1) Xavier has a lunch food budget of $120 per month. He spends an average of $6 per day on lunch. Write a function that represents how much money is left in his lunch budget after $x$ days of buying lunch.

**Question:**
How much money is left in Xavier's account after 7 days?

2) Pierson's Pet Palace has an 85 gallon fish tank. When it needs to be cleaned, it can be drained at a rate of 4 gallons per minute. Assuming the tank was full, write a function that represents the amount of water in the tank after $x$ minutes.

**Question:**
How long has the tank been draining for if it has 33 gallons left?

3) You are saving money to buy a stereo system. You have saved $50 so far. You plan to save $20 each week for the next few months. Write a function that represents how much money you have after $x$ weeks.

**Question:**
How much money do you have saved after 1 year?

4) Your family spends $80 for tickets to a baseball game and $3 per hour for parking. Write a function that gives the total cost of your family's outing to the baseball game after $x$ hours you were there.

**Question:**
How much does the baseball outing cost if you were there for 7 hours?

5) Diamond recently bought a car for $34,000. Her research shows the car will depreciate an average of $1,200 per year. If $x$ represents the number of years Diamond owns the car, write a function that represents the value of car after $x$ years.

**Question:**
How long has Diamond owned the car if the car value is $28,000?

6) The initial fee to have a website set up is $60. It costs $44 per month to maintain the website. Write a function that represents the total cost of setting up and maintaining a website for $x$ months.

**Question:**
How long can you maintain the website for if you have $940?
7) Your gym membership costs $33 per month after an initial membership fee. You paid a total of $228 after 6 months. Write a function that represents the total cost of your gym membership after x months.

**Question:**
How much will it cost to have a gym membership for 6 months?

8) An editor gets $2890 raise each year. In her eighth year, she is making $27,400 per year. Write a function that represents her income after x years she has worked at the company.

**Question:**
What is the editor's income after 20 years?

9) A tomato plant grows approximately 1.3 centimeters per day. On the ninth day, the plant is approximately 21.7 centimeters tall. Write a function that represents the height of the tomato plant after x days.

**Question:**
How tall is the tomato plant after 10 days?

10) Four years after a maple tree was planted, its height was 9 feet. Eight years after it was planted, the maple tree's height was 12 feet. Write a function that represents the height of the tree after x years.

**Question:**
\[ \text{a) What is the growth rate of the maple tree?} \]
\[ \text{b) What was the height when it was planted?} \]

11) In Bicycle Moto Crossing (BMX) racing, racers purchase a one year membership to a track. They also pay an entry fee for each race at that track. One racer paid a total of $125 after 5 races. A second racer paid a total of $170 after 8 races. Write a function that represents the total cost of a race after x races.

**Question:**
\[ \text{a) How much does the track membership cost?} \]
\[ \text{b) What is the entry fee per race?} \]

12) You use a garden hose to fill a swimming pool at a constant rate. The pool is empty when you begin to fill it. The pool contains 15 gallons of water after 5 minutes. After 30 minutes, the pool contains 90 gallons of water. Write a function that represents the volume (in gallons) of water in the pool after x minutes since you began filling it.

**Question:**
What is the volume of the pool after 1 hour?
Class set
<table>
<thead>
<tr>
<th>Function</th>
<th>Linear Equation</th>
<th>Problem</th>
</tr>
</thead>
</table>
| $f(x) = 50 + 20x$             | $y = mx + b$    | 1. $m = \_\_\_\_\_\_$  
|                               |                 | $b = \_\_\_\_\_\_$         |
| $f(x) = 2890x + 4280$         |                 | 2. $m = \_\_\_\_\_\_$  
|                               |                 | $b = \_\_\_\_\_\_$         |
| $f(x) = 85 - 4x$              |                 | 3. $m = \_\_\_\_\_\_$  
|                               |                 | $b = \_\_\_\_\_\_$         |
| $f(x) = 15x + 50$             |                 | 4. $m = \_\_\_\_\_\_$  
<p>|                               |                 | $b = ______$         |
| $f(x) = 1.3x + 10$            |                 |         |
| $f(x) = 34,000 - 1,200x$      |                 |         |
| $f(x) = 120 - 6x$             |                 |         |
| $f(x) = 80 + 3x$              |                 |         |
| $f(x) = 33x + 30$             |                 |         |
| $f(x) = 3x$                   |                 |         |
| $f(x) = 60 + 44x$             |                 |         |
| $f(x) = 0.75x + 6$            |                 |         |
| 0.75                         |                 |         |
| 5                             |                 |         |
| 6                             |                 |         |
| 13                            |                 |         |
| 15                            |                 |         |
| 20                            |                 |         |
| 23                            |                 |         |
| 50                            |                 |         |
| 78                            |                 |         |
| 101                           |                 |         |
| 180                           |                 |         |
| 228                           |                 |         |
| 1,090                         |                 |         |
| 62,080                        |                 |         |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 5. | \( m = \)
  
