1. The Montoni family owns two chains of pizza restaurants, *Lenny’s Pizza* and *Mama Leone’s*. Jessica Montoni was given the job of creating bar graphs for the number of pizzas sold in each restaurant chain for one week. She used the information listed in the table below.

<table>
<thead>
<tr>
<th>City</th>
<th>Lenny’s Pizza</th>
<th>Mama Leone’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington</td>
<td>140</td>
<td>75</td>
</tr>
<tr>
<td>Phoenix</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>St. Charles</td>
<td>140</td>
<td>125</td>
</tr>
<tr>
<td>Boston</td>
<td>180</td>
<td>150</td>
</tr>
<tr>
<td>New York</td>
<td>210</td>
<td>175</td>
</tr>
</tbody>
</table>

**FIRST** determine which restaurant chain (*Lenny’s Pizza* or *Mama Leone’s*) is represented by the bar graph below.

**Circle one:** *Lenny’s Pizza*     *Mama Leone’s*

**NEXT** complete the graph given below by:
- Naming the bars on the horizontal axis.
- Labeling the horizontal axis.
- Numbering the lines on the vertical axis.
- Labeling the vertical axis.
- Providing the graph with an appropriate title.
2. Make an input-output table for the equation when \( n = 2, 4, 6, 8, 10 \). \( C \) is the cost and \( n \) is the number of pizzas sold.

\[
C = 15n
\]

<table>
<thead>
<tr>
<th>( n )</th>
<th>( C )</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

3. If you make $10 for every lawn that you mow, how many lawns would you have to mow in order to make $150?

A. Write a verbal model to solve this problem.

________________________________________________________________________________________

B. Write an algebraic model for this problem.

________________________________________________________________________________________

C. How much will you make if you mow 50 lawns? (use your algebraic model to solve this problem)

_______________________________________________________________________________________

4. The table shows the number of brothers and sisters of each student in the 8th period algebra class. In the space to the right of the table, draw a bar graph to show this data.

<table>
<thead>
<tr>
<th>Number of brothers and sisters</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>5 or more</td>
<td>1</td>
</tr>
</tbody>
</table>

What conclusions might you draw from this data? ___________________________________________
Multiple Choice: Choose the correct answer and put the letter on the blank.

1. Evaluate \((3y - x) + 2\) when \(x = 3\) and \(y = 5\).
   - A. 16
   - B. 6
   - C. 2
   - D. 19

2. Write eight cubed in exponential form.
   - A. \(8^2\)
   - B. \(3^8\)
   - C. 38
   - D. \(8^3\)

3. Evaluate \(3^4\).
   - A. 12
   - B. 34
   - C. 81
   - D. 27

In questions 4 – 6, find the expression, equation or inequality for each:

4. x increased by y
   - A. \(x + y\)
   - B. \(x - y\)
   - C. \(x < y\)
   - D. \(x > y\)

5. 5 less than n is 4
   - A. \(5 - n = 4\)
   - B. \(n - 5 = 4\)
   - C. \(5 - 4 = n\)
   - D. \(n - 4 = 5\)

6. The quotient of x and 6 is greater than 9
   - A. \(6x - 9\)
   - B. \(\frac{x}{6} < 9\)
   - C. \(6x > 9\)
   - D. \(\frac{x}{6} > 9\)

Short Answer:

7. What is the difference between these two expressions? \((2x)^2\) and \(2x^2\)

   __________________________
   __________________________
1. The Daily closing prices of a company’s stock for one week are shown below. Find the change in closing price from day to day.

<table>
<thead>
<tr>
<th>Day</th>
<th>Closing Price</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>44.0</td>
<td>-------</td>
</tr>
<tr>
<td>T</td>
<td>35.6</td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>38.9</td>
<td></td>
</tr>
<tr>
<td>Th</td>
<td>30.7</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>30.5</td>
<td></td>
</tr>
</tbody>
</table>

Write the changes in ascending order.

