### Section 2.1

1. Evaluate $x + 4$ when $x = -3$.

**Answer:** 1

2. Evaluate $15 - y$ when $y = -5$.

**Answer:** 20


**Answer:** $n + 4$

4. Translate into algebra “5 is less than $x$.”

**Answer:** $x - 5$

### Section 2.2

1. Simplify: $-7\left(\frac{1}{-7}\right)$

**Answer:** 1

2. Evaluate $9x + 2$ when $x = -3$.

**Answer:** $-25$

### Section 2.3


**Answer:** $4y$

### Section 4

1. Simplify: $(a - 4)$

**Answer:** $-a + 4$
2. Multiply: \( \frac{3}{2}(12x + 20) \).

   \textbf{Answer: } 18x + 30

3. Simplify: \( 5 - 2(n+1) \).

   \textbf{Answer: } 3 - 2n

4. Multiply: \( 3(7y + 9) \).

   \textbf{Answer: } 21y + 27

5. Multiply: \( (2.5)(6.4) \).

   \textbf{Answer: } 16

---

### Section 2.5

1. Multiply: \( 8 \cdot \frac{3}{8} \).

   \textbf{Answer: } 3

2. Find the LCD of \( \frac{5}{6} \) and \( \frac{1}{4} \).

   \textbf{Answer: } 12

3. Multiply: 4.78 by 100.

   \textbf{Answer: } 478

---

### Section 2.6

1. Solve: \( 15t = 120 \).

   \textbf{Answer: } 8

2. Solve: \( 6x + 24 = 96 \).
### Section 2.7

1. Translate from algebra to English: $15 > x$.

**Answer:** $15$ is greater than $x$.

2. Solve: $n - 9 = -42$.

**Answer:** $n = -33$


**Answer:** $p = \frac{23}{5}$

4. Solve: $3a - 12 = 7a - 20$.

**Answer:** $a = 2$

### Section 3.1

1. Translate “6 less than twice $x$” into an algebraic expression.

**Answer:** $2x - 6$

2. Solve: $\frac{2}{3}x = 24$.

**Answer:** $x = 36$

3. Solve: $3x + 8 = 14$.

**Answer:** $x = 2$

### Section 3.2

1. Convert 4.5% to a decimal.
2. Convert 0.6 to a percent.

**Answer:** 60%

3. Round 0.875 to the nearest hundredth.

**Answer:** 0.88


**Answer:** 10.71

5. Solve: $3.5 = 0.7n$.

**Answer:** $n = 5$


**Answer:** 12.55

---

Section 3.3

1. Multiply: $14(0.25)$.

**Answer:** 3.5

2. Solve: $0.25x + 0.10(x + 4) = 2.5$.

**Answer:** $x = 6$

3. Write an expression for the number of dimes.

**Answer:** $d = q + 3$

---

Section 3.4

1. Simplify: $\frac{1}{2}(6h)$.

**Answer:** $3h$
2. The length of a rectangle is three less than the width. Let \( w \) represent the width. Write an expression for the length of the rectangle.

