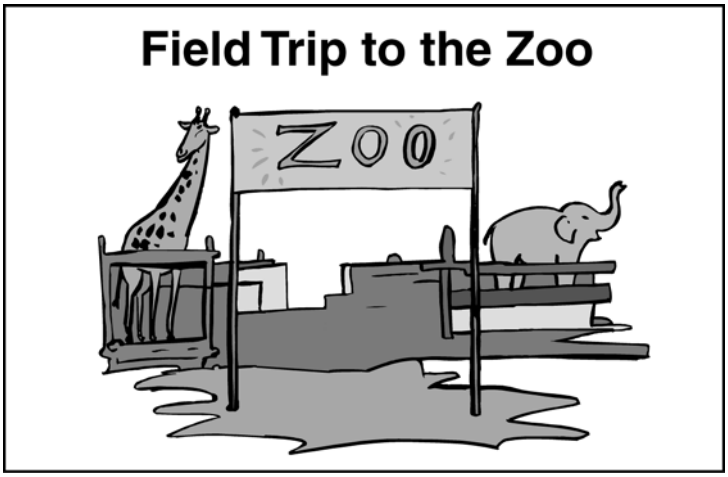
Common Core Mathematics Challenge



Level: Grade Five

Domain: Number and Operations–Fractions

Cluster: Use equivalent fractions as a strategy to add and subtract fractions.

Standard

Add and subtract fraction with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.

Domain: Number and Operations in Base Ten

Cluster: Perform operations with multi-digit numbers and with decimals to hundredths.

Standard

Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawing and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Common Core Mathematics Challenge

Number and Operations–Fractions and Base Ten
Grade 5–Field Trip to the Zoo

The purpose of the Mathematics Challenges is to provide opportunities for students to develop and demonstrate understanding of important mathematical concepts and standards. Each Challenge includes a set of tasks that require higher-order thinking skills. Because these types of tasks may be new for students and they will have varying levels of understanding, the student responses will vary. The Challenges and guiding questions were designed to help teachers plan their implementation and elicit, analyze, and act on evidence of student understanding.

Each packet contains all the materials necessary to implement the Mathematics Challenge including a grade-appropriate Challenge, the Mathematics Challenge Meeting Protocol, and the Guiding Questions for Analyzing Student Responses to Mathematics Challenges.

For each Challenge, you will complete a six step process of planning, implementation, and analysis and reflection.

The Mathematics Challenge Process

Stage	Step	Task
Planning	Step 1.	Review the Mathematics Challenge Meeting Protocol
	Step 2.	Review and solve the Mathematics Challenge prior to your Professional Learning Community meeting. Think about your responses to the guiding questions on the Meeting Protocol
	Step 3.	Hold your Professional Learning Community meeting and discuss your responses to the Guiding Questions on the Meeting Protocol
Implementation	Step 4.	Implement the Mathematics Challenge with your class
Analysis and Reflection	Step 5.	For your own planning and documentation, respond to the Guiding Questions on the Analyzing Student Responses Protocol
	Step 6.	To help us improve the Challenges and to provide recommendations for teachers implementing them in future years, complete the Mathematics Challenge Feedback Log and provide copies of all student work to the Assessment Coordinator

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Number and Operations–Fractions and Base Ten
Grade 5–Field Trip to the Zoo

Mathematics Challenge Meeting Protocol

Your Professional Learning Community will meet to discuss the implementation of one Mathematics Challenge. In preparation for your meeting, please print and review the Mathematics Challenge, solve all tasks within the Challenge, and think about the guiding questions below. These questions will be used to facilitate a group discussion regarding the implementation of the upcoming Mathematics Challenge.

