1. Evaluate $2x - y$ for the given replacement values.

$x = 2$ and $y = -8$

$2x - y = \underline{\phantom{12}}$

Answer: 12

2. Simplify.

$8 + 4 \cdot 9 - 11$

$8 + 4 \cdot 9 - 11 = \underline{\phantom{33}}$

Answer: 33


$8(-12) \div [2(-8) - 3(-5)]$

The answer is $\underline{\phantom{96}}$.

Answer: 96

4. Evaluate the following expression for $x = -3$ and $y = 4$.

$x^2 - y$

$x^2 - y = \underline{\phantom{5}}$

Answer: 5

5. Solve. Check your solution.

$d - 7 = -5$

The solution is $d = \underline{\phantom{2}}$.

Answer: 2


$\frac{n}{8} = -4$

The solution is $n = \underline{\phantom{-32}}$.

Answer: $-32$
7. Simplify the expression by combining like terms.
   \[ 3x - 10x \]
   \[ 3x - 10x = \boxed{\phantom{0}} \]
   Answer: \(-7x\)

8. Multiply.
   \[ -6(3s + 2) \]
   \[ -6(3s + 2) = \boxed{\phantom{0}} \]
   Answer: \(-18s - 12\)

9. Simplify the expression.
   \[ 4y - 2(y - 3) + 4 \]
   \[ 4y - 2(y - 3) + 4 = \boxed{\phantom{0}} \]
   Answer: \(2y + 10\)

10. Find the perimeter of the figure.
    The perimeter is \boxed{\phantom{0}} feet. (Simplify your answer.)
    Answer: \(15a + 18\)

11. Find the perimeter of the figure.
    The perimeter is \boxed{\phantom{0}} inches. (Simplify your answer.)
    Answer: \(-40x + 65\)
12. Find the area of the rectangle.

The area is $32x - 96$ sq km.

13. A decorator wishes to put a wallpaper border around a rectangular room that measures 22 feet by 30 feet. Find the room's perimeter. Use $P = 2L + 2W$.

The perimeter of the room is 104 feet.

14. Solve and check the solution.

$4(2x - 4) = 9x$

$x = -16$

Answer: $-16$

15. Solve the equation.

$-3(x + 9) - 43 = 5 - 51$

The answer is $x = -8$.

Answer: $-8$

16. Solve the following equation.

$\frac{x}{-3} = 2^2 - | -3 | - (-6)$

The solution is $-21$.

Answer: $-21$
17. Solve the equation.
\[ 8x - 1 = 9x + 8 \]
\[ x = \quad \text{Answer: } -9 \]

18. Solve the equation.
\[ -18x - 20 = -14x + 100 \]
\[ x = \quad \text{Answer: } -30 \]

19. Solve the equation.
\[ 4(y - 3) = 2y - 12 \]
\[ y = \quad \text{Answer: } 0 \]

20. Solve the equation.
\[ 3t - 7 = 4(t + 6) \]
\[ t = \quad \text{Answer: } -31 \]

21. Solve the equation.
\[ 2(5c - 1) - 3 = 8c + 9 \]
\[ c = \quad \text{Answer: } 7 \]

22. Solve the equation.
\[ 5n + 55 = 60 \]
\[ n = \quad \text{Answer: } 1 \]
23. During the women's basketball championship game, team A scored 6 more points than team B. Together, both teams scored a total of 160 points. How many points did the Champion team A score during this game?

Answer: 83

24. Multiply. Write the product in simplest form.

\[
\frac{3}{2} \times \frac{5}{6}
\]

Answer: \(-\frac{5}{4}\)

25. Multiply.

\[
\frac{7}{6} \times \frac{1}{2} \times \frac{3}{14}
\]

Answer: \(\frac{1}{8}\)

26. Evaluate the following expression.

\[
\left(-\frac{3}{7}\right)^2
\]

Answer: \(\frac{9}{49}\)
27. Divide.

$$\frac{7}{18} + \frac{31}{36}$$

Select the correct choice below and fill in any answer boxes in your choice.

- **A.** \(\frac{7}{18} + \frac{31}{36} = \) (Type an integer or a simplified fraction.)
- **B.** The answer is undefined.

Answer: A. \(\frac{7}{18} + \frac{31}{36} = \frac{14}{31}\) (Type an integer or a simplified fraction.)

28. Perform the indicated operation.

$$\frac{25x^2}{21y} + \frac{15x}{49y}$$

(Simplify your answer. Use integers or fractions for any numbers in the expression.)

Answer: \(\frac{35x}{9}\)

29. Find \(\frac{3}{4}\) of 28. Write the answer in simplest form.

\(\frac{3}{4}\) of 28 is \(\) (Simplify your answer.)

