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

Solve.

1) Wayne has $19.50 in his wallet. Janice has a debt note for $28.09 in her wallet. Find the difference between these amounts.

A) –$47.59  
B) $47.59  
C) $8.59  
D) –$8.59

Simplify to lowest terms.

2) \(\frac{27}{63}\)

A) \(\frac{27}{63}\)  
B) \(\frac{3}{9}\)  
C) \(\frac{3}{7}\)  
D) \(\frac{9}{7}\)

Divide.

3) \(\frac{32}{7} ÷ 4\)

A) \(\frac{7}{8}\)  
B) \(\frac{8}{7}\)  
C) 8  
D) \(\frac{128}{7}\)

Identify the base and the exponent. Do not evaluate.

4) \(13^{14}\)

A) Base: 182, exponent: 14  
B) Base: 13, exponent: 14  
C) Base: 14, exponent: 182  
D) Base: 14, exponent: 13

Identify the coefficient of the given term.

5) –8.5y

A) 8.5  
B) –8.5y  
C) –1  
D) –8.5

Use the distributive property to write an equivalent expression.

6) 6(8x + 3)

A) 8x + 18  
B) 48x + 3  
C) 66x  
D) 48x + 18

Evaluate using the order of operations.

7) \(\frac{-2(6^2) - 6(9 - 5)}{-6(2 - 7) ÷ (-5)}\)

A) 16  
B) –26  
C) 26  
D) –16

Determine whether the equation is an identity. (Y/N)

8) 30m + 12 = 3(5m + 49)

A) Yes  
B) No
Use the formulas below to answer the question. Round your answer to the nearest tenth if necessary.

\[
C = \frac{5}{9}(F - 32) \text{ or } C = \frac{F - 32}{1.8}
\]

\[
F = \frac{9}{5}C + 32 \text{ or } F = 1.8C + 32.
\]

9) The average temperature on a planet in a solar system is 149°F. What is this temperature in degrees Celsius?

A) 50.8°C  
B) 300.2°C  
C) 91°C  
D) 65°C

Solve.

10) \(7y - 2(y - 7) = 11y - (7y + 10)\)

A) -24  
B) -4  
C) 4  
D) 24

Solve and graph. Write the solution set in set-builder and interval notation.

11) \(x + \frac{1}{21} > \frac{4}{21}\)

A) \(\{x \mid x < \frac{2}{7}\}; \left( -\infty, \frac{2}{7} \right]\)

B) \(\{x \mid x > -\frac{1}{7}\}; \left( -\frac{1}{7}, \infty \right)\)

C) \(\{x \mid x > \frac{1}{7}\}; \left( \frac{1}{7}, \infty \right)\)

D) \(\{x \mid x > \frac{1}{7}\}; \left( \frac{1}{7}, \infty \right)\)

Solve.

12) \(-5(-6x - 5) - 5(7 - 6x) = -12 + 61x\)

A) -22  
B) 72  
C) -10  
D) 2
13) \(-16.8 = -5.6c\)
   A) 11.2       B) 3.0       C) 2.0       D) -11.2

Solve and graph. Write the solution set in set-builder and interval notation.
14) \(9m + 4 \geq 8m - 1\)

\[\begin{align*}
&\text{A)} \{m \mid m < 9\}; (-\infty, 9) \\
&\text{B)} \{m \mid m > 9\}; (9, \infty) \\
&\text{C)} \{m \mid m \geq -5\}; [-5, \infty) \\
&\text{D)} \{m \mid m \leq -5\}; (-\infty, -5]
\end{align*}\]

Translate word for word or to a proportion, then solve.
15) What percent of 65 is 668?
   A) 1027.7%       B) 102.8%       C) 1.0%       D) 0.1%

Solve the problem.
16) If the first and third of three consecutive odd integers are added, the result is 57 less than five times the second integer. Find the third integer.
   A) 17       B) 38       C) 19       D) 21

Solve.
17) A triangular lake-front lot has a perimeter of 2200 feet. One side is 200 feet longer than the shortest side, while the third side is 500 feet longer than the shortest side. Find the lengths of all three sides.
   A) 600 ft., 600 ft., 600 ft.       B) 500 ft., 700 ft., 1000 ft.
   C) 100 ft., 200 ft., 300 ft.       D) 600 ft., 800 ft., 1100 ft.

Determine whether the ratios are equal.
18) \(\frac{2}{7} = \frac{17}{32}\)
   A) Yes       B) No
Solve.

