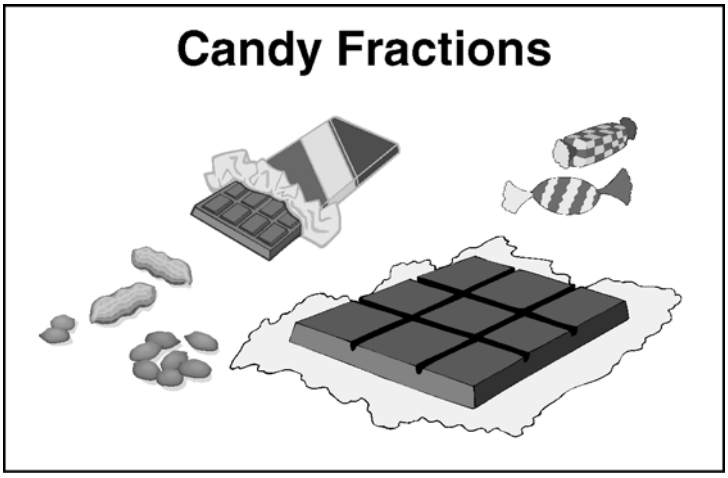
SITES-M Mathematics Challenge



Level: Grade Two

Standard: Mathematical Processes

Learning Target: Focus on Fractions

Checks for Understanding

0206.1.8	Use concrete models or pictures to show whether a fraction is less than a half, more than a half, or equal to a half.
0206.1.9	Match the spoken, written, concrete, and pictorial representations of halves, thirds, and fourths.

SITES-M Mathematics Challenge

Grade 2–Focus on Fractions
Candy Fractions

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 2–Focus on Fractions
Candy Fractions

Mathematics Challenge Meeting Protocol

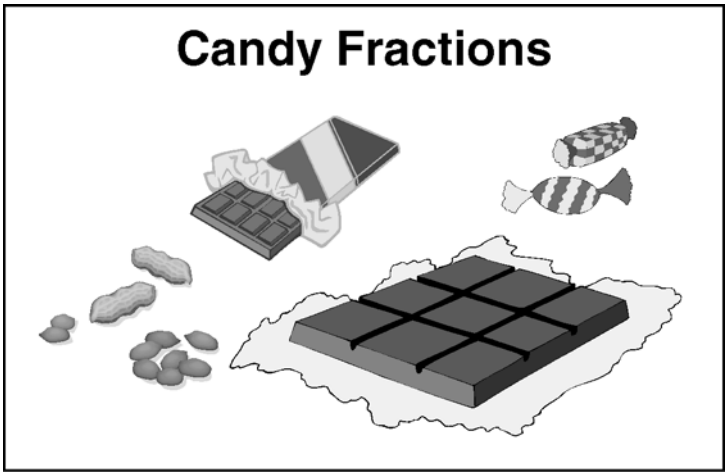
Each month, your Professional Learning Community will meet to discuss the implementation of one Mathematics Challenge. In preparation for your monthly meeting, please print and review this month's Mathematics Challenge, solve all tasks within the Challenge, and think about the guiding questions below. 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 2–Focus on Fractions



Standard: Mathematical Processes

Learning Target: Focus on Fractions

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

- ✓ Use concrete models or pictures to show whether a fraction is less than a half, more than a half, or equal to a half;
- ✓ Match the spoken, written, concrete, and pictorial representations of halves, thirds, and fourths.

Task Preparation:
Each student will need a copy of the Student Response Sheet and the Cut-Out Candy Strips sheet. The cut-out sheet can be printed separately. Students can cut out the strips before the challenge is administered.

Stimulus Cards (Drawing or Word Description):
Cut-Out Candy Strips sheets

Manipulatives/Supplies:
Pencils
Scissors

SITES-M Mathematics Challenge

Grade 2–Focus on Fractions

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.

