Candy and Ribbon

Students are asked to solve multi-step word problems that require converting units.

General Information

Subject(s): Mathematics
Grade Level(s): 5
Intended Audience: Educators

Freely Available: Yes

Keywords: MFAS, context, converting units, feet, inch, gram, kilogram
Instructional Component Type(s): Formative Assessment
Resource Collection: MFAS Formative Assessments

Attachment

MFAS_CandyAndRibbonWorksheet.docx

Formative Assessment Task

Instructions for Implementing the Task
This task may be implemented individually, in small groups, or in a whole-group setting. If the task is given in a whole-group setting, the teacher should ask each student to explain his or her thinking and strategy.

1. The teacher provides the student with the Candy and Ribbon worksheet and reads aloud each problem.

   RyLeigh made a piñata for her birthday party. The candy inside the piñata weighs 3.3kg. If each piece of candy weighs 12g, how many pieces of candy are inside the piñata?

   RyLeigh plans to make treat bags to pass out to the guests as they leave the party. Each bag will be tied with ribbon. RyLeigh has determined that she needs 9 inches of ribbon for each treat bag and she is going to make 22 bags. How many feet of ribbon does RyLeigh need to purchase for the bags?

1. The student is given ample time to complete each problem.

TASK RUBRIC

Getting Started

Misconception/Error
The student does not use an effective strategy to convert units and solve the word problems.

**Examples of Student Work at this Level**

The student does not know the conversion factor for converting kilograms to grams or inches to feet. Consequently, the student is unable to develop an effective strategy to solve the problems.

The student knows the conversion factors but is unable to complete the conversions to answer the questions.

**Questions Eliciting Thinking**

If you knew how many grams are in one kilogram, could you solve this problem?

What does the 0.3 represent in the number 3.3? How can you find \( \frac{3}{10} \) of one kilogram?

RyLeigh needs how many inches of ribbon for each bag? How many inches does she need for two bags? How can you determine how many inches of ribbon she needs for 22 bags?

**Instructional Implications**

Review the conversion factors for weight (e.g., mass) in the metric system and length in the customary system. Guide the student in using the conversion factors to develop procedures for converting from smaller to larger units and from larger to smaller units. Assist the student in understanding when to multiply and when to divide.

Provide the student with one-step word problems that require converting units of measure. Before making a conversion, have the student consider if the conversion should result in numerically more units (as when converting from a larger unit to a smaller unit) or numerically fewer units (as when converting from a smaller unit to a larger unit). Allow the student to use a conversion reference sheet until the conversion factors are learned. Focus on the strategies used to make the conversions.

Provide assistance so that the student makes sense of word problems and develops strategies to solve them.

Consider using the MFAS task Converting Measurement Units (5.MD.1.1) which assesses the student’s understanding of converting units of measure without the context of a word problem.

**Making Progress**

**Misconception/Error**

The student misunderstands the context of the problem or makes an error when finding the correct number of pieces of candy or the number of feet of ribbon needed.

**Examples of Student Work at this Level**

The student struggles to convert 3.3 kilograms to 3,300 grams. In the second problem, the student knows to multiply 22 x 9. He or she then divides by 12 but is unable to interpret the remainder in the quotient.

The student understands that there are 1000 grams in one kilogram and understands that \( \frac{1}{10} \) of 1000 is 100; however, the student is unable to determine that there are 3,300 grams in 3.3 kilograms. In the second problem, the student multiplies to determine that 198 inches of ribbon are needed, but does not understand that 198 must be converted to feet by dividing by 12.
Questions Eliciting Thinking
How many inches of ribbon does RyLeigh need? How can you convert that to feet?

If \( \frac{1}{10} \) of 1000 is 100 grams, what is \( \frac{3}{10} \) of 1000?

What does the 0.3 represent in the number 3.3? How can you find \( \frac{3}{10} \) of one kilogram?

You divided 198 by 12 and got 16 with a remainder of six. What unit goes with the 16? What unit goes with the six? How much of a foot is 6 inches?

Instructional Implications
Provide specific feedback to the student regarding errors made. For example:

- Ensure that the student can interpret remainders in division problems. Consider using the MFAS task, What Does The 21 Mean (3.OA.1.1). Guide the student to understand that remainders must be taken into account in the final answer.
- If the student does not know the conversion factor for converting from kilograms to grams, provide the student with additional practice in converting metric units both in and out of context.
- If the student does not know the conversion factor for converting from inches to feet, provide the student with additional practice in converting customary units both in and out of context.

Got It

Misconception/Error
The student provides complete and correct responses to all components of the task.

Examples of Student Work at this Level
In the first problem, the student converts 3.3 kilograms to 3,300 grams and divides by 12 to determine there are 275 pieces of candy in the piñata. In the second problem, the student multiplies 22 by 9 and determines that 198 inches of ribbon are needed. The student then divides 198 by 12 to determine that RyLeigh needs 16 \( \frac{1}{2} \) feet of ribbon for the bags.

Questions Eliciting Thinking
If RyLeigh has 260 pieces of candy and each piece of candy weighs 10 grams, how many kilograms is that?

How many feet of ribbon would RyLeigh need to make 25 bags with a 9 inch ribbon on each bag?

Instructional Implications
Consider using the MFAS task Party Planning (5.MD.1.1) to assess the student's understanding of converting ounces to cups and centimeters to meters in multi-step word problems.

Encourage the student to determine scenarios in which it is necessary to convert units of measure. Ask the student to create word problems that include opportunities to convert units. Have the student exchange problems with a classmate and solve. Have the students compare answers and reconcile any differences.

Accommodations & Recommendations

Special Materials Needed:
- Candy and Ribbon worksheet

Source and Access Information

Contributed by: MFAS FCRSTEM
Name of Author/ Source: MFAS FCRSTEM
District/ Organization of Contributor(s): Okaloosa
Is this Resource freely Available? Yes
Access Privileges: Public
License: CPALMS License - no distribution - non commercial
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAFS.5.MD.1.1</td>
<td>Convert among different-sized standard measurement units (i.e., km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec) within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.</td>
</tr>
</tbody>
</table>