Answer: 21

30. Add and simplify.

$$\frac{4}{9} + \frac{2}{9}$$

(Type an integer or a simplified fraction.)

Answer: \(\frac{2}{3}\)
31. Add and simplify.
\[
\frac{1}{2} + \frac{1}{4}
\]
\[
\frac{1}{2} + \frac{1}{4} = \frac{3}{4} \quad \text{(Type an integer or a fraction.)}
\]
Answer: \(
\frac{3}{4}
\)

32. Subtract.
\[
\frac{1}{4} - \frac{5}{18}
\]
\[
\frac{1}{4} - \frac{5}{18} = \frac{-1}{36} \quad \text{(Type an integer or a fraction.)}
\]
Answer: \(
\frac{-1}{36}
\)

33. Simplify the complex fraction.
\[
\frac{\frac{2}{9}}{\frac{2}{7}}
\]
\[
\frac{\frac{2}{9}}{\frac{2}{7}} = \frac{7}{9} \quad \text{(Type an integer or a simplified fraction.)}
\]
Answer: \(
\frac{7}{9}
\)

34. Solve the equation and check the solution.
\[
x = \frac{5}{\frac{7}{x}}
\]
\[
-35 = \frac{5}{\frac{7}{x}}
\]
Answer: \(-49\)
35. Solve the equation.

\[
\frac{x}{5} = \frac{x}{6} - 4
\]

\[x = \text{________________} \quad \text{(Type an integer or a fraction. Simplify your answer.)}\]

Answer: \(-120\)

36. Solve the equation.

\[
\frac{8}{9} - \frac{z}{8} = \frac{1}{72}
\]

\[z = \text{________________} \quad \text{(Type an integer or a fraction. Simplify your answer.)}\]

Answer: \(7\)

37. Solve.

\[
\frac{x}{2} + 5 = \frac{1}{2}
\]

\[x = \text{________________} \quad \text{(Type an integer or a fraction. Simplify your answer.)}\]

Answer: \(-9\)

38. Solve the equation.

\[
\frac{a}{6} + 5 = \frac{a}{5} + 8
\]

\[a = \text{________________} \quad \text{(Type an integer or fraction. Simplify your answer.)}\]

Answer: \(-90\)


\[-7.022 \times 1000\]

\[-7.022 \times 1000 = \text{________________} \quad \text{(Type an integer or a decimal.)}\]

Answer: \(-7022\)
40. Divide.

\[
\frac{93.949}{100} = \underline{0.93949}
\]

Answer: 0.93949

41. Solve.

\[3.3x - 69 = 1.7x + 3\]

\[x = \underline{45}\] (Type an integer or a decimal.)

Answer: 45

42. Solve the proportion.

\[\frac{3}{4} = \frac{x}{12}\]

\[x = \underline{9}\] (Type an integer or a simplified fraction.)

Answer: 9

43. A 10-oz iced tea at a certain restaurant has 90 calories. How many calories are there in a 17-oz iced tea?

The 17-oz iced tea has \underline{153} calories.

Answer: 153

44. Write the fraction as a percent.

\[\frac{4}{25}\]

\[\frac{4}{25} = \underline{16\%}\] (Simplify your answer.)

Answer: 16
45. A stereo normally priced at $749 is on sale for 45% off. Find the discount and the sale price.

The discount is $_________

The sale price is $_________

Answers 337.05

411.95

46. A company borrows $58,000 for 2 years at a simple interest rate of 5.5%. Find the interest paid on the loan and the total amount paid.

The interest paid on the loan is $_________

The total amount paid is $_________

Answers 6,380

64,380

47. Find the perimeter of the following figure.

The perimeter is (1)_________

(1) sq. in.

(1) in.

Answers 69

(1) in.
48. Find the circumference of the circle. Give the exact circumference and then an approximation. Use $\pi \approx 3.14$.

The exact circumference of the circle is $\boxed{17\pi}$ centimeters.
(Simplify your answer. Type an exact answer in terms of $\pi$.)

The approximate circumference of the circle is $\boxed{53.38}$ centimeters.
(Type an integer or a decimal rounded to the nearest hundredth.)

(1) centimeters.  (2) centimeters.

49. Find the circumference of the circle. Give the exact circumference and then an approximation. Use $\pi \approx 3.14$.

The exact circumference of the circle is $\boxed{26\pi}$ miles.
(Simplify your answer. Type an exact answer in terms of $\pi$.)

The approximate circumference of the circle is $\boxed{81.64}$ miles.
(Type an integer or a decimal rounded to the nearest hundredth.)