Mr. Diaz and his students went on a class trip to the Candy Shop. They saw different candies being made. The Candy Shop makes three types of candy strips shown below. Cut out the 3 strips on the candy strip cut-outs on the last page. You can fold and use these strips to help you answer questions 1, 2, and 3. (TEACHER NOTE: Students should look at the pictured below. Have them cut out the strips on the last page. You could have this done beforehand to save time during the challenge.**)**

1. **The Candy Shop makes combination candy strips. Look at the strip below. It is part plain and part sprinkles. Is the part of the strip that is sprinkles more than half, less than half, or equal to half of the strip? (Teacher's Note:** Have students check the correct box.**) How do you know? (Teacher's Note:** Have students fill in the text box.**) Here is another candy strip that is part peanuts, part plain, and part sprinkles. Is the part of the strip that is peanuts more than half, less than half, or equal to half of the strip? (Teacher's Note:** Have students check the correct box.**) How do you know? (Teacher's Note:** Have students fill in the text box.**)**

2. **Look at another combination strip below. What fraction of the strip has sprinkles? (Teacher's Note:** Have students write the correct number in each of box of the fraction.**) How do you know? (Teacher's Note:** Have students fill in the text box.**) What fraction of the strip has peanuts? (Teacher's Note:** Have students write the correct number in each of box of the fraction.**) How do you know? (Teacher's Note:** Have students fill in the text box.**)**

3. **Look at one more strip below. One student says that the strip is $\frac{1}{2}$ sprinkles, $\frac{1}{2}$ plain, and $\frac{1}{2}$ peanuts. Is the student right or wrong? (Teacher's Note:** Have students check the correct box.**) How do you know? (Teacher's Note:** Have students fill in the text box.**)**

4. **The Candy Shop sells chocolate bars. The bars can be broken into smaller parts to share with friends. One bar looks like the picture below. How many smaller parts are in 1 bar of chocolate? (Teacher's Note:** Have students write the correct number on the line.**) Tanya, Marcus, and Sheng want to share 1 bar so that each of them gets $\frac{1}{3}$ of the bar. The pictures on the next page show different ways to break the bar into 3 parts. Which bars have been broken into thirds? Check "Yes" if the bar is broken into thirds. Check "No" if the bar is not broken in thirds. (Teacher's Note:** Have students check the correct "Yes" or "No" box for each figure.**) How can you tell if the parts are $\frac{1}{3}$ of the bar? (Teacher's Note:** Have students fill in the text box.**)**

SITES-M Mathematics Challenge

Grade 2–Focus on Fractions

TSM20002

SITES-M Mathematics Challenge

Grade 2–Focus on Fractions

Student Response Sheet

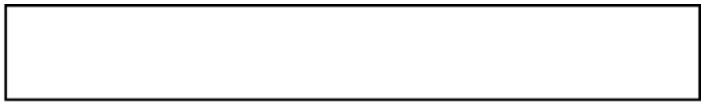
Candy Fractions

Name: _____ **Date:** _____

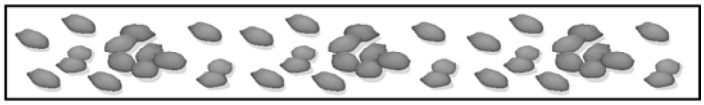
Mr. Diaz and his students went on a class trip to the Candy Shop. They saw different candies being made.

The Candy Shop makes three types of candy strips shown below.

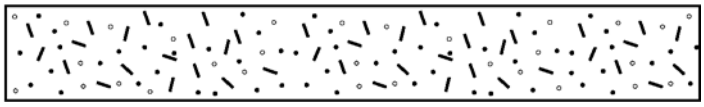
Plain



Peanuts



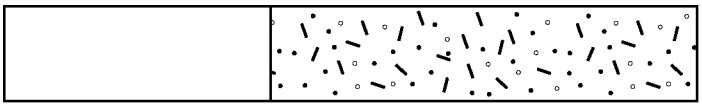
Sprinkles



Cut out the 3 strips on the candy strip cut-outs on the last page. You can fold and use these strips to help you answer questions 1, 2, and 3.