Find the difference between the greatest change and the least change.

2. If a crane is raised at 1.25 feet per second, what is the crane’s velocity and speed?

3. Evaluate the function \( y = \frac{12}{x} \) when \( x = -4, -2, 3, \) and \( 6 \). Organize the results in an input-output table.
4. Write two expressions to describe the total area.

\[
\begin{array}{|c|c|}
\hline
7 & x \\
\hline
\end{array}
\]

\[4 \times 7 + 4 \times x\]

5. Combine the like terms in the expression: \[9k + 4j^2 - j - 3j - 11j^2 - 6k\]

6. It takes Chris 30 minutes to travel to the zoo from his hotel. He spent \(t\) minutes riding in a cab at an average of 0.25 miles per minute. (Note: Use \(d=rt\))

A. Write and simplify an equation that gives the distance Chris traveled.

B. After visiting the zoo, Chris caught a cab home. If this trip took only 27 minutes, what was the average speed of the cab?

7. Use the figure below to solve for \(x\).

\[\text{Perimeter} = 30\]

Multiple Choice: Choose the correct answer and put the letter on the blank.

1. _____ A hot air balloon rises 489 feet. It then descends 118 feet. Find the elevation of the hot air balloon, assuming its journey started at sea level.


2. _____ Mark has $288 in his checking account. He writes a check for $112, makes a deposit of $92 and then writes another check for $94. Find the amount left in his account.

   A. $402   B. $174   C. $74   D. $164
3. _______ Simplify: 2(x + 3)
   A. 2x + 3      B. 2x + 6.      C. 2x + 5      D. x^2 + 6

4. _______ You have $40.00. You want to buy a t-shirt costing $11.50 and a pair of jeans costing $23.95. There is a 5% sales tax on clothing. How much change will you receive?
   A. $2.78      B. $4.50      C. $3.78      D. none – you don’t have enough money

5. _______ Choose the linear equation.
   A. 3r^2 = 16 – r      B. 16 = f^2
   C. 2s – 46 = 14      D. (k + 3)^2 = 17

Short Answer:

6. Leslie is shopping for rose bushes to plant in her yard. She needs 6 bushes and each bush costs $14.50. Use the Distributive Property to find the total cost of the bushes. Explain your process.
In January, you and your friends decided to go to a concert to see your favorite group, The Mathematicians. The cost of the concert is $23 for each ticket plus a one-time $18 service charge.

1. Write an algebraic equation to represent the cost of the tickets to see The Mathematicians. Let \( t \) represent the total cost of an order of tickets and \( n \) represent the total number of tickets you are purchasing.

2. You and six of your friends want to attend the concert. Use the equation above to figure out the total cost for all of you to attend. Show the algebraic process used to find your solution.

3. Your older brother and some of his friends are also going to the concert. The total cost of their tickets was $271. Use the equation from #1 to show how many tickets your brother bought. Show the algebraic process used to find your solution.

4. As a project for your mathematics class, you want to give your friends an easy way to determine the total cost for different size groups. You decide to use your equation to make a table with different possible group sizes for your friends to use. Complete the table below:

<table>
<thead>
<tr>
<th>( n )</th>
<th>( t )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Multiple Choice: Choose the correct answer and put the letter on the blank.

1. _______ Solve: $48 = 6y$
   A. 42  B. 1/42  C. 8  D. 54

2. _______ Solve: $-\frac{x}{3} = 6$
   A. -2  B. -18  C. 2  D. 18

3. _______ Solve: $8x + 6 = 46$
   A. 52  B. 7  C. 5  D. 6

4. _______ Solve: $-8x + 13 = -10x - 19$
   A. -10  B. 16  C. -16  D. 10

5. _______ Solve: $(\frac{7}{12})y + 35 = 0$
   A. -\frac{5}{3}  B. \frac{5}{3}  C. \frac{3}{5}  D. \frac{5}{4}