  \( b = \)   | 9. | \( m = \)
  
  \( b = \)
  
  \((x, y) = \)   |
| 6. | \( m = \)
  
  \( b = \)   | 10. | \( m = \)
  
  \( b = \)
  
  \((x, y) = \)
  
  \((x, y) = \)   |
| 7. | \( m = \)
  
  \( b = ? \)
  
  \((x, y) = \)   | 11. | \( m = \)
  
  \( b = \)
  
  \((x, y) = \)
  
  \((x, y) = \)   |
| 8. | \( m = \)
  
  \( b = ? \)
  
  \((x, y) = \)   | 12. | \( m = \)
  
  \( b = \)
  
  \((x, y) = \)
  
  \((x, y) = \)   |
1. A line has a y-intercept of -11 and a slope of 3. Find the equation of the line.

   A. \( y = 3x + 11 \)  \( m = 3 \)
   B. \( y = 3x - 33 \)  \( b = -33 \)
   C. \( y = -11x - 3 \)
   D. \( y = 3x - 11 \)

2. A line passes through the point \((4, -3)\) and has a slope of \(\frac{3}{2}\). Find the equation of the line.

   A. \( y = \frac{3}{2}x - 3 \)
   B. \( y = -\frac{3}{2}x - 9 \)
   C. \( y = -\frac{3}{2}x - 3 \)
   D. \( y = \frac{3}{2}x - 9 \)

3. What is the equation for a line that passes through the points \((7, -3)\) and \((-14, 24)\)?

   A. \( y = \frac{3}{7}x - 6 \)
   B. \( y = -\frac{3}{7}x - 6 \)
   C. \( y = \frac{9}{7}x + 6 \)
   D. \( y = -\frac{9}{7}x + 6 \)

4. Convert the following linear equation to slope-intercept form.

   \[ y - 3 = -\frac{10}{9}(x - 1) \]

   A. \( y = -\frac{10}{9}x + 2 \)
   B. \( y = -\frac{10}{9}x + 4 \)
   C. \( y = -\frac{10}{9}x + \frac{10}{9} \)
   D. \( y = -\frac{10}{9}x + \frac{37}{9} \)

5. Convert the following linear equation to standard form.

   \[ y = -\frac{3}{4}x - 9 \]

   A. \( \frac{3}{4}x - y = 9 \)
   B. \( 3x + 4y = -36 \)
   C. \( 3x + 4y = -9 \)
   D. \( \frac{3}{4}x + y = -9 \)
6. Given (7, 27) is a point on the following line, convert the equation to point-slope form.

\[ y = 3x + 6 \]

- A. \( y + 7 = 3(x + 27) \)
- B. \( y + 27 = 3(x + 7) \)
- C. \( y - 7 = 3(x - 27) \)
- D. \( y - 27 = 3(x - 7) \)

7. Convert the following linear equation to standard form. \( \text{show work!} \)

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

- A. \( 3x - y = -5 \)
- B. \( 3x + y = 5 \)
- C. \( 3x - y = 5 \)
- D. \( 3x - y = -3 \)

8. Given \((-4, y_0)\) is a point on the following line, convert the equation to point-slope form.

\[ y = 4x + 3 \]

- A. \( y + 13 = 4(x + 4) \)
- B. \( y - 3 = 4(x + 4) \)
- C. \( y - 13 = 4(x - 4) \)
- D. \( y - 3 = 4(x - 4) \)

9. Given \((3, -6)\) is a point on the following line, convert the equation to point-slope form. \( \text{show work!} \)

\[ 12x + 3y = 18 \]

- A. \( y - 6 = -12(x - 3) \)
- B. \( y + 6 = -12(x - 3) \)
- C. \( y + 6 = -4(x - 3) \)
- D. \( y - 6 = -4(x - 3) \)

10. Convert the following linear equation to slope-intercept form. \( \text{show work!} \)

\[-5x - 3y = -6\]

- A. \( y = \frac{5}{3}x - 2 \)
- B. \( y = -\frac{5}{3}x + 2 \)
- C. \( y = -\frac{5}{3}x - 2 \)
- D. \( y = \frac{5}{3}x + 2 \)
IF Monday

Slope-Intercept Form

\[ y = mx + b \]

Point-Slope Form

\[ y - y_1 = m(x - x_1) \]

Standard Form

\[ Ax + By = C \]

Tuesday

\[
\begin{array}{c}
\text{Linear Functions} \\
\text{Given the linear equation } y = 2x + 10. \\
What would be the equation of the line if the } y \text{-intercept is decreased by 5?} \\
\end{array}
\]

\[
\begin{array}{c}
\text{Linear Functions} \\
\text{Given the linear function } f(x) = 3x - 2. \\
What is the value of } f(4)? \\
\end{array}
\]

\[
\begin{array}{c}
\text{Graphical Properties of Linear Functions} \\
\text{Graphical Properties of Linear Functions} \\
\text{Graphical Properties of Linear Functions} \\
\end{array}
\]