(1) miles.  (2) miles.
50. Find the area of the geometric figure.

The area is \( \boxed{1} \) \( \boxed{\text{square yards}} \). (Simplify your answer.)

- [ ] yards
- [ ] square yards
- [ ] cubic yards

Answers 3
\( \frac{6}{4} \)

(1) square yards

51. Find the area of the given geometric figure.

The area of the triangle is \( \boxed{1} \) \( \boxed{\text{square yards}} \). (Simplify your answer.)

- [ ] yards
- [ ] cubic yards
- [ ] square yards

Answers 35

(1) square yards.
52. A pizzeria will bake and deliver a round pizza with a 16-inch diameter. Find the exact area of the top of the pizza and an approximation. Use $3.14$ as an approximation for $\pi$.

The exact area is $\frac{16^2\pi}{4}$ \text{ square inches}.

(Type an integer or decimal rounded to two decimal places as needed.)

The approximate area is $200.96$ \text{ square inches}.

(1) inches
☐ square inches ☐ cubic inches

(2) inches
☐ square inches ☐ cubic inches

Answers $64\pi$

(1) square inches
200.96

(2) square inches

53. A $16\frac{1}{2}$-foot by 6-foot concrete wall is to be built using concrete blocks. Find the area of the wall.

The area of the wall is $16\frac{1}{2} \times 6$ \text{ sq ft.}

(1) square ft.
☐ cubic ft.
☐ ft.

Answers 99

(1) sq ft.

54. Find the area of the shaded region. Use the approximation 3.14 for $\pi$.

The area of the shaded region is approximately $\pi(8^2 - 4^2)$ \text{ sq in.}

(Simplify your answer. Type an integer or a decimal.)

(1) cubic in.
☐ square in.
☐ in.

Answers $55.04$

(1) sq in.
55. Convert as indicated. When necessary, round to the nearest tenth of a degree.

176°F to degrees Celsius

176°F = °C
(Round to the nearest tenth as needed.)

Answer: 80

56. Solve the equation for x.

− 5(x + 6) − 4 = − 34

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. x = 0 (Simplify your answer. Type an integer or a fraction.)
B. The solution is all real numbers.
C. There is no solution.

Answer: A. x = 0 (Simplify your answer. Type an integer or a fraction.)

57. Solve the equation for y.

9x + y = 9

y =

Answer: 9 − 9x

58. Solve the formula for the specified variable.

Q = R + Rst for t

t =

Answer: \frac{Q - R}{Rs}
59. Solve the inequality. Graph the solution set and write it in interval notation.

\[ 2x < -6 \]

Choose the correct graph below.

\[ \text{The solution to the inequality } 2x < -6 \text{ is } (-\infty, -3)\]

Answers

D. \((-\infty, -3)\)

60. Solve the inequality. Graph the solution set and write it in interval notation.

\[-7x \leq 21\]

Choose the correct graph below.

\[ \text{The solution to the inequality } -7x \leq 21 \text{ is } [-3, \infty)\]

Answers

C. \([-3, \infty)\)
61. Solve the inequality.

\[ 3x - 4 < 9x + 14 \]

The solution set is \(( -3, \infty )\). (Type your answer in interval notation.)

Answer: \(( -3, \infty )\)

62. Graph the linear equation.

\[ y = 2 \]

Use the graphing tool to graph the linear equation.
63. Graph the linear equation.

\[ y = -\frac{3}{2}x + 3 \]

Use the graphing tool to graph the linear equation.
64. Identify the intercepts.

Answers: 

((0, 4), (-4, 0))
65. Plot the intercepts to graph the equation.

\[ 7x - 2y = 14 \]

Use the graphing tool to graph the equation. Use the intercepts when drawing the line. If only one intercept exists, use it and another point to draw the line.

Answer:

66. Find the slope of the line that goes through the given points.

\[(7, -5) \text{ and } (-8, 6)\]

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The slope is . (Simplify your answer.)
- B. The slope is undefined.

Answer: A. The slope is \[-\frac{11}{15}\]. (Simplify your answer.)
67. Find the slope of the line.

\[ y = -2x + 9 \]

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. The slope is  \(-2\).
B. The slope is undefined.

Answer: A. The slope is  \(-2\).

68. Find the slope of the line.

\[ 7x - 9y = 63 \]

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. The slope of the line is  \( \frac{7}{9} \). (Simplify your answer.)
B. The slope of the line is undefined.

Answer: A. The slope of the line is  \( \frac{7}{9} \). (Simplify your answer.)

69. Solve the following equation for \( y \).

\[ y - 7 = 3(x - (-4)) \]

\[ y = \text{ } \]

(Simplify your answer.)