19) How many cups of party mix that is 74% pretzels must be added to 135 cups of a party mix that is 47% pretzels to make a party mix that is 59% pretzels?

A) 108 cups  B) 109 cups  C) 111 cups  D) 110 cups

Solve the problem.

20) Matthew has two different stocks. One of the stocks is worth $4 more per share than the other. He has 13 shares of the more valuable stock and 27 shares of the other stock. His total assets in stocks is $1412. How much is the more expensive stock worth per share?

A) $4 per share  B) $40 per share  C) $38 per share  D) $30 per share

Find the x- and y- intercepts.

21) $3x - 5y = 8$

A) $\left(\frac{8}{5}, 0\right), \left(0, \frac{8}{5}\right)$  B) $\left(\frac{8}{5}, 0\right), \left(0, -\frac{8}{5}\right)$  C) $\left(5, 0\right), \left(0, 13\right)$  D) $\left(-\frac{8}{5}, 0\right), \left(0, \frac{8}{3}\right)$

Graph the linear inequality.

22) $y < -4x + 1$

A)  

B)
Determine if the relation is a function.

23) \( \{(3, -2), (4, 2), (8, 8), (3, 6)\} \)

A) Yes  
B) No

Solve.

24) The value, \( v \), in hundreds of dollars, of Juan’s computer is approximated by \( v = -0.50t + 9 \) where \( t \) is the number of years since he first bought the computer. Find the value of the computer 6 years after it was purchased.

A) $600  
B) $780  
C) $300  
D) $1200

Determine if the relation is a function.

25) \( \{(-7, 2), (-4, -3), (-2, 9), (2, 7)\} \)

A) No  
B) Yes

Write the equation of a line that passes through the given point and is parallel to the given line. Write the equation in slope-intercept form and in the form of \( Ax + By = C \), where \( A, B, \) and \( C \) are integers and \( A > 0 \).

26) \((1, -4); y = 2x - 7\)

A) \( y = -2x + 2 \)  
B) \( y = -2x - 2 \)  
C) \( y = 2x + 6 \)  
D) \( y = 2x - 6 \)

Write the number in scientific notation.

27) The population of a city is 81,000.

A) \( 8.1 \times 10^4 \)  
B) \( 8.1 \times 10^5 \)  
C) \( 8.1 \times 10^{-4} \)  
D) \( 8.1 \times 10^{-5} \)

Combine like terms and write the resulting polynomial in descending order of degree.

28) \( 8p^5 - 7p^4 + 3p^5 + 5p^4 \)

A) \( 5p^5 - 2p^4 \)  
B) \( 11p^5 - 2p^4 \)  
C) \( 11p^5 - 12p^4 \)  
D) \( 22p^5 - 4p^4 \)
Write the number in standard form.

29) The electrical resistance was $4.0826 \times 10^4$ ohms.
   A) 408,260  B) 40,826  C) 4082.6  D) 163.304

Add.

30) $(6x^3y^3 + 4x^2y^2 - x^2y + xy^2 + 2x + 3) + (x^3y^3 - x^2y^2 + x^2y + 2x - 6)$
   A) $7x^3y^3 + 5x^2y^2 + x^2y + 4x - 3$
   B) $7x^3y^3 + 3x^2y^2 + 2xy^2 - 3$
   C) $7x^3y^3 + 3x^2y^2 + xy^2 + 4x - 3$
   D) $7x^3y^3 + 4x^2y^2 + x^2y + 3$

Multiply using the rules for special products.

31) $(4y + x)(4y - x)$
   A) $16y^2 - 8xy - x^2$
   B) $16y^2 - x^2$
   C) $8y^2 - x^2$
   D) $16y^2 + 8xy - x^2$

Factor.

32) $729p^3 - 1$
   A) $(9p - 1)^3$
   B) $(9p - 1)(81p^2 + 9p + 1)$
   C) Prime
   D) $(9p - 1)(81p^2 + 1)$

Solve the problem.

33) The length of a rectangular frame is 6 cm more than the width. The area inside the frame is 135 square cm. Find the width of the frame.
   A) 21 cm  B) 11 cm  C) 15 cm  D) 9 cm

Factor.

34) $4x^2 + 12x + 9$
   A) $(4x + 3)(x + 3)$
   B) $(2x + 3)(2x + 3)$
   C) $(2x - 3)(2x - 3)$
   D) Prime

35) $u^2 - 7uv - 18v^2$
   A) $(u - 2v)(u + v)$
   B) $(u - v)(u + 9v)$
   C) $(u - 2v)(u + 9v)$
   D) $(u + 2v)(u + 9v)$

36) $x^2 + 8x + 16$
   A) Not a perfect square
   B) $(x - 4)^2$
   C) $(x + 4)(x - 4)$
   D) $(x + 4)^2$

Use dimensional analysis to solve the problem.

