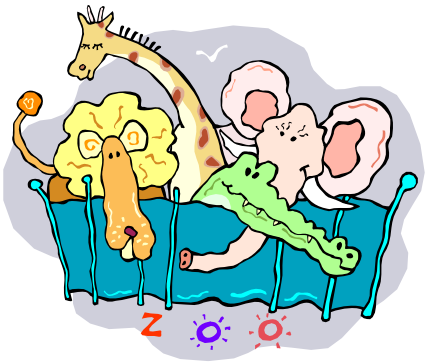
# SITES-M Mathematics Challenge

## Field Trip to the Zoo



**Level:** Grade Three

**Standard:** Number and Operations

**Learning Target:** Focus on Addition and Subtraction

### Grade Level Expectations

**GLE 0306.2.7** Add and subtract fractions with like denominators.

### Checks for Understanding

**0306.2.6** Solve a variety of addition and subtraction story problems, including those with irrelevant information.

### State Performance Indicators

**SPI 0306.2.9** Solve contextual problems involving addition (with and without regrouping) and subtraction (with and without regrouping) of two-and three-digit whole numbers.

SITES-M Mathematics Challenge

# Grade 3–Focus on Addition and Subtraction
# 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.

You will be able to choose which Mathematics Challenge Packet to implement each month, according to the learning needs of your students and your teaching context. 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 (PLC) meeting. Think about your responses to the guiding questions on the Meeting Protocol |
| | Step 3. | Hold your PLC 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 |

SITES-M Mathematics Challenge

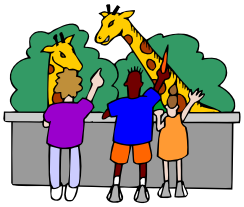
# Grade 3–Focus on Addition and Subtraction
# Field Trip to the Zoo
## Mathematics Challenge Meeting Protocol

Each month, your Professional Learning Community will meet to discuss the implementation of one Mathematics Challenge. In preparation for your monthly meeting, please print and review this month's 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 this month?
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?

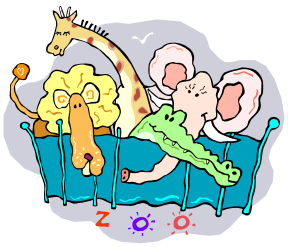
After you have implemented the challenge with your class, be sure to respond to the Guiding Questions on the Analyzing Student Responses Protocol



SITES-M Mathematics Challenge

**Grade 3–Focus on Addition and Subtraction**

**Field Trip to the Zoo**



**Standard:** Number and Operations

**Learning Target:** Focus on Addition and Subtraction

Claims:
Students should understand and be able to explain or demonstrate how to:

- ✓ Solve contextual problems involving addition (with and without regrouping) and subtraction (with and without regrouping) of two-and three-digit whole numbers;
- ✓ Solve a variety of addition and subtraction story problems, including those with irrelevant information;
- ✓ Add and subtract fractions with like denominators.

**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:**
A copy of the student response sheet for each student
Pencils

SITES-M Mathematics Challenge

**Grade 3–Focus on Addition and Subtraction**

**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: **Mr. Johnson's class went to the zoo. His class talked with a zookeeper about the amount of food the animals eat. This is a table of the number of pounds of food eaten each day.** Have students look at the table and make observations.

1. Say: **Use the information in the table. How many more pounds of apples are eaten than pounds of squid? 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.**)**

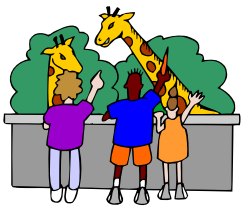
2. **Use the information in the table. How many pounds of biscuits, earthworms, and hay are eaten in all each day? Show how you get your answer. (TEACHER NOTE:** Students should show their work in the box and write their answers on the blank below the box.**) Write a number sentence to tell how you got your answer. (TEACHER NOTE:** Students should write their number sentences on the blank provided.**)**

3. **Each day the snakes eat $\frac{2}{3}$ pound of earthworms. Each day the birds eat $\frac{1}{3}$ pound less earthworms than the snakes eat. Write a number sentence to tell how many pounds of earthworms the birds eat each day. (TEACHER NOTE:** Students should write their number sentences on the blank provided.**)**