**Answer:** \( l = w - 3 \)

3. Solve: \( A = \frac{1}{2}bh \) for \( b \) when \( A = 260 \) and \( h = 52 \).

**Answer:** \( b = 10 \)

4. Simplify: \( \sqrt{144} \).

**Answer:** 12

### Section 3.5

1. Find the distance travelled by a car going 70 miles per hour for 3 hours.

**Answer:** 210 miles

2. Solve: \( x + 1.2(x - 10) = 98 \).

**Answer:** \( x = 50 \)

3. Convert 90 minutes to hours.

**Answer:** 1.5 hours

### Section 3.6

1. Write as an inequality: \( x \) is at least 30.

**Answer:** \( x \geq 30 \)

2. Solve: \( 8 - 3y < 41 \).

**Answer:** \( y > -11 \)

**Elementary Algebra**

**Ch 4: Graphs**

### Section 4.1
1. Evaluate \(x + 3\) when \(x = -1\).

**Answer:** 2

2. Evaluate \(2x - 5y\) when \(x = 3\) and \(y = -2\).

**Answer:** 16

3. Solve: for \(y\) : \(40 - 4y = 20\).

**Answer:** 5

---

### Section 4.2

1. Evaluate \(3x + 2\) when \(x = -1\).

**Answer:** -1

2. Solve: \(3x + 2y = 12\) for \(y\) in general.

**Answer:** \(y = \frac{12 - 3x}{2}\)

---

### Section 4.3

1. Solve: \(3.0 + 4y = -2\)

**Answer:** -\(\frac{1}{2}\)

---

### Section 4.4

1. Simplify: \(\frac{1 - 4}{8 - 2}\).

**Answer:** -\(\frac{1}{2}\)

2. Divide: \(\frac{0}{4}, \frac{4}{0}\).

**Answer:** 0, undefined
3. Simplify: \( \frac{15}{-3}, \frac{-15}{3}, \frac{-15}{-3} \).

**Answer:** \(-5, -5, 5\)

---

### Section 4.5

1. Add: \( \frac{x}{4} + \frac{1}{4} \).

**Answer:** \( \frac{x+1}{4} \)

2. Find the reciprocal of \( \frac{3}{7} \).

**Answer:** \( \frac{7}{3} \)

3. Solve: \( 2x - 3y = 12 \) for \( y \).

**Answer:** \( y = \frac{12 - 2x}{-3} \)

---

### Section 4.6

1. Solve: \( \frac{2}{3} = \frac{x}{5} \).

**Answer:** \( x = \frac{10}{3} \)

2. Simplify: \( -\frac{2}{5}x - 15 \).

**Answer:** \( -\frac{2}{5}x + 6 \)

---

### Section 4.7

1. Solve: \( 4x + 3 > 23 \).

**Answer:** \( x > 5 \)

2. Translate from algebra to English: \( x > 5 \).
Answer: $x$ is less than 5.

3. Evaluate $3x - 2y$ when $x = 1$, $y = -2$.

Answer: 7

---

**Elementary Algebra**

Ch 5: Systems of Linear Equations

Section 5.1

1. For the equation $y = \frac{2}{3}x - 4$: (a) is $(6, 0)$ a solution? (b) is $(-3, -2)$ a solution?

Answer: (a) yes  (b) no

2. Find the slope and $y$–intercept of the line $3x - y = 12$.

Answer: $m = 3$; $b = -12$

3. Find the $x$– and $y$–intercepts of the line $2x - 3y = 12$.

Answer: $(6, 0)$, $(0, -4)$

Section 5.2

1. Simplify: $-5 - x$.

Answer: $-15 + 5x$

2. Simplify: $4 - 2n + 5$.

Answer: $-2n - 6$


Answer: $y = 4$

4. Solve: for $x$. $3x - 9y = -3$.

Answer: $x = 3y - 1$
Section 5.3

1. Simplify: \(-5\,6\,3a\).
   Answer: \(-30 + 15a\)

2. Solve: the equation \(\frac{1}{3}x + \frac{5}{8} = \frac{31}{24}\).
   Answer: \(x = 2\)

Section 5.4

1. The sum of twice a number and nine is 31. Find the number.
   Answer: 11

2. Twins Jon and Ron together earned $96,000 last year. Ron earned $8,000 more than three times what Jon earned. How much did each of the twins earn?
   Answer: Jon earned $22,000 and Ron earned $74,000.

3. Alessio rides his bike \(3\frac{1}{2}\) hours at a rate of 10 miles per hour. How far did he ride?
   Answer: 35 miles

Section 5.5

1. Multiply: 4.025 \(1,562\).
   Answer: 6,287.05

2. Write 8.2% as a decimal.
   Answer: 0.082

3. Earl’s dinner bill came to $32.50 and he wanted to leave an 18% tip. How much should the tip be?
   Answer: $5.85

Section 5.6
1. Graph \( x > 2 \) on a number line.

![Number line showing graph of \( x > 2 \)]

**Answer:**

2. Solve: the inequality \( 2a < 5a + 12 \).

**Answer:** \( a > -4 \)

3. Determine whether the ordered pair \( \left( \frac{3}{2}, \frac{1}{2} \right) \) is a solution to the system \( \begin{align*}
2x + y &= 4 \\
y &= 6x
\end{align*} \).