37) The speed of sound under certain conditions is 1089 ft/sec. Calculate the speed in miles per hour. Round answers to the nearest tenths.
   A) 742.5 mi/hr  B) 12.4 mi/hr  C) 746.5 mi/hr  D) 2227.5 mi/hr
Simplify, if possible.

\[ \frac{x^2 - 25}{(x - 5)^2} \]

A) \( \frac{x^2 - 25}{(x - 5)^2} \)  

B) \( x + 5 \)  

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

D) \( \frac{x + 5}{x - 5} \)  

Evaluate the rational expression.

39) \( \frac{x}{x - 2} \) when \( x = -2 \)

A) \( \frac{1}{2} \)  

B) 0  

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

D) Undefined  

40) \( \frac{x}{x + 7} \) when \( x = -7 \)

A) \( -\frac{1}{7} \)  

B) \( \frac{1}{2} \)  

C) 0  

D) Undefined  

Graph.

41) \( f(x) = x^2 - 8x + 14 \)
Solve and graph. Write the solution in interval notation.

42) \(|0.25z - 5| + 4 > 6\)

A) \((28, \infty)\)

B) \((12, 28)\)

C) \((-\infty, 12) \cup (28, \infty)\)

D) \((-\infty, -28) \cup (28, \infty)\)

Find the indicated intersection or union.

43) \(\{q, s, u, v, w, x\} \cap \emptyset\)

A) \(\{q, s, u, v, w\}\)  B) \(\{q\}\)  C) \(\{q, s, u, v, w, x\}\)  D) \(\emptyset\)
Graph the compound inequality.

44) $x \geq -2$ and $x < 2$

Explain the mistake in the graph.

45)

Find the determinant.

46) $\begin{bmatrix} 3 & -1 \\ 1 & 2 \end{bmatrix}$
Solve using Cramer’s Rule.

47)
\[
\begin{align*}
\frac{1}{3}x - \frac{1}{2}y + \frac{5}{6}z &= -\frac{13}{6} \\
\frac{3}{2}x + \frac{1}{4}y + \frac{2}{3}z &= \frac{10}{3} \\
\frac{1}{2}x + \frac{3}{4}y + \frac{1}{4}z &= \frac{15}{4}
\end{align*}
\]
A) (2, 4, -1)  B) (2, -4, -1)  C) (-2, 4, -1)  D) (-2, 4, 1)

Determine if the given point is a solution of the system.

48) (-2, 6, -1)
\[
\begin{align*}
-x + 3y + 4z &= 16 \\
3x + 2y - z &= 7 \\
4x - y + 3z &= -17
\end{align*}
\]
A) Yes  B) No

Solve.

49) \(\frac{3}{2}t = -4\)
A) \(\frac{3}{\sqrt{-4}}\)  B) -64  C) -12  D) no real-number solution

Evaluate the root, if possible.

50) \(\sqrt[3]{\frac{256}{625}}\)
A) \(\frac{256}{625}\)  B) \(\frac{4}{5}\)  C) \(\frac{16}{25}\)  D) \(\frac{64}{125}\)

Simplify. Assume variables represent nonnegative values.

51) \(\sqrt[3]{64a^8b^5}\)
A) \(4ab \sqrt[3]{a^2b^2}\)  B) \(4ab \sqrt[3]{a^3b^3}\)  C) \(4 \sqrt[3]{a^2b^2}\)  D) \(4a^2b \sqrt[3]{a^2b^2}\)

52) \(\sqrt[8]{48k^7q^8}\)
A) \(4k^3q^4 \sqrt[3]{k}\)  B) \(4k^3q^4 \sqrt[3]{3k}\)  C) \(4k^7q^8 \sqrt[3]{3k}\)  D) \(4k^2q^4 \sqrt[3]{3k}\)

Solve.

53) \(x^4 - 5x^2 - 36 = 0\)
A) \(\pm 3i, \pm 2i\)  B) \(\pm 3, \pm 2i\)  C) \(\pm 3, \pm 2\)  D) \(\pm 2, \pm 3i\)
Solve the inequality, and graph the solution set.