4. **Each day the spiders eat $\frac{2}{4}$ pound of crickets and $\frac{1}{4}$ pound of flies. How many pounds of both crickets and flies do the spiders eat each day? 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.**)**

5. **Each day the frogs eat $\frac{2}{4}$ pound of flies and $\frac{3}{4}$ pound of blackworms. How many pounds of both flies and blackworms do the frogs eat? 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.**)**

6. **Each day the animals eat 8 pounds of earthworms and $\frac{1}{2}$ pound of crickets. How many more pounds of earthworms do the animals eat than pounds of crickets? 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.**)**

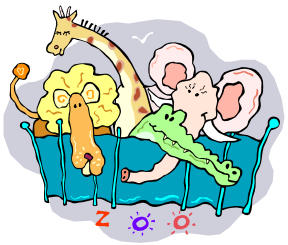


SITES-M Mathematics Challenge

**Grade 3–Focus on Addition and Subtraction**

**Student Response Sheet**

## Field Trip to the Zoo



**Name:** _____ **Date:** _____

**Mr. Johnson's class went to the zoo. His class talked with a zookeeper about the amount of food the animals eat. This is a table of the number of pounds of food eaten each day.**

**Pounds of Food Eaten Each Day**

| Food | Pounds |
|---|---|
| Apples | 505 |
| Bananas | 400 |
| Biscuits | 86 |
| Blackworms | $\frac{3}{4}$ |
| Carrots | 818 |
| Crickets | $\frac{1}{2}$ |
| Earthworms | 8 |
| Flies | $\frac{3}{4}$ |
| Hay | 990 |
| Squid | 176 |

1. **Use the information in the table.**
   **How many more pounds of apples are eaten than pounds of squid? Show how you get your answer.**

**Answer: _____ more pounds of apples than squid**

2. **Use the information in the table.**
   **How many pounds of biscuits, earthworms, and hay are eaten in all each day? Show how you get your answer.**

**Answer: _____ pounds of biscuits, earthworms, and hay eaten in all**

**Write a number sentence to tell how you got your answer.**

**Number Sentence:_____**

**3. Each day the snakes eat $\frac{2}{3}$ pound of earthworms. Each day the birds eat $\frac{1}{3}$ pound <u>less</u> earthworms than the snakes eat.**

**Write a number sentence to tell how many pounds of earthworms the birds eat each day.**

**Number Sentence:_____**

**4. Each day the spiders eat $\frac{2}{4}$ pound of crickets and $\frac{1}{4}$ pound of flies. How many pounds of both crickets and flies do the spiders eat each day? Show how you get your answer.**

**Answer: _____ pounds of both crickets and flies**

**5. Each day the frogs eat $\frac{2}{4}$ pound of flies and $\frac{3}{4}$ pound of blackworms. How many pounds of both flies and blackworms do the frogs eat? Show how you get your answer.**

**Answer: _____ pounds of both flies and blackworms**

**6. Each day the animals eat 8 pounds of earthworms and $\frac{1}{2}$ pound of crickets. How many more pounds of earthworms do the animals eat than pounds of crickets? Show how you get your answer.**

**Answer: _____ more pounds of earthworms than crickets**

**Pounds of Food Eaten Each Day**

| Food | Pounds |
|---|---|
| Apples | 505 |
| Bananas | 400 |
| Biscuits | 86 |
| Blackworms | $\frac{3}{4}$ |
| Carrots | 818 |
| Crickets | $\frac{1}{2}$ |
| Earthworms | 8 |
| Flies | $\frac{3}{4}$ |
| Hay | 990 |
| Squid | 176 |

# Learning and Teaching Considerations

**Task 1:**

**A)** Be sure that students understand that the word "more" generally signifies making a comparison of numbers or amounts. Determining exactly "how many" or "how many more" often requires subtracting one number or amount from the other.

**B)** Students may answer in words or symbols. They may also subtract traditionally, add a constant difference and then subtract, or they may subtract in chunks. Be sure they understand that they can get the correct answer using any of these strategies, though some are more efficient.