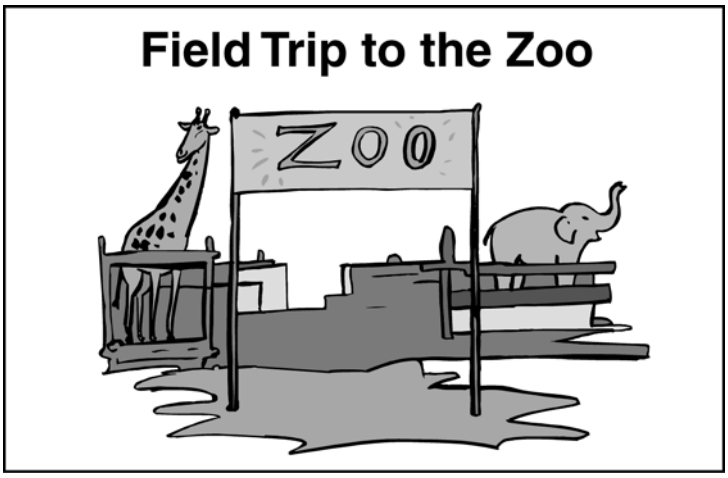
Guiding Questions for Implementing the Mathematics Challenges

1. What is the title of the Challenge that you will use?
2. What skills or standards is this Challenge measuring?
3. Where does this Challenge fit within your curriculum? Within which unit?
4. At what point during the unit will you administer this Challenge (e.g., At the beginning of a unit to determine what students do or do not know, at the end of a unit to assess what students have or have not learned, in the middle of a unit to determine where to go next instructionally)?
5. How will your students complete this Challenge (e.g., individually, one-on-one, in small groups, as a class)? Why?
6. Are there any prerequisite skills, common misunderstandings, or vocabulary needs that you will have to address? What are they?
7. What difficulties do you anticipate your students will have with the Challenge? How will you address them?
8. Are these skills and difficulties different for special needs students, ELL students, etc.? How? Will you do anything different for these students? What?
9. How will you evaluate student responses (e.g., grade responses with the provided rubric, scan responses to identify common mistakes/misconceptions, have students evaluate one another's responses, have students evaluate their own response)?
10. What will student responses to this Challenge tell you about student understanding?
11. How might you use this evidence of student understanding to adapt your teaching and learning?
12. What other materials, resources, or support might you need? Where can you get them?
13. How can your colleagues assist you in the analysis of student understanding?
14. What other questions or concerns do you have about this Mathematics Challenge?

After you have implemented the challenge with your class, be sure to respond to the Guiding Questions on the Analyzing Student Responses Protocol.

Common Core Mathematics Challenge

Number and Operations–Fractions and Base Ten
Grade 5–Field Trip to the Zoo



Domain: Number and Operations–Fractions

Cluster: Use equivalent fractions as a strategy to add and subtract fractions.

Standard:

Add and subtract fraction with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.

Domain: Number and Operations in Base Ten

Cluster: Perform operations with multi-digit whole numbers and with decimals to hundredths.

Standard:

Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawing and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Task Preparation:
Each student will need a copy of the Student Response Sheet and a pencil.

Stimulus Cards (Drawing or Word Description):
None

Manipulatives/Supplies:
The Student Response Sheet and pencils

Common Core Mathematics Challenge

Number and Operations–Fractions and Base Ten
Grade 5–Field Trip to the Zoo

Cues/Directions:
Distribute student response sheets. Students should be directed to look carefully at each figure. Allow students time to answer.

Instruct students to follow along as you read aloud and say: **Ms. Lee's class is planning a trip to the zoo. They need to buy three kinds of tickets for themselves and their families. Of all the people going, $\frac{2}{3}$ are children, $\frac{1}{4}$ are adults, and $\frac{1}{12}$ are seniors.**

1. Say: **Briana says that the fractions of all the people going should add $\left(\frac{2}{3}+\frac{1}{4}+\frac{1}{12}\right)$ to 1. Is she correct? (TEACHER NOTE:** Students should check the correct box.**) Why or why not? (TEACHER NOTE:** Students should write their answers in the box.**) Find the sum of $\frac{2}{3}+\frac{1}{4}+\frac{1}{12}$. Show how you get your answer. (TEACHER NOTE:** Students should show their work in the box and write their answers on the blank below the box.**) Is your sum greater than 1, equal to 1, or less than 1? (TEACHER NOTE:** Students should only circle one box for their answer.**)**

2. **Of the people going, $\frac{2}{3}$ are children and $\frac{1}{4}$ are adults. What is the difference between these two fractions? Show how you get your answer. (TEACHER NOTE:** Students should show their work in the box and write their answers on the blank below the box.**)**

This is a table of the ticket prices for the zoo. Students should look at the table.