6. _______ Identify the coefficient of each variable term: $3b^9 + b^6 - b^3 - 29$
   A. 3, 0, 0  B. 3, -29  C. -29  D. 3, 1, -1

7. _______ You and three friends drive 280 miles from a city in Washington to a city in Oregon. It takes you 4 hours to make the trip. What is your average speed?
   A. 48 mph  B. 64 mph  C. 56 mph  D. 70 mph

8. _______ Solve and round to the nearest tenth: $x - 2.27 = -8.6$
   A. -6.4  B. -10.8  C. -6.3  D. -6.37

9. _______ Solve for $v$ in the equation $B = 5u^2v$.
   A. $v = \frac{B}{5u}$  B. $v = \frac{B}{5u^2}$  C. $v = B = 5u^2$  D. $v = \frac{5u^2}{B}$

10. _______ The area, $A$, of a rectangular swimming pool is 120 square feet. If the length is 15 feet, what is the width of the pool? Use the formula $A = lw$.
    A. 105 feet  B. 8 feet  C. 45 feet  D. 6 feet
Short Answer:

11. Explain why the equation $2 + 15x + 10 = 5(3x + 2)$ has no solution.
1. The table below has data on Alisha’s height at certain ages. Use the data to make a (age, height) scatter plot. Draw a line that best fits the data.

<table>
<thead>
<tr>
<th>Age</th>
<th>Height (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>120</td>
</tr>
<tr>
<td>8</td>
<td>132</td>
</tr>
<tr>
<td>9</td>
<td>139</td>
</tr>
<tr>
<td>10</td>
<td>150</td>
</tr>
</tbody>
</table>

2. At what age was Alisha about 125 centimeters tall? ________ Label this on your graph.

3. About how tall should Alisha be when she is 12 years old? ________ Label this on your graph.

4. Is height a function of age? _____ Explain.____________________________________________

5. Use the equation $4x - 2y = 8$ for the exercise below.
   a. Complete the table of values.
   b. Graph the equation.

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

   c. Write the equation in slope-intercept form.___________________________________________
Multiple Choice: Choose the correct answer and put the letter on the blank.

1. ______ Which ordered pair identifies a point in quadrant II?
   A. (-5, -3)  B. (-5, 3)  C. (5, -3)  D. (-5, 0)

2. ______ Which ordered pair is NOT a solution of the function 2x + y = 7?
   A. (4, -1)  B. (3, 2)  C. (1, 5)  D. (0, 7)

3. ______
   Find the equation of the line:
   A. y = (-1/2) x - 1
   B. y = (-1/2) x + 1
   C. y = (1/2) x - 1
   D. y = 2x + 1

4. ______ Find the x- and y-intercepts of y = 6x - 7
   A. x-intercept: 7/6 ; y-intercept: -7
   B. x-intercept: 7; y-intercept: 7/6
   C. x-intercept: 6; y-intercept: -7
   D. x-intercept: -7; y-intercept: 6

5. ______ Find the slope of the line passing through the points  A(2, -5) and B(-6, -3).
   A. 2  B. -4  C. 3  D. -1/4

6. ______ Find the slope and y-intercept of the line, 6x – 2y = -24.
   A. m = 18; y = 1/3  B. m = -12; y = -1/3  C. m = 3; y = 12  D. m = -3; y = -12

7. ______ Which equation does NOT show y as a function of x?
   A. y = |4x|  B. y = x^2 + 7x + 2  C. x = y^2 + 3  D. 3x + 7 = y

8. ______ Find f(-3) given f(x) = -3x + 4.
   A. 13  B. 5  C. -23  D. 9
Short Answer:

9. Solve for $y$ in $-8x + 2y = -3$. Determine if the line is parallel to $y = (7/2) x + 1$. Explain your answer.

________________________________________________________________________

________________________________________________________________________
Classroom Assessments Based on Standards
Algebra I – Chapter 5 – Assessment Model ML105

Student Name: __________________________________________________
Teacher Name: ____________________________

ID Number: ____________________________
Date___________________________

1. A basketball team scored 120 points in a playoff game. Each field goal is 2 points and each free throw is 1 point.
   
   A. Write a linear equation in standard form for the number of points the team scored in terms of field goals, x, and free throws, y.

   \[2x + y = 120\]

   B. Use the linear equation to complete the table below.

<table>
<thead>
<tr>
<th>Number of field goals, x</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of free throws, y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   C. Plot the points and sketch the line on the graph below.

