Math 6
Winter Student Enrichment Packet

Detroit Public Schools Community District
Department of Curriculum and Instruction
Office of Mathematics

Adapted from Prince George’s County Public Schools
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 6 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. *Activity titles on this page are hyperlinked.*

<table>
<thead>
<tr>
<th>Activity 1</th>
<th>Activity 2</th>
<th>Activity 3</th>
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<td><strong>Divide Fractions with Thinking Blocks</strong></td>
<td><strong>Create a Number Line</strong></td>
<td><strong>Real-World Examples of Positive and Negative Numbers</strong></td>
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<tr>
<td><strong>Represent the Distributive Property</strong></td>
<td><strong>Place Parentheses to Create Expressions</strong></td>
<td><strong>Solve Algebra Puzzles</strong></td>
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<table>
<thead>
<tr>
<th>Activity Titles</th>
<th>Negative</th>
<th>Zero</th>
<th>Positive</th>
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</thead>
<tbody>
<tr>
<td><strong>Real-World Examples of Positive and Negative Numbers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Activity 7  
Create Story Problems: Dividing a Fraction by a Fraction

Activity 8  
Translate Verbal Expressions to Algebraic Expressions

Activity 9  
Create a Map

Math 6 Winter Student Enrichment Choice Board: Activity Directions

Activity 1  
Standard 6.NS.1
Access the Thinking Blocks website (http://www.mathplayground.com/tb_fractions/thinking_blocks_fractions.html)
- Select the Multiply and Divide Fractions (Set 5) tile from the menu. (Shown below, circled in red)
- Begin to solve the problems. Solve 5 problems successfully so that you earn 5 stars.
- After you solve 5 problems, take a picture of your computer screen with your face or name on an index card included in the frame.

Activity 2  
Standard 6.NS.6
On a sheet of blank or lined paper and with the use of a ruler, create a number line on which you plot the following values:

<table>
<thead>
<tr>
<th>Value</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>−2.5</td>
<td>7/8</td>
</tr>
<tr>
<td>1/8</td>
<td>2 3/4</td>
</tr>
<tr>
<td>−1 1/4</td>
<td>−0.25</td>
</tr>
</tbody>
</table>

Think carefully about how many tick marks you create on your number line and how far apart the tick marks are (the intervals).

Activity 3  
Standard 6.NS.5
Write four real-world situations that include positive and negative rational numbers that are used to describe quantities that are opposites. Examples can include elevations, temperatures, speeds, directions, money, and others. Explain the meaning of zero in your situation. There is an example given below.

Example:
- Positive: I received $50 as a gift. (50)
- Negative: I wrote a check for $35.50. (−35.50)
- Meaning of zero: No money in an account. Or there is no change in the balance.

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Your number line must be precise! Do not make careless mistakes.
### Activity 4
**Standard 6.EE.3-4**
Create a diagram that demonstrates an application of the Distributive Property to create an equivalent expression to an algebraic (variable) expression.
- Your diagram should display an array or other arrangement of tiles or other items.
- **Explain** in at least one sentence how your diagram represents an application of the Distributive Property.
- For assistance with completing this activity, see [this video](http://www.learnzillion.com) or use this Quick Code at [www.learnzillion.com](http://www.learnzillion.com): **JQ4EK7M**.

### Activity 5
**Standard 6.EE.1**
Given the following expression:

\[ 7 + 7 \div 2 + 2^3 \cdot 3 - 1 \]

- On a separate sheet of paper, evaluate the expression as it is written. Perform one operation per line and show your work.
- On the same paper, create three new values for the expression by placing **one set of parentheses** in the expression.
- Show a step-by-step evaluation for each of your three new expressions.

### Activity 6
**Standard 6.EE.7**
Solve algebra puzzles! Access the puzzles at [this link](http://www.mathplayground.com/algebra_puzzle.html) (Full link: [http://www.mathplayground.com/algebra_puzzle.html](http://www.mathplayground.com/algebra_puzzle.html))
- On the landing page, click on the link for **3x3 Grid – Beginner**.
- Begin to solve the puzzles. Your goal is to solve **6 puzzles**.
- As you solve each one and see the message that says **Good job. You solved the puzzle**, take a picture of the screen with an index card (or other small piece of paper) that has your name on it in the frame of the picture.
- Then click **New Puzzle** and begin to solve a new puzzle.
- Cut and paste your 6 pictures on one document (can be a Word doc, Google Doc, or on paper).
Activity 7
Standard 6.NS.1
Create two story problems that involve dividing a fraction by a fraction.
- Write the two problems so they have a theme of holiday cookies, candy or other sweets!
- Each story problem should include at least three sentences.
- Solve your story problem. Represent the solution to your problem in multiple ways.
- Represent the solution of the problem visually. You can use pictures of each step of your problems (for example, for 1 \( \frac{1}{2} \) cookies divided by \( \frac{1}{3} \), show the one and one-half cookies cut into pieces of \( \frac{1}{3} \) of a cookie.)
- Represent the solutions of both problems numerically (that is, by using an algorithm to work the problem out).

Activity 8
Standard 6.EE.2
Write 10 different verbal algebraic (variable) expressions using a different one of the words/phrases below in each expression. Then translate that verbal phrase into a variable expression and indicate clearly how the words/phrases below translate into the variable expression. See an example located below the list.

<table>
<thead>
<tr>
<th>divided by</th>
<th>product</th>
</tr>
</thead>
<tbody>
<tr>
<td>sum</td>
<td>less than</td>
</tr>
<tr>
<td>fewer than</td>
<td>times</td>
</tr>
<tr>
<td>quotient</td>
<td>squared</td>
</tr>
<tr>
<td>difference</td>
<td>Increased by</td>
</tr>
</tbody>
</table>

- Verbal expression: \( t \) decreased by 3.
- Variable expression: \( t - 3 \)
  - ‘decreased by’ means to subtract

Activity 9
Standard 6.NS.8
Create a map of a town on a four-quadrant coordinate grid. (One is attached in this packet.)
- You must plot the following places on your map: Post Office, school, grocery store, restaurant, convenience store.
- You must have at least one building in each quadrant of the grid.
- Each building must be at least five units away from any other building.
- Pretend that all of the streets in your town run along the grid lines of your coordinate grid.
- Determine the distance between the following:
  - Post Office to school
  - Grocery store to restaurant
  - Post Office to grocery store to convenience store
  - Convenience store to restaurant to school
  - Restaurant to Post Office