Answer: \( 3x + 19 \)

70. Find the slope-intercept form of the line whose slope is 4 and that passes through the point \((-2, 6)\).

The equation of the line is  \( y = 4x + 14 \).

(Type your answer in slope-intercept form.)

Answer: \( y = 4x + 14 \)

71. Find the value of \( x^2 - 4x + 5 \) for the given value of \( x \).

\[ x = -3 \]

The value of the polynomial for \( x = -3 \) is  \( -26 \). (Simplify your answer.)

Answer: 26
72. Determine whether each ordered pair is a solution of the system of linear equations.

\[
\begin{align*}
2x - y &= 4 \\
x + 9y &= 21
\end{align*}
\]

a. (5,6)  

b. (3,2)

a. Is (5,6) a solution?  

○ Yes  

○ No

b. Is (3,2) a solution?  

○ No  

○ Yes

Answers  

No

Yes

73. Solve the system of equations using the substitution method.

\[
\begin{align*}
x + y &= 8 \\
x &= 3y
\end{align*}
\]

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

○ A. The solution of the system is _______ (Type an ordered pair.)

○ B. There are infinitely many solutions; \{(x,y)\mid x + y = 8\} or \{(x,y)\mid x = 3y\}.

○ C. There is no solution; \{\} or \{\\}.

Answer: A. The solution of the system is \[(6,2)\]. (Type an ordered pair.)

74. Solve the system of equations by the addition method.

\[
\begin{align*}
5x - y &= 15 \\
6x + y &= 29
\end{align*}
\]

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

○ A. The solution is _______. (Simplify your answer. Type an ordered pair.)

○ B. There are infinitely many solutions; \{(x,y)\mid 5x - y = 15\} or \{(x,y)\mid 6x + y = 29\}.

○ C. There is no solution; \{\} or \{\\}.

Answer: A. The solution is \[(4,5)\]. (Simplify your answer. Type an ordered pair.)
75. Solve the system of equations by the addition method.

\[
\begin{align*}
    x + 2y &= 6 \\
    2x + 5y &= 16
\end{align*}
\]

Select the correct choice below and, if necessary, fill in the answer box within your choice.

- **A.** The solution is \(( -2,4 )\). (Simplify your answer. Type an ordered pair.)
- **B.** There are infinitely many solutions; \((x, y)\) \(x + 2y = 6\) or \((x, y)\) \(2x + 5y = 16\).
- **C.** There is no solution; {} or \(\emptyset\).

Answer: A. The solution is \(( -2,4 )\). (Simplify your answer. Type an ordered pair.)

76. Two numbers total 33 and have a difference of 11. Find the two numbers.

The larger number is \(\) , and the smaller number is \(\) .

Answers 22

11

77. Use the product rule to simplify the expression. Write the result using exponents.

\[
\left( -9m^6 n^6 \right) \left( 4mn^2 \right)
\]

\[
\left( -9m^6 n^6 \right) \left( 4mn^2 \right) = \]

Answer: \(-36m^7 n^8\)

78. Use the product rule to simplify the expression. Write the results using exponents.

\[
\left( 4z^{11} \right) \left( -6z^7 \right) \left( z^3 \right)
\]

\[
\left( 4z^{11} \right) \left( -6z^7 \right) \left( z^3 \right) = 
\]

Answer: \(-24z^{21}\)

79. Use the power rule to simplify the expression.

\[
\left( z^7 \right)^8
\]

\[
\left( z^7 \right)^8 = 
\]

(Simplify your answer. Type exponential notation with positive exponents.)

Answer: \(z^{56}\)
80. Use the power rule and the power of a product rule to simplify the expression.

\[
(2q^9)^5
\]

\[
(2q^9)^5 = \underline{32q^{45}}
\]

Answer: \(32q^{45}\)

81. Use the power rule and the power of a product or quotient rule to simplify the expression.

\[
(-7a^3b^5c)^2
\]

\[
(-7a^3b^5c)^2 = \underline{49a^6b^{10}c^2}
\]

Answer: \(49a^6b^{10}c^2\)

82. Use the power rule, the power of a product rule, and the power of a quotient rule to simplify the expression.

\[
\left(\frac{6xz^2}{y^5}\right)^2
\]

\[
\left(\frac{6xz^2}{y^5}\right)^2 = \underline{36x^2z^4/y^{10}}
\]

Answer: \(\frac{36x^2z^4}{y^{10}}\)

83. Simplify the expression.

\[
a^3 \cdot a^4 \cdot a^6
\]

\[
a^3 \cdot a^4 \cdot a^6 = \underline{a^{13}}
\]

