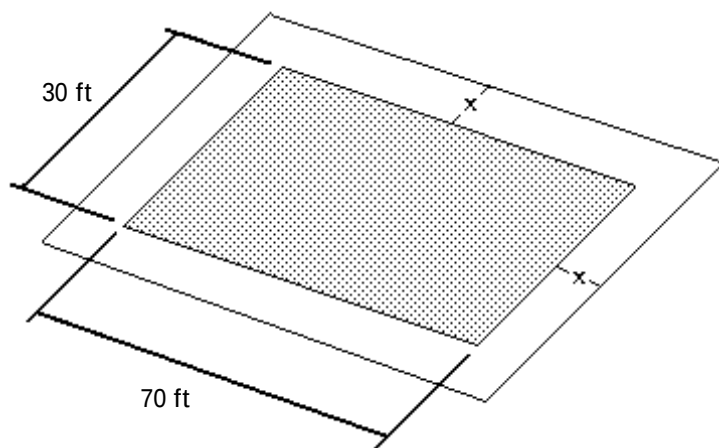
C) 20.4 ft

D) 55.6 ft

- 560) There are 22 more sophomores than juniors in an 8 AM algebra class. If there are 114 students in this class, find the number of sophomores and the number of juniors in the class. 560) _____
 A) 136 sophomores; 92 juniors B) 114 sophomores; 92 juniors
 C) 46 sophomores; 68 juniors D) 68 sophomores; 46 juniors
- 561) The president of a certain university makes three times as much money as one of the department heads. If the total of their salaries is \$230,000, find each worker's salary. 561) _____
 A) president's salary: \$115,000; department head's salary: \$57,500
 B) president's salary: \$172,500; department head's salary: \$57,500
 C) president's salary: \$57,500; department head's salary: \$172,500
 D) president's salary: \$17,250; department head's salary: \$5750
- 562) During a road trip, Tony drove one-third the distance that Lana drove. Mark drives 12 more miles than Lana drove. The total distance they drove on the trip was 362 miles. How many miles did each person drive? 562) _____
 A) Tony: 46 mi, Lana: 138 mi, Mark: 150 mi B) Tony: 50 mi, Lana: 150 mi, Mark: 162 mi
 C) Tony: 150 mi, Lana: 450 mi, Mark: 462 mi D) Tony: 450 mi, Lana: 150 mi, Mark: 138 mi
- 563) The sum of the angles of a triangle is 180° . Find the three angles of the triangle if one angle is twice the smallest angle and the third angle is 28° greater than the smallest angle. 563) _____
 A) $30^\circ, 60^\circ, 90^\circ$ B) $24^\circ, 48^\circ, 108^\circ$ C) $38^\circ, 76^\circ, 66^\circ$ D) $24^\circ, 52^\circ, 104^\circ$
- 564) In a recent International Gymnastics competition, the U.S., China, and Romania were the big winners. If the total number of medals won by each team are three consecutive integers whose sum is 72 and the U.S. won more than China who won more than Romania, how many medals did each team win? 564) _____
 A) U.S.: 74 medals; China: 73 medals; Romania: 72 medals
 B) U.S.: 26 medals; China: 25 medals; Romania: 24 medals
 C) U.S.: 25 medals; China: 24 medals; Romania: 23 medals
 D) U.S.: 23 medals; China: 22 medals; Romania: 21 medals
- 565) Sybil is having her yard landscaped. She obtained an estimate from two landscaping companies. Company A gave an estimate of \$240 for materials and equipment rental plus \$45 per hour for labor. Company B gave an estimate of \$320 for materials and equipment rental plus \$35 per hour for labor. Determine how many hours of labor will be required for the two companies to cost the same. 565) _____
 A) 11 hr B) 12 hr C) 8 hr D) 7 hr
- 566) Sergio's internet provider charges its customers \$9 per month plus 6¢ per minute of on-line usage. Sergio received a bill from the provider covering a 5-month period and was charged a total of \$72.60. How many minutes did he spend on-line during that period? (Round to the nearest whole minute, if necessary.) 566) _____
 A) 46 min B) 460 min C) 646 min D) 713 min

- 567) The rectangular swimming pool in the figure shown measures 30 feet by 70 feet and contains a path of uniform width around the four edges. The perimeter of the rectangle formed by the pool and the surrounding path is 232 feet. Determine the width of the path.

567) _____



- A) 33 ft B) 12 ft C) 8 ft D) 4 ft

- 568) A rectangular parking lot has a length that is 2 yards greater than the width. The area of the parking lot is 195 square yards. Find the length and the width.

568) _____

- A) Width: 17 yd; length: 19 yd B) Width: 11 yd; length: 13 yd
C) Width: 13 yd; length: 15 yd D) Width: 15 yd; length: 17 yd

- 569) Each side of a square is lengthened by 2 inches. The area of this new, larger square is 81 square inches. Find the length of a side of the original square.

569) _____

- A) 5 in. B) 8 in. C) 7 in. D) 9 in.

- 570) Use the formula $\text{Time traveled} = \frac{\text{Distance traveled}}{\text{Average Velocity}}$. A passenger train can travel 320 miles in the same amount of time it takes a freight train to travel 240 miles. If the average velocity of the freight train is 10 miles per hour slower than the average velocity of the passenger train, find the average velocity of each.

570) _____

- A) passenger train: 40 mph B) passenger train: 60 mph
freight train: 30 mph freight train: 50 mph
C) passenger train: 30 mph D) passenger train: 50 mph
freight train: 20 mph freight train: 40 mph

- 571) A cruise boat travels 84 miles downstream in 4 hours and returns to its starting point upstream in 12 hours. Find the speed of the stream.

571) _____

- A) 14 mph B) 21 mph C) 35 mph D) 7 mph

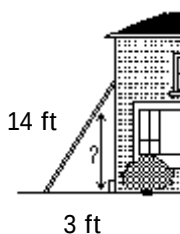
- 572) Judy has a rectangular garden 9 by 22 feet. She wants to put a grass border around the garden with a uniform width on all sides. If she has enough grass seed to cover 312 square feet, how wide can the grass border be?

572) _____

- A) 4 ft B) 8 ft C) 6 ft D) 2 ft

573) A 14-foot ladder is leaning against a house with the base of the ladder 3 feet from the house. How high up the house does the ladder reach? If necessary, round to the nearest tenth foot.

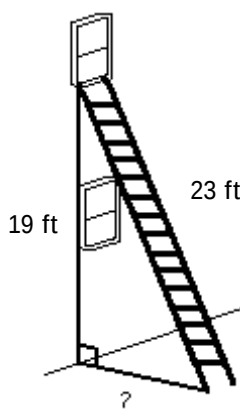
573) _____



- A) 13.7 ft B) 14 ft C) 14.3 ft D) 11 ft

574) A 23-ft-tall ladder is placed so that it reaches 19 ft up on the wall of a house. How far is the base of the ladder from the wall of the house? If necessary, round to the nearest tenth foot.

574) _____



- A) 29.8 ft B) 890 ft C) 13 ft D) 168 ft

575) Two cars leave an intersection. One car travels north; the other east. When the car traveling north had gone 6 miles, the distance between the cars was 2 miles more than the distance traveled by the car heading east. How far had the east bound car traveled?

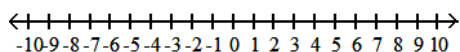
575) _____

- A) 8 mi B) 6 mi C) 12 mi D) 10 mi

Express the interval in set-builder notation and graph the interval on a number line.