Wednesday

\[
\begin{array}{c}
\text{Graphical Properties of Linear Functions} \\
\text{A. Which of the following describes the equation } y = 1/2x? \\
\text{1. Non-linear and proportional} \\
\text{2. Linear and proportional} \\
\text{3. Linear and not proportional} \\
\text{4. Non-linear and not proportional} \\
\end{array}
\]

\[
\begin{array}{c}
\text{Graphical Properties of Linear Functions} \\
\text{The linear equation } y = x + 3 \text{ represents a proportional relationship, while which of the following cannot be written as a proportion?} \\
\text{1. } x = 3 \\
\text{2. } y = x \\
\text{3. } x = 4 \\
\text{4. } x = 1/4 \\
\end{array}
\]
1.

The line above goes through points (-4,2) and (0,3). What is the equation of the line above?

A) \( y = \frac{1}{4}x + 3 \)
B) \( y = \frac{1}{4}x - 3 \)
C) \( y = \frac{3}{2}x + 3 \)
D) \( y = \frac{2}{9}x + 3 \)

\[ y - y_1 = m(x - x_1) \]

\[ y_1 - y_2 \]
\[ x_1 - x_2 \]

\[ y = mx + b \]
2. Four points from a line are shown in the table below.

<table>
<thead>
<tr>
<th>INPUT</th>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
</tr>
</tbody>
</table>

Use the table to determine the slope-intercept form of the equation of the line.

- **A** $y = \frac{4}{3}x + 10$
- **B** $y = \frac{4}{5}x - 10$
- **C** $y = -\frac{3}{4}x + 10$
- **D** $y = -\frac{3}{4}x - 10$
4. Given the function $y = -3x + 7$, which set of numbers completes the table?

<table>
<thead>
<tr>
<th>INPUT</th>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2</td>
<td>13</td>
</tr>
<tr>
<td>-1</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

- **A** -4, -7, -10
- **B** 10, 7, 4
- **C** 4, 7, 10
- **D** 11, 9, 7
9.

<table>
<thead>
<tr>
<th>x</th>
<th>-4</th>
<th>0</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Which of the following graphs matches the table above?
6. Given the linear equation $y = 12x + 10$.

What would be the equation of the line if the $y$-intercept is decreased by 5?

- A. $y = 17x + 10$
- B. $y = 12x + 5$
- C. $y = 7x + 10$
- D. $y = 12x + 15$
5. \[ y = -\frac{4}{5}x - 3 \]

The line given by the equation above is graphed below.

If the slope of the line is decreased by 1 and the y-intercept is increased by 3, how is the graph of the line affected?

A. The line will fall more quickly from left to right, and the line will be shifted 3 units up.
B. The line will rise more slowly from left to right, and the line will be shifted 3 units down.
C. The line will rise more quickly from left to right, and the line will be shifted 3 units down.
D. The line will fall more slowly from left to right, and the line will be shifted 3 units up.
10. Which of the following describes the equation $y = 17x$?

- A: non-linear and proportional
- B: linear and proportional
- C: linear and not proportional
- D: non-linear and not proportional
4. The linear equation \( y = 9x + b \) represents a proportional relationship when which of the following values is present?

- A. \( b = 0 \)
- B. \( b = -9 \)
- C. \( b = 9 \)
- D. \( b = -\frac{1}{9} \)
<table>
<thead>
<tr>
<th>pg. #</th>
<th>Learning Targets</th>
<th>CW (teacher sign)</th>
<th>Practice assignment</th>
<th>Practice assignment (teacher sign)</th>
<th>Understanding?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4</td>
<td>Linear function problem solving.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Study Island—Linear review.</td>
<td></td>
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<tr>
<td></td>
<td>Graphing Review</td>
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</tr>
<tr>
<td></td>
<td>I can write equations in slope-intercept form of parallel lines.</td>
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<tr>
<td></td>
<td>I can write equations in slope-intercept form of perpendicular lines.</td>
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<tr>
<td></td>
<td>Parallel perpendicular review</td>
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</tr>
<tr>
<td></td>
<td>What shape? (graphing calculator)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
\[ m = -6 \]
\[ b = 120 \]
\[ y = mx + b \]
\[ y = -6x + 120 \]
\[ f(x) = 120 - 6x \]
\[ y = 120 - 6(7) \]
\[ y = -78 \]
\[ y = mx + b \text{ word problems} \]

\[ \begin{align*}
\text{If } m &= 33 \\
b &= ? \\
(x, y) &= (6, 228)
\end{align*} \]
Today's Agenda

1) Complete word problems (1-12)
2) Raise hand for CW stamp (Spaeth)
3) Start Practice
Practice

Writing Linear Equations Review

1. D 6. D
2. D 7. C
3. D 8. A
4. D 9. C
5. D 10. B