3. **What is the total cost of 2 adult tickets and 1 child ticket? Show how you get your answer. (TEACHER NOTE:** Students should show their work in the box and write their answers on the blank below the box.**) Is $40.00 enough to pay for these 3 tickets? (TEACHER NOTE:** Students should check the correct box.**) If yes, how much change is there from $40.00? If no, how much more money do you need than $40.00? Show how you get your answer. (TEACHER NOTE:** Students' work in this box will depend on which box they checked above. Regardless, students should show their work in the box and write their answers on the blank below the box.**)**

4. **On Monday the price of a child ticket is $7.75 instead of $8.50. How much money would you save buying 1 child ticket on a Monday? Show how you get your answer. (TEACHER NOTE:** Students should show their work in the box and write their answers on the blank below the box.**) How much money would you save buying 2 child tickets on a Monday? Show how you get your answer. (TEACHER NOTE:** There are different ways to answer this question. Regardless of the method students choose, they should show their work in the box and write their answers on the blank below the box.**)**

Common Core Mathematics Challenge

Number and Operations–Fractions and Base Ten
Grade 5–Field Trip to the Zoo

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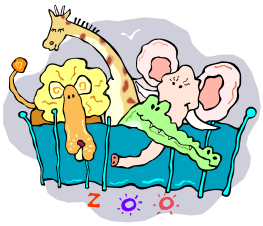
Common Core Mathematics Challenge

Number and Operations–Fractions and Base Ten

Grade 5–Field Trip to the Zoo



Student Response Sheet

Field Trip to the Zoo

Name: _____ **Date:** _____

Ms. Lee's class is planning a trip to the zoo. They need to buy three kinds of tickets for themselves and their families. Of all the people going, $\frac{2}{3}$ are children, $\frac{1}{4}$ are adults, and $\frac{1}{12}$ are seniors.

1. Briana says that the fractions of all the people going <u>should</u> add $\left(\frac{2}{3}+\frac{1}{4}+\frac{1}{12}\right)$ to 1. Is she correct?

Check one: ☐ **yes** ☐ **no**

Why or why not?

Find the sum of $\frac{2}{3}+\frac{1}{4}+\frac{1}{12}$. Show how you get your answer.

Sum: _____

Is your sum $\boxed{>1}$ or $\boxed{=1}$ or $\boxed{<1}$? (Circle one box.)

2. Of all the people going, $\frac{2}{3}$ are children and $\frac{1}{4}$ are adults. What is the difference between these two fractions? Show how you get your answer.

Difference: _____

This is a table of the ticket prices for the zoo.

Zoo Ticket Prices

Child (ages 2–12)	$8.50
Adult (ages 13–61)	$10.50
Senior (ages 62–up)	$9.50

3. What is the total cost of 2 adult tickets and 1 child ticket? Show how you get your answer.

Answer: _____ total cost of these 3 tickets

Is $40.00 enough to pay for these 3 tickets?

Check one: ☐ yes ☐ no

If yes, how much change is there from $40.00?
If no, how much more money do you need than $40.00?
Show how you get your answer

Answer: _____ change or money needed

4. On Monday the price of a child ticket is $7.75 instead of $8.50. How much money would you save buying 1 child ticket on a Monday? Show how you get your answer.

Answer: You would save _____

How much money would you save buying 2 child tickets on a Monday? Show how you get your answer.

Answer: You would save_____

Teaching and Learning Considerations

Task 1:

A) Students may answer in words, pictures, or symbols.

B) Some students may not understand the concept that all the fractional parts of a unit, however divided, must add up to one. Others may be confused because each denominator is different. Working with fraction manipulatives may help.

C) Some students may have the misconception that the sum of two or more fractions is the sum of the numerators "over" the sum of the denominators, e.g., 2/3 + 1/4 + 1/12 = 4/19. Working with fraction manipulatives may help.

D) Some students may have the misconception that adding the same number to the numerator and denominator results in an equivalent fraction, e.g., 2/3 + 9/9 = 11/12 and 1/4 + 8/8 = 9/12. Working with fraction manipulatives may help.