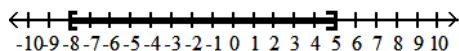
576) $(-8, 5]$

576) _____

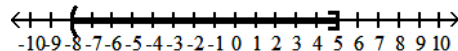


A) $\{x \mid -8 \leq x \leq 5\}$

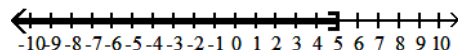
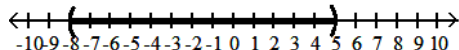
B) $\{x \mid -8 < x \leq 5\}$

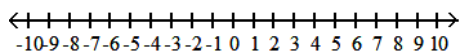


C) $\{x \mid -8 < x < 5\}$

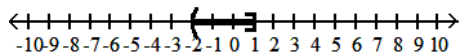


D) $\{x \mid x \leq 5\}$

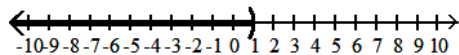


577) $[-2, 1)$ 

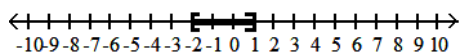
A) $\{x \mid -2 < x \leq 1\}$



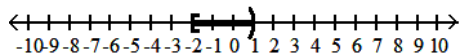
C) $\{x \mid x < 1\}$



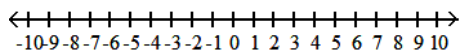
B) $\{x \mid -2 \leq x \leq 1\}$



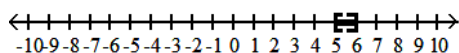
D) $\{x \mid -2 \leq x < 1\}$



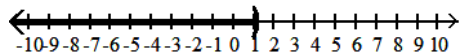
577) _____

578) $\left[-\infty, \frac{6}{5}\right)$ 

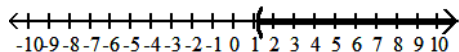
A) $\{x \mid 5 \leq x \leq 6\}$



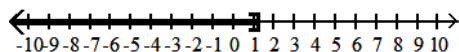
C) $\left\{x \mid x < \frac{6}{5}\right\}$



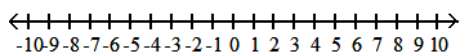
B) $\left\{x \mid x > \frac{6}{5}\right\}$



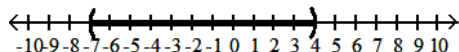
D) $\left\{x \mid x \leq \frac{6}{5}\right\}$



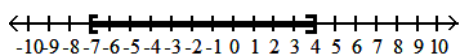
578) _____

579) $[-7, 4]$ 

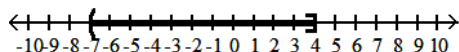
A) $\{x \mid -7 < x < 4\}$



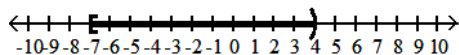
C) $\{x \mid -7 \leq x \leq 4\}$



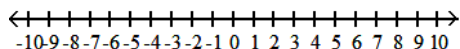
B) $\{x \mid -7 < x \leq 4\}$



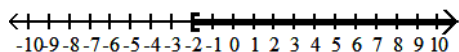
D) $\{x \mid -7 \leq x < 4\}$



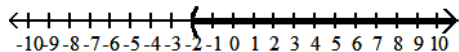
579) _____

580) $(-2, \infty)$ 

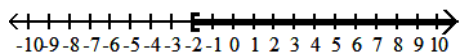
A) $\{x \mid x > -2\}$



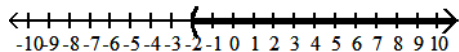
C) $\{x \mid x \geq -2\}$



B) $\{x \mid x \geq -2\}$



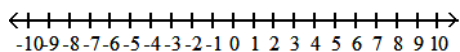
D) $\{x \mid x > -2\}$



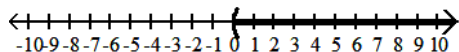
580) _____

581) $[0, \infty)$

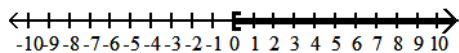
581) _____



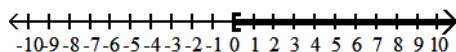
A) $\{x \mid x > 0\}$



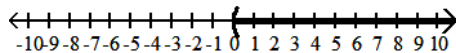
C) $\{x \mid x > 0\}$



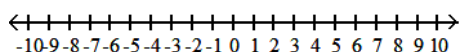
B) $\{x \mid x \geq 0\}$



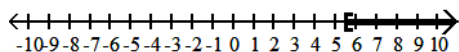
D) $\{x \mid x \geq 0\}$

582) $(-\infty, 5.5]$

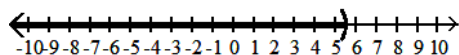
582) _____



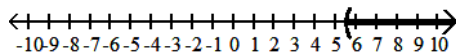
A) $\{x \mid x \geq 5.5\}$



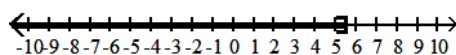
C) $\{x \mid x < 5.5\}$



B) $\{x \mid x > 5.5\}$



D) $\{x \mid x \leq 5.5\}$



Use graphs to find the set.

583) $(-6, 0) \cap [-2, 7]$

583) _____

A) $(-6, 7]$

B) $(-6, -2]$

C) $[-2, 0)$

D) $(0, 7]$

584) $(-6, 0) \cup [-1, 9]$

584) _____

A) $[-1, 0)$

B) $(-6, -1]$

C) $(-6, 9]$

D) $(0, 9]$

585) $(-\infty, 4) \cap [-3, 15]$

585) _____

A) $(4, 15)$

B) $(-\infty, -3]$

C) $(-\infty, 15)$

D) $[-3, 4)$

586) $(-\infty, 7) \cup [-9, 15]$

586) _____

A) $(7, 15)$

B) $(-\infty, 15)$

C) $(-\infty, -9]$

D) $[-9, 7)$

587) $(6, \infty) \cap [14, \infty)$

587) _____

A) $[14, \infty)$

B) $(6, \infty)$

C) $(-\infty, \infty)$

D) $(6, 14]$

588) $(6, \infty) \cup [10, \infty)$

588) _____

A) $(-\infty, \infty)$

B) $(6, 10]$

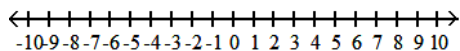
C) $[10, \infty)$

D) $(6, \infty)$

Solve the linear inequality. Other than $\emptyset$, use interval notation to express the solution set and graph the solution set on a number line.