54) \(v^2 + 9v + 18 \geq 0\)

\[
\begin{array}{c}
\text{A) } (-\infty, -6] \\
\text{B) } [-3, \infty) \\
\text{C) } [-6, -3] \\
\text{D) } (-\infty, -6] \cup [-3, \infty)
\end{array}
\]

55) \((r + 5)^2 = 11\)

\[
\begin{array}{c}
\text{A) } \pm \sqrt{11} \\
\text{B) } 5 \pm \sqrt{11} \\
\text{C) } -5 \pm \sqrt{11} \\
\text{D) } 6
\end{array}
\]

Determine whether or not the given functions are inverses of each other.

56) \(f(x) = x^3 + 7, \ g(x) = \frac{3}{\sqrt{x} - 7}\)

\[
\begin{array}{c}
\text{A) Yes} \\
\text{B) No}
\end{array}
\]

Write the expression as a logarithm of a quantity to a power. Leave answers in simplest form without negative or fractional exponents.

57) \(6 \log_7 y\)

\[
\begin{array}{c}
\text{A) } \log_6 y^7 \\
\text{B) } 7 \log_6 y^6 \\
\text{C) } 6 \log_7 y^6 \\
\text{D) } \log_7 y^6
\end{array}
\]

Solve the equation.

58) \(23^{x-3} = 30\) (Round to the nearest hundredth.)

\[
\begin{array}{c}
\text{A) } 3.92 \\
\text{B) } 4.08 \\
\text{C) } 4.46 \\
\text{D) } 4.30
\end{array}
\]

Solve the system of equations.

59) \[
\begin{align*}
\begin{cases}
x^2 + y^2 &= 24 \\
y^2 &= 2x + 21
\end{cases}
\end{align*}
\]

\[
\begin{array}{c}
\text{A) } (1, \sqrt{23}), (-2, \sqrt{15}), (1, -\sqrt{23}), (-2, -\sqrt{15}) \\
\text{B) } (2, \sqrt{23}), (-3, \sqrt{15}), (2, -\sqrt{23}), (-3, -\sqrt{15}) \\
\text{C) } (1, \sqrt{23}), (-3, \sqrt{15}), (1, -\sqrt{23}), (-3, -\sqrt{15}) \\
\text{D) No solution}
\end{array}
\]
Graph the solution set of the system of inequalities.

\[
\begin{align*}
\frac{x^2}{16} - \frac{y^2}{25} & \geq 1 \\
\frac{x^2}{49} + \frac{y^2}{16} & \leq 1
\end{align*}
\]

Graph using a graphing calculator.
61) \((x - 4)^2 + (y + 5)^2 = 25\)
Find the additive inverse.

62) \(- \frac{a}{b}\)

A) -1  
B) 0  
C) \(- \frac{b}{a}\)  
D) \(\frac{a}{b}\)

Add or subtract.

63) \(|-17| + |14|\)

A) 31  
B) -31  
C) 3  
D) -3

Evaluate using the order of operations.

64) \(240 \div 6 - 4\)

A) 238  
B) 230  
C) 36  
D) 120

Translate the sentence to an equation and then solve.

65) The product of negative four and \(n\) results in thirty-six.

A) \(-4n = 36; 9\)  
B) \(-4n = 36; -9\)  
C) \(-4 + n = 36; 40\)  
D) \(-9n = 4; 9\)
Solve and graph. Write the solution set in set-builder and interval notation.

66) \( \frac{n}{-3} < 4 \)

- A) \( n > -12 \); \((-12, \infty)\)
- B) \( n \leq -12 \); \((-\infty, -12]\)
- C) \( n < -12 \); \((-\infty, -12)\)
- D) \( n \geq -12 \); \([-12, \infty)\)

Solve.

67) Find the length of a rectangular lot with a perimeter of 132 meters if the length is 8 meters more than the width.

- A) 74 m
- B) 66 m
- C) 37 m
- D) 29 m

Write the percent as a decimal.

68) 0.7%

- A) 0.007
- B) 0.7
- C) 0.008
- D) 0.07

Find the x- and y- intercepts.

69) \( 5x + 2y = 10 \)

- A) (2, 0), (0, -5)
- B) (-2, 0), (0, -5)
- C) (2, 0), (0, 5)
- D) (5, 0), (0, 2)

Write the equation of a line that passes through the given point and is perpendicular to the given line. Write the equation in slope-intercept form and in the form of \( Ax + By = C \), where \( A, B, \) and \( C \) are integers and \( A > 0 \).