   D. Find the slope of the line. ________________

2. When a grocery store sells canned hams for $7 each, they can sell 450 per month. If it sells the same hams for $10, they only sell 300 per month.
   
   A. Assuming the relationship between price and sales is linear, write the equation you could use to predict sales for other prices.

   \[P = -50S + 2250\]

   B. Explain what the slope represents as a rate of change.

   C. Use your equation to predict the number of hams sold if they cost $12 each. ________________
3. In 1980 the average price of a home in Dodge county was $90,000. By 1986, the average price of a home was $102,000.

A. Write a linear model for the price of a home, \( P \), in Dodge county in terms of the year, \( t \). Let \( t = 0 \) correspond to 1980.

\[ \text{_________________________________________________________________} \]

B. Predict the year when the average price of a home in Dodge county was $76,000.

4. Given the graph on the right, find the equation of the line.

\[ \text{_________________________________________________________________} \]

Multiple Choice: Choose the correct answer and put the letter on the blank.

1. _______ Find an equation of the line containing the points (-4, 8) and (-7, 11).
   A. \( y = -x + 4 \)  B. \( y = x + 4 \)  C. \( y = (-1/2) x + 2 \)  D. \( y = x + 12 \)

2. _______ Write an equation of the line where the slope is 5 and the y-intercept is -3.
   A. \( y = 5x - 3 \)  B. \( 5x + 3y \)  C. \( y = -3x + 5 \)  D. \( -3 = 5x \)

3. _______ Find the standard form of the equation of the line with slope 3 passing through the point (2, -3).
   A. \( 3x - y = 9 \)  B. \( -x + 3y = 11 \)  C. \( -3x + y = -9 \)  D. \( 3x - y - 9 = 0 \)

4. _______ Write the ordered pair that is the intersection of the lines \( y = -3 \) and \( x = 2 \).
   A. (2, -3)  B. (3, -2)  C. (-2, 3)  D. (-3, 2)
5. Write the slope-intercept form of the equation of the line passing through the point (-4, 4) and perpendicular to the line \( y = 2x + 3 \).

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

6. Rewrite \( 5x - 9y = -2 \) in slope-intercept form.

A. \( y = -\frac{5}{9}x + 2 \)  B. \( y = \frac{5}{9}x + 2/9 \)  C. \( y = -5x - 2 \)  D. \( \frac{5}{9}x + 2/9 \)

Short Answer:

7. Determine if the lines \( y = \frac{1}{4}x - 6 \) and \( y = -4x + 3 \) are perpendicular. Explain your reasoning.
1. Using the scatterplot given, draw the line of best fit.

Identify two points on your line.

____________      _____________

What is the slope of the line that passes through your two points?

Find the equation of your line.

2. Solve each inequality and graph its solution on the number line.

\[ 4x + 6 \leq 18 \]

\[ -12 < 5x + 3 < 18 \]

\[ (-1/3) x \geq -2 \text{ or } 5x > -20 \]
3. Graph the inequality in a coordinate plane.

\[ x < 2 \quad \quad \quad y \geq -1 \]

4. Solve for y, make a table of values and graph on the coordinate plane.

\[ x + 3y < 6 \]

5. At the county fair the admission fees are based on age. Children who are younger than 13 pay half fare. People who are 13 or older but younger than 65 pay full fare. Those 65 or older pay half fare. Write a compound inequality to describe \( a \), the ages in years of people who pay half fare.
6. John is grilling hamburgers and hot dogs for the class reunion. He plans to spend no more than $200 for meat. Hamburger costs $1.60 per pound and $2.70 per pound for hot dogs. How many pounds of each can he buy?