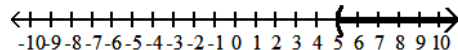
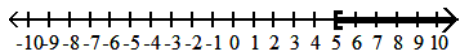
589) $4x + 3 < 23$

589) _____



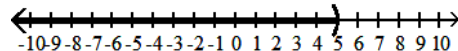
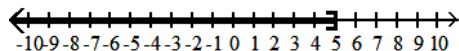
A) $[5, \infty)$

B) $(5, \infty)$



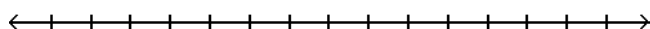
C) $(-\infty, 5]$

D) $(-\infty, 5)$

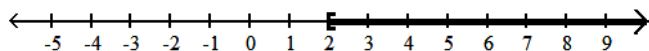


590) $2x - 6 \geq 10$

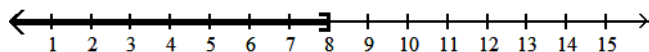
590) _____



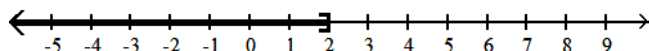
A) $[2, \infty)$



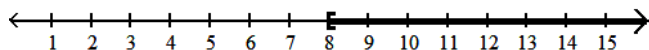
B) $(-\infty, 8]$



C) $(-\infty, 2]$

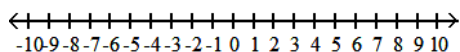


D) $[8, \infty)$



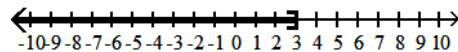
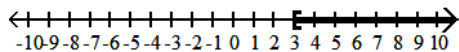
591) $-8x \geq 24$

591) _____



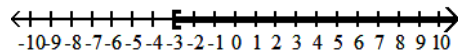
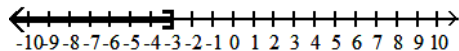
A) $[3, \infty)$

B) $(-\infty, 3]$



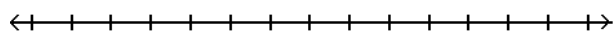
C) $(-\infty, -3]$

D) $[-3, \infty)$

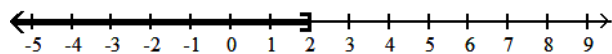


592) $4x - 7 > 3x - 5$

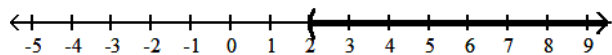
592) _____



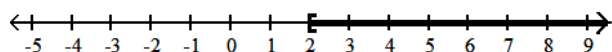
A) $(-\infty, 2]$



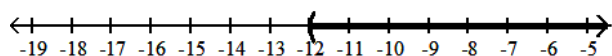
B) $(2, \infty)$



C) $[2, \infty)$

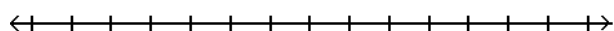


D) $(-12, \infty)$

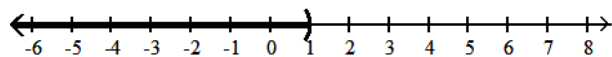


593) $5x + 6 \geq 4x + 7$

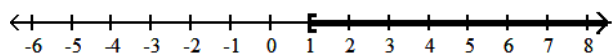
593) _____



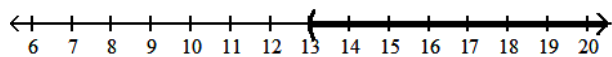
A) $(-\infty, 1)$



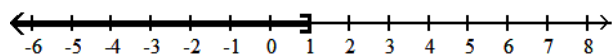
B) $[1, \infty)$



C) $(13, \infty)$

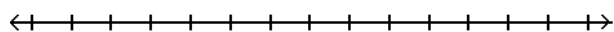


D) $(-\infty, 1]$

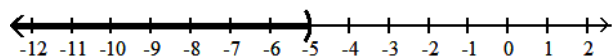


594) $12x - 8 > 4(2x - 7)$

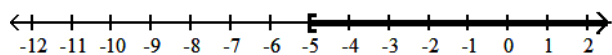
594) _____



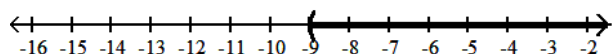
A) $(-\infty, -5)$



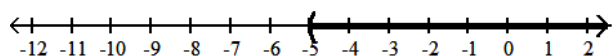
B) $[-5, \infty)$



C) $(-9, \infty)$

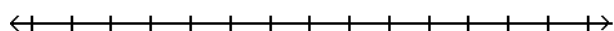


D) $(-5, \infty)$

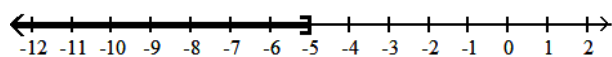


595) $-6(3x - 3) < -24x + 12$

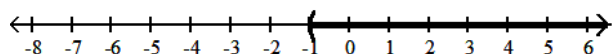
595) _____



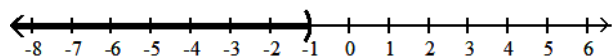
A) $(-\infty, -5]$



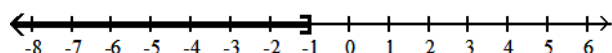
B) $(-1, \infty)$



C) $(-\infty, -1)$

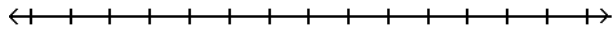


D) $(-\infty, -1]$

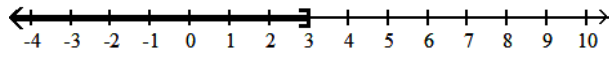


596) $-9x + 21 \leq -3(2x - 4)$

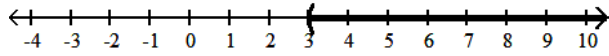
596) _____



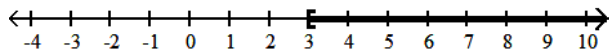
A) $(-\infty, 3]$



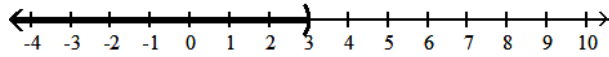
B) $(3, \infty)$



C) $[3, \infty)$

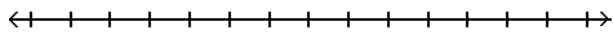


D) $(-\infty, 3)$

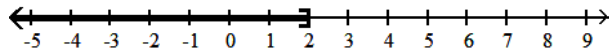


597) $8x - 8 \leq 2(3x - 2)$

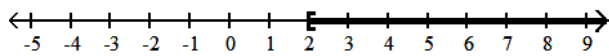
597) _____



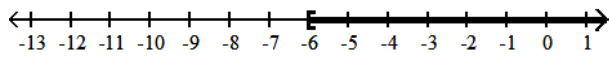
A) $(-\infty, 2]$



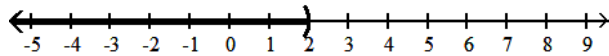
B) $[2, \infty)$



C) $[-\infty, -6)$

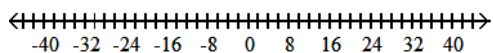


D) $(-\infty, 2)$



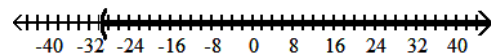
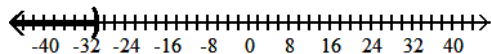
598) $\frac{x}{7} - \frac{1}{6} \leq \frac{x}{4} + 3$

598) _____



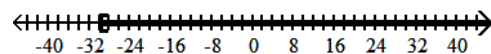
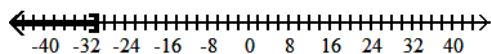
A) $\left(-\infty, -\frac{266}{9}\right)$

B) $\left(-\frac{266}{9}, \infty\right)$



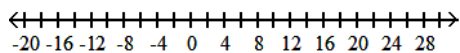
C) $\left[-\infty, -\frac{266}{9}\right]$

D) $\left[-\frac{266}{9}, \infty\right)$



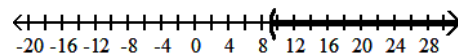
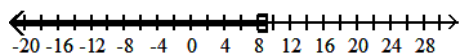
599) $\frac{x-5}{15} \geq \frac{x-4}{20} + \frac{1}{60}$

599) _____



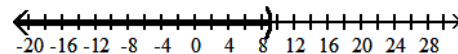
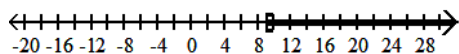
A) $(-\infty, 9]$

