Solve each problem.

1. \[3,281 + 1,952\]
2. \[23.25 + 9.75\]
3. \[62,523 - 13,145\]
4. \[66.7 - 1.954\]

5. \[483 \times 367\]
6. \[3,135 \times 789\]
7. \[0.92 \times 1.5\]
8. \[4.18 \times 37\]

9. \[6 \div 9,468\]
10. \[7 \div 2,307\]
11. \[8 \div 10.4\]
12. \[4 \div 2.6\]

Use exponents to rewrite each expression. Then, evaluate each expression.

**EXAMPLE:** \[4 \times 4 \times 4 = 4^3 = 64\]

1. \[3 \times 3 \times 3 \times 3 \times 3 = ____ = ____\]
2. \[7 \times 7 = ____ = ____\]
3. \[4 \times 4 \times 4 \times 4 = ____ = ____\]
4. \[2 \times 2 \times 2 \times 2 \times 2 = ____ = ____\]
5. \[9 \times 9 \times 9 = ____ = ____\]
6. \[10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 = ____ = ____\]
7. \[5 \times 5 \times 5 \times 5 = ____ = ____\]
8. \[8 \times 8 \times 8 \times 8 = ____ = ____\]
9. \[6 \times 6 \times 6 = ____ = ____\]
Write two equivalent fractions for each fraction.

1. \( \frac{2}{4} = \) = 2. \( \frac{2}{12} = \) = 3. \( \frac{8}{14} = \) = 4. \( \frac{4}{18} = \) =

5. \( \frac{10}{24} = \) = 6. \( \frac{4}{9} = \) = 7. \( \frac{10}{20} = \) = 8. \( \frac{18}{24} = \) =

Complete each equivalent fraction.

9. \( \frac{1}{11} = \frac{33}{33} \) 10. \( \frac{1}{4} = \frac{20}{20} \) 11. \( \frac{4}{16} = \frac{32}{32} \) 12. \( \frac{8}{9} = \frac{54}{54} \)

13. \( \frac{3}{15} = \frac{45}{45} \) 14. \( \frac{2}{6} = \frac{36}{36} \) 15. \( \frac{5}{16} = \frac{48}{48} \) 16. \( \frac{3}{8} = \frac{24}{24} \)

Find the greatest common factor (GCF) for each pair of numbers.

1. 6 \hspace{2cm} 2. 15 \hspace{2cm} 3. 24
   18 \hspace{2cm} 20 \hspace{2cm} 32
   GCF: \hspace{2cm} GCF: \hspace{2cm} GCF:

4. 14 \hspace{2cm} 5. 14 \hspace{2cm} 6. 9
   21 \hspace{2cm} 35 \hspace{2cm} 15
   GCF: \hspace{2cm} GCF: \hspace{2cm} GCF:

7. 18 \hspace{2cm} 8. 4 \hspace{2cm} 9. 15
   27 \hspace{2cm} 12 \hspace{2cm} 40
   GCF: \hspace{2cm} GCF: \hspace{2cm} GCF:
Max is making some trail mix. The ratio of nuts to pieces of dried fruit is 3:1. Complete the ratio table to show equivalent ratios. Then, graph the ratios on the coordinate plane.

<table>
<thead>
<tr>
<th>Nuts (x)</th>
<th>Fruit (y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
</tr>
</tbody>
</table>

Find the least common multiple (LCM) for each set of numbers.

1. 6
2. 4
3. 5

2. 8
3. 3

4. 4
5. 8
6. 6

6. 12
7. 10

7. 6
8. 4
9. 4

8. 5
9. 9
10. 15
11. 18
12. 14

LCM:
LCM:
LCM:

LCM:
Rewrite each pair of fractions using the least common denominator (LCD).

1. \( \frac{1}{9} \) and \( \frac{1}{3} \)  
2. \( \frac{1}{3} \) and \( \frac{1}{6} \)  
3. \( \frac{5}{6} \) and \( \frac{2}{5} \)

4. \( \frac{3}{8} \) and \( \frac{2}{3} \)  
5. \( \frac{1}{3} \) and \( \frac{4}{9} \)  
6. \( \frac{4}{5} \) and \( \frac{5}{9} \)

7. \( \frac{2}{4} \) and \( \frac{3}{7} \)  
8. \( \frac{2}{3} \) and \( \frac{7}{8} \)  
9. \( \frac{3}{5} \) and \( \frac{5}{6} \)

Graph the following points on the coordinate plane: A (4, 6), B (4, -3), C (-2, -3).

Points A, B, and C form three vertices of a rectangle. The fourth vertex is point D. Connect the points on the grid to determine the location of point D. Write its coordinates: D (____, ____).
Solve the problems. Show your work.