E) If a student says or writes, "I just know," prompt him or her by saying something like "I'm glad you know, but it's important in math to be able to explain your answers so other people can understand what you're thinking." (This applies to the other tasks, as well.)

F) If a student says or writes, "I don't know," say something positive like "Let's start with what you do know about this problem." Students often know more than they think or say, and getting them to vocalize or write about that knowledge is all they need. (This applies to the other tasks, as well.)

Task 2:

A) Be sure that they understand that the word "difference" generally signifies using the subtraction operation when comparing numbers or amounts. Some students may add the fractions.

B) Some students may have the misconception that the difference between two fractions is the difference of the numerators "over" the difference of the denominators, e.g., 2/3 – 1/4 = (2 – 1)/(3 – 4) = 1/ (–1) = –1. Working with fraction manipulatives may help.

C) Some students may have the misconception that adding the same number to the numerator and denominator results in an equivalent fraction, e.g., 2/3 + 9/9 = 11/12 and 1/4 + 8/8 = 9/12. Working with fraction manipulatives may help.

D) For students who correctly obtained two equivalent fractions, some may have the misconception that the difference between two fractions is the difference of the numerators "over" the difference of the denominators, e.g., 8/12 – 3/12 = 5.

Task 3:

A) For the first question, students may add all three ticket prices together, add the two adult prices first and then add one child price, add one adult price and one child price and then add the other adult price, or multiply one adult price by 2 and then add one child price. Others may add all the dollars amounts and cents amounts separately and then add the two subtotals together. Be sure they understand that they can get the correct answer using any of these strategies, though some are more efficient.

B) Some students may have the misconception that numbers are left-justified, without regard to the decimal, when adding decimals, e.g., 10.50 + 8.50 = 95.50. Working with place value and money manipulatives may help.

C) Some students may have the misconception that decimal numbers can be treated like two whole numbers separated by a decimal point, e.g., 10.50 + 10.50 = 20 + 100 or 20.100.

D) Be sure that students understand the connection between numbers written as decimals and their fractional representations, e.g., 8.50 = 8 ones and 50 hundredths or 8×1 and $50 \times \frac{1}{100}$. Working with place value and fraction manipulatives may help.

E) Be sure that students understand that it helps to determine what a "reasonable answer" would be for a problem. Estimation is often a helpful strategy. For the first question, 10.50 + 10.50 + 8.50 can be estimated as 10 + 10 + 8 = 28 or 10 + 10 + 9 = 29. This should raise a red flag for students who obtain answers that are far off.

F) Be sure that students understand the importance of labeling answers in math, when appropriate, to increase their accuracy.

G) For the second question, students may do traditional subtraction or they may add on to get the answer.

H) Some students may have the misconception that in a multi-digit subtraction problem you always subtract the smaller digits from the larger digits, e.g., 40.00 – 29.50 = 29.50. Working with base–10 blocks may help.

I) Be sure that students understand that it helps to determine what a "reasonable answer" would be for a problem. For the second question, 40.00 – 29.50 can be estimated as 40 – 30 = 10.

Task 4:

A) For the first question, students may answer by traditional subtraction or by adding on. Be sure they understand that they can get the correct answer using either strategy, though one may be more efficient.

B) Be sure students understand that "addition" is assumed in the definition of subtraction, so that they can obtain/check their answers by adding, e.g., 8.50 – 7.75 = 0.75 means 8.50 = 7.75 + 0.75.

C) Some students may subtract correctly but then forget the decimal point and get $75 as the answer. Working with place value and money manipulatives may help.

D) For the second question, students may answer by adding or multiplying the savings from the first question, or they may add or multiply the prices of a regular and a reduced child ticket and then subtract. Be sure they understand that they can get the correct answer using any of these strategies, though some are more efficient.

E) Some students may add or multiply correctly but then forget the decimal point and get $150 as the answer. Working with place value and money manipulatives may help.

Name: ANSWER KEY Date: _____

Ms. Lee's class is planning a trip to the zoo. They need to buy three kinds of tickets for themselves and their families. Of all the people going, $\frac{2}{3}$ are children, $\frac{1}{4}$ are adults, and $\frac{1}{12}$ are seniors.