**C)** Be sure that students understand that "addition" is assumed in the definition of subtraction, so that they can obtain/check their answers by adding, e.g., 505 – 176 = 329 means 505 = 176 + 329.

**D)** Be sure that students understand that 505 – 176 = 329 is the same as 329 = 505 – 176. Many textbooks and teachers have a tendency to write equations only one way, and so students are confused when they see them written differently. Using a balance scale may help.

**E)** Some students may have the misconception that 505 – 176 is the same as 176 – 505, like addition. Working with manipulatives and number lines may help.

**F)** 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., 505 – 176 = 471. Working with base-10 blocks may help.

**G)** 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 this task, 505 – 176 can be estimated as 500 – 200 = 300 or 500 – 175 = 325. This will raise a red flag for students who obtain 471 as the answer.

**H)** Students often have difficulty translating word problems into mathematical symbols. Remind them first to ask what they know about a problem (WYK– What You Know) and write it down, e.g., apples = 505 pounds; squid = 176 pounds. Next, they should write down what they need to know (NTK– Need to Know), e.g., pounds of apples – pounds of squid = x. (This applies to the other tasks, as well.)

**I)** 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.)

**J)** 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 students understand that the words "in all" generally signify the addition operation.

**B)** Students may answer in words or symbols. They may also add traditionally, add the hundreds, tens, and ones separately and then add the subtotals, or add in chunks. Be sure they understand that they can get the correct answer using any of these strategies, though some are more efficient.

**C)** Be sure that students understand that not only does 990 + 86 + 8 = 1,084, etc. but 1,084 = 990 + 86 + 8, etc. Using a balance scale may help.

**D)** Some students may have the misconception that whole numbers are left-justified for addition, e.g., 990 + 86 + 8 = 2,650. Working with base-10 blocks may help.

**E)** Some students may have the misconception that when adding numbers that requires carrying a ten, hundred, etc., you just write the entire number and continue adding, e.g., 990 + 86 + 8 = 91,714. Working with base-10 blocks may help.

**Task 3:**

**A)** Be sure that students understand that the word "less" generally signifies comparing amounts to find out which is smaller. Determining exactly "how much less" often requires subtracting one amount from the other.

**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 – 1/3 = 1. Working with fraction manipulatives may help.

**Task 4:**

**A)** Students may answer in words, symbols, or pictures. Others may use manipulatives to solve the problem. 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 the sum of two fractions is the sum of the numerators "over" the sum of the denominators, e.g., 2/4 + 1/4 = 3/8. Working with fraction manipulatives may help.

**Task 5:**

**A)** Students may answer in words, symbols, or pictures. Others may use manipulatives to solve the problem. They may leave the answer as an improper fraction or may change it to a mixed number. 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 the sum of two fractions is the sum of the numerators "over" the sum of the denominators, e.g., 2/4 + 3/4 = 5/8. Working with fraction manipulatives may help.

**C)** Some students may have the misconception that improper fractions are impossible, e.g., 5/4. Working with fraction manipulatives may help.

**Task 6:**

**A)** Students may answer in words, symbols, or pictures. They may subtract on a number line, by first converting the whole number to a fraction, or by adding on. Others may need manipulatives to help solve the problem. 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 to convert a whole number to an equivalent fraction, you just place the whole number over the chosen denominator, e.g., 8 = 8/2.

**C)** Be sure that students understand that as you move right (→) on a number line, the numbers increase in value. As you move left (←), the numbers decrease in value.

**D)** Some students may have the misconception that it is impossible to subtract a fraction from a whole number, e.g., 8 – 1/2. Working with fraction manipulatives may help.

Name: ANSWER KEY Date: _____

Mr. Johnson's class went to the zoo. His class talked with a zookeeper about the amount of food the animals eat. This is a table of the number of pounds of food eaten each day.