Answer: \(a^{13}\)
84. Simplify the expression. Assume that all bases are not equal to 0.

\[
\frac{9x^4y^2z}{x^2yz}
\]

\[
\frac{9x^4y^2z}{x^2yz} = \underline{\text{Answer: } 9x^2y}
\]

85. If \( P(x) = x^2 + x + 3 \), find \( P(6) \).

\[
P(6) = \underline{\text{Answer: } 45}
\]

86. Simplify the following expression by combining the like terms.

\[
-7a^2 - 6ab + 7b^2 - 3a^2 - 6ab + 3b^2
\]

\[
-7a^2 - 6ab + 7b^2 - 3a^2 - 6ab + 3b^2 = \underline{\text{Answer: } -10a^2 - 12ab + 10b^2}
\]

87. Subtract.

\[
(6y^2 + 6y - 4) - (-9y + 3)
\]

\[
(6y^2 + 6y - 4) - (-9y + 3) = \underline{\text{Answer: } 6y^2 + 15y - 7}
\]

88. Add.

\[
(-4y^2 - 7y) + (6y^2 + y - 3)
\]

\[
(-4y^2 - 7y) + (6y^2 + y - 3) = \underline{\text{Answer: } 2y^2 - 6y - 3}
\]
89. Multiply.

\[(x + 7) \left( x^3 - 5x + 6 \right) \]

\[(x + 7) \left( x^3 - 5x + 6 \right) = \phantom{0000} \]

Answer: \(x^4 + 7x^3 - 5x^2 - 29x + 42\)

90. Multiply vertically.

\[
\begin{array}{c}
\times +5 \\
\times -4 \\
\hline 
\end{array} 
\]

\[
\begin{array}{c}
3x^2 - 9x + 4 \\
\hline 
\end{array} 
\]

\[
\left( x^2 + 5x - 4 \right) \left( 3x^2 - 9x + 4 \right) = \phantom{0000} \text{ (Simplify your answer.)} 
\]

Answer: \(3x^4 + 6x^3 - 53x^2 + 56x - 16\)

91. Multiply.

\[-3x \left( x^2 + 7x - 4 \right) \]

\[-3x \left( x^2 + 7x - 4 \right) = \phantom{0000} \text{ (Simplify your answer.)} \]

Answer: \(-3x^3 - 21x^2 + 12x\)

92. Find the area of the triangle.

\[
\text{Area: } 24x^2 - 9x \text{ sq in.} 
\]
93. Write a polynomial that describes the area of the shaded region.

The area is \( x^2 + 10x + 16 \).

94. Multiply using the FOIL method.

\[ 6(y - 3)(8y - 1) = \]

Answer: \( 48y^2 - 150y + 18 \)

95. Multiply.

\[ (x + 7)^2 = \]

Answer: \( x^2 + 14x + 49 \)

96. Multiply.

\[ (a - 6)(a + 6) = \]

Answer: \( a^2 - 36 \)

97. Multiply the monomial and the polynomial.

\[ 7x^2 \left( 2x^3 - 3x^2 + 8 \right) = \]

Answer: \( 14x^5 - 21x^4 + 56x^2 \)
98. Use a special product to multiply, if possible.

\[(5b - 2c)^2\]

Choose the expression equivalent to \((5b - 2c)^2\).

- **A.** \(25b^2 + 4c^2\)
- **B.** \(25b^2 + 20bc + 4c^2\)
- **C.** \(25b^2 - 4c^2\)
- **D.** \(25b^2 - 20bc + 4c^2\)
- **E.** none of these

Answer: **D.** \(25b^2 - 20bc + 4c^2\)

99. Simplify the following expression.

\[5^{-3}\]

\[5^{-3} = \frac{1}{125}\] (Type an integer or a simplified fraction.)

Answer: \(\frac{1}{125}\)

100. Simplify the following expression.

\[\left(\frac{1}{3}\right)^{-3}\]

\[\left(\frac{1}{3}\right)^{-3} = 27\] (Type an integer or a simplified fraction.)