1. \( 12 \overline{)1,584} \)  
2. \( 73 \overline{)84,649} \)  
3. \( 25 \overline{)4,675} \)

4. \( 19 \overline{)24,396} \)  
5. \( 45 \overline{)5,947} \)

6. \( 60 \overline{)588,140} \)

7. \( 105 \overline{)212,205} \)
8. \( 15 \overline{)87,129} \)

9. \( 54 \overline{)749,423} \)

---

Use equal ratios to solve each problem.

1. The Quick-Mart grocery store sells 5 bottles of water for $2.00. How many bottles of water can a customer buy with $12.00?

   \[ \text{bottles of water} \]

2. The tomato plants in Ms. Lang’s garden grow 2 inches every 3 days. How much will they grow in 15 days?

   \[ \text{inches} \]

3. Oscar drove 240 miles in 4 hours. How far will he drive in 7 hours?

   \[ \text{miles} \]

4. Roberto scored 3 points in 2 soccer games. At this rate, how many points will he score in 10 games?

   \[ \text{points} \]
Order from least to greatest.

1. \(-5, 7, 3, -2, 0, -7\)

2. \(3, -3, 2, -2, 4, -5\)

3. \(10, -12, 11, -1, 0, 5\)

4. \(-8, 12, 5, -3, 2, -2\)

Find the absolute value of each integer.

5. \(|-24| = \ldots\)

6. \(|35| = \ldots\)

7. \(|56| = \ldots\)

8. \(|-82| = \ldots\)

9. \(|16| = \ldots\)

10. \(|-39| = \ldots\)

Solve each problem.

1. \(7.59 + 2.09 = \ldots\)

2. \(25.90 + 34.80 = \ldots\)

3. \(157.8 + 30.4 = \ldots\)

4. \(83.041 + 5.226 = \ldots\)

5. \(10.42 - 6.01 = \ldots\)

6. \(52.99 - 25.00 = \ldots\)

7. \(14.07 - 2.88 = \ldots\)

8. \(19.99 - 12.70 = \ldots\)

9. \(15.08 + 46.09 + 145.73 = \ldots\)

10. \(35.33 + 19.38 + 10.94 = \ldots\)

11. \(19.44 - 11.79 = \ldots\)

12. \(99.421 - 77.025 = \ldots\)
Use the ratios to convert each measurement.

1. 3 yards = _____ feet
2. _____ cups = 5 gallons
3. 72 inches = _____ yards
4. _____ ounces = 5 pounds
5. _____ inches = 7 feet
6. 24 feet = _____ yards
7. 40 pints = _____ gallons
8. 16 cups = _____ quarts
9. _____ inches = 4 yards
10. 48 ounces = _____ pounds

Solve each problem. Show your work.

Mrs. Carlyle bought a bag of peanuts for her children. When Phillip, Joy, Brent, and Preston came home from school, they each took some peanuts from the bag.

- Phillip took $\frac{1}{3}$ of the peanuts from the bag.
- Joy took $\frac{1}{4}$ of the remaining peanuts.
- Brent took $\frac{1}{2}$ of the remaining peanuts.
- Preston took 10 peanuts.
- There were 71 peanuts remaining in the bag.

1. How many peanuts were originally in the bag? ____________________________
2. How many peanuts did each child take? ____________________________

______________________________
Translate each description into an algebraic expression. Then, evaluate the expression using the value shown in the box for the variable.

**EXAMPLE:** the quotient of 112 and a added to 25 = \(112 ÷ a + 25 = 53\)

\[
\begin{align*}
a &= 4 & b &= 3 & c &= 9 & d &= 2 \\
w &= 10 & x &= 11 & y &= 7 & z &= 5
\end{align*}
\]

1. the difference of 100 and the product of y and 12 = ____________ = __________
2. \(b\) times the sum of 15 and 37 = ____________________________________________________________________________ = __________
3. 27 added to the product of \(z\) and 12 = ____________________________________________________________________________ = __________
4. 135 divided by the product of \(c\) and 5 = ____________________________________________________________________________ = __________
5. \(w\) to the second power times the quotient of 12 and 4 = ____________________________________________________________________________ = __________
6. 12 times \(d\) divided by the difference of 25 and 19 = ____________________________________________________________________________ = __________
7. the product of \(x\) and 5 added to 13 = ____________________________________________________________________________ = __________

Use substitution to determine which value for the variable makes the equation or inequality true. Then, circle the value that makes the number sentence true.

1. \(x + 25 = 51\) 
   - 24, 25, 26
2. \(17 \times a = 85\) 
   - 9, 7, 5
3. \(26 > 7 \times y\) 
   - 5, 4, 3
4. \(35 < 57 - d\) 
   - 20, 25, 30
5. \(6m > 72\) 
   - 13, 12, 11
6. \(p - 84 > 102\) 
   - 184, 186, 188
7. \(125 ÷ t = 25\) 
   - 4, 5, 6
8. \(n + 55 > 175\) 
   - 125, 120, 115
Solve each equation to find the value of the variable.