1. The Candy Shop makes combination candy strips.

a. Look at the strip below. It is part plain and part sprinkles.



Is the part of the strip that is sprinkles more than half, less than half, or equal to half of the strip?

Check one:

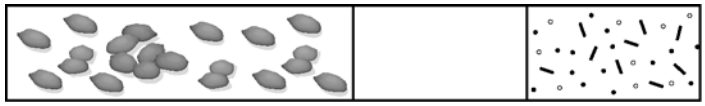
More than half ☐

Less than half ☐

Equal to half ☐

How do you know?

b. Here is another candy strip that is part peanuts, part plain, and part sprinkles.



Is the part of the strip that is peanuts more than half, less than half, or equal to half of the strip?

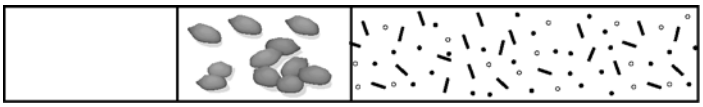
Check one: **More than half** ☐

Less than half ☐

Equal to half ☐

How do you know?

2. Look at another combination strip below.



What fraction of the strip has sprinkles? $\frac{\square}{\square}$

How do you know?

What fraction of the strip has peanuts? $\frac{\square}{\square}$

How do you know?

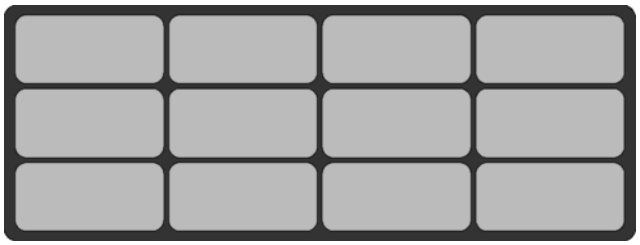
3. Look at one more strip below. One student says that the strip is $\frac{1}{2}$ sprinkles, $\frac{1}{2}$ plain, and $\frac{1}{2}$ peanuts.

Is the student right or wrong?

Check one: ☐ **Right** ☐ **Wrong**

How do you know?

4. The Candy Shop sells chocolate bars. The bars can be broken into smaller parts to share with friends. One bar looks like the picture below.

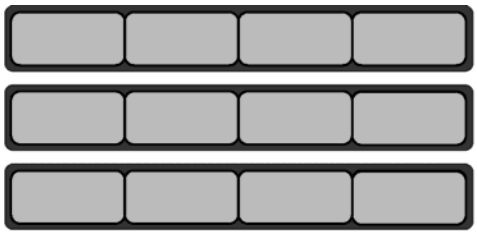


a. How many smaller parts are in 1 bar of chocolate?

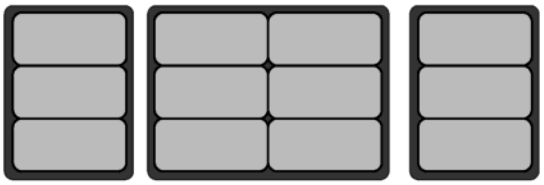
_____

b. Tanya, Marcus, and Sheng want to share 1 bar so that each of them gets $\frac{1}{3}$ of the bar. The pictures on the next page show different ways to break the bar into 3 parts. Which bars have been broken into thirds?

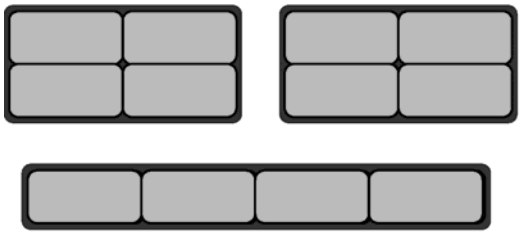
Check "Yes" if the bar is broken into thirds. Check "No" if the bar is not broken in thirds.