B) $(9, \infty)$



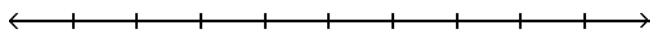
C) $[9, \infty)$

D) $(-\infty, 9)$

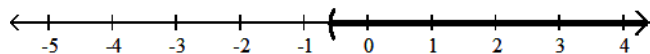


600) $\frac{1}{2} - \frac{5}{6}x < 2$

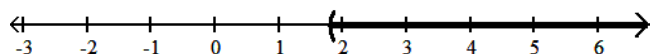
600) _____



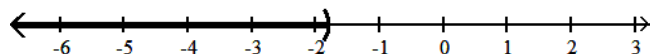
A) $\left(-\frac{3}{5}, \infty\right)$



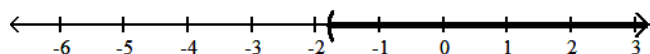
B) $\left(\frac{9}{5}, \infty\right)$



C) $\left(-\infty, -\frac{9}{5}\right)$

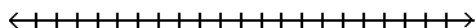


D) $\left(-\frac{9}{5}, \infty\right)$

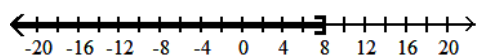


601) $\frac{x}{2} \geq \frac{x}{8} + 3$

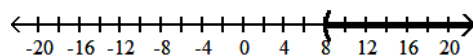
601) _____



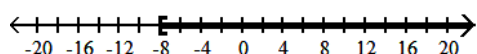
A) $(-\infty, 8]$



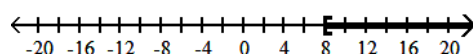
B) $(8, \infty)$



C) $[-8, \infty)$

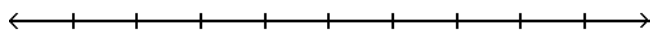


D) $[8, \infty)$

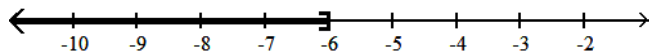


602) $\frac{x}{8} \leq \frac{x}{2} - \frac{2x+3}{4}$

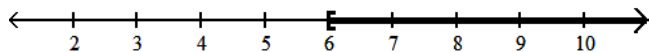
602) _____



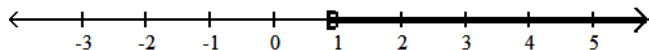
A) $(-\infty, -6]$



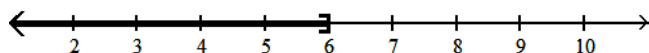
B) $[6, \infty)$



C) $\left[\frac{6}{7}, \infty\right)$

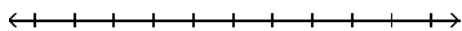


D) $(-\infty, 6]$

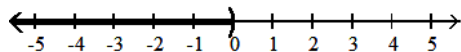


603) $-3(-3 - x) < 5x + 21 - 12 - 2x$

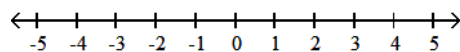
603) _____



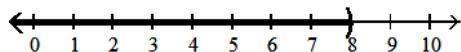
A) $(-\infty, 0)$



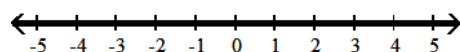
B) $\emptyset$



C) $(-\infty, 8)$

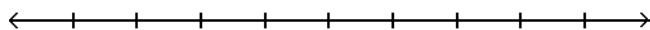


D) $(-\infty, \infty)$

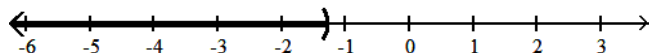


604) $-4(2x + 1) \geq 3[3x - 2(x + 3)]$

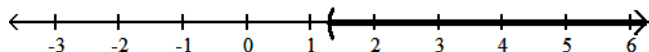
604) _____



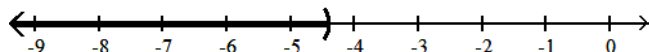
A) $\left[-\infty, -\frac{14}{11} \right]$



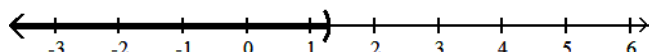
B) $\left[\frac{14}{11}, \infty \right)$



C) $\left[-\infty, -\frac{22}{5} \right]$



D) $\left[-\infty, \frac{14}{11} \right]$



Solve the problem.

605) When making a long distance call from a certain pay phone, the first three minutes of a call cost \$1.60. After that, each additional minute or portion of a minute of that call costs \$0.35. Use an inequality to find the number of minutes one can call long distance for \$6.50.

605) _____

- A) 14 minutes or fewer
C) 19 minutes or fewer

- B) 4 minutes or fewer
D) 17 minutes or fewer

606) It takes 24 minutes to set up a candy making machine. Once the machine is set up, it produces 10 candies per minute. Use an inequality to find the number of candies that can be produced in 2 hours if the machine has not yet been set up.

606) _____

- A) 2640 candies or fewer
C) 960 candies or fewer

- B) 20 candies or fewer
D) 480 candies or fewer

607) A certain store has a fax machine available for use by its customers. The store charges \$1.95 to send the first page and \$0.45 for each subsequent page. Use an inequality to find the number of pages that can be faxed for \$7.35.

607) _____

- A) 16 pages or fewer
C) 4 pages or fewer

- B) 13 pages or fewer
D) 51 pages or fewer

608) Claire has received scores of 85, 88, 87, and 90 on her algebra tests. What score must she receive on the fifth test to have an overall test score average of at least 87?

608) _____

- A) 86 or greater

- B) 85 or greater

- C) 84 or greater

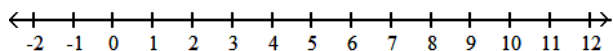
- D) 83 or greater

- 609) Using data from 1996-1998, the annual number of cars sold at a certain dealership can be modeled by the formula
 $y = 4x + 1$,
 where y is the number of cars, in thousands, sold x years after 1996. According to this formula, in which years will the number of cars sold exceed 49 thousand?
 A) Years after 2008
 B) Years after 2006
 C) Years after 2012
 D) Years after 2010
 609) _____
- 610) ABC phone company charges \$20 per month plus 8¢ per minute of phone calls. XYZ phone company charges \$8 per month plus 10¢ per minute of phone calls. How many minutes of phone calls in a month make XYZ phone company the better deal?
 A) More than 60 minutes
 B) Less than 60 minutes
 C) Less than 600 minutes
 D) More than 600 minutes
 610) _____
- 611) Greg is opening a car wash. He estimates his cost equation as $C = 7000 + 0.07x$ and his revenue equation as $R = 1.75x$, where x is the number of cars washed in a six-month period. Find the number of cars that must be washed in a six-month period for Greg to make a profit.
 A) At least 417 cars
 B) At least 41,667 cars
 C) At least 4167 cars
 D) At least 3167 cars
 611) _____
- 612) A standard train ticket in a certain city costs \$1.50 per ride. People who use the train also have the option of purchasing a frequent-rider pass for \$16.50 each month. With the pass, a ticket costs only \$0.75 per ride. How many train rides in a month make the frequent-rider pass a better deal than standard train tickets?
 A) 22 or more rides
 B) 24 or more rides
 C) 21 or more rides
 D) 23 or more rides
 612) _____
- 613) Every Sunday, Jarod buys a loaf of fresh bread for his family from the corner bakery for \$2.00. The local department store has a sale on breadmakers for \$89. If the bread-making supplies cost \$0.93 per week, for how many weeks would Jarod have to bake a loaf of bread at home before the breadmaker starts saving him money?
 A) At least 84 weeks
 B) At least 86 weeks
 C) At least 85 weeks
 D) At least 83 weeks
 613) _____

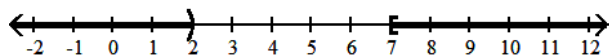
Solve the compound inequality. Other than $\emptyset$, use interval notation to express the solution set and graph the solution set on a number line.