1. \( y + 8 = 11 \)  
2. \( x + 8 = 24 \)  
3. \( v + 3 = 13 \)

4. \( m - 12 = 5 \)  
5. \( q - 15 = 100 \)  
6. \( r - 19 = 37 \)

7. \( w \times 4 = 32 \)  
8. \( z \div 12 = 3 \)  
9. \( a \div 6 = 7 \)

10. \( 11 \times y = 88 \)  
11. \( g \div 5 = 12 \)  
12. \( c \times 15 = 75 \)

Describe each set of data.

   
   Lowest value: _____  Highest value: _____  
   Spread: _____  Center value: _____

2. Visitors to a museum each hour during operating hours: 35, 42, 65, 59, 84, 62, 46, 52, 24
   
   Lowest value: _____  Highest value: _____  
   Spread: _____  Center value: _____

3. Weight of cats, in pounds: 9, 11, 11, 12, 14, 14, 15, 15, 16, 17, 18, 18, 20, 22
   
   Lowest value: _____  Highest value: _____  
   Spread: _____  Center value: _____
Write equivalent expressions.

1. \(5(a + a + a) = \) ________________
2. \(6(3x - 4) = \) ________________
3. \(3^2(g + 12) = \) ________________
4. \(w(3w - 8) = \) ________________
5. \(10(5 + 2m) = \) ________________
6. \(13(z + z + z) = \) ________________
7. \(3(3y + 7) = \) ________________
8. \(5(b + 20) = \) ________________
9. \(4^2(2c + 3) = \) ________________
10. \(9(9d - d) = \) ________________
11. \(7(n^2 + 8) = \) ________________
12. \(40 \div 6(f + f + f) = \) ________________

Find the volume of each rectangular prism. Give answers in simplest form.

1. \(V = \) ________________
2. \(V = \) ________________
3. \(V = \) ________________
4. \(V = \) ________________
5. \(V = \) ________________
6. \(V = \) ________________
Find the mean, median, mode, and range of each set of data.
1. 34, 41, 33, 41, 31
   mean: _______  median: _______  mode: _______  range: _______
2. 18, 10, 10, 8, 35, 10, 21
   mean: _______  median: _______  mode: _______  range: _______

3. 7, 14, 10, 14, 29, 16, 15
   mean: _______  median: _______  mode: _______  range: _______
4. 41, 18, 24, 41, 72, 82, 16
   mean: _______  median: _______  mode: _______  range: _______

Solve each problem. Write each improper fraction as a simplified mixed number.
1. \( \frac{7}{2} \div \frac{1}{2} = \)
2. \( \frac{4}{3} \div \frac{2}{3} = \)
3. \( \frac{6}{4} \div \frac{3}{4} = \)
4. \( \frac{9}{2} \div \frac{1}{3} = \)
5. \( \frac{8}{3} \div \frac{2}{5} = \)
6. \( \frac{15}{4} \div \frac{3}{7} = \)
7. \( \frac{5}{6} \div \frac{5}{6} = \)
8. \( \frac{3}{8} \div \frac{3}{4} = \)
9. \( \frac{3}{4} \div \frac{5}{2} = \)
Complete the table.

<table>
<thead>
<tr>
<th>Regular Price</th>
<th>Discount Rate</th>
<th>Discount</th>
<th>Sale Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>$58</td>
<td>40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$128</td>
<td>30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$16</td>
<td>15%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$760</td>
<td>60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$19</td>
<td>55%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$100</td>
<td>45%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$2,500</td>
<td>25%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Solve each problem. Write each improper fraction as a simplified mixed number.

1. \(11 \frac{1}{2} \div 2 \frac{7}{8} = \)
2. \(3 \frac{1}{2} \div 2 = \)
3. \(4 \frac{1}{4} \div 3 \frac{1}{8} = \)
4. \(3 \frac{3}{4} \div 5 = \)
5. \(3 \frac{1}{2} \div 1 \frac{3}{4} = \)
6. \(6 \frac{1}{3} \div 2 = \)
7. \(8 \div 1 \frac{1}{5} = \)
8. \(12 \frac{3}{8} \div 2 \frac{3}{4} = \)
9. \(5 \frac{3}{5} \div 4 \frac{2}{3} = \)
Rather than interpreting data, create data to fit the conditions described in each situation. Show your work to prove that you have chosen valid data.

1. Create a set of data that contains 11 test scores and satisfies each condition below:
   Mean: 83
   Median: 81
   Mode: 80
   Range: 26

2. Create a set of data that shows temperature highs for 10 days and satisfies each condition below:
   Mean: 72°
   Median: 74°
   Mode: 68°
   Range: 21°

Solve each problem.

1. A covered wagon on the Oregon Trail could travel about 2.5 miles per hour on flat terrain. About how many miles could it travel in 9 hours?

2. In 1860, gingham cloth sold for $0.25 per yard. Mrs. Olsen bought 16.4 yards to make clothes for her family. How much did she spend on cloth?