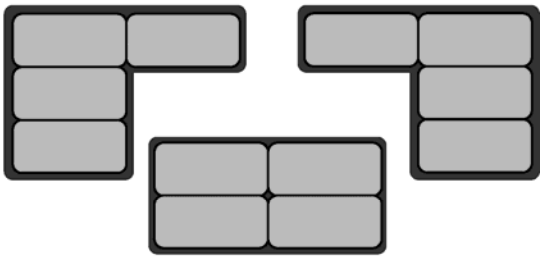
☐ Yes ☐ No



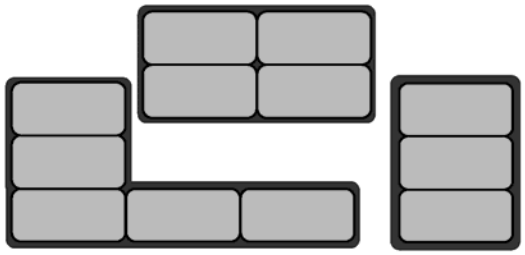
☐ Yes ☐ No



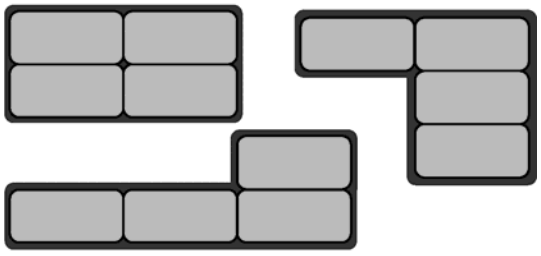
☐ Yes ☐ No



☐ Yes ☐ No



☐ Yes ☐ No



☐ Yes ☐ No

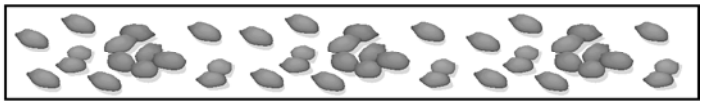
c. How can you tell if the parts are $\frac{1}{3}$ of the bar?

Cut-Out Candy Strips

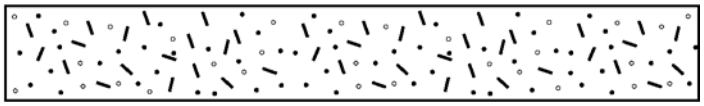
Cut out the 3 strips below. You can fold the strips to help you decide about the fractions in questions 1, 2, and 3.

Plain

Peanuts



Sprinkles



Learning and Teaching Considerations

Task 1:

A) Be sure that students understand that fractional parts are equal shares or equal-sized portions of a whole or unit. In this case, the unit is an object.

B) 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."

C) 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 encouraging them to vocalize or write about that knowledge is all they need.

D) The teacher can encourage students to use manipulatives that represent a linear model, such as Cuisenaire rods, to explore fractions.

Task 2:

A) Be sure that students understand that fractional parts have special names that tell how many parts of that size are needed to make the whole. The denominator of a fraction indicates by what number the whole has been divided in order to produce the type of part under consideration. The numerator of a fraction counts or tells how many of the fractional parts (of the type indicated by the denominator) are under consideration.

B) Students may fold the cut-out strips in half and in half again.

C) Students may draw lines on the picture to divide the strip into halves and quarters.

Task 3:

A) Be sure that students understand the equality, in size or area, of the parts.

B) Be sure students understand that the more fractional parts used to make the unit, the smaller the parts. For example, thirds are smaller than halves.

C) Students may have the misconception that there are more than two halves in one unit.

D) Students may have the misconception that folding the strip into three equal pieces would produce three halves.

Task 4:

A) Be sure that students understand that fractional parts are equal shares or equal-sized portions of a whole or unit. The unit is counted as 1.

B) The teacher can encourage students to use manipulatives that represent a rectangular area model, such as a geoboard, to explore fractions.

C) Students may divide the twelve pieces by three or distribute the twelve pieces equally to three people.

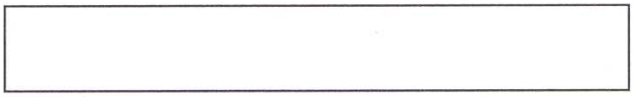
D) Students may have the misconception that the only way to solve the problem is by folding the chocolate bar into three equal pieces and therefore eliminate some of the correct choices.

