NOTE TO THE STUDENT

This Winter Student Enrichment Packet has been compiled to complement middle school mathematics classroom instruction aligned to the Maryland College and Career Ready Standards (MCCRS). The packet is intended to be used for review and practice of previously taught and new concepts.

We strongly encourage you to work diligently to complete the activities for the choice board. You may experience some difficulty with some activities in this packet, but we encourage you to think critically and creatively and complete them to the best of your ability.
# Math 8 Winter Student Enrichment Choice Board

**Directions:** Complete three activities in a tic-tac-toe (three in a row across, down, or diagonal) pattern. Follow all directions closely and complete each activity entirely. Use the rubrics to guide your work.

<table>
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<tr>
<th>Activity 1</th>
<th>Activity 2</th>
<th>Activity 3</th>
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<tbody>
<tr>
<td><strong>Power Up or Key It</strong></td>
<td><strong>It’s Real</strong></td>
<td><strong>Explain It</strong></td>
</tr>
<tr>
<td>Create a PowerPoint, keynote, or Google document of at least five slides.</td>
<td>Write and solve systems of linear equations to represent word problems.</td>
<td>Explain how you can determine if a relation is a function.</td>
</tr>
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<tr>
<th>Activity 4</th>
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<tr>
<td><strong>All About Coding</strong></td>
<td><strong>What’s Your Solution?</strong></td>
<td><strong>Puzzle Time</strong></td>
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<tr>
<td>Complete a Code.Org coding activity.</td>
<td>Create three different linear equations written in one variable that each has one of the following solutions: one solution; no solution; infinitely many solutions.</td>
<td>Complete a task in which you match systems of equations to their solutions as ordered pairs.</td>
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<tr>
<th>Activity 7</th>
<th>Activity 8</th>
<th>Activity 9</th>
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<td><strong>Solve Them</strong></td>
<td><strong>Map It Out</strong></td>
<td><strong>Create a Quiz</strong></td>
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<td>Solve systems of equations by elimination and substitution.</td>
<td>Examine the street layout of Washington, D.C., and create your own mini street layout.</td>
<td>Create a quiz on ProProfs Quiz Maker that assesses Solving Linear Equations.</td>
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</tbody>
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*Adapted from Prince George’s County Public Schools*
### Math 8 Choice Board Activity Directions

<table>
<thead>
<tr>
<th>Activity 1: Power Up or Key It</th>
<th>Activity 2: It’s Real</th>
<th>Activity 3: Explain It</th>
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<tr>
<td><strong>Standard 8.G.5</strong></td>
<td><strong>Standard 8.EE.8</strong></td>
<td><strong>Standard 8.F.1</strong></td>
</tr>
<tr>
<td>Create a PowerPoint, Keynote, or Google Slides presentation of at least five slides on transversals. Include the following terms, their definitions, examples and/or pictures or videos:</td>
<td>On loose leaf paper, write and solve a system of linear equations for each of the following word problems. State the solution to each system in a sentence.</td>
<td>On loose leaf paper, explain how you can determine if a relation IS or IS NOT a function from each of the representations below. Give a detailed example of a relation that IS a function and a relation that IS NOT a function to illustrate your explanation for each.</td>
</tr>
<tr>
<td>- Transversal</td>
<td>1. A test has 20 questions and is worth 100 points. The test consists of True/False questions worth 3 points each and multiple choice questions worth 11 points each. How many multiple-choice questions are on the test?</td>
<td>- A set of ordered pairs</td>
</tr>
<tr>
<td>- Parallel Lines</td>
<td>2. Danielle is selling her handmade jewelry online. Yesterday, she sold 2 bracelets and 4 necklaces, for a profit of $118. Today, she made a profit of $132 by selling 4 bracelets and 4 necklaces. How much profit does Danielle earn from each piece?</td>
<td>- A graph line</td>
</tr>
<tr>
<td>- Vertical Angles</td>
<td>1. A test has 20 questions and is worth 100 points. The test consists of True/False questions worth 3 points each and multiple choice questions worth 11 points each. How many multiple-choice questions are on the test?</td>
<td>- A mapping diagram</td>
</tr>
<tr>
<td>- Corresponding Angles</td>
<td>2. Danielle is selling her handmade jewelry online. Yesterday, she sold 2 bracelets and 4 necklaces, for a profit of $118. Today, she made a profit of $132 by selling 4 bracelets and 4 necklaces. How much profit does Danielle earn from each piece?</td>
<td>- A table</td>
</tr>
<tr>
<td>- Alternate Interior Angles</td>
<td>1. A test has 20 questions and is worth 100 points. The test consists of True/False questions worth 3 points each and multiple choice questions worth 11 points each. How many multiple-choice questions are on the test?</td>
<td></td>
</tr>
<tr>
<td>- Alternate Exterior Angles</td>
<td>2. Danielle is selling her handmade jewelry online. Yesterday, she sold 2 bracelets and 4 necklaces, for a profit of $118. Today, she made a profit of $132 by selling 4 bracelets and 4 necklaces. How much profit does Danielle earn from each piece?</td>
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## Math 8 Choice Board Activity Directions