1. Briana says that the fractions of all the people going should add $\left(\frac{2}{3}+\frac{1}{4}+\frac{1}{12}\right)$ to 1. Is she correct?

Check one: [X] yes [ ] no

Why or why not?

ALL PARTS OF A WHOLE WILL ADD TO THE WHOLE.

(ANSWERS MAY VARY)

Find the sum of $\frac{2}{3}+\frac{1}{4}+\frac{1}{12}$. Show how you get your answer.

$\frac{3}{3} = \frac{8}{12}$

$\frac{1}{4} = \frac{3}{12}$

$\frac{8}{12} + \frac{3}{12} + \frac{1}{12} = \frac{12}{12} = 1$

Sum: 1

Is your sum [>1] or [=1] or [<1]? (Circle one box.)

2. Of all the people going, $\frac{2}{3}$ are children and $\frac{1}{4}$ are adults.

What is the difference between these two fractions? Show how you get your answer.

$\frac{2}{3} = \frac{8}{12}$

$-\ \frac{1}{4} = -\frac{3}{12}$

$\frac{5}{12}$

Difference: $\frac{5}{12}$

This is a table of the ticket prices for the zoo.

Zoo Ticket Prices

Child (ages 2–12)	$8.50
Adult (ages 13–61)	$10.50
Senior (ages 62–up)	$9.50

3. What is the total cost of 2 adult tickets and 1 child ticket? Show how you get your answer.

$$10.50 \times 2 = 21.00 \qquad 21.00 + 8.50 = 29.50$$

Answer: $29.50 total cost of these 3 tickets

Is $40.00 enough to pay for these 3 tickets?

Check one: [X] yes [ ] no

If yes, how much change is there from $40.00?
If no, how much more money do you need than $40.00?
Show how you get your answer

$$40.00 - 29.50 = 10.50$$

Answer: $10.50 change or money needed

4. On Monday the price of a child ticket is $7.75 instead of $8.50. How much money would you save buying 1 child ticket on a Monday? Show how you get your answer.

$$\begin{array}{r} 8.50 \\ -\ 7.75 \\ \hline 0.75 \end{array}$$

Answer: You would save $0.75 (OR 75¢)

How much money would you save buying 2 child tickets on a Monday? Show how you get your answer.

$$\begin{array}{r} 8.50 \\ \times\ 2 \\ \hline 17.00 \end{array}$$

$$\begin{array}{r} 17.00 \\ -\ 15.50 \\ \hline 1.50 \end{array}$$

OR

$$\begin{array}{r} 0.75 \\ \times\ 2 \\ \hline 1.50 \end{array}$$

$$\begin{array}{r} 7.75 \\ \times\ 2 \\ \hline 15.50 \end{array}$$

Answer: You would save $1.50

Common Core Mathematics Challenge

Number and Operations–Fractions and Base Ten
Grade 5–Field Trip to the Zoo Rubric

Category	4	3	2	1
Mathematical concepts	**Response shows complete understanding of the mathematical concepts used to solve the problem(s).**	**Response shows substantial understanding of the mathematical concepts used to solve the problem(s).**	**Response shows some understanding of the mathematical concepts needed to solve the problem(s).**	**Response shows very limited understanding of the underlying concepts needed to solve the problem(s), OR the response is not written.**
	Response shows evidence in ALL of the following tasks. **Task 1**. Student shows evidence of understanding the concept that the sum of the fractions that represent the parts of a whole is 1, and shows understanding of how to add fractions with unlike denominators. **Task 2**. Student shows evidence of understanding how to find the difference of two fractions with unlike denominators. **Task 3**. Student shows evidence of understanding how to add and subtract decimal numbers and how to translate from a verbal representation (problem in context) to a numerical representation. **Task 4**. Student shows evidence of understanding how to find the difference of two decimal numbers (in context).	Response shows evidence of understanding most of concepts listed in category 4.	Response shows evidence of basic understanding of adding and subtracting fractions and decimals, but may not fully understand one or more of the concepts of working with fractions with unlike denominators, adding or subtracting decimals with regrouping, or regrouping across zeros when subtracting. (It is acceptable to use alternative strategies that do not require traditional regrouping.)	Response shows evidence of none or one of the basic concepts of adding and subtracting fractions and decimals.