3. In 1863 in Fort Laramie, Wyoming, travelers could buy beef jerky at the trading post for $0.35 per pound. How much would a 16-pound box of beef jerky cost?

4. Each wagon in the Parley Company of Travelers wagon train was about 3.65 meters long. If 12 wagons traveled end to end, how long would the wagon train be?
Solve each problem.

1. \(2 \div 45.4\)  
2. \(2 \div 4.5\)  
3. \(7 \div 34.37\)  
4. \(5 \div 0.105\)

5. \(6 \div 120.6\)  
6. \(6 \div 12.06\)  
7. \(4 \div 2.44\)  
8. \(6 \div 2.76\)

---

Solve each problem.

1. \(0.6 \div 5.4\)  
2. \(0.9 \div 0.18\)  
3. \(1.4 \div 13.86\)  
4. \(0.86 \div 0.688\)

5. \(1.7 \div 10.54\)  
6. \(2.4 \div 16.8\)  
7. \(0.07 \div 0.035\)  
8. \(0.92 \div 0.736\)
Ratios/Usage

Find the unit rate in each problem. Equivalent ratios are provided for the first two problems. Solve for the variable.

1. A baker uses $3 \frac{1}{4}$ cups of sugar in 8 batches of cookies. How much sugar is used in one batch of cookies? Let $a$ represent the amount of sugar.

   equivalent ratios: $\frac{3 \frac{1}{4}}{8} = \frac{a}{1}$

   _________ cups of sugar in each batch

2. Stephan hiked $7 \frac{2}{5}$ miles in 4 hours. How many miles did he hike per hour? Let $x$ represent the number of miles.

   equivalent ratios: $\frac{7 \frac{2}{5}}{4} = \frac{x}{1}$

   _________ miles each hour

3. A hose pumped $118 \frac{1}{8}$ gallons of water from a pool in 15 minutes. How much water did the hose pump each minute? Let $y$ represent the number of gallons.

   equivalent ratios: $\frac{118 \frac{1}{8}}{15} = \frac{y}{1}$

   _________ gallons each minute

Data Analysis/Parts of Speech

Using the number line below, draw a box-and-whisker plot for the following data:
12, 18, 18, 20, 22, 22, 25, 26, 30, 30, 32, 32, 35, 35, 38, 40, 42.

1. What is the median score? ______________

2. What is the lower quartile? ______________

3. What is the upper quartile? ______________
Solve. Write fractions in simplest form.

1. \(-12 + 8 = \)  
2. \(25 - (-4) = \)  
3. \(-8 - 3 = \)  

4. \(13 + (-5) = \)  
5. \(-4 + (-9) = \)  
6. \(-15 - 6 = \)  

7. \(\frac{1}{9} + 3 \frac{5}{8} = \)  
8. \(1 \frac{5}{6} - \frac{3}{4} = \)  
9. \(4 \frac{3}{7} + 2 \frac{1}{2} = \)  

10. \(1 \frac{2}{3} + 3 \frac{2}{9} = \)  
11. \(5 \frac{7}{12} - 3 \frac{3}{5} = \)  
12. \(8 \frac{3}{4} - 4 \frac{5}{7} = \)  

Probability/Parts of Speech

Use the given probability to predict long-term outcomes. Round answers to the nearest whole number.

1. The probability of pulling a green marble out of a bag of colored marbles is \(\frac{2}{5}\). If you were to pull colored marbles out of the bag (one at a time, and putting the marble back each time) for 600 tries, approximately how many times would you select a green marble? \(\) times

2. The probability of spinning a 4 on a spinner is 0.125. If you spun 150 times, approximately how many times would the spinner land on 4? \(\) times

3. The probability of drawing a queen of hearts from a deck of cards is \(\frac{1}{52}\). If you drew one card at a time (and put the card back each time) for 300 tries, how many times total could you expect to draw a queen of hearts? \(\) times
Add each pair of expressions.

1. \(3x + 7\) and \(x + 4\)  
2. \(y - 5\) and \(2y + 6\)  
3. \(5a + 3\) and \(-3a + 1\)  

Subtract the second expression from the first expression.

4. \(5x + 7\) minus \(2x + 2\)  
5. \(7y - 2\) minus \(y + 4\)  
6. \(b + 8\) minus \(-2b + 5\)  

Factor each expression.

7. \(12y - 3\)  
8. \(4x^2 - 12x\)  
9. \(-9c + 3\)  

Determine the probability that each event will happen. Simplify if possible.

A jar contains 18 marbles that are all the same size. It contains 7 purple marbles, 3 green marbles, and 8 orange marbles. Without looking, Travis chooses 1 marble. What is the probability of each of the following outcomes?

1. \(P\text{(green)}\) = ______  
2. \(P\text{(not green)}\) = ______  
3. \(P\text{(purple)}\) = ______  
4. \(P\text{(purple or green)}\) = ______  
5. \(P\text{(orange)}\) = ______  
6. \(P\text{(not orange)}\) = ______  

Determine the probability that each event will happen. Simplify if possible.