Answer: 27

101. Simplify the expression. Write the result using positive exponents only. Assume that all bases are not equal to 0.

\[\frac{y^{-4}}{y}\]

\[\frac{y^{-4}}{y} = \frac{1}{y^5}\]

Answer: \(\frac{1}{y^5}\)
102. Simplify. Use positive exponents for any variables. Assume that all bases are not equal to 0.

\[
\frac{k^{-1}}{k^{-9}}
\]

\[
\frac{k^{-1}}{k^{-9}} = k^8
\]

Answer: \( k^8 \)

103. Simplify the following expression. Write the result using positive exponents only.

\[
\left( -2x^4y^{-4} \right) \left( 4x^{-1}y^2 \right)
\]

\[
\left( -2x^4y^{-4} \right) \left( 4x^{-1}y^2 \right) = -\frac{8x^3}{y^2}
\]

Answer: \(-\frac{8x^3}{y^2}\)

104. Simplify the expression. Assume that all bases are not equal to 0.

\[
\left( a^{-3}b^2 \right)^{-4}
\]

\[
\left( a^{-3}b^2 \right)^{-4} = a^{12}b^8
\]

Answer: \( \frac{a^{12}}{b^8} \)

105. Write the number in scientific notation.

77,000

77,000 = \( 7.7 \times 10^4 \)

Answer: \( 7.7 \times 10^4 \)

106. Write the number in scientific notation.

0.00000193

0.00000193 = \( 1.93 \times 10^{-6} \)

Answer: \( 1.93 \times 10^{-6} \)
107. Divide.

\[
\frac{15p^6 + 20p^5}{5p}
\]

\[
\frac{15p^6 + 20p^5}{5p} = 3p^5 + 4p^4
\]

Answer: \(3p^5 + 4p^4\)

108. Find the GCF for the given list.

\[27, 45\]

The GCF is \(9\).

Answer: \(9\)

109. Factor out the greatest common factor from the polynomial.

\[5x + 30\]

\[5x + 30 = 5(x + 6)\]

Answer: \(5(x + 6)\)

110. Factor.

\[16xy - 54x^2\]

\[16xy - 54x^2 = 2x(8y - 27x)\]

Answer: \(2x(8y - 27x)\)

111. Factor the trinomial completely.

\[x^2 - 2x - 63\]

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** \(x^2 - 2x - 63 = (x + 7)(x - 9)\) (Type your answer in factored form.)
- **B.** The polynomial is prime.

Answer: **A.** \(x^2 - 2x - 63 = (x + 7)(x - 9)\) (Type your answer in factored form.)
112. Factor the following binomial completely.

\[ 196x^2 - 81y^2 \]

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. \( 196x^2 - 81y^2 = \) _________ (Factor completely.)
- B. The polynomial is prime.

Answer: A. \( 196x^2 - 81y^2 = (14x + 9y)(14x - 9y) \) (Factor completely.)

113. Solve the equation.

\[ (x - 3)(x + 2) = 0 \]

\[ x = \] _________

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: 3, − 2

114. Solve the equation.

\[ 3x(x - 9) = 0 \]

\[ x = \] _________ (Use a comma to separate answers as needed.)

Answer: 9,0

115. Solve the equation.

\[ (6x + 7)(2x - 3) = 0 \]

\[ x = \] _________

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: \[ -\frac{7}{6}, \frac{3}{2} \]

116. Solve the equation.

\[ x^2 - 11x + 24 = 0 \]

\[ x = \] _________

(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)

Answer: 8,3
117. Solve.

\[ x^2 + 2x - 15 = 0 \]

\[ x = \underline{5,3} \]  
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)  
Answer: \(-5, 3\)

118. Solve the equation.

\[ x^3 - 10x^2 + 16x = 0 \]

\[ x = \underline{0, 2, 8} \]  
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)  
Answer: \(0, 2, 8\)

119. Solve.

\[ 2x^2 - 9x - 35 = 0 \]

\[ x = \underline{-5, 7} \]  
(Simplify your answer. Type each solution only once. Use a comma to separate answers as needed.)  
Answer: \(-\frac{5}{2}, 7\)

120. Find the domain of the rational function.

\[ C(x) = \frac{x + 7}{x^2 - 16} \]

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** The domain is \( \{ x \mid x \text{ is a real number and } x \neq \underline{-4, 4} \} \).  
(Simplify your answer. Type an integer or a fraction. Use a comma to separate answers as needed.)
- **B.** The domain is \( \{ x \mid x \text{ is a real number} \} \).

Answer: A. The domain is \( \{ x \mid x \text{ is a real number and } x \neq -4, 4 \} \).  
(Simplify your answer. Type an integer or a fraction. Use a comma to separate answers as needed.)
121. Simplify the expression.
\[
\frac{x + 7}{x^2 - 3x - 70}
\]

Select the correct choice below and fill in any answer boxes in your choice.

A. \(\frac{x + 7}{x^2 - 3x - 70} = \) \(\frac{1}{x - 10}\) (Simplify your answer.)

B. The expression cannot be simplified.

Answer: A. \(\frac{x + 7}{x^2 - 3x - 70} = \frac{1}{x - 10}\) (Simplify your answer.)