614) $4 < 2x \leq 14$

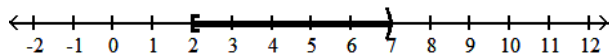
614) _____



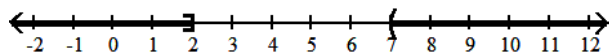
A) $(-\infty, 2) \cup [7, \infty)$



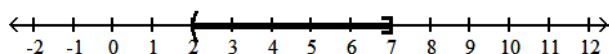
B) $[2, 7)$



C) $(-\infty, 2] \cup (7, \infty)$

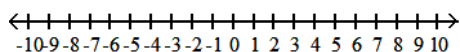


D) $(2, 7]$



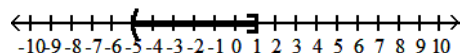
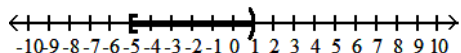
615) $-2 < x - 3 \leq 4$

615) _____



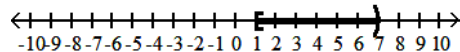
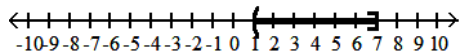
A) $[-5, 1)$

B) $(-5, 1]$



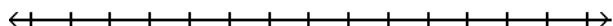
C) $(1, 7]$

D) $[1, 7)$

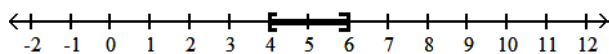


616) $7 \leq 3x - 5 \leq 13$

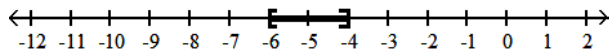
616) _____



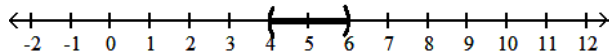
A) $[4, 6]$



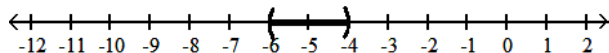
B) $[-6, -4]$



C) $(4, 6)$

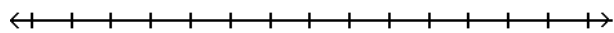


D) $(-6, -4)$

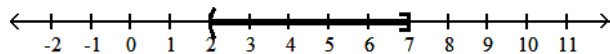


617) $-15 \leq -2x - 1 < -5$

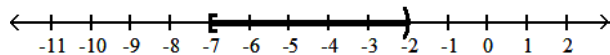
617) _____



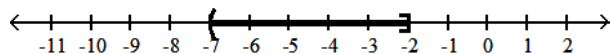
A) $(2, 7]$



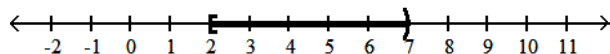
B) $[-7, -2)$



C) $(-7, -2]$

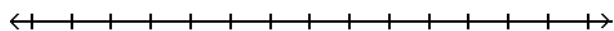


D) $[2, 7)$

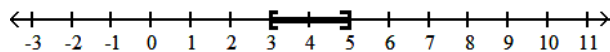


618) $-15 \leq -4x + 5 \leq -7$

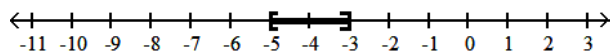
618) _____



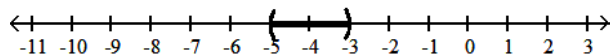
A) $[3, 5]$



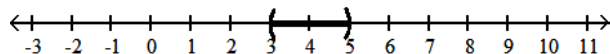
B) $[-5, -3]$



C) $(-5, -3)$

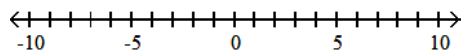


D) $(3, 5)$

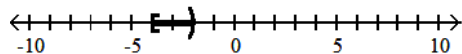


619) $-4 \leq -4x - 12 < 4$

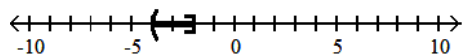
619) _____



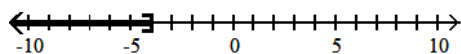
A) $[-4, -2)$



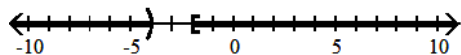
C) $(-4, -2]$



B) $(-\infty, -4]$

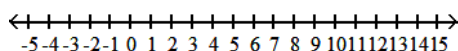


D) $(-\infty, -4)$ or $[-2, \infty)$



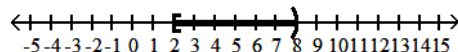
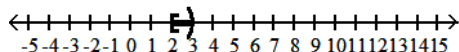
620) $9 \leq \frac{7}{2}x + 2 < 30$

620) _____



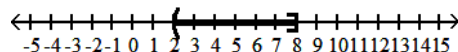
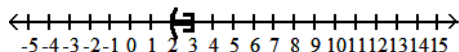
A) $[2, 3)$

B) $[2, 8)$



C) $(2, 3]$

D) $(2, 8]$



Solve the problem.

621) The formula for converting Fahrenheit temperature, F, to Celsius temperature, C, is

621) _____

$$C = \frac{5}{9}(F - 32).$$

If Celsius temperature ranges from 85° to 145° , inclusive, what is the range for the Fahrenheit temperature?

A) $[-8^{\circ}\text{F}, -2^{\circ}\text{F}]$

B) $(185^{\circ}\text{F}, 293^{\circ}\text{F})$

C) $(-8^{\circ}\text{F}, -2^{\circ}\text{F})$

D) $[185^{\circ}\text{F}, 293^{\circ}\text{F}]$

622) The formula for converting Celsius temperature, C, to Fahrenheit temperature, F, is

622) _____

$$F = \frac{9}{5}C + 32.$$

If Fahrenheit temperature ranges from 5° to 131° , inclusive, what is the range for the Celsius temperature?

A) $(-15^{\circ}\text{C}, 55^{\circ}\text{C})$

B) $[-15^{\circ}\text{C}, 55^{\circ}\text{C}]$

C) $[41^{\circ}\text{C}, 268^{\circ}\text{C}]$

D) $(41^{\circ}\text{C}, 268^{\circ}\text{C})$

623) On the first four exams, your grades are 76, 93, 58, and 77. You are hoping to earn a C in the course. This will occur if the average of your five exam grades is greater than or equal to 70 and less than 80. What range of grades on the fifth exam will result in earning a C?

623) _____

A) $[36, 86)$

B) $[36, 86]$

C) $[46, 96)$

D) $(46, 96]$

624) On the first four exams, your grades are 78, 84, 71, and 79. There is still a final exam, and it counts as two grades. You are hoping to earn a C in the course. This will occur if the average of your six exam grades is greater than or equal to 70 and less than 80. What range of grades on the final exam will result in earning a C?

624) _____

A) $[54, 84)$

B) $[38, 88]$

C) $[38, 88)$

D) $[54, 84]$

625) Parts for an automobile repair cost \$273. The mechanic charges \$39 per hour. If you receive an estimate for at least \$351 and at most \$468 for fixing the car, what is the time interval, in hours, that the mechanic will be working on the job?