### Activity 4: All About Coding

**Standards in 8.F**

Complete the Farmer coding activity at the following link:
https://studio.code.org/s/20-hour/stage/8/puzzle/1

1. Watch the video on “Functions.”
2. Click on the orange tab “Finished! Continue to next stage.”
3. Work through the stages of the coding activities. Take a selfie that shows your computer screen AND YOUR NAME in the frame of the photo after you have completed the 11th stage.
4. For three videos that appear throughout the Farmer coding activity (shown below), write one sentence that summarizes the main idea of each video.
   - Repeat Times Block (Mark Zuckerberg)
   - While Block (Makinde Adeagbo)
   - If Block (Bill Gates)

### Activity 5: What’s Your Solution?

**Standard 8.EE.7**

On loose leaf paper, create three different linear equations with one variable but that have variable terms on each side of the equal sign.

One equation each should have the following answers:
- One Solution
- No Solution
- Infinitely Many Solutions

### Activity 6: Puzzle Time

**Standard 8.EE.8**

On the coordinate grids contained in this packet or on other coordinate grids that you print or create, do the following:
- Graph the systems of equations from the puzzle sheet 5.1 Puzzle Time.
- Determine the solutions to the systems of equations.
- Identify the solutions on the puzzle sheet and find the words that correspond to the answers.
- Write the answer to the riddle on the puzzle sheet or on loose leaf paper.
## Math 8 Choice Board Activity Directions

### Activity 7: Solve Them  
**Standard 8.EE.8**

On loose leaf paper, solve each system of equations by **elimination** and **substitution**. Explain your steps for each method used.

\[
\begin{align*}
2x + 4y &= 7 \\
x + 2y &= 3
\end{align*}
\]

\[
\begin{align*}
4x + 4y &= -8 \\
3x - 2y &= 19
\end{align*}
\]

### Activity 8: Map It Out  
**Standard 8.G.5**

Using a computer, iPad, or mobile device:
- Go to the “Maps” app or Google Earth or Google Maps. Search for “Washington D.C.”
- On a sheet of loose leaf paper, describe the layout of the city’s streets in at least five sentences. For example, you may write about how the city is divided into quadrants; the direction and arrangement of numbered, lettered, and state-name streets, etc.
- On the [coordinate grid sheet in this packet](#), draw parallel lines that represent two streets.
- Create two more streets that cross the parallel streets at non-right angles and name them. The cross streets cannot be parallel to each other.
- Label each of the angles formed by numbers: \(L_1, L_2, L_3, L_4\), etc.
- Explain the relationship between all congruent pairs of angles that are formed by the cross streets to the parallel lines. Name all pairs of **Vertical Angles**, **Corresponding Angles**, **Alternate Interior Angles**, and **Alternate Exterior Angles**.

### Activity 9: Create a Quiz  
**Standard 8.EE.7**

Go to [www.proprofs.com](http://www.proprofs.com).
- Click on the link for **Quizzes**.
- Click on the link for **Create a Quiz**.
- Click on the link for **Create a Scored Quiz**.
- Title your quiz “**Solving Linear Equations**.”
- Each question should have a problem that requires solving a linear equation with variables on both sides.
- Create five multiple-choice questions and include the four answer choices. Mark the correct answer with a ✅.
- After you have created your five problems:
  - **Email your teacher the link to your quiz.**
  - MAKE SURE TO INCLUDE YOUR NAME in your message.
- You may also print out your quiz and submit it to your teacher.
# 5.1 Puzzle Time

Why Did The Student Eat His Homework?

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>H</td>
<td>I</td>
<td>J</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

### Solve the system of linear equations by graphing.

- **A.** \( y = x \)  
  \( y = -x \)
- **B.** \( y = x + 1 \)  
  \( y = -x - 3 \)
- **C.** \( y = 2x \)  
  \( y = 4x + 2 \)
- **D.** \( y = -4x + 2 \)  
  \( y = 2x + 2 \)
- **E.** \( y = \frac{1}{4}x + \frac{3}{4} \)  
  \( y = \frac{1}{4}x - \frac{3}{4} \)
- **F.** \( y = \frac{1}{2}x - 1 \)  
  \( y = -x + 2 \)
- **G.** \( x + y = 3 \)  
  \( y = x - 1 \)
- **H.** \( 4x + y = 12 \)  
  \( y = 4x + 4 \)
- **I.** \( -x + y = -3 \)  
  \( 4x + y = 2 \)

- **J.** At a grocery store, Candy buys 2 cantaloupes at \( x \) dollars each and 1 watermelon at \( y \) dollars. Her total bill is $9. Chip goes to the same grocery store and buys 1 cantaloupe at \( x \) dollars and 1 watermelon at \( y \) dollars. His total bill is $6. Write and solve a system of linear equations by graphing to find the cost \( x \) of a cantaloupe and the cost \( y \) of a watermelon.
Coordinate Grids for Puzzle Time Activity