Write a verbal model.

Write an algebraic model.

Solve the algebraic model and graph its solution.

Multiple Choice: Choose the correct answer and put the letter on the blank.

1. Select the appropriate graph for the solution of: \(4x - 5 > 2(x + 1)\)

A. 

B. 

C. 

D. 

\(\)
2. _______ On a road in a certain city, the maximum speed is 60 miles per hour and the minimum speed is 20 miles per hour. If x represents speed, which sentence best expresses this condition?

   A.  x – 20 < 60  
   B.  60 ≤ x ≤ 20  
   C.  60 ≥ x ≥ 20  
   D.  60 ≥ x ≤ 20

3. _______ Solve the inequality:  2x – 1 > -5  OR  3x + 13 < 12

   A.  All real numbers  
   B.  x < 3  
   C.  x > -2  
   D.  (-1/3)>x>-2

4. _____ Choose the graph that shows the solution to the inequality:  -y ≤ x - 3

   A.  
   B.  
   C.  
   D.  

Short Answer:

5. Explain the difference between the solutions in #4a and #4b above.
1. You call two car rental companies to find out their rental prices. Company A charges $95 per day with unlimited free miles. Company B charges $80 per day plus $0.20 per mile.

Set up the equations to represent the two companies.
Company A: _______________________________
Company B: _______________________________

Find the solution to this system.

What does this solution mean? __________________

If you are traveling 300 miles which company would you choose? __________________

2. How many solutions does the following system have?
   \[ 4x - 2y = 6 \]
   \[ 2x - y = 3 \]
Solve the following systems of equations. Use any method you choose. Be sure to show your work.

3. \[ y = -2x + 6 \]
   \[ y = \frac{1}{3} x - 1 \]

4. \[ x = 3y - 1 \]
   \[ 2x + 4y = 18 \]

5. \[ 3x - 8y = 28 \]
   \[ 2x + 4y = 18 \]

6. Sketch and shade the graph of the following system of inequalities.

   \[ y \geq -3x + 5 \]
   \[ 2x - 4y > 12 \]

Does the point (10,0) belong to the solution of the system? Explain.
Multiple Choice: Choose the correct answer and put the letter on the blank.

1. How many solutions does the linear system have: \(2x - 6y = -14\) \(-2x + 3y = 7\)
   A. none  
   B. exactly one  
   C. exactly two  
   D. infinitely many

2. At what point do the lines \(5x + y = 19\) and \(-x + 2y = -6\) intersect?
   A. \((0,-3)\)  
   B. \((2,0)\)  
   C. \((3,4)\)  
   D. \((4,-1)\)

3. Which system of inequalities is represented by the graph?
   ![Graph of inequalities]
   A. \(y < -x + 5\) \(y \geq \frac{1}{2}x + 2\)
   B. \(y > -x + 5\) \(y \leq \frac{1}{2}x + 2\)
   C. \(y \leq -x + 5\) \(y > \frac{1}{2}x + 2\)
   D. \(y \geq -x + 5\) \(y < \frac{1}{2}x + 2\)

4. The solution to the system:
   \(2x + 3y = 1\)
   \(2x + 3y = -9\)
   A. \((-1,1)\)  
   B. \((1,-9)\)  
   C. Infinite set  
   D. There is no solution

Short Answer:

5. What does it mean if a system of equations has an infinite number of solutions?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
1. Buggs and Satton had 14,000 employees in 1990. Each year, for 10 years, the number of employees has decreased by 14%. Complete the table showing the number of employees for each year, then sketch the graph.