**Pounds of Food Eaten Each Day**

| Food | Pounds |
|---|---|
| Apples | 505 |
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| Blackworms | $\frac{3}{4}$ |
| Carrots | 818 |
| Crickets | $\frac{1}{2}$ |
| Earthworms | 8 |
| Flies | $\frac{3}{4}$ |
| Hay | 990 |
| Squid | 176 |

1. Use the information in the table.
How many more pounds of apples are eaten than pounds of squid? Show how you get your answer.

$$\begin{array}{r} 505 \\ -\ 176 \\ \hline 329 \end{array}$$

Answer: 329 more pounds of apples than squid

2. Use the information in the table.
How many pounds of biscuits, earthworms, and hay are eaten in all each day? Show how you get your answer.

$$\begin{array}{r} 86 \\ 8 \\ +\ 990 \\ \hline 1084 \end{array}$$

Answer: 1,084 pounds of biscuits, earthworms, and hay eaten in all

Write a number sentence to tell how you got your answer.

Number Sentence: 86 + 8 + 990 = 1084

NOTE: ORDER OF ADDITION IS NOT IMPORTANT.

3. Each day the snakes eat $\frac{2}{3}$ pound of earthworms. Each day the birds eat $\frac{1}{3}$ pound less earthworms than the snakes eat.

Write a number sentence to tell how many pounds of earthworms the birds eat each day.

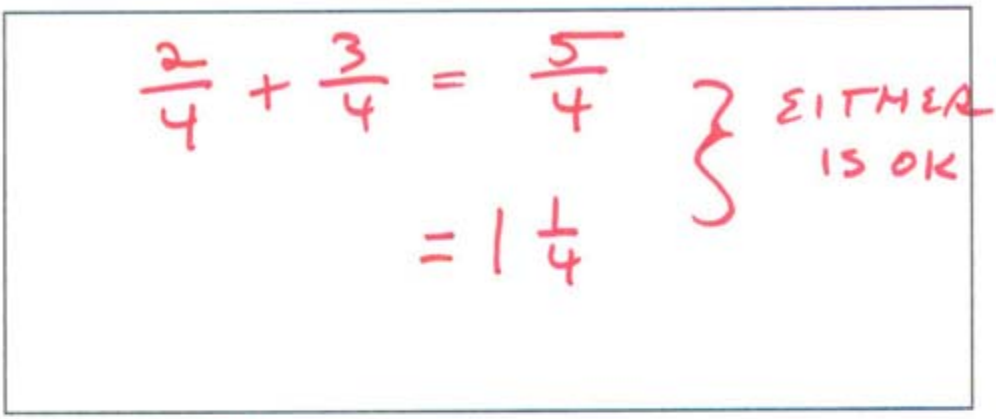
Number Sentence: $\frac{2}{3} - \frac{1}{3} = \frac{1}{3}$

4. Each day the spiders eat $\frac{2}{4}$ pound of crickets and $\frac{1}{4}$ pound of flies. How many pounds of both crickets and flies do the spiders eat each day? Show how you get your answer.

$\frac{2}{4} + \frac{1}{4} = \frac{3}{4}$

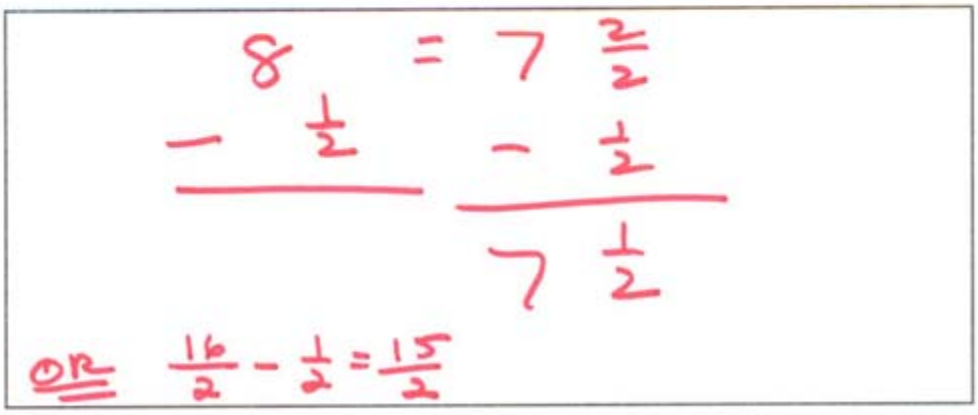
Answer: $\frac{3}{4}$ pounds of both crickets and flies

5. Each day the frogs eat $\frac{2}{4}$ pound of flies and $\frac{3}{4}$ pound of blackworms. How many pounds of both flies and blackworms do the frogs eat? Show how you get your answer.