70) \(-3, -6\); \( y = \frac{1}{2}x + 16 \)

- A) \( y = -2x + 12 \)
- B) \( y = -2x - 12 \)
- C) \( y = \frac{1}{2}x - \frac{9}{2} \)
- D) \( y = -\frac{1}{2}x - \frac{15}{2} \)

Add.

71) \((19s + 14t) + (2t - 3s)\)

- A) \( 21s + 11 \)
- B) \( 32st \)
- C) \( 22s + 16t \)
- D) \( 16s + 16t \)
Multiply.

72) \(-10a^5(-6a^6 - 8x^4)\)

A) \(60a^2x^{11} + 80x^9\)
B) \(60a^2x^{11} - 8x^4\)
C) \(60ax + 80x\)
D) \(60a^2x^{11} + 80ax^9\)

Solve the problem.

73) The height of a triangle is 3 cm more than the length of the base. If the area of the triangle is 65 cm², find the height and length of the base.

A) height: 10 cm; base: 7 cm
B) height: 14 cm; base: 9 cm
C) height: 12 cm; base: 9 cm
D) height: 13 cm; base: 10 cm

Factor completely.

74) \(16(x + 3)^2 - 49y^2\)

A) \([4(x + 3) - 4y][4(x + 3) + 7y]\)
B) \([4(x + 3) - 7y][4(x + 3) + 7y]\)
C) \([4(x + 3)^2 - 7y][4(x + 3)^2 + 7y]\)
D) \([x + 3] - 7y]][(x + 3] + 7y]\)

Solve.

75) The weight \(W\) of an object on the Moon varies directly as the weight \(E\) on earth. A person who weighs 130 lb on earth weighs 26 lb on the Moon. How much would a 117-lb person weigh on the Moon?

A) .2 lb
B) 23.4 lb
C) 273 lb
D) 585 lb

Check the given value to see if it is a solution to the equation.

76) \(\frac{x}{10} - \frac{2}{5} = \frac{x - 1}{5} ;; \quad x = -2\)

A) Yes
B) No

Identify the domain and range of the relation.

77) Ranking of finalists in ice-skating competition:

<table>
<thead>
<tr>
<th>Rank</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alice</td>
</tr>
<tr>
<td>2</td>
<td>Toni</td>
</tr>
<tr>
<td>3</td>
<td>Marcie</td>
</tr>
<tr>
<td>4</td>
<td>Celia</td>
</tr>
</tbody>
</table>

A) Domain: \(\{1, 2, 3, 4, 5, \ldots\}\); Range: \{Alice, Toni, Marcie, Celia\}
B) Domain: \(\{1, 2, 3, 4\}\); Range: \{Alice, Toni, Marcie, Celia\}
C) Domain: \(\{1, Alice\}\); Range: \(\{2, Toni\}\)
D) Domain: \{Alice, Toni, Marcie, Celia\} ; Range: \(\{1, 2, 3, 4\}\)
Translate the problem to a system of equations, then solve using matrices.

78) Jim wants to plan a meal with 78 grams of carbohydrates and 940 calories. If green beans have 7 grams of carbohydrates and 30 calories per half cup serving and if french fried shrimp have 9 grams of carbohydrates and 190 calories per three-ounce serving, how many servings of green beans and shrimp should he use?

A) 7 half cups of beans and 9 three-ounce helpings of shrimp
B) 9 half cups of beans and 7 three-ounce helpings of shrimp
C) 6 half cups of beans and 4 three-ounce helpings of shrimp
D) 4 half cups of beans and 6 three-ounce helpings of shrimp

Find the perimeter.

79) A rectangular coal bin has a length of \( \sqrt{18} \) feet and a width of \( \sqrt{18} \) feet.

A) \( 6\sqrt{3} \) feet
B) \( 12\sqrt{3} \) feet
C) \( 6\sqrt{2} \) feet
D) \( 12\sqrt{2} \) feet

Rewrite the quadratic equation in the form \( ax^2 + bx + c = 0 \), then identify \( a \), \( b \), and \( c \).

80) \( 7x^2 + 11 = 0 \)

A) \( a = 7, b = 0, c = 11 \)
B) \( a = 0, b = 7, c = 11 \)
C) \( a = 2, b = 0, c = -11 \)
D) \( a = 7, b = 11, c = 0 \)

Solve.

81) The annual depreciation rate \( r (0 < r < 1) \) of a car purchased for \( P \) dollars and worth \( A \) dollars after \( t \) years can be modeled by the following formula:

\[
\log (1 - r) = \frac{1}{t} \log \frac{A}{P}.
\]

Find the depreciation rate of a car that is purchased for $37,000 and is sold 5 years later for $20,000. Express your answer as a percentage, and round the answer to the nearest whole percentage.