122. Find the product and simplify if possible.

\[
\frac{5x}{y^2} \cdot \frac{6y}{7x}
\]

\[
\frac{5x}{y^2} \cdot \frac{6y}{7x} = \]

(Simplify your answer. Use positive exponents only.)

Answer: \(\frac{30}{7y}\)

123. Find the product and simplify if possible.

\[
\frac{x^2 - 64}{x^2 - 4x - 32} \cdot \frac{x + 4}{x}
\]

\[
\frac{x^2 - 64}{x^2 - 4x - 32} \cdot \frac{x + 4}{x} = \]

(Simplify your answer.)

Answer: \(\frac{x + 8}{x}\)
124. Find the quotient and simplify the result.

\[
\frac{16x^2}{y^5} + \frac{8x^2 y^5}{9}
\]

\[
\frac{16x^2}{y^5} + \frac{8x^2 y^5}{9} = \frac{18}{y^{10}} \quad \text{(Simplify your answer.)}
\]

Answer: \( \frac{18}{y^{10}} \)

125. Add the rational expressions.

\[
\frac{5m}{2n} + \frac{7m}{2n}
\]

\[
\frac{5m}{2n} + \frac{7m}{2n} = \frac{6m}{n} \quad \text{(Simplify your answer.)}
\]

Answer: \( \frac{6m}{n} \)

126. Subtract the rational expressions.

\[
\frac{7x + 9}{x^2 - 8x + 12} - \frac{6x + 15}{x^2 - 8x + 12}
\]

\[
\frac{7x + 9}{x^2 - 8x + 12} - \frac{6x + 15}{x^2 - 8x + 12} = \frac{1}{x - 2} \quad \text{(Simplify your answer.)}
\]

Answer: \( \frac{1}{x - 2} \)
127. Solve the equation.

\[ \frac{2 - \frac{5}{a}}{a} = 9 \]

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. The solution is \( \frac{5}{7} \).

B. There is no solution.

Answer: A. The solution is \( \frac{5}{7} \).

128. Solve the equation.

\[ \frac{x - 5}{4} = \frac{x}{9} \]

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. The solution is \( \frac{9}{x} \).

B. There is no solution.

Answer: A. The solution is \( \frac{9}{x} \).

129. Solve the equation.

\[ \frac{9}{y} + \frac{2}{7} = \frac{7}{7y} \]

Select the correct answer below and, if necessary, fill in the answer box to complete your choice.

A. \( y = -28 \) (Use a comma to separate answers if needed.)

B. There is no solution.

Answer: A. \( y = -28 \) (Use a comma to separate answers if needed.)
130. Graph the function.

\[ f(x) = x^2 - 1 \]

Choose the correct graph below.

\[ \bigcirc \text{ A.} \quad \bigcirc \text{ B.} \quad \bigcirc \text{ C.} \quad \bigcirc \text{ D.} \]

Answer: \[ \text{C.} \]

131. Graph the function.

\[ h(x) = |x| + 3 \]

Choose the correct graph below.

\[ \bigcirc \text{ A.} \quad \bigcirc \text{ B.} \quad \bigcirc \text{ C.} \quad \bigcirc \text{ D.} \]

Answer: \[ \text{B.} \]
132. Graph the function.

\[ f(x) = 5x - 2 \]

Choose the correct graph below.

**Answer:**

![Graph](image)

B.

133. Simplify by factoring. Assume that all variables under radicals represent nonnegative numbers.

\[ \sqrt{25x^6} \]

Select the correct choice below and, if necessary, fill in the answer box that completes your choice.

**A.** \[ \sqrt{25x^6} = \] (Type an exact answer, using radicals as needed.)

**B.** The square root is not a real number.

**Answer:** A. \[ \sqrt{25x^6} = 5x^3 \] (Type an exact answer, using radicals as needed.)

134. Find the cube root.

\[ \sqrt[3]{343} \]

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

**A.** \[ \sqrt[3]{343} = \]

**B.** The cube root is not a real number.

**Answer:** A. \[ \sqrt[3]{343} = 7 \]
135. Simplify the radical.

\[ \sqrt{\frac{49}{64}} \]

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** \( \sqrt{\frac{49}{64}} = \quad \) (Type an integer or a simplified fraction.)
- **B.** The square root is not a real number.

Answer: A. \( \sqrt{\frac{49}{64}} = \frac{7}{8} \) (Type an integer or a simplified fraction.)
136. Identify the domain and then graph the function, using the table to the right.

\[ f(x) = \sqrt{x - 11} \]

The domain of the function \( f(x) \) is \( \boxed{[11, \infty)} \). (Type your answer in interval notation.)