Name: ANSWER KEY Date: _____

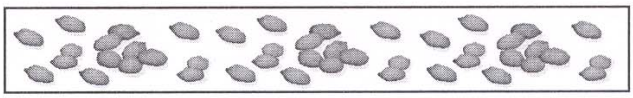
Mr. Diaz and his students went on a class trip to the Candy Shop. They saw different candies being made.

The Candy Shop makes three types of candy strips shown below.

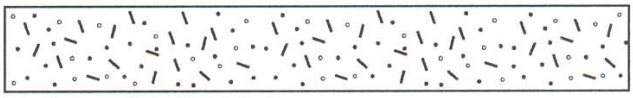
Plain



Peanuts



Sprinkles



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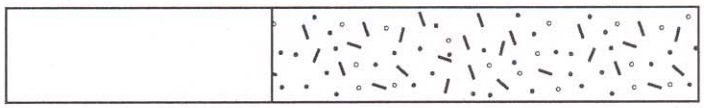
1. The Candy Shop makes combination candy strips.

   a. Look at the strip below. It is part plain and part sprinkles.



Is the part of the strip that is sprinkles more than half, less than half, or equal to half of the strip?

Check one:

- More than half [X]
- Less than half [ ]
- Equal to half [ ]

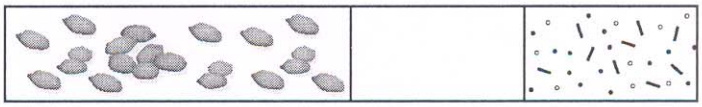
How do you know?

ANSWERS CAN VARY.

STRIP IS NOT DIVIDED INTO 2 EQUAL PARTS. THE AREA WITH SPRINKLES IS GREATER THAN THE AREA WITHOUT.

STRIP IS DIVIDED INTO 2 PARTS OF UNEQUAL SIZE.

b. Here is another candy strip that is part peanuts, part plain, and part sprinkles.



Is the part of the strip that is peanuts more than half, less than half, or equal to half of the strip?

Check one:

- **More than half** ☐
- **Less than half** ☐
- **Equal to half** ☒

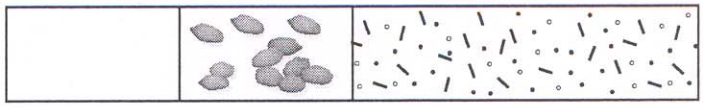
How do you know?

WHEN FOLDED IN HALF, PEANUTS COVERS ONE PART OF THE STRIP.

OR STRIP IS DIVIDED INTO 2 EQUAL PARTS & ONE PART IS PEANUTS. THE OTHER PART IS DIVIDED IN HALF AGAIN.

ANSWERS CAN VARY.

2. Look at another combination strip below.



What fraction of the strip has sprinkles? $\frac{1}{2}$

How do you know?

BY FOLDING, YOU CAN SEE THAT THE STRIP IS DIVIDED INTO 2 EQUAL PARTS — ONE PART WITH SPRINKLES & ONE PART WITH NO SPRINKLES.

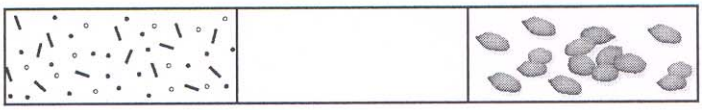
What fraction of the strip has peanuts? $\frac{1}{4}$

How do you know?

THE HALF WITHOUT SPRINKLES IS DIVIDED AGAIN INTO 2 EQUAL PARTS, ONE WITH PEANUTS & ONE WITHOUT. HALF OF A HALF IS $\frac{1}{4}$.

NOTE: STUDENT MAY ALSO SAY STRIP WAS FOLDED INTO 4 EQUAL PARTS.

3. Look at one more strip below. One student says that the strip is $\frac{1}{2}$ sprinkles, $\frac{1}{2}$ plain, and $\frac{1}{2}$ peanuts.