625) _____

A) $[9, 12]$

B) $[1, 2]$

C) $[2, 5]$

D) $[1, 5]$

626) The formula $C = 1.5x + 17$ represents the estimated future cost of yearly attendance at State University, where C is the cost in thousands of dollars x years after 2002. Use a compound inequality to determine when the attendance costs will range from 32 to 38 thousand dollars.

626) _____

A) From 2013 to 2015

B) From 2013 to 2017

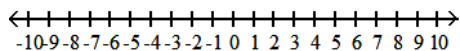
C) From 2012 to 2016

D) From 2011 to 2015

Solve the absolute value inequality. Other than $\emptyset$, use interval notation to express the solution set and graph the solution set on a number line.

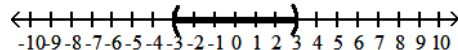
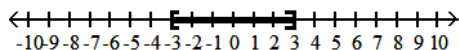
627) $|x| < 3$

627) _____



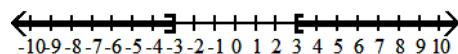
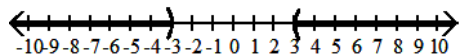
A) $[-3, 3]$

B) $(-3, 3)$



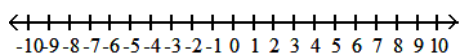
C) $(-\infty, -3) \cup (3, \infty)$

D) $(-\infty, -3] \cup [3, \infty)$



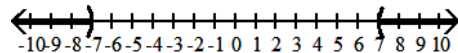
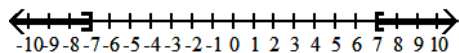
628) $|x| > 7$

628) _____



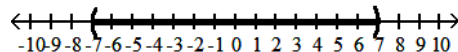
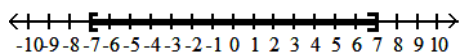
A) $(-\infty, -7] \cup [7, \infty)$

