### Professional Learning Community Grantees Product Template

<table>
<thead>
<tr>
<th>Instructor(s) Name(s):</th>
<th>District/Organization:</th>
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<tbody>
<tr>
<td>Stephanie Stockwell Smith Dan Case</td>
<td>Worcester</td>
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</tbody>
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**Learning Standards:**
Number Sense (10.M.2 and 10.N.3)

**Guiding Principle I, II, IV, V**

**Activity: Using Algeblocks**

**Length of Time: 45 minutes +**

Integers – Objective: Use multiple representations to evaluate integer addition and subtraction

1. Adding of integers by using the mat.
2. Drawing on paper/poster
3. Be able to use the algorithm

**Addition of Integers**

1. Positive + Positive = More Positive
   
   Ex. 3 + 2 = 5

2. Negative + Negative = More Negative
   
   Ex. -3 + -2 = -5

3. Positive + Negative = Subtract smaller number from larger number and take the sign of the larger number
   
   Ex. 3 + -2 = 1

4. Negative + Positive = Subtract smaller number from larger number and take the sign of the larger number
   
   Ex. -3 + 2 = -1

**Subtraction of Integers – The rule is never subtract (Use the property of Additive Inverse to change a subtraction problem into an addition problem)**

Ex. 5 – 2 = 5 + -2 = 3
See number 3 above

Ex. 2 -5 = 2 + -5 = -3
See number 3 above

Ex. -2 – 5 = -2 + -5 = -7
See number 2 above

Ex. 2 - -5 = 2 + 5 = 7
See number 1 above

Ex. -2 - -5 = -2 + 5 = 3
See number 4 above

**How does the mat work?**

1. Use the mat for addition only. If subtraction, covert into addition.
2. Place the tiles on the mat from the first number, positive or negative.
3. Place the tiles on the mat from the second number, positive or negative.
4. If the tiles are on both positive and negative areas, remove zero pairs, 1 postive tile + 1 negative tile = zero pair.
Objective: Use physical representation to demonstrate how the distributive property works.

Ex. 2(x + 3)

1. On a coordinate mat, use the tiles to represent the expression.
2. Place one factor on each axis.
3. Using area model, build a rectangle filling in the space between them.
   a. In 2(x + 3), place two “1” tiles, on the vertical axis and one “x” tile and three “1” tiles on the horizontal axis.
   b. Then 1 \( \cdot x = x, \)
      
      \[
      1 \cdot 1 = 1 \\
      1 \cdot 1 = 1 \\
      1 \cdot 1 = 1 \\
      1 \cdot x = x \\
      1 \cdot 1 = 1 \\
      1 \cdot 1 = 1 \\
      1 \cdot 1 = 1 
      \]
   c. Thus, \( 2(x + 3) = 2x + 6 \)
Example: \((x + 1)(x - 2)\)

\[
x \cdot x = x^2
\]
\[
1 \cdot x = x
\]
\[
X \cdot -1 = -x
\]
\[
X \cdot -1 = -x
\]
\[
1 \cdot -1 = -1
\]
\[
1 \cdot -1 = -1
\]

\[
x^2 + x - 2x - 2 = x^2 - x - 2
\]

**Assessment:**
Teacher Observation and group sharing. Students should make up their own expressions using the distributive property and challenge the rest of the class to answer them.

**Next Steps:**
Solve expressions and equations with the distributive property independently, without algeblocks.
<table>
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<tr>
<th><strong>Materials:</strong></th>
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<tbody>
<tr>
<td>Algebblocks</td>
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<tr>
<td>Construction Paper</td>
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<tr>
<td>Markers/Crayons</td>
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