A) \(-88\% \)
B) \(-12\% \)
C) \(12\% \)
D) \(88\% \)

Solve the system of equations.

82) \[
\begin{align*}
xy &= 1 \\
x^2 + y^2 &= 2
\end{align*}
\]

A) \((1, -1), (-1, 1)\)
B) \((1, 1)\)
C) \((-1, -1), (1, 1)\)
D) No solution

Divide.

83) \(2 ÷ 0\)

A) 1
B) Undefined
C) 2
D) 0

Solve the equation for the indicated variable.

84) \( I = \frac{ne}{nr + R} \)

A) \( n = IR(Ir - E) \)
B) \( n = \frac{IR}{Ir + E} \)
C) \( n = \frac{-R}{Ir - E} \)
D) \( n = \frac{-IR}{Ir - E} \)
Find any missing lengths in the similar figures.

85) 

\[ \begin{array}{c}
10 \\
\downarrow \\
x \\
15
\end{array} \]

A) \( x = 20 \)  
B) \( x = 12 \)  
C) \( x = 25 \)  
D) \( x = 19 \)

Write the coordinates for each point.

86) 

A) \( A(2, 6); B(-5, 4) \)  
B) \( A(2, 4); B(6, 4) \)  
C) \( A(2, 6); B(4, -5) \)  
D) \( A(6, 20); B(4, -5) \)

Simplify.

87) \( 3m^6n^4 \cdot (3m^5n^4)^4 \)

A) \( 84m^{28}n^{19} \)  
B) \( 9m^{15}n^{12} \)  
C) \( 243m^{11}n^8 \)  
D) \( 243m^{26}n^{20} \)

Find the GCF.

88) \( 64a^{10}b^4, 56a^5b^{10} \)

A) \( 8a^5b^4 \)  
B) \( 4a^5b^6 \)  
C) \( 8a^{10}b^{10} \)  
D) \( 448a^{10}b^{10} \)
Use dimensional analysis and the exchange rate below to convert.

<table>
<thead>
<tr>
<th></th>
<th>USD</th>
<th>GBP</th>
<th>CAD</th>
<th>EUR</th>
</tr>
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<td>1.49819</td>
<td>0.652784</td>
<td>0.964599</td>
</tr>
<tr>
<td>GBP</td>
<td>0.667468</td>
<td>1</td>
<td>0.435712</td>
<td>0.643839</td>
</tr>
<tr>
<td>CAD</td>
<td>1.5319</td>
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<td>1.0367</td>
<td>1.55318</td>
<td>0.676741</td>
<td>1</td>
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</table>

Round to the nearest hundredth, if necessary.

89) Change $700 into £ (Great Britain pound).
   A) 725.69 £   B) 467.23 £   C) 1,048.73 £   D) 675.22 £

For the compound inequality, give the solution set in both interval and graph forms.

90) $6x - 4 < 2x$ or $-3x \leq -9$
    A) $\emptyset$
    B) $(-\infty, \infty)$
    C) $(1, 3]$
    D) $(-\infty, 1) \cup [3, \infty)$
Solve the system graphically.

91) \[
\begin{align*}
3x + y &= 10 \\
6x + 2y &= 20
\end{align*}
\]

91) ______

A) (0, 10)  
B) Inconsistent with independent equations  
C) (5, -5)  
D) Consistent with dependent equations

Write the quotient in standard form.

92) \[
\frac{3 + 3i}{5 + 2i}
\]

92) ______

A) \(\frac{21}{29} + \frac{9}{29}i\)  
B) \(1 - \frac{3}{7}i\)  
C) \(\frac{3}{7} - \frac{3}{7}i\)  
D) \(\frac{9}{29} - \frac{21}{29}i\)

Find the \(x\)- and \(y\)-intercepts. If no \(x\)-intercepts exist, state so.

93) \(f(x) = 2x^2 + 15x + 28\)

93) ______

A) (-4, 0), \(\left(\frac{7}{2}, 0\right)\), (0, -28)  
B) (-7, 0), (- 2, 0), (0,28)  
C) (-7, 0), (- 2, 0), (0,-28)  
D) (4, 0), \(\left(-\frac{7}{2}, 0\right)\), (0,28)

Write the expression using a multiple of a logarithm.

94) \(\log_b \frac{1}{y^9}\)

94) ______

A) \(\frac{1}{9} \log_b y\)  
B) \(b \log_b y\)  
C) -9 \(\log_b y\)  
D) 9 \(\log_b y\)

Solve the system of equations.