Common Core Mathematics Challenge

Number and Operations–Fractions and Base Ten
Grade 5–Field Trip to the Zoo Rubric

Category	4	3	2	1
Strategy and procedures	**Student typically uses an efficient and effective strategy to solve the problem(s).**	**Student typically uses an effective strategy to solve the problem(s).**	**Student sometimes uses an effective strategy to solve the problem(s), but not consistently.**	**Student rarely uses an effective strategy to solve the problem(s).**
	Response shows evidence in ALL of the following tasks. **Task 1**. Student shows evidence of summing fractions to add to 1, and shows understanding of how to add fractions with unlike denominators. **Task 2**. Student shows evidence of finding the difference of two fractions with unlike denominators. **Task 3**. Student shows evidence of adding and subtracting decimal numbers and how to translate from a verbal representation (problem in context) to a numerical representation. **Task 4**. Student shows evidence of how to find the difference of two decimal numbers (in context).	Response typically uses an effective strategy to answer the tasks, but may use an inefficient strategy in Task 4 to find the amount of money saved on 2 tickets (e.g., finding the cost of 2 regular tickets and the cost of 2 discounted tickets, then finding the difference).	Response uses inefficient or inappropriate strategies, such as counting on, for most tasks in the challenge, but uses more efficient strategies for at least one task.	Response uses only inefficient or inappropriate strategies, such as counting, or does not show evidence of knowing how to solve most tasks in the challenge.

Number and Operations–Fractions and Base Ten
Grade 5–Field Trip to the Zoo Rubric

Category	4	3	2	1
Explanation and communication	**Explanation is detailed and clear; uses appropriate terminology and/or notation.**	**Explanation is clear; uses some appropriate terminology and/or notation.**	**Explanation is a little difficult to understand, but includes critical components; shows little use of appropriate terminology and/or notation.**	**Explanation is difficult to understand, is missing several components, and does not use or include appropriate terminology and/or notation.**
	All requested explanations are provided (can use pictures, numbers, words, or any combination of pictures, numbers, and words). Explanations are sufficiently clear and detailed so as to convey problem-solving method. Explanation correctly uses some appropriate terminology (e.g., adding or addition, sum, difference, subtracting or subtraction) and/or notation (e.g., +, —, =, fraction notation).	Explanations are sufficiently clear, but are less detailed or use less mathematical terminology and/or notation than those in Category 4.	Explanations may lack detail or steps, but include critical components. Little use of appropriate terminology and/or notation; in particular, no evidence of being able to translate verbal representations of addition and/or subtraction to number computations.	Explanations are missing and lack details (e.g., only "I counted" or "I added" or "I subtracted"). Explanations are inaccurate or incorrect.

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Number and Operations–Fractions and Base Ten
Grade 5–Field Trip to the Zoo Rubric

Category	4	3	2	1
Mathematical accuracy	**All or almost all of the steps and solutions have no mathematical errors.**	**Most of the steps and solutions have no mathematical errors.**	**Some of the steps and solutions have no mathematical errors.**	**Few of the steps and solutions have no mathematical errors.**
	Student provides correct answers for ALL of the following tasks. **Task 1**. Student checks the "yes" box, answers 1, and circles "=1" box. **Task 2**. Student answers $\frac{5}{12}$. **Task 3**. Student answers $29.50 in the first blank, checks the "yes" box, and answers $10.50 in the second blank. **Task 4**. Student answers $0.75 in the first blank and $1.50 in the second blank.	Student provides correct answers for only 3 of the tasks described in category 4.	Student provides correct answers for only 2 of the tasks described in category 4.	Student provides a correct answer for only 1 task or none of the tasks described in category 4.