Answer: $\frac{5}{4}$ OR $1\frac{1}{4}$ pounds of both flies and blackworms

6. Each day the animals eat 8 pounds of earthworms and $\frac{1}{2}$ pound of crickets. How many more pounds of earthworms do the animals eat than pounds of crickets? Show how you get your answer.




Answer: $7\frac{1}{2}$ more pounds of earthworms than crickets

OR $\frac{15}{2}$

SITES-M Mathematics Challenge

**Grade 3–Focus on Addition and Subtraction**
**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.<br>**Task 1**. Student shows evidence of understanding verbal description of context involving finding a difference.<br>**Task 2**. Student shows evidence of understanding verbal description of context involving finding a sum and translating from verbal representation to numerical representation.<br>**Task 3**. Student shows evidence of understanding of translating from verbal representation of addition of fractions to numerical representation.<br>**Task 4**. Student shows evidence of understanding verbal description of context involving addition of fractions.<br>**Task 5**. Student shows evidence of understanding verbal description of context involving addition of fractions with sums greater than 1.<br>**Task 6**. Student shows evidence of reasoning to find difference between an integer and a fraction. | Response shows evidence of understanding of most of the concepts listed under category 4. For example, student may show evidence of understanding of all concepts except reasoning required for Task 6. | Response shows evidence of basic understanding of verbal descriptions of contexts involving finding sums and differences. | Response shows evidence of none or one of the basic concepts of understanding verbal descriptions of addition or subtraction. |

SITES-M Mathematics Challenge

**Grade 3–Focus on Addition and Subtraction**
**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.<br>**Task 1**. Student shows evidence of use of appropriate strategy to find difference between 3-digit numbers (standard algorithm with regrouping, adding the same number to or subtracting it from both terms to make easier problem, subtracting in chunks, adding up in chunks, subtracting on a number line, etc.).<br>**Task 2**. Student shows evidence of use appropriate strategy to find sum of 3 numbers, including multidigit numbers (standard algorithm, including recall of addition facts, adding by place value, adding in chunks, adding on a number line, etc.).<br>**Task 3**. Student shows evidence of use of an appropriate strategy to subtract fractions with like denominators.<br>**Task 4**. Student shows evidence of use of an appropriate strategy to add fractions with like denominators.<br>**Task 5**. Student shows evidence of use of an appropriate strategy to add fractions with like denominators where sum is greater than 1.<br>**Task 6**. Student shows evidence of reasoning to find difference between an integer and a fraction (pictorial representation, adding up, subtracting on a number line, subtracting in chunks, etc.). | Student uses a less efficient strategy, such as counting on or drawing a diagram, in some tasks, but predominantly uses more efficient strategies. Response may not include a correct problem-solving strategy for Task 6. | Student uses inefficient strategies, such as counting on or drawing diagrams, for most tasks in the challenge, but uses more efficient strategies for at least one task. | Student uses only inefficient strategies, such as counting all or drawing diagrams, or does not show evidence of knowing how to solve most tasks in the challenge. |

# Grade 3–Focus on Addition and Subtraction
# 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 diagrams, numbers, words, or any combination of diagrams, numbers, and words).<br><br>Explanations are sufficiently clear and detailed to convey problem-solving method. Explanation correctly uses some appropriate terminology (e.g., adding or addition, 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. There is little use of appropriate terminology and/or notation; in particular, no evidence of being able to translate verbal descriptions of addition and/or subtraction to number sentences. | Explanations are missing, lacking details (e.g., only "I counted" or "I added" or "I subtracted"), inaccurate, or incorrect. |