A die numbered 1 through 6 is rolled. Find the probability of each outcome.

7. \(P(5)\) = ______  
8. \(P(1 \text{ or } 2)\) = ______  
9. \(P\text{(odd number)}\) = ______  
10. \(P\text{(not 6)}\) = ______  
11. \(P\text{(even number)}\) = ______  
12. \(P(1, 2, 3, \text{ or } 4)\) = ______
Solve each word problem.

1. The length of one side of a cube is 8 cm.
   What is the cube’s surface area? ________ cm²
   What is the cube’s volume? ________ cm³

2. A state park is 16.5 miles long and 8.3 miles wide. Assuming the park’s shape is rectangular, what is its area? ________ square miles

3. Malcolm built a toy box for his younger sister. It is 24 inches tall, 36 inches wide, and 18 inches deep. What is the volume of the toy box? ________ in.³
   Malcolm wants to paint the outside of the toy box. If each can of paint covers 10 square feet, how many cans will he need to buy? ________ cans of paint

4. A triangular traffic sign has a height of 45 cm. It is 75 cm long at its base.
   What is the area of the sign? ________ cm²

5. A square pyramid has a height of 12 feet. Each side of the base is 7 feet long.
   Use the following formula to calculate the pyramid’s volume: \( V = \frac{1}{3} (s^2 \times h) \).
   ________ ft.³

Continue each number pattern.

1. 5, 8, 11, 14, 17, ____, ____, ____ 2. 91, 86, 81, 76, 71, ____, ____, ____

3. 100, 92, 84, 76, 68, ____, ____, ____ 4. 10, 20, 25, 35, 40, ____, ____, ____

5. 72, 69, 66, 63, 60, ____, ____, ____ 6. 317, 402, 487, 572, ____, ____, ____

7. 5, 11, 23, 41, 65, ____, ____, ____ 8. 244, 226, 208, 190, ____, ____, ____

9. 1, 4, 9, 16, 25, ____, ____, ____ 10. 1, 2, 4, 8, 16, ____, ____, ____
1. In a sample, 11 out of 25 marbles are green. Predict approximately how many green marbles are in a box of 100 marbles.

2. In a sample, 54 out of 75 middle school students said that they are going to the school carnival. Based on this sample, approximately how many of the 750 middle school students are going to the carnival?

3. In a sample of 50 sixth-grade students, 32 students said that they are entering the school writing contest. Based on this sample, approximately how many of the school’s 250 sixth graders will enter the writing contest?

4. In a sample, 25 sixth graders reported their T-shirt sizes. The results were: small–3, medium–9, and large–13. Approximately how many of each size should be ordered for 250 sixth graders?

---

In descending order, list the four rules that apply to the order of operations.

1. 
2. 
3. 
4.

---

Use the order of operations to simplify each math expression. Then, solve each equation.

1. \( 28 \div 7 + 10 = \) ________________

2. \( 6 \times 2 + 6 \times 3 = \) ________________

3. \( 40 - 3 \times 4 + 5 = \) ________________

4. \( (10 - 4) \times 3 - 10 = \) ________________

5. \( 9 + 6 - 12 + 8 = \) ________________

6. \( (7 + 2) \div (7 - 4) = \) ________________
Solve. Write fractions in simplest form.

1. \( 15 - (-6) = \) ________  
2. \( -9 + (-3) = \) ________  
3. \( -18 + 13 = \) ________

4. \( 24 + (-16) = \) ________  
5. \( -32 - (-22) = \) ________  
6. \( -45 - 30 = \) ________

7. \( \frac{8}{4} + \frac{7}{8} = \) ________  
8. \( \frac{1}{6} - 2\frac{8}{15} = \) ________  
9. \( 4\frac{5}{7} + 8\frac{1}{2} = \) ________

10. \( 15\frac{2}{5} - 3\frac{7}{9} = \) ________  
11. \( 5\frac{7}{12} + 13\frac{3}{4} = \) ________  
12. \( 12\frac{9}{11} - 4\frac{1}{2} = \) ________

Calculate unit rates to solve each problem. Round answers as needed.

1. Mikayla can run 2 miles in \( 12 \frac{1}{2} \) minutes. Brie can run 5 miles in \( 22 \frac{1}{4} \) minutes. Who can run faster?

   Unit rate for Mikayla: ________________  
   Unit rate for Brie: ________________

   ________________ runs faster.

2. Lucy went to Store A and bought \( 4\frac{4}{5} \) pounds of chicken for \$18.50. Sophie went to Store B and bought \( 3\frac{1}{2} \) pounds of chicken for \$14.75. Who got the better deal?

   Unit rate for Lucy’s purchase: ________________

   Unit rate for Sophie’s purchase: ________________

   ________________ got the better deal.

3. Tré went for a long hike and burned 585 calories in \( 2\frac{1}{4} \) hours. Zack decided to go for a bike ride and burned 1,055 calories in \( 3\frac{5}{8} \) hours. Who burned the most calories per hour?