**Answer:** no

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**Elementary Algebra**

**Ch 6: Polynomials**

**Section 6.1**

1. Simplify: \( 8x + 3x \)

**Answer:** \( 11x \)

2. Subtract: \( (5n + 8) - (2n - 1) \).

**Answer:** \( 3n + 9 \)

3. Write in expanded form: \( a^5 \)

**Answer:** \( a \cdot a \cdot a \cdot a \cdot a \)

**Section 6.2**

1. Simplify: \( \frac{3}{4} \cdot \frac{3}{4} \)

**Answer:** \( \frac{3}{4} \cdot \frac{3}{4} \)

2. Simplify: \( (-2)(-2)(-2) \)

**Answer:** \(-8\)
Section 6.3

1. Distribute: \(2(x + 3)\).

**Answer:** \(2x + 6\)

2. Combine like terms: \(x^2 + 9x + 7x + 63\).

**Answer:** \(x^2 + 16x + 63\)

Section 6.4

1. Simplify: (a) \(9^2\) (b) \((-9)^2\) (c) \(-9^2\)

**Answer:** (a) 81 (b) 81 (c) -81

Section 6.5

1. Simplify: \(\frac{8}{24}\).

**Answer:** \(\frac{1}{3}\)

2. Simplify: \((2m^3)^5\).

**Answer:** \(32m^{15}\)

3. Simplify: \(\frac{12x}{12y}\).

**Answer:** \(\frac{x}{y}\)

Section 6.6

1. Add: \(\frac{3}{d} + \frac{x}{d}\).

**Answer:** \(\frac{3 + x}{d}\)
2. Simplify: \( \frac{30xy^3}{5xy} \).

Answer: \( 6y^2 \)

3. Combine like terms: \( 8a^2 + 12a + 1 + 3a^2 - 5a + 4 \).

Answer: \( 11a^2 + 7a + 5 \)

---

1. What is the place value of the \( 6 \) in the number 64,891?

Answer: Ten thousands

2. Name the decimal: \( 0.0012 \)

Answer: Twelve ten thousandths

3. Subtract: \( 5 - (-3) \).

Answer: 8

---

1. Factor 56 into primes.

Answer: \( 2 \cdot 2 \cdot 2 \cdot 7 \)

2. Find the least common multiple of 18 and 24.

Answer: 72

3. Simplify: \( -3(6a+11) \).

Answer: \( -18a - 33 \)
1. Multiply: \((x + 4)(x + 5)\).

**Answer:** \(x^2 + 9x + 20\)

2. Simplify: (a) \(-9 + (-6)\) (b) \(-9 + 6\).

**Answer:** (a) \(-15\) (b) \(-3\)

3. Simplify: (a) \(-9(6)\) (b) \(-9(-6)\)

**Answer:** (a) \(-54\) (b) \(54\)

Section 7.3

1. Find the GCF of \(45p^2\) and \(30p^6\).

**Answer:** \(15p^2\)

2. Multiply: \((3y + 4)(2y + 5)\).

**Answer:** \(6y^2 + 23y + 20\)

3. Combine like terms: \(12x^2 + 3x + 5x + 9\).

**Answer:** \(12x^2 + 8x + 9\)

Section 7.4

1. Simplify: \((12x)^2\).

**Answer:** \(144x^2\)

2. Multiply: \((m + 4)^2\)

**Answer:** \(m^2 - 8m + 16\)

3. Multiply: \((p - 9)^2\).

**Answer:** \(p^2 - 18p + 81\)

4. Multiply: \((k + 3)(k - 3)\)
Section 7.5

1. Factor \( y^2 - 2y - 24 \).

Answer: \((y - 6)(y + 4)\)

2. Factor \( 3t^2 + 17t + 10 \).

Answer: \((3t + 2)(t + 5)\)

3. Factor \( 36p^2 - 60p + 25 \).

Answer: \((6p - 5)^2\)

4. Factor \( 5x^2 - 80 \).

Answer: \(5(x - 4)(x + 4)\)

Section 7.6

1. Solve: \(5y - 3 = 0\).

Answer: \(y = \frac{3}{5}\)

2. Solve: \(10a = 0\).

Answer: \(a = 0\)

