

<b>Title:</b>	<b>Field Trip to the Farmers' Market</b>
<b>Grade:</b>	<b>4</b>
<b>Claim(s):</b>	<p><b>Claim 4: Modeling and Data Analysis</b> Students can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems.</p> <p><b>Claim 3: Communicating Reasoning</b> Students clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.</p> <p><b>Claim 2: Problem Solving</b> Students can solve a range of well-posed problems in pure and applied mathematics, making productive use of knowledge and problem-solving strategies.</p>
<b>Assessment Target(s):</b>	<p><b>Claim 4</b> <b>A.</b> Apply mathematics to solve problems arising in everyday life, society, and the workplace. <b>E.</b> Analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon. <b>F.</b> Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas).</p> <p><b>Claim 3</b> <b>C.</b> State logical assumptions being used. <b>E.</b> Distinguish correct logic or reasoning from that which is flawed and—if there is a flaw in the argument—explain what it is.</p> <p><b>Claim 2</b> <b>A.</b> Apply mathematics to solve well-posed problems in pure mathematics and arising in everyday life, society, and the workplace.</p>
<b>Standard(s):</b>	<ol style="list-style-type: none"> <li>1. C2TA- 4.NBT.4</li> <li>2. C4TE- 4.OA.1 (pg. 29 of specs)</li> <li>3. C3TE- 4.OA.3, 4.NBT.6</li> <li>4. C4TA- 4.MD.2</li> <li>5. C3TC- 4.NBT.5 (target c pg. 15 of specs)</li> <li>6. C4TF- 4.NF.3c</li> </ol> <p>4.OA.1, 4.OA.3, 4.NBT.4, 4.NBT.5, 4.NBT.6 4.NF.3c, 4.MD.2</p>
<b>Mathematical Practice(s):</b>	1, 2, 3, 4, 6, 7
<b>Revised Bloom's Taxonomy Level:</b>	Analyze - 4
<b>DOK Level:</b>	Strategic Thinking/Reasoning - 3
<b>Score Points:</b>	11 points possible
<b>Difficulty:</b>	Medium
<b>Resources:</b>	N/A
<b>Notes:</b>	N/A
<b>Task Overview:</b>	Students will solve problems using the four operations applied to fractions, decimals, and whole numbers.

<b>Teacher Preparation/Resource Requirements:</b>	None required
<b>Time Requirements:</b>	Approximately 60-80 minutes

<b>Prework:</b>	None
-----------------	------

<b>Sample Top-Score Response</b>	<p>Your class is going on a field trip to your local farmers' market with two other fourth-grade classes. Your teacher has asked you to help prepare for the trip by planning a little ahead of time. Use your knowledge of the four operations, fractions, and decimals to help your teacher.</p> <p><b>Part A</b></p> <p>1. You know that your first stop at the farmers' market will be to buy vegetables.</p> <p>You have planned to buy the following vegetables:</p> <p style="padding-left: 40px;">8 radishes 29 potatoes 14 cauliflowers 17 carrots</p> <p>How many total vegetables do you plan on buying?</p> <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 10px 0;"><b>68 vegetables</b></div> <p>2. Which situation is represented by the equation <math>2 \times 6 = \square</math> ?</p> <p><b>A.</b> A carton of strawberries weighs 2 pounds. A box of apples weighs 6 pounds more than that. How much does the box of apples weigh?</p> <p><b>B.</b> A carton of strawberries weighs 2 pounds. A box of apples weighs 6 times as much as the carton of strawberries. How much does the box of apples weigh?</p> <p><b>C.</b> A carton of strawberries weighs 2 pounds. A box of apples weighs 6 pounds more than the strawberries. How much do they weigh altogether?</p> <p><b>D.</b> A carton of strawberries weighs 2 pounds. A box of apples weighs 6 times as much as the carton of strawberries. How much do they weigh altogether?</p> <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 10px 0;"><b>B. A carton of strawberries weighs 2 pounds. A box of apples weighs 6 times as much as the carton of strawberries. How much does the box of apples weigh?</b></div>
----------------------------------	--

**Part B**

3. Your friend Steve is also helping plan. He is planning to buy 2 boxes of plums, and each box of plums has 83 plums in it. Steve has small cartons that hold a total of 8 plums per carton. Steve used the total number of plums he planned on buying to find that he needs 20 cartons to hold all of his plums. Is Steve correct? Explain why or why not.

**Steve is not correct. He would need at least 21 cartons to hold all of his plums. There are a total of 166 plums (2 boxes  $\times$  83 plums = 166 plums), and if each carton could hold 8 plums, he would divide that number by 8 to get 20R6. Since there is a remainder, I know that Steve would need at least 21 cartons to fit all of his plums.**

4. You and Steve need to find out the cost of the cartons to hold the plums you purchase. If each carton costs \$1.30, how much money would you spend on cartons for plums? Use your answer from the previous question to help you solve, and explain your reasoning.

**We would need a total of \$27.30 for cartons to hold plums. I found this by multiplying the number of cartons needed (21) by the price of each carton (\$1.30).**

5. While Steve was planning, he decided that it would be nice to purchase enough peaches to share with the kids in the fourth grade. He planned to give each kid half of a peach, and he estimated that he would need 102 peaches to share. What assumption did Steve use to make this estimation? Explain your reasoning.