B) $(-\infty, -7) \cup (7, \infty)$



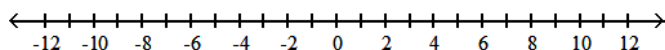
C) $[-7, 7]$

D) $(-7, 7)$

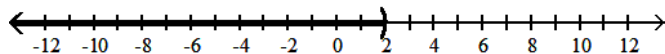


629) $|x - 2| < 0$

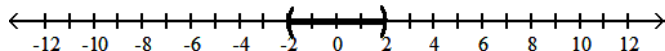
629) _____



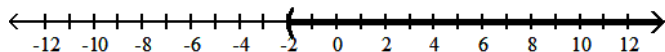
A) $(-\infty, 2)$



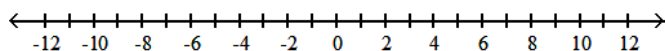
B) $(-2, 2)$



C) $(-2, \infty)$

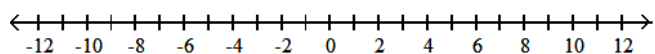


D) $\emptyset$

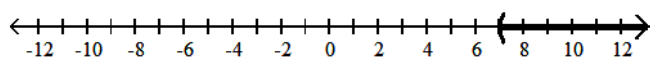


630) $|x - 7| > 0$

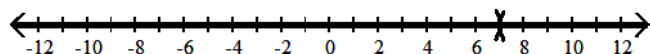
630) _____



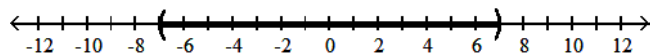
A) $(7, \infty)$



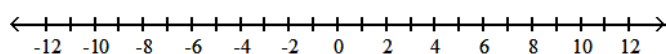
B) $(-\infty, 7) \cup (7, \infty)$



C) $(-7, 7)$

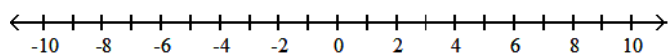


D) $\emptyset$

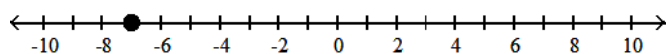


631) $|x + 7| \leq 0$

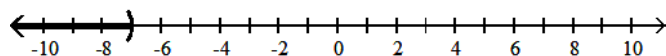
631) _____



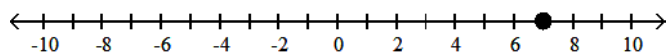
A) $\{-7\}$



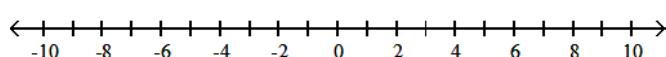
B) $(-\infty, -7)$



C) $\{7\}$

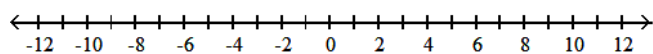


D) $\emptyset$

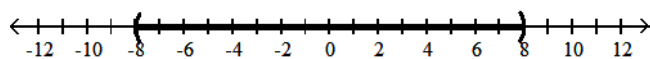


632) $|x + 8| \geq 0$

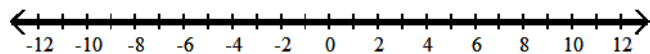
632) _____



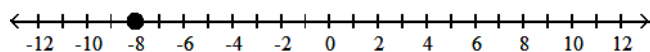
A) $(-8, 8)$



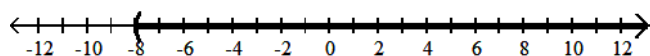
B) $(-\infty, \infty)$



C) $\{-8\}$

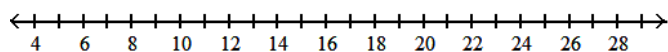


D) $(-8, \infty)$

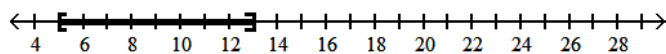


633) $|x - 9| < 4$

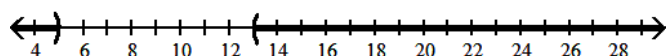
633) _____



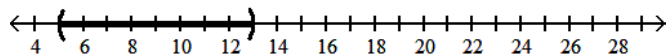
A) $[5, 13]$



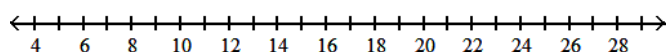
B) $(-\infty, 5) \cup (13, \infty)$



C) $(5, 13)$

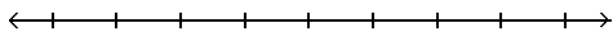


D) $\emptyset$

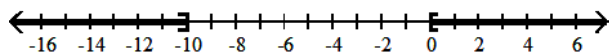


634) $|x + 5| + 1 \leq 6$

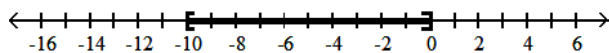
634) _____



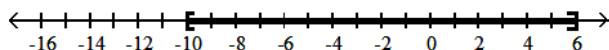
A) $(-\infty, -10] \cup [0, \infty)$



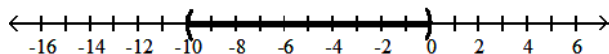
B) $[-10, 0]$



C) $[-10, 6]$

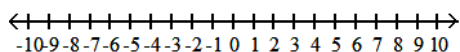


D) $(-10, 0)$

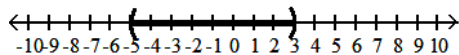


635) $|2(x + 1) + 4| \leq 8$

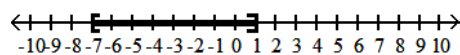
635) _____



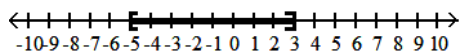
A) $(-5, 3)$



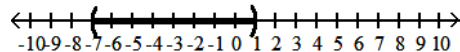
B) $[-7, 1]$



C) $[-5, 3]$

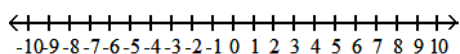


D) $(-7, 1)$

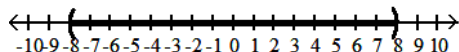


636) $\left| \frac{5y + 20}{4} \right| < 5$

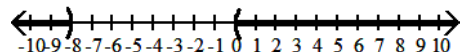
636) _____



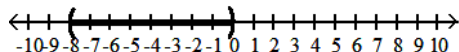
A) $(-8, 8)$



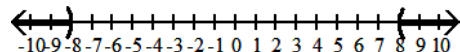
B) $(-\infty, -8) \cup (0, \infty)$



C) $(-8, 0)$

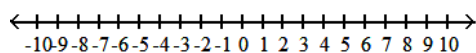


D) $(-\infty, -8) \cup (8, \infty)$



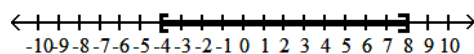
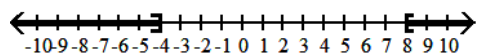
637) $5 + \left| 1 - \frac{x}{2} \right| \geq 8$

637) _____



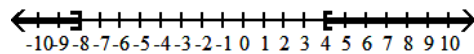
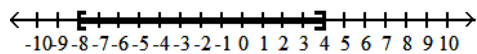
A) $(-\infty, -4] \cup [8, \infty)$

B) $[-4, 8]$



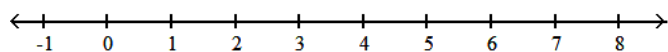
C) $[-8, 4]$

D) $(-\infty, -8] \cup [4, \infty)$

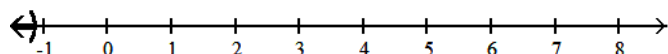


638) $|7x - 1| - 4 < -13$

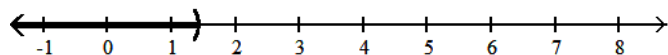
638) _____



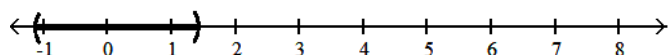
A) $\left(-\infty, -\frac{8}{7} \right)$



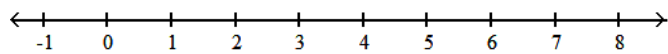
B) $\left(-\infty, \frac{10}{7} \right)$



C) $\left(-\frac{8}{7}, \frac{10}{7} \right)$

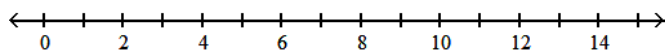


D) $\emptyset$

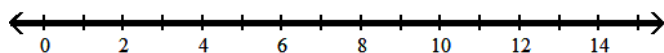


639) $|7x - 7| - 3 > -12$

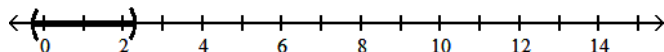
639) _____



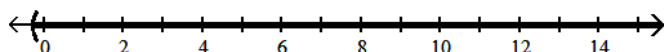
A) $(-\infty, \infty)$



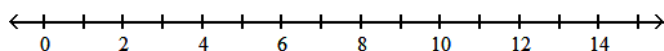
B) $\left(-\frac{2}{7}, \frac{16}{7}\right)$



C) $\left(-\frac{2}{7}, \infty\right)$



D) $\emptyset$



Solve the problem.

640) A spinner has five regions numbered 1 through 5. If the spinner is spun 100 times, we would expect about 20 of the outcomes to be Region 1. It can be determined that the spinner is unbalanced if x , the number of outcomes that result in Region 1, satisfies $\left|\frac{x - 20}{4}\right| \geq 1.645$. Describe the number of outcomes that determine an unbalanced spinner that is spun 100 times.

640) _____

- A) Fewer than 17 or more than 29 outcomes B) Between 14 and 26 outcomes
C) Between 17 and 29 outcomes D) Fewer than 14 or more than 26 outcomes

641) When a number is subtracted from -7 , the absolute value of the difference is more than 3. Use interval notation to express the set of all numbers that satisfy this condition.

641) _____

- A) $(-\infty, -10) \cup (-4, \infty)$ B) $(-\infty, -4) \cup (10, \infty)$
C) $(-10, -4)$ D) $(-\infty, -10] \cup [-4, \infty)$

642) A landscaping company sells 40-pound bags of top soil. The actual weight x of a bag, however, may differ from the advertised weight by as much as 0.75 pound. Write an inequality involving absolute value that expresses the relationship between the actual weight x of a bag and 40 pounds. Solve the inequality, and express the answer in interval form.

642) _____

- A) $|x| - 40 \leq 0.75$; $(-\infty, 40.75]$ B) $|x + 0.75| \leq 40$; $[39.25, \infty)$
C) $|40 + x| \leq 0.75$; $[39.25, 40.75]$ D) $|40 - x| \leq 0.75$; $[39.25, 40.75]$

Answer Key

Testname: UNTITLED35

- 1) B
- 2) B
- 3) B
- 4) D
- 5) B
- 6) D
- 7) B
- 8) A
- 9) A
- 10) D
- 11) D
- 12) A
- 13) D
- 14) D
- 15) A
- 16) C
- 17) B
- 18) B
- 19) B
- 20) A
- 21) C
- 22) C
- 23) A
- 24) A
- 25) A
- 26) A
- 27) D
- 28) B
- 29) A
- 30) A
- 31) B
- 32) B
- 33) B
- 34) A
- 35) A
- 36) A
- 37) A
- 38) C
- 39) B
- 40) C
- 41) A
- 42) C
- 43) D
- 44) C
- 45) A
- 46) B
- 47) C
- 48) D
- 49) A
- 50) B

Answer Key

Testname: UNTITLED35

- 51) A
- 52) C
- 53) B
- 54) C
- 55) D
- 56) A
- 57) C
- 58) D
- 59) A
- 60) C
- 61) D
- 62) B
- 63) D
- 64) B
- 65) B
- 66) D
- 67) B
- 68) B
- 69) B
- 70) D
- 71) C
- 72) C
- 73) A
- 74) C
- 75) B
- 76) A
- 77) C
- 78) A
- 79) C
- 80) C
- 81) D
- 82) D
- 83) C
- 84) B
- 85) D
- 86) A
- 87) B
- 88) D
- 89) D
- 90) B
- 91) B
- 92) D
- 93) A
- 94) A
- 95) B
- 96) C
- 97) D
- 98) D
- 99) B
- 100) A

Answer Key

Testname: UNTITLED35

- 101) C
- 102) A
- 103) D
- 104) B
- 105) C
- 106) C
- 107) B
- 108) C
- 109) D
- 110) A
- 111) D
- 112) D
- 113) A
- 114) D
- 115) A
- 116) D
- 117) D
- 118) B
- 119) C
- 120) B
- 121) B
- 122) C
- 123) C
- 124) B
- 125) C
- 126) A
- 127) B
- 128) C
- 129) A
- 130) D
- 131) B
- 132) D
- 133) B
- 134) C
- 135) B
- 136) A
- 137) C
- 138) B
- 139) C
- 140) B
- 141) A
- 142) A
- 143) A
- 144) C
- 145) B
- 146) B
- 147) C
- 148) B
- 149) B
- 150) C