   Unit rate for Tré: ________________  
   Unit rate for Zack: ________________

   ________________ burned more calories per hour.
Write and solve an equation for each problem.

1. Charley sold 12 fruit baskets for the school fundraiser. Maria sold 15, and Paul sold 18. If each fruit basket cost $18, how much money did they raise altogether?

   equation: 
   answer: 

2. A cougar can run 25 miles per hour. A cheetah can run 55 miles per hour. If they both run for 3 hours at full speed, how much farther will the cheetah run?

   equation: 
   answer: 

3. Elsa sold 24 drawings for $12 each at the art fair. She is going to use \( \frac{1}{3} \) of the money to buy books. The rest of the money is going into her savings account. How much money will she put into her savings account?

   equation: 
   answer: 

4. Lukas paid for a pair of shoes with a $50 bill. After the clerk added 9% tax to the purchase, Lukas received $17.30 in change. What was the price of the shoes, not including the tax?

   equation: 
   answer: 

Use cross multiplication to solve each proportion.

9. \( \frac{5}{2} = \frac{10}{m} \)
10. \( \frac{3}{a} = \frac{9}{3} \)
11. \( \frac{12}{d} = \frac{3}{1} \)
12. \( \frac{7}{n} = \frac{2}{4} \)

13. \( \frac{p}{15} = \frac{6}{5} \)
14. \( \frac{14}{21} = \frac{j}{3} \)
15. \( \frac{120}{30} = \frac{s}{5} \)
16. \( \frac{y}{18} = \frac{3}{6} \)

17. \( \frac{100}{20} = \frac{5}{r} \)
18. \( \frac{24}{k} = \frac{8}{12} \)
19. \( \frac{g}{15} = \frac{8}{5} \)
20. \( \frac{5}{5} = \frac{7}{t} \)
Write and solve an addition equation for each problem. It may be useful to include absolute values in the equations you write.

1. The Trailride Bus left Pottstown and drove 54 miles due east. Then, it turned around and drove due west for 73 miles. How far was the bus from Pottstown?

   Addition equation: ____________________________

2. The temperature was 32° at dawn. By noon, the temperature had risen 15°. By midnight, the temperature had fallen again by 57°. What was the temperature at midnight?

   Addition equation: ____________________________

3. Delaney rolled a 6 and moved his game piece forward 6 spaces on the board. Then, he drew a card that read Move back 10 spaces. How many spaces is he from where he began his turn?

   Addition equation: ____________________________

Solve the multiplication and division problems. If the total number of negative signs is even, the final answer will be positive. If the total number of negative signs is odd, the final answer will be negative. Write fractions in simplest form.

1. \(-7 \times 5 = \) ________

2. \(32 \div (-4) = \) ________

3. \(-9 \times (-3) = \) ________

4. \(60 \div (-12) = \) ________

5. \(-9 \times 7 = \) ________

6. \(-6 \times (-3) = \) ________

7. \(4 \frac{3}{8} \times 2 \frac{1}{3} = \) ________

8. \(1 \frac{4}{7} \div \frac{1}{2} = \) ________

9. \(3 \frac{8}{9} \times 1 \frac{3}{4} = \) ________

10. \(5 \frac{2}{3} \div 1 \frac{2}{5} = \) ________

11. \(4 \frac{7}{8} \div 1 \frac{1}{4} = \) ________

12. \(6 \frac{1}{3} \times 2 \frac{5}{7} = \) ________
A unit rate can also be called the constant of proportionality \((k)\). It describes the rate at which variables in an equation change. It is found using the equation \(k = \frac{x}{y}\). Find the constant of proportionality for the set of values below. Then, complete the table with three more values. Graph the points on the coordinate plane and draw a line through the points to show that the rate of change is constant (a straight line).

<table>
<thead>
<tr>
<th></th>
<th>3</th>
<th>6</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>y</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(k = \)  

Find the circumference of each circle using the formula \(C = 2\pi r\). The variable \(r\) stands for radius. Use 3.14 for pi \((\pi)\).

1. \(15 \text{ cm}\)
2. \(6 \text{ yd.}\)
3. \(13 \text{ ft.}\)
4. \(2 \text{ m}\)
5. \(26 \text{ m}\)
6. \(62 \text{ ft.}\)
7. \(36 \text{ yd.}\)
8. \(64 \text{ mm}\)
Find the area of each circle using the formula $A = \pi r^2$. Use 3.14 for pi ($\pi$). Round answers to the nearest whole number.

1. 16 cm
2. 18 km
3. 19 cm
4. 8 ft.
5. 22 cm
6. 5 m
7. 11 cm
8. 14 in.

Increase each rectangle by a scale factor of 2. Then, find the area and perimeter using the new measurements.