Complete the table to the right.

Graph the function. Choose the correct graph to the right.

<table>
<thead>
<tr>
<th>x</th>
<th>f(x)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

Answers \( [11, \infty) \)

0

1

2

3

D.
137. Use radical notation to write the expression. Simplify if possible.

\[ \left( \frac{81}{625} \right)^{\frac{1}{4}} \]

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

**A.** \( \left( \frac{81}{625} \right)^{\frac{1}{4}} = \frac{3}{5} \) (Simplify your answer. Type an exact answer, using radicals as needed.)

**B.** The answer is not a real number.

Answer: A. \( \left( \frac{81}{625} \right)^{\frac{1}{4}} = \frac{3}{5} \) (Simplify your answer. Type an exact answer, using radicals as needed.)

138. Use radical notation to rewrite the expression. Simplify if possible.

\[ 1024^{\frac{3}{5}} \]

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

**A.** \( 1024^{\frac{3}{5}} = 64 \) (Simplify your answer. Type an exact answer, using radicals as needed.)

**B.** The answer is not a real number.

Answer: A. \( 1024^{\frac{3}{5}} = 64 \) (Simplify your answer. Type an exact answer, using radicals as needed.)

139. Simplify by factoring.

\[ \sqrt{50} \]

Answer: \( 5\sqrt{2} \)

140. Simplify. Assume that the variables represent nonnegative real numbers.

\[ \sqrt{9a^2 b^7} \]

\[ \sqrt{9a^2 b^7} = 3ab^3 \sqrt{b} \] (Type an exact answer, using radicals as needed.)

Answer: \( 3ab^3 \sqrt{b} \)
141. Solve.
\[ \sqrt{x-9} = 4 \]

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. The solution(s) is(are) \( x = \frac{25}{9} \). (Use a comma to separate answers as needed.)

B. The solution set is \( \emptyset \).

Answer: A. The solution(s) is(are) \( x = \frac{25}{9} \). (Use a comma to separate answers as needed.)

142. Solve.
\[ \sqrt{x+8} = \sqrt{2x-1} \]

Select the correct choice below and fill in any answer boxes present in your choice.

A. \( x = \frac{9}{2} \) (Simplify your answer. Use a comma to separate answers as needed.)

B. There is no solution.

Answer: A. \( x = \frac{9}{2} \) (Simplify your answer. Use a comma to separate answers as needed.)

143. Multiply.
\[ (8 + 6i)(6 + i) \]

\[ (8 + 6i)(6 + i) = 42 + 44i \]
(Simplify your answer. Type your answer in the form \( a + bi \).)

Answer: 42 + 44i

144. Use the square root property to solve the equation. The equation has real number solutions.
\[ (x + 9)^2 = 16 \]

\[ x = \frac{-5, -13}{2} \]
(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

Answer: \(-5, -13\)

145. The area of a square room is 256 square feet. Find the dimensions of the room.

The side of the room is _____ feet long.

Answer: 16
146. Evaluate \( \sqrt{b^2 - 4ac} \) for \( a = 2 \), \( b = 3 \), and \( c = -5 \).

\[
\sqrt{b^2 - 4ac} = \underline{7}
\]

(Simplify your answer. Type an exact answer, using radicals as needed.)

Answer: 7

147. Use the quadratic formula to solve the equation.

\[
m^2 + 3m + 2 = 0
\]

\[
m = \underline{-2, -1}
\]

(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

Answer: \(-2, -1\)

148. Use the quadratic formula to solve the equation.

\[
x^2 + 8x + 25 = 0
\]

The solution(s) is/are \( x = \underline{-4 + 3i, -4 - 3i} \).

(Simplify your answer. Type an exact answer, using radicals and \( i \) as needed. Use a comma to separate answers as needed.)

Answer: \(-4 + 3i, -4 - 3i\)
149. Sketch the graph of the quadratic function and the axis of symmetry. State the vertex, and give the equation for the axis of symmetry.

\[ g(x) = (x + 3)^2 - 4 \]

Use the graphing tool to graph the function as a solid curve and the axis of symmetry as a dashed line.

What is the vertex of the graph?

The vertex is \((-3, -4)\).

What is the equation for the axis of symmetry?

\[ x = -3 \]
150. Sketch the graph of the quadratic function and the axis of symmetry. State the vertex, and give the equation for the axis of symmetry.

\[ F(x) = -x^2 + 5 \]

Use the graphing tool to graph the function as a solid curve and the axis of symmetry as a dashed line.

The vertex is \((0, 5)\).

The axis of symmetry is \(x = 0\).