

<b>Title:</b>	<b>A Musical Performance</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>B.</b> Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem.</p> <p><b>Claim 3</b> <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. <b>C.</b> Interpret results in the context of a situation.</p>
<b>Standard(s):</b>	4.MD.2, 4.OA.3, 4.NF.3c, 4.NF.4c, 4.NBT.5, 4.NBT.6
<b>Mathematical Practice(s):</b>	1, 2, 3, 4, 6, 7
<b>Bloom's Taxonomy Level:</b>	Analyzing - 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
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A local musician, Mr. May, is coming to your school to play for the fourth-grade classes. Your principal has asked you to help Mr. May prepare for his performance. Use your knowledge of the four operations, decimals, and fractions to help Mr. May.

**Part A**

1. Before Mr. May comes to your school, your classmates want to plan a thank you gift for him. All of the fourth-grade classes have raised money to buy him a new guitar. The amount each class has raised is listed below.

Class	Amount Raised
Mrs. White's class	\$75.63
Mr. Fendley's class	\$94.02
Ms. Herrera's class	\$84.54
Mrs. Atkinson's class	\$79.78

With the amount of money left over after buying the guitar, the classes decide to donate the rest to Mr. May's music group. If the guitar costs \$296.49, how much money will be donated to Mr. May's music group?

**\$37.48**

2. Once Mr. May arrives at your school, he needs to set up the tables where students will sit during the performance. He knows that two fourth-grade classes will be in the room together, and he has the number of students in each class listed below.

Class	Number of Students in Class
Mrs. White's class	25
Mr. Fendley's class	21
Ms. Herrera's class	24
Mrs. Atkinson's class	23

Each table can hold a total of five students. How many tables does Mr. May need to have in the room so that each student has a place to sit during the performance?

**10 tables**

**Sample Top-Score Response (Session 1)**

**Part B**

3. Mr. May would like your help in selecting some songs for his performance. He has given you a choice of the following 5 songs:

- Song 1 is  $3\frac{3}{4}$  minutes long.
- Song 2 is  $4\frac{1}{4}$  minutes long.
- Song 3 is  $2\frac{1}{4}$  minutes long.
- Song 4 is  $5\frac{3}{4}$  minutes long.
- Song 5 is  $3\frac{2}{4}$  minutes long.

Mr. May has  $17\frac{2}{4}$  minutes to play four of these songs. To get as close as possible to his  $17\frac{2}{4}$  minute time limit, which four songs should Mr. May play? Explain your reasoning and include the total amount of time Mr. May will play the songs you choose.

**Mr. May should play songs 1, 2, 4, and 5. When I add all of those times together, I get  $17\frac{1}{4}$  minutes. Every other combination of songs is less than that amount, so this is the closest to  $17\frac{2}{4}$  minutes I can get.**

4. After determining which songs he will perform, Mr. May decides that he would like to give an introduction to his songs. He would like to spend  $\frac{1}{4}$  of a minute introducing each of his four songs before he plays them. Using the amount of time that Mr. May will play his four chosen songs from question 3, how much *more* time will Mr. May need to request to add to his  $17\frac{2}{4}$  minute time limit to introduce his songs? Explain your steps.

**Mr. May will need to request another  $\frac{3}{4}$  of a minute for his limit. To find this, I multiplied  $\frac{1}{4}$  by 4 to see that he will spend  $\frac{4}{4}$  (or 1) minute introducing his songs. I then subtracted the amount of time he will spend playing his songs ( $17\frac{1}{4}$ ) minutes from the total time limit ( $17\frac{2}{4}$ ) to see he only had  $\frac{1}{4}$  of a minute for introductions. I then subtracted  $\frac{1}{4}$  from  $\frac{4}{4}$  to see that he needed an additional  $\frac{3}{4}$  of a minute for his time limit.**

**Sample Top-Score Response (Session 1)**

5. Mr. May has planned to put on a longer performance tonight, and he brought tickets with him to sell to the parents and teachers at your school. Each ticket costs \$15, and he brought a total of 50 tickets. If he sells all of the tickets, Mr. May calculates that he will make \$650. Did Mr. May calculate the total correctly? If he did not, correct his mistake.