<table>
<thead>
<tr>
<th>Year</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td></td>
</tr>
<tr>
<td>1992</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. You deposit $500 in an account that pays 5% interest compounded yearly. How much money is in the account after 4 years?
3. Simplify:

\[ x^8 \cdot x^{10} \cdot x^4 \quad (6^8)^9 \]

\[ 3x^2 \cdot (4x^3)^2 \quad 2(2^3) \]

\[ (-2x)^4 \quad \left( \frac{4x^4y}{3xy^2} \right)^4 \]

\[ \frac{x^8}{y^9} \]

4. Simplify, then evaluate the expression when \( a = 1 \) and \( b = 2 \).

\[ -(a^5b^2)^3 \quad (a^3b^4)(a^2b^3)^4 \]

5. Match the equation with its graph.

a. \( y = 5 - 4x \)  
   
   ![Graph A]

b. \( y = (1.3)^x \)  
   
   ![Graph B]

c. \( y = (0.3)^x \)  
   
   ![Graph C]
Multiple Choice: Choose the correct answer and put the letter on the blank.

1. Simplify: \( \frac{3x^2y}{4x^3y^2} \cdot \frac{8x^3y^5}{3x^2y} \)
   A. \( \frac{2}{x^3y} \)  
   B. \( \frac{x^4y}{2} \)  
   C. 2x^3y  
   D. 2xy^3

2. Simplify: \( (3^4 \cdot 3^3)^2 \)
   A. 3^9  
   B. 3^{14}  
   C. 3^{16}  
   D. 3^{24}

3. Which of the following is NOT written in scientific notation.
   A. 61.2 \times 10^4  
   B. 4.56 \times 10^{13}  
   C. 8.642 \times 10^{-3}  
   D. 1.987 \times 10^3

4. Rewrite 4.5 \times 10^{-7} in decimal form.
   A. 0.00000045  
   B. 0.0000045  
   C. 45,000,000  
   D. 450,000,000

5. You buy a used truck for $22,000. It depreciates at the rate of 10% per year. What is the value of the truck after 4 years?
   A. $13,000  
   B. $14,434.20  
   C. $21,133.11  
   D. $21,912.13

6. Which equation is graphed below?
   A. \( y = 4^x \)  
   B. \( y = 2^x \)  
   C. \( y = \left(\frac{1}{2}\right)^x \)  
   D. \( y = (1/4)^x \)

Short Answer:

7. Describe the difference between a linear graph and a quadratic graph.
Classroom Assessments Based on Standards
Algebra I – Chapter 9-10 – Assessment Model ML110

Consider the quadratic equation: \( y = x^2 - 2x - 3 \)

A. Find the x-coordinate of the vertex.  

B. Make a table of values, using x-values:

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
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C. Plot the points and sketch the graph.

D. Draw in the axis of symmetry.

E. Find the x-intercepts.  

F. Find the y-intercept.  

Multiple Choice: Choose the correct answer and put the letter on the blank.

1. _______ Which number is a perfect square?
   A. -36  
   B. 44  
   C. \( \sqrt{44} \)  
   D. 81

2. _______ Find the degree of the polynomial: \(-1 - 6x^4 + 2x^2\)
   A. 0  
   B. 2  
   C. 4  
   D. 6
3. _______ Determine the number of real solutions of the equation $3x^2 - 2x + 2 = 0$.
   A. 2  B. 3  C. 0  D. 1

4. _______ Use the Quadratic Formula to solve the equation $2x^2 - 10x + 12 = 0$.
   A. -2, -3  B. 2,3  C. -6,1  D. 3/2, -7/2

5. _______ Which expression is the difference of two squares?
   A. $x^2 - 4$  B. $x^2 + 4$  C. $x - 4$  D. $x - 2$

6. _______ Which of the following is the factored form of the polynomial $6x^2 - 5x - 6$?
   A. $(2x + 3)(3x - 2)$  B. $(6x - 1)(x + 6)$  C. $(2x - 3)(3x + 2)$  D. $(6x + 1)(x - 6)$

7. _______ What is the solution of $(x^2 - x - 4) + (2x^2 + 3x + 1)$?
   A. $3x^2 + 2x - 3$  B. $3x^2 - 4x - 5$  C. $2x^4 - 4x - 3$  D. $3x^2 - 3x - 3$