3. Combine like terms \(12x^2 - 6x + 4x\).

Answer: \(12x^2 - 2x\)

4. Factor \( n^3 - 9n^2 - 22n \) completely.

Answer: \(n(n - 11)(n + 2)\)
### Section 8.1

1. Simplify: \( \frac{90y}{15y^2} \).
   
   Answer: \( \frac{6}{y} \)

2. Factor: \( 6x^2 - 7x + 2 \).
   
   Answer: \( (2x - 1)(3x - 2) \)

3. Factor: \( n^3 + 8 \).
   
   Answer: \( (n + 2)(n^2 - 2n + 4) \)

### Section 8.2

1. Multiply: \( \frac{14}{15} \cdot \frac{6}{35} \).
   
   Answer: \( \frac{4}{25} \)

2. Divide: \( \frac{14}{15} \div \frac{6}{35} \).
   
   Answer: \( \frac{49}{9} \)

3. Factor completely: \( 2x^2 - 98 \).
   
   Answer: \( 2(x - 7)(x + 7) \)

4. Factor completely: \( 10n^3 + 10 \).
   
   Answer: \( 10(n + 1)(n^2 - n + 1) \)

5. Factor completely: \( 10p^2 - 25pq - 15q^2 \).
   
   Answer: \( 5(2p + q)(p - 3q) \)
Section 8.3

1. Add: \( \frac{y}{3} + \frac{9}{3} \).

\[ \text{Answer: } \frac{y + 9}{3} \]

2. Subtract: \( \frac{10}{x} - \frac{2}{x} \).

\[ \text{Answer: } \frac{8}{x} \]

3. Subtract: \( \frac{10}{x} - \frac{2}{x} \).

\[ \text{Answer: } 4n^1(2n^2 - 5) \]

4. Factor completely: \( 45a^3 - 5ab^2 \).

\[ \text{Answer: } 5a(3a - b)(3a + b) \]

---

Section 8.4

1. Add: \( \frac{7}{10} + \frac{8}{15} \).

\[ \text{Answer: } \frac{37}{30} \]

2. Subtract: \( 6x + 1 - 4x - 5 \).

\[ \text{Answer: } 8x + 26 \]

3. Find the Greatest Common Factor of \( 9x^2y^3 \) and \( 12xy^5 \).

\[ \text{Answer: } 3xy^3 \]

4. Factor completely: \( -48n - 12 \).

\[ \text{Answer: } -12(4n + 1) \]
Section 8.5

1. Simplify: \( \frac{3}{5} \cdot \frac{9}{10} \).

Answer: \( \frac{2}{3} \)

2. Simplify: \( \frac{1 - \frac{1}{3}}{4^2 + 4.5} \).

Answer: \( \frac{1}{54} \)

Section 8.6

1. Solve: \( \frac{1}{6}x + \frac{1}{2} = \frac{1}{3} \).

Answer: \( x = -1 \)

2. Solve: \( n^2 - 5n - 36 = 0 \).

Answer: \( n = 9, \ n = -4 \)

3. Solve for \( y \) in terms of \( x \) : \( 5x + 2y = 10 \) for \( y \).

Answer: \( y = \frac{10 - 5x}{2} \)

Section 8.7

1. Solve: \( \frac{n}{3} = 30 \).

Answer: \( n = 90 \)

2. The perimeter of a triangular window is 23 feet. The lengths of two sides are ten feet and six feet. How long is the third side?

Answer: 7 feet
Section 8.8

1. An express train and a local bus leave Chicago to travel to Champaign. The express bus can make the trip in 2 hours and the local bus takes 5 hours for the trip. The speed of the express bus is 42 miles per hour faster than the speed of the local bus. Find the speed of the local bus.

Answer: 28 mph

2. Solve: \( \frac{1}{3}x + \frac{1}{4}x = \frac{5}{6} \).

Answer: \( x = \frac{10}{7} \)

3. Solve: \( 18t^2 - 30 = -33t \).

Answer: \( t = \frac{5}{2}, t = \frac{2}{3} \)

Section 8.9

1. Find the multiplicative inverse of \(-8\).

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

2. Solve: for \( n: 45 = 20n \).

Answer: \( n = 2.25 \)

3. Evaluate: \( 5x^2 \) when \( x = 10 \).

Answer: 500

Section 9.1

1. Simplify: (a) \( 9^2 \) (b) \(-9^2\) (c) \(-9^2\).

Answer: (a) 81 (b) 81 (c) -81

2. Round 3.846 to the nearest hundredth.
Answer: 3.85

3. For each number, identify whether it is a real number or not a real number:

(a) \(-\sqrt{100}\)  (b) \(\sqrt{-100}\).