**Mr. May did not calculate the total correctly. He should have found that  $15 \times 50 = 750$ .**

6. Mr. May has enjoyed spending his day at your school so much that he has decided to give \$600 of his ticket sales back to your elementary school as a gift. Your principal has asked Mr. May to divide the money equally between 4 clubs at your school, so Mr. May gives each club \$105. Did Mr. May calculate the total correctly? If he did not, how much money should each club receive?

**Mr. May did not calculate the total correctly. Each club should receive \$150 because  $600 \div 4 = 150$ .**

**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 money. The student correctly calculates the amount of money that will be donated.
<b>0 Points:</b>	The student demonstrates no understanding of solving word problems with money. The student does not correctly calculate the amount of money that will be donated.

<b>Scoring Rubric Question 2:</b>	
<b>1 Point:</b>	The student demonstrates good understanding of solving a multi-step problem with an interpretation of a remainder. The student correctly calculates the number of tables needed.
<b>0 Points:</b>	The student demonstrates no understanding of solving a multi-step problem with an interpretation of a remainder. The student does not correctly calculate the number of tables needed.

**Scoring Rubric for Part B:**

<b>Scoring Rubric Question 3:</b>	
<b>3 Points:</b>	The student demonstrates thorough understanding of adding fractions with like denominators. The student correctly identifies the four songs to be played, correctly calculates the total amount of time, and correctly explains the reasoning.
<b>2 Points:</b>	The student demonstrates good understanding of adding fractions with like denominators. The student correctly identifies the four songs to be played, correctly calculates the total amount of time but does not correctly explain the reasoning. OR The student correctly identifies the four songs to be played and correctly explains the reasoning but does not correctly calculate the total amount of time.
<b>1 Point:</b>	The student demonstrates limited understanding of adding fractions with like denominators. The student correctly identifies the four songs to be played but does not correctly explain the reasoning and does not correctly calculate the total amount of time. OR The student does not correctly identify the four songs to be played but does correctly explain the reasoning for the choice made and does correctly calculate the total amount of time for that choice.
<b>0 Points:</b>	The student demonstrates no understanding of adding fractions with like denominators. The student does not correctly identify the four songs to be played, does not correctly explain the reasoning for that choice, and does not correctly calculate the total amount of time for that choice.

<b>Scoring Rubric Question 4:</b>	
<b>2 Points:</b>	The student demonstrates thorough understanding of multiplying and subtracting fractions. The student correctly identifies the amount of time Mr. May needs to add to his limit and explains their reasoning.
<b>1 Point:</b>	The student demonstrates good understanding of multiplying and subtracting fractions. The student correctly identifies the amount of time to be added but does not correctly explain the reasoning.
<b>0 Points:</b>	The student demonstrates no understanding of multiplying and subtracting fractions. The student does not correctly identify the time that should be added and provides no explanation.

*\*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 good understanding of multiplying two two-digit whole numbers. The student correctly identifies the original calculation as wrong and correctly calculates the total amount made.
<b>1 Point:</b>	The student demonstrates limited understanding of multiplying two two-digit whole numbers. The student correctly identifies the original calculation as wrong but does not correctly calculate the total amount made.
<b>0 Points:</b>	The student demonstrates no understanding of multiplying two two-digit whole numbers. The student does not correctly identify the original calculation as wrong.

<b>Scoring Rubric Question 6:</b>	
<b>2 Points:</b>	The student demonstrates good understanding of dividing whole numbers. The student correctly identifies the original calculation as wrong and correctly calculates the total amount given to each club.
<b>1 Point:</b>	The student demonstrates limited understanding of dividing whole numbers. The student correctly identifies the original calculation as wrong but does not correctly calculate the total amount given to each club.
<b>0 Points:</b>	The student demonstrates no understanding of dividing whole numbers. The student does not correctly identify the original calculation as wrong.