8. _______ What is the solution of $(2x + 3 - 5x^2) - (2x^2 - x + 6)$
   A. $4x - 11$  B. $2x + x^2$  C. $-7x^2 + 3x - 3$  D. $-3x^2 + x + 9$

9. _______ Factor $x^2 - 5x + 6$.
   A. $(x - 2)(x - 3)$  B. $(x - 6)(x + 1)$  C. $(x + 6)(x - 1)$  D. $(x + 2)(x + 3)$

10. _______ The distance, $h$, traveled in $t$ seconds by an object dropped from a height is $h = 16t^2$. If an object is dropped from a height of 108 feet, how long will it take before the object hits the ground? Round your answer to the nearest hundredth.
    A. 1.84 seconds  B. 2.60 seconds  C. 3.71 seconds  D. 1.50 seconds

Short Answer:

11. Explain what the FOIL method is used for and what the letters F-O-I-L stand for.

F: _______________   O: _______________   I: _______________   L: _______________
1. Consider the points: \((-1, 4), (2, -3)\) and \((3, 0)\).
   
   A. Plot the three points and draw the triangle.

   
   B. Is the triangle a right triangle? Prove your answer.

2. Barbara found a sale on apples. She bought 15 apples for $3.00. If Darlene went to the same sale, how much would it cost her to buy 20 apples?

   A. Write a proportion that represents this problem.

   
   B. Solve the problem. Write your solution in sentence form.

3. Sara had a picture of her house drawn by an architect who used the scale of 2 cm to 1 m. In the picture a doorway is 4.4 cm tall and 1.6 cm wide. Find the actual size of the doorway.
4. To get to the store from his house, Ernest jogged 6 kilometers due west and then 8 kilometers due north. On the way back he cut across a field, taking the shortest possible route home. How far did Ernest jog on the round-trip?

![Diagram of Ernest's route](image)

5. The price per person of renting a bus varies inversely with the number of people renting the bus. It costs $21 per person if 58 people rent the bus. How much will it cost per person if 63 people rent the bus?

Multiple Choice: Choose the correct answer and put the letter on the blank.

1. ______ Two machines can complete 5 tasks every 4 days. Let \( t \) represent the number of tasks these machines can complete in a 30-day month. Select the correct statement for the given conditions.

   A. \( \frac{4}{30} = \frac{t}{5} \)  
   B. \( \frac{30}{4} = \frac{t}{10} \)  
   C. \( \frac{4}{5} = \frac{t}{30} \)  
   D. \( \frac{5}{4} = \frac{t}{30} \)

2. ______ Which set of side lengths cannot form a right triangle?

   A. 6 mm, 8 mm, 10 mm  
   B. 3 mm, 4 mm, 5 mm  
   C. 4 mm, 4 mm, 5 mm  
   D. 3/2 mm, 2 mm, 5/2 mm

3. ______ Find the distance between points (-4, -2) and (2, 3).

   A. \( \sqrt{1} \)  
   B. \( \sqrt{11} \)  
   C. \( \sqrt{61} \)  
   D. \( \sqrt{5} \)
4. ______ A cable 22 feet long runs from the top of a utility pole to a point on the ground 14 feet from the base of the pole. How tall is the utility pole?

A. 36.08 feet     B. 8 feet     C. 16.97 feet     D. 18 feet

5. ______ Find the coordinate of the midpoint of the line that connects points (-3, 4) and (2, -1).

A. ( -5/2, 5/2)     B. (-1/2, 3/2)     C. (5/2, -5/2)     D. (1/2, -3/2)

6. ______ The variables x and y vary inversely. Use the given values to write an equation that relates x and y.

y = 7, x = 4

A. y = 28 / x     B. y = 4/7 x     C. y = x/28     D. y = 7/4 x

Short answer:

7. Explain what a rational expressions is.