95) \[
\begin{align*}
4x^2 - 16y^2 &= 64 \\
4x^2 + 9y^2 &= 36
\end{align*}
\]

95) ______

A) (-4, 0), (4, 0)  
B) (-3, 0), (3, 0)  
C) (0, 2), (0, -2)  
D) No solution
Find the square root. If it is not a real number, say so.

96) \( \sqrt{\frac{16}{4}} \)

A) 4  B) 8  C) \( \pm \frac{1}{2} \)  D) ± 2

Solve the equation for the indicated variable.

97) \( A = P(1 + n); \quad r \)

A) \( r = \frac{P - A}{Pn} \)  B) \( r = \frac{A}{n} \)  C) \( r = \frac{Pn}{A - P} \)  D) \( r = \frac{A - P}{Pn} \)

Determine whether the ratios are equal.

98) \( \frac{2}{3} = \frac{18}{27} \)

A) Yes  B) No

Write the equation of the line in slope-intercept form.

99)

A) \( y = x + 2 \)  B) \( y = -x - 2 \)  C) \( y = x - 2 \)  D) \( y = -x + 2 \)

Use long division to divide the polynomials.

100) \( \frac{8x^2 - 6x - 5}{4x - 5} \)

A) \( 2x + 1 \)  B) \( x - 1 + \frac{3}{4x - 5} \)  C) \( 2x + 1 + \frac{3}{4x - 5} \)  D) \( 2x - 2 \)
1) B  
Objective: (1.3) Solve Apps: Properties of Real Numbers

2) C  
Objective: (1.2) Simplify Fraction to Lowest Terms

3) B  
Objective: (1.4) Divide Signed Fractions

4) B  
Objective: (1.5) Identify Base and Exponent

5) D  
Objective: (1.7) Identify Coefficient of Term

6) D  
Objective: (1.7) Use Distributive Property to Write

7) A  
Objective: (1.5) Evaluate Using Order of Operations IV

8) B  
Objective: (2.1) Determine Whether Equation is Identity

9) D  
Objective: (2.1) Solve Apps: Convert Between Fahrenheit

10) A  
Objective: (2.2) Solve Equation Using Addition Principle

11) D  
Objective: (2.6) Solve and Graph Inequality

12) D  
Objective: (2.2) Solve Equation Using Addition Principle

13) B  
Objective: (2.3) Solve Equation Using Multiplication

14) C  
Objective: (2.6) Solve and Graph Inequality

15) A  
Objective: (3.2) Solve Percent Sentence

16) D  
Objective: (3.3) Solve Apps: Numbers

17) B  
Objective: (3.3) Solve Apps: Geometry

18) B  
Objective: (3.1) Determine Whether Ratios are Equal (Y/N)

19) A  
Objective: (3.5) Solve Apps: Mixture

20) C  
Objective: (3.3) Solve Apps: General

21) B  
Objective: (4.3) Find x- and y-Intercepts

22) C  
Objective: (4.6) Graph Linear Inequality

23) B  
Objective: (4.7) Determine if Relation is Function (Ordered

24) A  
Objective: (4.2) Solve Apps: Graphing Linear Equations

25) B  
Objective: (4.7) Determine if Relation is Function (Ordered

26) D  
Objective: (4.5) Write Equation of Parallel Line

27) A  
Objective: (5.1) Write Number in Scientific Notation

28) B  
Objective: (5.2) Combine Like Terms (One Variable)

29) B  
Objective: (5.1) Write Number in Standard Form

30) C  
Objective: (5.3) Add Two Polynomials (Two or Three

31) B  
Objective: (5.5) Multiply Conjugate Binomials

32) B  
Objective: (6.4) Factor Difference of Cubes

33) D  
Objective: (6.6) Solve Apps: Geometry

34) B  
Objective: (6.3) Factor Trinomial with Lead Coefficient

35) D  
Objective: (6.2) Factor Trinomial (Two Variables)

36) D  
Objective: (6.4) Factor Perfect Square Trinomial

37) A  
Objective: (7.2) Solve Apps: Convert American Units of

38) D  
Objective: (7.1) Simplify Rational Expression II

39) A  
Objective: (7.1) Evaluate Rational Expression

40) D  
Objective: (7.1) Evaluate Rational Expression

41) D  
Objective: (8.4) Graph Nonlinear Function

42) C  
Objective: (8.3) Solve and Graph Absolute Value

43) D  
Objective: (8.1) Find Intersection or Union of Sets

44) D  
Objective: (8.1) Graph Compound Inequality (And)