**Steve estimated that there were 204 kids in the fourth grade to share with. I found this by multiplying the number of peaches he planned to share (102) by two since there would be two kids for every peach.**

6. Steve decided to make a table to keep track of the vegetables he planned on purchasing. Use Steve's table below to answer the question.

Vegetable	Pounds of Vegetable
Broccoli	$4\frac{1}{4}$
Celery	$1\frac{2}{4}$
Cauliflower	$2\frac{3}{4}$
Asparagus	$3\frac{2}{4}$
Cucumber	$1\frac{1}{4}$

How many pounds of broccoli, celery, and cauliflower does Steve plan to buy altogether? Explain how you found your answer.

**Steve plans on buying  $8\frac{2}{4}$  pounds of broccoli, celery, and cauliflower. I found this by replacing each of the mixed numbers with equivalent fractions, adding, and simplifying. I first changed the fractions to  $\frac{17}{4}$ ,  $\frac{6}{4}$ , and  $\frac{11}{4}$ . Then, I added the numerators to get  $\frac{34}{4}$ . From there, I simplified to get a mixed number and found that  $\frac{34}{4}$  was equal to  $8\frac{2}{4}$ .**

**End of Performance Task**

**Scoring Rubrics:**

<b>Scoring Rubric Question 1:</b>	
<b>1 Point:</b>	The student demonstrates good understanding of solving word problems with addition. The student correctly calculates the amount of vegetables that are planned to be purchased.
<b>0 Points:</b>	The student demonstrates no understanding of solving word problems with addition. The student does not correctly calculate the amount of vegetables that are planned to be purchased.

<b>Rationales Question 2:</b>	
	<p>A. Student(s) may have confused addition and multiplication.</p> <p>B. Correct answer</p> <p>C. Student(s) may not have understood how to interpret a multiplication problem and may have incorrectly assumed the problem was finding how much the two fruits weighed together.</p> <p>D. Student(s) may have believed that multiplying the two numbers would solve for the combined total, rather than the total weight of the apples only.</p>

**Scoring Rubric for Part B:**

<b>Scoring Rubric Question 3:</b>	
<b>3 Points:</b>	The student demonstrates thorough understanding of solving multi-step problems using the four operations and interpreting remainders. The student correctly identifies that Steve is not correct, correctly identifies the number of cartons needed, and explains and correctly explains the reasoning.
<b>2 Points:</b>	The student demonstrates good understanding of solving multi-step problems using the four operations and interpreting remainders. The student correctly identifies that Steve is not correct and correctly identifies the number of cartons needed but does not correctly explain the reasoning. OR The student correctly identifies that Steve is not correct and correctly explains the reasoning but does not correctly calculate the total number of cartons needed.
<b>1 Point:</b>	The student demonstrates limited understanding of solving multi-step problems using the four operations and interpreting remainders. The student correctly identifies that Steve is not correct but does not correctly explain the reasoning and does not correctly calculate the number of cartons needed. OR The student does not correctly identify that Steve is not correct but does correctly explain the reasoning for the choice made.
<b>0 Points:</b>	The student demonstrates no understanding of solving multi-step problems using the four operations and interpreting remainders. The student does not correctly identify that Steve is not correct, does not correctly explain the reasoning for that choice, and does not correctly calculate the number of cartons needed.

<b>Scoring Rubric Question 4:</b>	
<b>2 Points:</b>	The student demonstrates thorough understanding of multiplying with money. The student correctly identifies the cost of cartons and explains their reasoning.
<b>1 Point:</b>	The student demonstrates good understanding of multiplying with money. The student correctly identifies the cost of cartons but does not explain their reasoning.
<b>0 Points:</b>	The student demonstrates no understanding of multiplying with money. The student does not correctly identify the cost of cartons and does not explain their reasoning.

*\*A student should receive full credit for this question if they correctly calculate with the incorrect numbers from the previous question(s).*

<b>Scoring Rubric Question 5:</b>	
<b>2 Points:</b>	The student demonstrates thorough understanding of dividing with multi-digit whole numbers. The student correctly identifies the estimation Steve made and explains their reasoning.
<b>1 Point:</b>	The student demonstrates good understanding of dividing with multi-digit whole numbers. The student correctly identifies the estimation Steve made but does not explain their reasoning.
<b>0 Points:</b>	The student demonstrates no understanding of dividing with multi-digit whole numbers. The student does not correctly identify the estimation Steve made and does not explain their reasoning.

<b>Scoring Rubric Question 6:</b>	
<b>2 Points:</b>	The student demonstrates thorough understanding of identifying information in a table and adding with mixed numbers. The student correctly finds the number of pounds of vegetables and correctly explains their reasoning about how they solved the problem.
<b>1 Point:</b>	The student demonstrates good understanding of identifying information in a table and adding with mixed numbers. The student correctly finds the number of pounds of vegetables but does not explain their reasoning about how they solved the problem.
<b>0 Points:</b>	The student demonstrates no understanding of identifying information in a table and adding with mixed numbers. The student does not correctly find the number of pounds of vegetables and does not explain their reasoning about how they solved the problem.