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Number and Operations–Fractions and Base Ten
Grade 5–Field Trip to the Zoo

Scoring Notes Checklist

Task	Check Yes	Category
Task 1		
First box: shows understanding of the concept that the sum of the fractions that represent all the parts of a whole is 1.		Concepts
Second box: shows understanding of addition of fractions with unlike denominators.		Concepts
First box: uses an appropriate strategy to confirm that the sum of the fractions that represent all the parts of a whole is 1.		Strategy
Second box: uses an appropriate strategy to add fractions with unlike denominators.		Strategy
First box: explanation clearly conveys the problem-solving method.		Explanation
Second box: work/explanation clearly conveys the problem-solving method; some terminology (e.g., added) and/or notation (e.g., +, fraction notation) is used appropriately.		Explanation
"Yes" box is checked.		Accuracy
Shows that $\frac{2}{3}+\frac{1}{4}+\frac{1}{12}=1$.		Accuracy
"= 1" box is circled.		Accuracy
Task 2		
Shows understanding of subtraction of fractions with unlike denominators.		Concepts
Uses an appropriate strategy to subtract fractions with unlike denominators.		Strategy
Work/explanation clearly conveys the problem-solving method; some terminology (e.g., subtracted) and/or notation (e.g., – , fraction notation) is used appropriately.		Explanation
Answer is $\frac{5}{12}$.		Accuracy

Task	Check Yes	Category
Task 3		
First box: shows understanding of addition and subtraction of decimals.		Concepts
Second box: shows understanding of translating a verbal representation (problem in context) into a number sentence.		Concepts
First box: uses an appropriate strategy to find the cost of the 3 tickets (e.g., multiplies the cost of an adult ticket by 2 and then adds the cost of 1 child ticket, finds the total cost of 2 adult tickets and 1 child ticket, etc.).		Strategy
Second box: uses an appropriate strategy to find the difference between $40.00 and the cost of the 3 tickets (e.g., using the standard subtraction algorithm, adding up, adding or subtracting by chunks, etc.).		Strategy
First box: work/explanation clearly conveys the problem-solving method; some terminology (e.g., multiplied, added) and/or notation (e.g., × , +) is used appropriately.		Explanation
Second box: work/explanation clearly conveys the problem-solving method; some terminology (e.g., subtraction) and/or notation (e.g., –) is used appropriately.		Explanation
First blank: answer is $29.50.		Accuracy
"Yes" box is checked.		Accuracy
Second blank: answer is $10.50.		Accuracy
Task 4		
Shows understanding of subtraction of decimals in context.		Concepts
First box: uses an appropriate strategy to find the difference between the price of a regular child ticket and a discounted ticket.		Strategy
Second box: adds the result of the first part twice, multiplies the result of the first part by 2, or uses another appropriate strategy.		Strategy
First box: work/explanation clearly conveys the problem-solving method; some terminology (e.g., subtraction) and/or notation (e.g., –) is used appropriately.		Explanation
Second box: work/explanation clearly conveys the problem-solving method; some terminology (e.g., multiplication, addition, subtraction) and/or notation (e.g., × , + , –) is used appropriately.		Explanation
First blank: answer is $0.75.		Accuracy
Second blank: answer is $1.50.		Accuracy

Common Core Mathematics Challenge

Number and Operations–Fractions and Base Ten
Grade 5–Field Trip to the Zoo

The purpose of the Mathematics Challenges is to provide opportunities for students to develop and demonstrate understanding of important mathematical concepts and standards. They include extended responses, open-ended tasks, and tasks that require higher-order thinking skills. Because these types of tasks may be novel for students and they will have varying levels of understanding, the student responses will vary.

The guiding questions below were designed to assist you in analyzing your class' response to the Challenge and determining appropriate next steps for your teaching and learning.

Guiding Questions for Analyzing Student Responses to the Mathematics Challenges

1. When completing the Challenge, what did your students do well? How do you know?

2. When completing the Challenge, what did your students struggle with? How do you know?

3. When your students completed the Challenge, did they implement multiple correct solutions strategies? What insightful approaches to problem solving did you observe?

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4. What, if any, patterns (e.g., common errors/misconceptions) did you observe across your student responses?

5. What questions or concerns did your students have when working through this Challenge or a particular task? Are these things you should address for the class as a whole?

6. What, if any, feedback did you provide to your class? How did you provide it?

7. What did you learn about your students' mathematical understanding based on their responses to this Challenge?