1. 6 cm
   4 cm
   $A = \ldots$  $P = \ldots$

2. 12 in.
   $A = \ldots$  $P = \ldots$

3. 3 ft.
   12 ft.
   $A = \ldots$  $P = \ldots$

4. 8 yd.
   2 yd.
   $A = \ldots$  $P = \ldots$

5. 5 mm
   14 mm
   $A = \ldots$  $P = \ldots$

6. 8 m
   $A = \ldots$  $P = \ldots$
Solve for each variable.

1. \[ \frac{5}{6} = \frac{n}{36} \]
2. \[ \frac{3}{8} = \frac{x}{24} \]
3. \[ \frac{5}{7} = \frac{b}{42} \]
4. \[ \frac{8}{9} = \frac{p}{63} \]

\[ n = \quad x = \quad b = \quad p = \]

Use equal ratios to solve each problem.

5. The Dollar-Mart grocery store sells 6 bars of soap for $1.00. How many bars of soap can a customer buy with $9.00?

6. Kelsey’s soccer team scored 5 points in 2 games. At this rate, how many points will the team score in 16 games?

7. The O’Neil family is driving 60 miles per hour. If they continue to drive at this speed, how many miles will they drive in 4 hours?

Write each fraction as a percentage. Write each percentage as a fraction in lowest terms.

17. \[ \frac{3}{5} = \]
18. \[ \frac{9}{10} = \]
19. \[ \frac{13}{100} = \]
20. \[ \frac{89}{100} = \]

21. \[ 4\% = \]
22. \[ 16\% = \]
23. \[ 25\% = \]
24. \[ 34\% = \]
Use the diagram to answer each question.

1. \( \angle A + \angle B = \) _________
   These are called ____________________ angles.

2. \( \angle D + \angle \) _________ = 180°
   These are called ____________________ angles.

Use the diagram to answer each question.

3. If \( \angle H = 43^\circ \),
   \( \angle E = \) _________
   \( \angle G = \) _________
   \( \angle F = \) _________

4. If \( \angle G = 132^\circ \),
   \( \angle H = \) _________
   \( \angle E = \) _________
   \( \angle F = \) _________

Find the measure of the missing angle in each triangle. Then, classify the triangle as acute, right, or obtuse.

1. \[
\begin{align*}
\angle = 110^\circ \\
\angle a = \_\_\_\_\_\_\_ \\
\angle b = \_\_\_\_\_\_\_ \\
\angle c = \_\_\_\_\_\_\\
\end{align*}
\]

2. \[
\begin{align*}
\angle = 50^\circ \\
\angle c = \_\_\_\_\_\_\_ \\
\angle b = \_\_\_\_\_\_\_ \\
\angle a = \_\_\_\_\_\_\_ \\
\end{align*}
\]

3. \[
\begin{align*}
\angle = 45^\circ \\
\angle b = \_\_\_\_\_\_\_ \\
\angle c = \_\_\_\_\_\_\_ \\
\angle a = \_\_\_\_\_\_\_ \\
\end{align*}
\]

4. \[
\begin{align*}
\angle = 45^\circ \\
\angle c = \_\_\_\_\_\_\_ \\
\angle b = \_\_\_\_\_\_\_ \\
\angle a = \_\_\_\_\_\_\_ \\
\end{align*}
\]

5. \[
\begin{align*}
\angle = 94^\circ \\
\angle b = \_\_\_\_\_\_\_ \\
\angle a = \_\_\_\_\_\_\_ \\
\angle c = \_\_\_\_\_\_\_ \\
\end{align*}
\]

6. \[
\begin{align*}
\angle = 81^\circ \\
\angle a = \_\_\_\_\_\_\_ \\
\angle b = \_\_\_\_\_\_\_ \\
\angle c = \_\_\_\_\_\_\_ \\
\end{align*}
\]

7. \[
\begin{align*}
\angle = 38^\circ \\
\angle b = \_\_\_\_\_\_\_ \\
\angle c = \_\_\_\_\_\_\_ \\
\angle a = \_\_\_\_\_\_\_ \\
\end{align*}
\]

8. \[
\begin{align*}
\angle = 36^\circ \\
\angle a = \_\_\_\_\_\_\_ \\
\angle b = \_\_\_\_\_\_\_ \\
\angle c = \_\_\_\_\_\_\_ \\
\end{align*}
\]
Look at the 3 x 3 arrangements of dots below. How many squares can be made from 9 dots if you use the dots to mark their corners? Use the grids below to show all of the squares that you can make. Hint: There are more than 5 squares.

Draw each polygon according to the given conditions.

1. a quadrilateral with 1 pair of parallel sides and 2 congruent sides
2. a regular polygon with 6 congruent sides
3. a polygon with 1 right angle and 2 acute angles
4. a quadrilateral with 2 pairs of parallel sides and 4 congruent sides
Find the missing edge length.