Answer Key

Testname: UNTITLED35

- 151) D
- 152) C
- 153) B
- 154) D
- 155) B
- 156) D
- 157) D
- 158) D
- 159) D
- 160) B
- 161) A
- 162) C
- 163) C
- 164) D
- 165) C
- 166) D
- 167) C
- 168) C
- 169) C
- 170) B
- 171) D
- 172) C
- 173) B
- 174) D
- 175) D
- 176) C
- 177) D
- 178) C
- 179) B
- 180) C
- 181) A
- 182) A
- 183) C
- 184) C
- 185) B
- 186) C
- 187) A
- 188) C
- 189) D
- 190) C
- 191) C
- 192) A
- 193) D
- 194) B
- 195) C
- 196) A
- 197) B
- 198) D
- 199) C
- 200) D

Answer Key

Testname: UNTITLED35

- 201) C
- 202) B
- 203) A
- 204) C
- 205) B
- 206) D
- 207) B
- 208) A
- 209) C
- 210) A
- 211) D
- 212) D
- 213) B
- 214) D
- 215) A
- 216) A
- 217) B
- 218) A
- 219) C
- 220) B
- 221) A
- 222) A
- 223) A
- 224) D
- 225) C
- 226) B
- 227) A
- 228) A
- 229) D
- 230) A
- 231) A
- 232) A
- 233) B
- 234) A
- 235) A
- 236) B
- 237) A
- 238) A
- 239) D
- 240) D
- 241) D
- 242) C
- 243) D
- 244) C
- 245) B
- 246) C
- 247) C
- 248) B
- 249) A
- 250) D

Answer Key

Testname: UNTITLED35

- 251) B
- 252) C
- 253) C
- 254) C
- 255) A
- 256) B
- 257) D
- 258) A
- 259) B
- 260) D
- 261) A
- 262) A
- 263) B
- 264) A
- 265) C
- 266) D
- 267) C
- 268) A
- 269) B
- 270) B
- 271) A
- 272) B
- 273) B
- 274) A
- 275) B
- 276) A
- 277) C
- 278) D
- 279) B
- 280) C
- 281) B
- 282) B
- 283) D
- 284) A
- 285) A
- 286) B
- 287) A
- 288) D
- 289) C
- 290) C
- 291) B
- 292) B
- 293) A
- 294) D
- 295) B
- 296) B
- 297) B
- 298) D
- 299) B
- 300) B

Answer Key

Testname: UNTITLED35

- 301) A
- 302) B
- 303) A
- 304) B
- 305) B
- 306) C
- 307) B
- 308) B
- 309) C
- 310) A
- 311) B
- 312) D
- 313) B
- 314) B
- 315) C
- 316) C
- 317) A
- 318) C
- 319) C
- 320) C
- 321) C
- 322) C
- 323) C
- 324) B
- 325) A
- 326) C
- 327) D
- 328) D
- 329) B
- 330) B
- 331) A
- 332) A
- 333) C
- 334) C
- 335) B
- 336) B
- 337) A
- 338) B
- 339) A
- 340) A
- 341) D
- 342) C
- 343) D
- 344) C
- 345) D
- 346) A
- 347) D
- 348) A
- 349) C
- 350) D

Answer Key

Testname: UNTITLED35

- 351) B
- 352) B
- 353) B
- 354) B
- 355) B
- 356) A
- 357) D
- 358) A
- 359) C
- 360) D
- 361) B
- 362) C
- 363) D
- 364) A
- 365) D
- 366) A
- 367) D
- 368) A
- 369) D
- 370) C
- 371) B
- 372) A
- 373) B
- 374) D
- 375) B
- 376) B
- 377) C
- 378) B
- 379) D
- 380) B
- 381) A
- 382) B
- 383) D
- 384) A
- 385) D
- 386) B
- 387) C
- 388) B
- 389) D
- 390) D
- 391) C
- 392) D
- 393) A
- 394) D
- 395) B
- 396) B
- 397) A
- 398) B
- 399) D
- 400) C

Answer Key

Testname: UNTITLED35

- 401) C
- 402) C
- 403) C
- 404) D
- 405) C
- 406) D
- 407) B
- 408) A
- 409) B
- 410) C
- 411) A
- 412) B
- 413) B
- 414) D
- 415) A
- 416) D
- 417) A
- 418) D
- 419) D
- 420) D
- 421) C
- 422) B
- 423) A
- 424) B
- 425) D
- 426) B
- 427) D
- 428) B
- 429) A
- 430) A
- 431) C
- 432) A
- 433) D
- 434) D
- 435) D
- 436) A
- 437) B
- 438) A
- 439) B
- 440) D
- 441) B
- 442) C
- 443) B
- 444) C
- 445) A
- 446) B
- 447) B
- 448) C
- 449) A
- 450) D

Answer Key

Testname: UNTITLED35

- 451) A
- 452) B
- 453) A
- 454) D
- 455) C
- 456) C
- 457) D
- 458) D
- 459) D
- 460) B
- 461) B
- 462) C
- 463) D
- 464) A
- 465) D
- 466) B
- 467) B
- 468) A
- 469) A
- 470) A
- 471) D
- 472) D
- 473) B
- 474) B
- 475) C
- 476) D
- 477) A
- 478) B
- 479) B
- 480) D
- 481) A
- 482) C
- 483) B
- 484) B
- 485) A
- 486) C
- 487) C
- 488) C
- 489) C
- 490) C
- 491) B
- 492) B
- 493) A
- 494) B
- 495) B
- 496) C
- 497) A
- 498) B
- 499) D
- 500) C

Answer Key

Testname: UNTITLED35

- 501) B
- 502) D
- 503) C
- 504) D
- 505) C
- 506) C
- 507) D
- 508) A
- 509) B
- 510) C
- 511) C
- 512) D
- 513) B
- 514) B
- 515) C
- 516) B
- 517) B
- 518) D
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- 529) A
- 530) C
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- 538) C
- 539) D
- 540) C
- 541) B
- 542) D
- 543) C
- 544) A
- 545) D
- 546) B
- 547) B
- 548) B
- 549) D
- 550) A

Answer Key

Testname: UNTITLED35

- 551) D
- 552) B
- 553) D
- 554) A
- 555) B
- 556) A
- 557) B
- 558) B
- 559) C
- 560) D
- 561) B
- 562) B
- 563) C
- 564) C
- 565) C
- 566) B
- 567) D
- 568) C
- 569) C
- 570) A
- 571) D
- 572) A
- 573) A
- 574) C
- 575) A
- 576) B
- 577) D
- 578) C
- 579) C
- 580) D
- 581) B
- 582) D
- 583) C
- 584) C
- 585) D
- 586) B
- 587) A
- 588) D
- 589) D
- 590) D
- 591) C
- 592) B
- 593) B
- 594) D
- 595) C
- 596) C
- 597) A
- 598) D
- 599) C
- 600) D

Answer Key

Testname: UNTITLED35

- 601) D
- 602) A
- 603) B
- 604) D
- 605) D
- 606) C
- 607) B
- 608) B
- 609) A
- 610) C
- 611) C
- 612) D
- 613) A
- 614) D
- 615) C
- 616) A
- 617) A
- 618) A
- 619) C
- 620) B
- 621) D
- 622) B
- 623) C
- 624) A
- 625) C
- 626) C
- 627) B
- 628) B
- 629) D
- 630) B
- 631) A
- 632) B
- 633) C
- 634) B
- 635) B
- 636) C
- 637) A
- 638) D
- 639) A
- 640) D
- 641) A
- 642) D