Answer: (a) real number   (b) not a real number

Section 9.2

1. Simplify: \(\frac{80}{176}\).

Answer: \(\frac{5}{11}\)

2. Simplify: \(\frac{n^9}{n^7}\).

Answer: \(n^2\)

3. Simplify: \(\frac{q^4}{q^{12}}\).

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

Section 9.3

1. Add: (a) \(3x + 9x\)  (b) \(5m + 5n\).

Answer: (a) \(12x\)   (b) \(5m + 5n\)

2. Simplify: \(\sqrt{50x^3}\).

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

Section 9.4

1. Simplify: \(3u \ 8v\).

Answer: \(24uv\)

2. Simplify: \(6 \ 12 - 7n\).
Answer: \( 72 - 42n \)

3. Simplify: \( 2 + a \ 4 - a \).

Answer: \( 8 + 2a - a^2 \)

Section 9.5

1. Find a fraction equivalent to \( \frac{5}{8} \) with denominator 48.

Answer: \( \frac{30}{48} \)

2. Simplify: \( \sqrt{5^2} \)

Answer: 5

3. Multiply: \( 7 + 3x \ 7 - 3x \).

Answer: \( 49 - 9x^2 \)

Section 9.6

1. Simplify: (a) \( \sqrt{9} \) (b) \( 9^2 \).

Answer: (a) 3 (b) 81

2. Solve: \( 5 \ x + 1 - 4 = 3 \ 2x - 7 \).

Answer: 22

3. Solve: \( n^2 - 6n + 8 = 0 \).

Answer: \( n = 2 \) or \( n = 4 \)

Section 9.7

1. Simplify: \( y^5 \ y^4 \).

Answer: \( y^9 \)
### Section 9.8

1. Add: \( \frac{7}{15} + \frac{5}{12} \).

   **Answer:** \( \frac{53}{60} \)

2. Simplify: \( 4x^2y^5 \).

   **Answer:** \( 64x^6y^{15} \)

3. Simplify: \( 5^{-3} \).

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

### Section 10.1

1. Simplify: \( \sqrt{75} \).

   **Answer:** \( 5\sqrt{3} \)

2. Simplify: \( \sqrt{\frac{64}{3}} \).

   **Answer:** \( \frac{8\sqrt{3}}{3} \)
3. Factor: \(4x^2 - 12x + 9\).

**Answer:** \((2x - 3)^2\)

---

**Section 10.2**

1. Simplify: \(x + 12\).

**Answer:** \(x^2 + 24x + 144\)

2. Factor: \(y^2 - 18y + 81\).

**Answer:** \(y - 9\)

3. Factor: \(5r^2 + 40n + 80\).

**Answer:** \(5n + 4\)

---

**Section 10.3**

1. Simplify: \(-\frac{20 - 5}{10}\).

**Answer:** \(-\frac{5}{2}\)

2. Simplify: \(4 + \sqrt{121}\).

**Answer:** \(15\)

3. Simplify: \(\sqrt{128}\).

**Answer:** \(8\sqrt{2}\)

---

**Section 10.4**

1. The sum of two consecutive odd numbers is \(-100\). Find the numbers.

**Answer:** \(-51, -49\)

2. The area of triangular mural is 64 square feet. The base is 16 feet. Find the height.
Answer: 8

3. Find the length of the hypotenuse of a right triangle with legs 5 inches and 12 inches.

Answer: 13 inches

Section 10.5

1. Graph the equation \( y = 3x - 5 \) by plotting points.

Answer: 

2. Evaluate \( 2x^2 + 4x - 1 \) when \( x = -3 \).

Answer: 5

3. Evaluate \( \frac{b}{2a} \) when \( a = \frac{1}{3} \) and \( b = \frac{5}{6} \).

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