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Model Subtraction Using Chips

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Mathematical Concept:

Numbers and Operations: Learn to subtract negative integers.

Students use mathematical modeling to subtracting integers, a difficult concept for middle school student to grasp. The model uses positive and negative chips to represent integers.

After reviewing addition of integers using the number line and on a chip board. I will introduce subtraction, the opposite operation of addition on the chip board.

Students will start the Color Chips - Subtraction Activity from the page below.

website: http://nlvm.usu.edu/en/nav/grade_g_3.html

Color Chips: This virtual manipulative uses plus-minus chips to demonstrate subtracting positive and negative values. Students using this virtual manipulative you will solve subtraction problems via chip boards.

Subtracting Integers using the virtual manipulative Color Chips:

1. Drag chips into the work circle to represent the first integer (red – negative, black - positive problem and click Continue.

2. Drag chips pairs into the work circle representing the second integer Continue. Note: When you drag a plus chip onto a negative chip they will animate and disappear to represent cancelling each other out.

3. Remove chips representing the integer being subtracted from the work circle and place in the take away bin and click Continue.
4. Type in your answer (the number of chips left over with the appropriate sign) and click Check

Students will be asked to complete a worksheet. The worksheet will consist of solving several subtraction sentences generated by the manipulative.

Students will:

1. Write down the subtraction sentence and solve.
2. Following the manipulative to confirm their solution.

Materials

- Worksheet

All students should be able to complete this assignment.
<table>
<thead>
<tr>
<th>Grading Rubric</th>
<th>Pass</th>
<th>Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Able to access the website</td>
<td>Able to access the site</td>
<td>Not able to access the site</td>
</tr>
<tr>
<td>Understands how to use the manipulate</td>
<td>Reads and follows the directions</td>
<td>Unable to read and follow directions</td>
</tr>
<tr>
<td>Able to solve the subtraction sentence</td>
<td>Correctly solves the problem</td>
<td>Unable to solve the problem</td>
</tr>
<tr>
<td>Complete the worksheet</td>
<td>Complete worksheet</td>
<td>Doesn’t complete Worksheet</td>
</tr>
</tbody>
</table>
Activity: Subtraction – Chip Board

In this activity you are going to use color chips to illustrate subtraction of integers.

Start the Color Chips - Subtraction Activity from the page below.

website: http://nlvm.usu.edu/en/nav/grade_g_3.html

Color Chips

This virtual manipulative uses plus-minus chips to demonstrate subtracting positive and negative values.

Using this virtual manipulative you will solve subtraction problems:

- Using plus and minus chips

Subtracting Integers using the virtual manipulative Color Chips:

1. Drag chips into the work circle to represent the first integer (red - negative, black - positive problem and click Continue.

2. Drag chips pairs into the work circle representing the second integer Continue. Note: When you drag a plus chip onto a negative chip they will animate and disappear to represent cancelling each other out.

3. Remove chips representing the integer being subtracted from the work circle and place in the take away bin and click Continue.

4. Type in your answer (the number of chips left over with the appropriate sign) and click Check

Complete the work sheet
Activity: Subtraction - Chip Board

1. Write the subtraction equation and solve.

____________________________________________________________________

2. Confirm or deny your solution using the color chips manipulative
   a. Drag chips into the work circle to represent the first integer (negative (-), positive (+)).

   [Circle]

   b. Drag chips pairs into the work circle representing the second integer (negative (-), positive (+)).

   [Circle]

   c. Cross out chips representing the second integer (subtraction).

   [Circle]

   d. The number of chips remaining is solution to the subtraction problem. Write and solve the subtraction equation.

____________________________________________________________________
1. Write the subtraction equation and solve.

________________________________________________________________________

2. Confirm or deny your solution using the color chips manipulative
   a. Drag chips into the work circle to represent the first integer (negative (-),
      positive (+)).

      ![Work circle 1]

   b. Drag chips pairs into the work circle representing the second integer (negative (-),
      positive (+)).

      ![Work circle 2]

   c. Cross out chips representing the second integer (subtraction).

      ![Work circle 3]

   d. The number of chips remaining is solution to the subtraction problem. Write and
      solve the subtraction equation.

      ______________________________________________________________________
1. Write the subtraction equation and solve.

________________________________________

2. Confirm or deny your solution using the color chips manipulative
   a. Drag chips into the work circle to represent the first integer (negative (-), positive (+)).

   b. Drag chips pairs into the work circle representing the second integer (negative (-), positive (+)).

   c. Cross out chips representing the second integer (subtraction).

   d. The number of chips remaining is solution to the subtraction problem. Write and solve the subtraction equation.

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