45) B  
Objective: (9.7) Identify Mistake in Graph

46) A  
Objective: (9.6) Evaluate Determinant of 2 × 2 Matrix
Answer Key
Testname: ALGEBRA

47) A
   Objective: (9.6) Use Cramer’s Rule to Solve System of
48) A
   Objective: (9.4) Decide if Ordered Triple Is Solution to
49) B
   Objective: (10.6) Solve Radical Equation I
50) B
   Objective: (10.1) Evaluate Higher-Order Root
51) D
   Objective: (10.3) Simplify Radical Expression
52) B
   Objective: (10.3) Simplify Radical Expression
53) B
   Objective: (11.3) Solve Using Substitution
54) D
   Objective: (11.5) Solve and Graph Quadratic Inequality
55) C
   Objective: (11.1) Solve Equation of Form \((x + a)^2 = b\)
56) A
   Objective: (12.1) Determine Whether Functions are
57) D
   Objective: (12.4) Use Power Rule to Write Logarithm to a
58) B
   Objective: (12.6) Solve Exponential Equation
59) C
   Objective: (13.3) Solve Nonlinear System of Equations by
60) D
   Objective: (13.4) Graph Solution Set of System of
61) B
   Objective: (13.1) Tech: Graph Circle Using Graphing
62) D
   Objective: (1.3) Find Additive Inverse
63) A
   Objective: (1.3) Add or Subtract with Absolute Values
64) C
   Objective: (1.5) Evaluate Using Order of Operations I
65) B
   Objective: (2.5) Translate to Equation and Solve (No
66) A
   Objective: (2.6) Solve and Graph Inequality
67) C
   Objective: (3.3) Solve Apps: Geometry
68) A
   Objective: (3.2) Write Percent as Decimal
69) C
   Objective: (4.3) Find \(x\)– and \(y\)–Intercepts
70) B
   Objective: (4.5) Write Equation of Perpendicular Line
71) D
   Objective: (5.3) Add Two Polynomials (Two or Three
72) D
   Objective: (5.5) Multiply Polynomial by Monomial
73) D
   Objective: (6.6) Solve Apps: Geometry
74) B
   Objective: (6.4) Factor Completely
75) B
   Objective: (7.7) Solve Apps: Direct Variation
76) A
   Objective: (7.6) Determine If Given Value Is Solution
77) B
   Objective: (8.4) Identify Domain and Range of Relation
78) C
   Objective: (9.5) Solve Apps: Translate Problem and Solve
79) D
   Objective: (10.4) Solve Apps: Find Perimeter of Geometric
80) A
   Objective: (11.2) Write Quadratic Equation in Standard
81) C
   Objective: (12.6) Solve Apps: Logarithmic and Exponential
82) C
   Objective: (13.3) Solve Nonlinear System of Equations by
83) B
   Objective: (1.4) Divide Signed Whole Numbers
84) D
   Objective: (2.4) Solve Formula for Indicated Variable II
85) A
   Objective: (3.1) Find Missing Lengths in Similar Figures
86) A
   Objective: (4.1) Determine Coordinates of Points on Graph
87) D
   Objective: (5.4) Multiply Monomials Raised to Powers
88) A
   Objective: (6.1) Find Greatest Common Factor of
89) B
   Objective: (7.2) Solve Apps: Currency Conversion
90) D
   Objective: (8.1) Solve and Graph Compound Inequality
91) D
   Objective: (9.1) Solve System of Equations Graphically
92) A
   Objective: (10.7) Write Quotient of Complex Numbers in
Answer Key
Testname: ALGEBRA

93) D
   Objective: (11.2) Find x- and y-Intercepts of Quadratic

94) C
   Objective: (12.4) Use Power Rule to Write as a Multiple of

95) D
   Objective: (13.3) Solve Nonlinear System of Equations by

96) D
   Objective: (1.5) Find Square Root

97) D
   Objective: (2.4) Solve Formula for Indicated Variable I

98) A
   Objective: (3.1) Determine Whether Ratios are Equal (Y/N)

99) D
   Objective: (4.4) Write Equation of Line from Graph

100) A
    Objective: (5.6) Divide Polynomial by Binomial II
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Practicing Elementary & Intermediate Algebra

1) ______ 51) ______
2) ______ 52) ______
3) ______ 53) ______
4) ______ 54) ______
5) ______ 55) ______
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