# Grade 3–Focus on Addition and Subtraction
# 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 at least 5 of the following tasks.<br>**Task 1**. Student answers 329.<br>**Task 2**. Student answers 1,084 and writes the number sentence 86 + 8 + 990 = 1,084.<br>**Task 3**. Student writes the number sentence $\frac{2}{3} - \frac{1}{3} = \frac{1}{3}$.<br>**Task 4**. Student answers $\frac{3}{4}$.<br>**Task 5**. Student answers $\frac{5}{4}$ or $1\frac{1}{4}$.<br>**Task 6**. Student answers $7\frac{1}{2}$. | Student provides correct answers for only 4 of the tasks described in category 4. | Student provides correct answers for only 2 or 3 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. |

## Scoring Notes Checklist

| Task | Check Yes | Category |
|---|---|---|
| | | |
| **Task 1** | | |
| Shows understanding of verbal description of context by finding a difference. | | Concepts |
| Uses an appropriate strategy to subtract 3-digit numbers (standard algorithm with regrouping, adding the same number to or subtracting it from both terms to make an easier problem, subtracting in chunks, adding up, using a number line, etc.). | | Strategy |
| Work/explanation clearly conveys the problem-solving method; some appropriate terminology (e.g., subtracted) and/or notation (e.g., – ) is used correctly. | | Explanation |
| Answer is 329. | | Accuracy |
| **Task 2** | | |
| Box: shows understanding of verbal description of context by finding a sum. | | Concepts |
| Number sentence blank: shows understanding of translating from verbal representation to numerical representation. | | Concepts |
| Uses an appropriate strategy to add 3 numbers (standard algorithm including recall of addition facts, adding by place value, adding in chunks, using a number line, etc.). | | Strategy |
| Work/explanation clearly conveys the problem-solving method; some appropriate terminology (e.g., added) and/or notation (e.g., + ) is used correctly. | | Explanation |
| Numerical answer: 1,084 | | Accuracy |
| Number sentence: 86 + 8 + 990 = 1,084 | | Accuracy |
| **Task 3** | | |
| Shows understanding of translating from verbal representation of addition of fractions to numerical representation. | | Concept |
| Uses an appropriate strategy to subtract fractions with like denominators. | | Strategy |
| Number sentence: $\frac{2}{3} - \frac{1}{3} = \frac{1}{3}$ | | Accuracy |

| Task | Check Yes | Category |
|---|---|---|
| | | |
| **Task 4** | | |
| Shows understanding of verbal description of context by adding fractions. | | Concepts |
| Uses an appropriate strategy to add fractions with like denominators. | | Strategy |
| Work/explanation clearly conveys the problem-solving method; some appropriate terminology (e.g., added) and/or notation (e.g., + , fraction notation) is used correctly. | | Explanation |
| Answer is $\frac{3}{4}$. | | Accuracy |
| **Task 5** | | |
| Shows understanding of verbal description of context by adding fractions whose sum is greater than 1. | | Concepts |
| Uses an appropriate strategy to add fractions with like denominators whose sum is greater than 1. | | Strategy |
| Work/explanation clearly conveys the problem-solving method; some appropriate terminology (e.g., added) and/or notation (e.g., + , fraction notation) is used correctly. | | Explanation |
| Answer is $\frac{5}{4}$ or $1\frac{1}{4}$. | | Accuracy |
| **Task 6** | | |
| Uses reasoning to find the difference between an integer and a fraction. | | Concepts |
| Uses reasoning to find the difference between an integer and a fraction (e.g., drawing a picture, adding up, using a number line, subtracting in chunks, etc.). | | Strategy |
| Work/explanation clearly conveys the problem-solving method; some appropriate terminology (e.g., subtracted) and/or notation (e.g., – , fraction notation) is used correctly. | | Explanation |
| Answer is $7\frac{1}{2}$. | | Accuracy |

# SITES-M Mathematics Challenge
# Focus on Addition and Subtraction Grade 3

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. Responses to these questions are for your reflection and documentation and will not be collected.

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?

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?

**Reminders:**

1) After you have completed the Challenge with your class and responded to these Guiding Questions for Analyzing Student Responses, please complete the Challenge Feedback Log. A link to this Log is e-mailed to you each month. Responses will be used to improve the Challenges and to provide recommendations for teachers implementing the Challenges in future years.

2) Please provide copies of all student work to the Assessment Coordinator.