1. \( V = 375 \text{ m}^3 \)

\[
\begin{array}{c}
5 \text{ m} \\
5 \text{ m} \\
 x
\end{array}
\]

\( x = \) __________

2. \( V = 1,056 \text{ m}^3 \)

\[
\begin{array}{c}
 x \\
12 \text{ m} \\
11 \text{ m}
\end{array}
\]

\( x = \) __________

3. \( V = 2,340 \text{ cm}^3 \)

\[
\begin{array}{c}
13 \text{ cm} \\
12 \text{ cm} \\
 x
\end{array}
\]

\( x = \) __________

4. \( V = 280 \text{ ft}^3 \)

\[
\begin{array}{c}
 x \\
5 \text{ ft} \\
8 \text{ ft}
\end{array}
\]

\( x = \) __________

Solve each problem. Draw and label your answers in the space provided.

1. Phoebe has 9 rocks. She puts the rocks into 3 boxes. Each box has 1 more rock than the previous box. How many rocks are in each box?

2. Alyssa has 4 boxes that contain a total of 30 seeds. Three of the boxes contain the same number of seeds. The fourth box contains the sum of the other 3 boxes. How many seeds are in each box?
Find the percentage of each number.

20. 3% of 10 =  
21. 4% of 30 =  
22. 16% of 80 =  

23. 18% of 36 =  
24. 6% of 80 =  
25. 9% of 90 =  

26. 8% of 68 =  
27. 9% of 75 =  
28. 62% of 62 =  

29. 4% of 400 =  
30. 3% of 200 =  
31. 37% of 51 =  

Given the volume, find the edge length of each cube.

1. \[ V = 125 \text{ cm}^3 \]  
side = 

2. \[ V = 8 \text{ ft}^3 \]  
side = 

3. \[ V = 343 \text{ yd}^3 \]  
side = 

4. \[ V = 1,000 \text{ mm}^3 \]  
side = 

5. \[ V = 1,728 \text{ in}^3 \]  
side = 

6. \[ V = 1 \text{ m}^3 \]  
side = 

Students scored these points on a quiz: 9, 18, 12, 9, 13, 22, 8, 23, 16, 17, 22, 20, 22, 15, 10, 17, 21, 23, 14, 11. Use the data to complete the histogram. Then, answer the questions.

**Quiz Scores**

9. Find the measures of center and variability for the data.
   - mean: __________  range: __________
   - median: __________  mode: __________

10. What percentage of the students scored 16–20% ________________

11. What percentage of the scores range from 21 to 25 points? ________________

**Write each decimal as a percentage.**

13. 0.37 = __________  
14. 0.69 = __________  
15. 0.40 = __________  
16. 0.21 = __________

17. 0.999 = __________  
18. 0.499 = __________  
19. 1.75 = __________  
20. 2.25 = __________

**Write each percentage as a decimal.**

21. 24% = __________  
22. 65% = __________  
23. 88% = __________  
24. 3% = __________

25. 17% = __________  
26. 9% = __________  
27. 10% = __________  
28. 86% = __________
Solve each problem.

1. \[ 2.8 \times 34 \]
2. \[ 6.2 \times 13 \]
3. \[ 3.7 \times 65 \]
4. \[ 0.17 \times 14 \]
5. \[ 0.52 \times 26 \]
6. \[ 0.208 \times 21 \]
7. \[ 302.6 \times 83 \]
8. \[ 3.208 \times 91 \]
9. \[ 0.43 \times 18 \]
10. \[ 0.618 \times 36 \]
11. \[ 214.4 \times 17 \]
12. \[ 4.197 \times 43 \]

Write equivalent expressions.

1. \[ 6x + 7 - 3 + x = \]
2. \[ 4(3y + 5) = \]
3. \[ -2w + w - (3 + 7) = \]
4. \[ 2b(b - 2) = \]
5. \[ -9(3x + 7) = \]
6. \[ c + c + 2c - 12 = \]
7. \[ a \times 5 \times a = \]
8. \[ 12 \div (z - 3) = \]
9. \[ 6 \times 2d \times 3 = \]
10. \[ x + 5x - 3x + 6 = \]
Rewrite each fraction as a decimal. On the line below each equation, write T if the decimal is terminating. Write R if the decimal is repeating. Round repeating decimals to the nearest ten thousandth.

1. \( \frac{7}{8} = \)  
2. \( \frac{2}{3} = \)  
3. \( \frac{5}{9} = \)

4. \( \frac{5}{6} = \)  
5. \( \frac{7}{16} = \)
6. \( \frac{7}{12} = \)

Find the area of each figure.

34. \[ \text{A} = \text{________ cm}^2 \]
35. \[ \text{A} = \text{________ in.}^2 \]
36. \[ \text{A} = \text{________ ft.}^2 \]

37. \[ \text{A} = \text{________ yd.}^2 \]
38. \[ \text{A} = \text{________ cm}^2 \]
39. \[ \text{A} = \text{________ cm}^2 \]