Core Content

<table>
<thead>
<tr>
<th>Cluster Title: Use the four operations with whole numbers to solve problems.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard 3</strong>: Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies, including rounding.</td>
</tr>
</tbody>
</table>

**MASTERY Patterns of Reasoning:**

**Conceptual:**
- Students will decode and understand multistep word problems that may or may not include remainders.
- Students will decode and understand multistep word problems and create an equation with a variable representing the unknown number.
- Students will determine the reasonableness of the calculated answer using mental computation and estimation strategies.

**Procedural:**
- Students can interpret a multistep equation that includes the four basic operations.
- Students can create and solve an equation using a variable or symbol to represent an unknown number in a multistep problem, interpreting remainders when needed.
- Students can evaluate the reasonableness of the answer through mental math, estimation, and rounding.

**Representational:**
- Students can represent and solve multistep word problems that include the four basic operations and which may or may not include remainders through the use of models, illustrations, and/or writing.

Code: 4.OA.3
Supports for Teachers

**Critical Background Knowledge**

**Conceptual:**
- Students will possess an understanding of number sense.
- Students will be proficient in the four basic operations.
- Students will identify the relationship between the four basic operations.
- Students will understand how to solve a word problem.
- Students will understand the use of variables for unknown numbers.
- Students will understand the meaning of remainders.

**Procedural:**
- Students achieve mastery of basic math facts using the four operations.
- Students can write equations that include unknown variables.
- Students can solve division problems with remainders.
- Students can use mental math and estimation to determine the reasonableness of an answer.

**Representational:**
- Students can use manipulatives, drawings, algorithms, and/or journaling to solve multistep word problems.

**Academic Vocabulary and Notation**
- multistep word problem, mental math, estimation, rounding, remainder, variable, operations, equation, reasonableness

**Instructional Strategies Used**

1. Polya’s Problem-Solving Method:
   a. Understand the problem.
   b. Devise a plan.
   c. Carry out the plan.
   d. Look back and evaluate the answer.

**Resources Used**

http://www.mathplayground.com
Click on the “Word Problems” tab and select “Word Problems with Katie” for different types of multistep problems.

http://www.mathscore.com/math/practice/Word%Problems%20With%20Remainders/
The site has multiple problems listed that require students to solve different operations in steps to determine the answer.

The site offers additional examples of word problems.

http://www.internet4classrooms.com/grade_level_help/solve_problems_math_fourth_4th_grade.htm
Look for the activity “Two-step Computation” to play a game with multi-step operations.

<table>
<thead>
<tr>
<th>Assessment Tasks Used</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Skill-Based Task:</strong> Solve an equation from a given multistep word problem. Then check the reasonableness of the answer using mental math or estimation.</td>
</tr>
<tr>
<td><strong>Problem Task:</strong> A 17-inch long piece of rope is cut into 2-inch pieces. How many 2-inch pieces are there? How much of the rope is left? Draw a picture or diagram that illustrates the problem. Write an equation using a symbol for the unknown variable. Solve the equation. Use mental math or estimation to determine the reasonableness of your answer. Write an explanation of how you know you are right.</td>
</tr>
</tbody>
</table>