Is the student right or wrong?

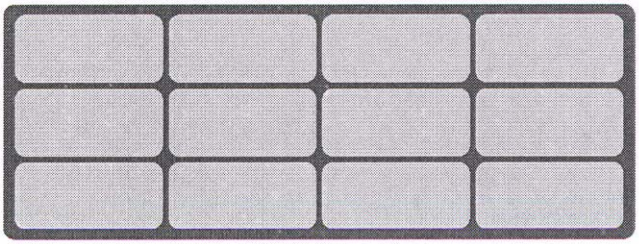
Check one: ☐ Right ☒ Wrong

How do you know?

STRIP IS DIVIDED IN 3 PARTS OF EQUAL SIZE. SO EACH PART IS $\frac{1}{3}$ NOT $\frac{1}{2}$.

STUDENT MAY ALSO SAY THAT ALL PARTS ADD TO THE WHOLE. $\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$ ADD TO MORE THAN THE WHOLE. SO EACH PART CAN NOT BE $\frac{1}{2}$.

4. The Candy Shop sells chocolate bars. The bars can be broken into smaller parts to share with friends. One bar looks like the picture below.



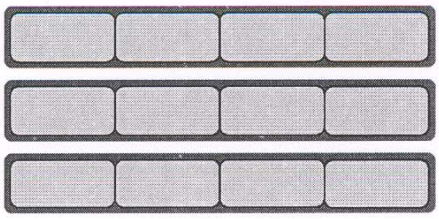
a. How many smaller parts are in 1 bar of chocolate?

12

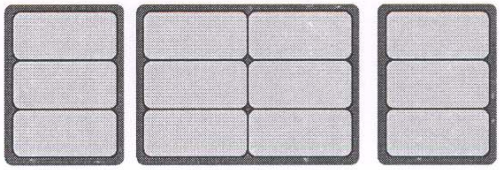
b. Tanya, Marcus, and Sheng want to share 1 bar so that each of them gets $\frac{1}{3}$ of the bar. The pictures on the next page show different ways to break the bar into 3 parts.

Which bars have been broken into thirds?

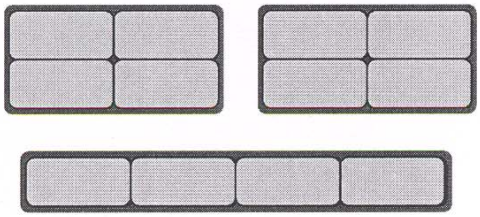
Check "Yes" if the bar is broken into thirds. Check "No" if the bar is not broken in thirds.



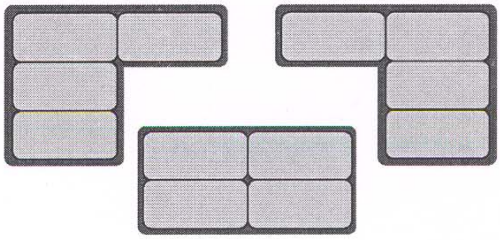
☒ Yes ☐ No



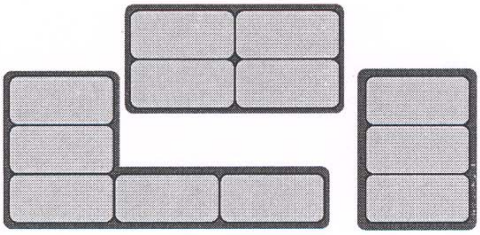
☐ Yes ☒ No



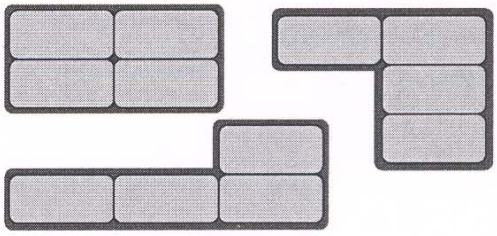
☒ Yes ☐ No



☒ Yes ☐ No

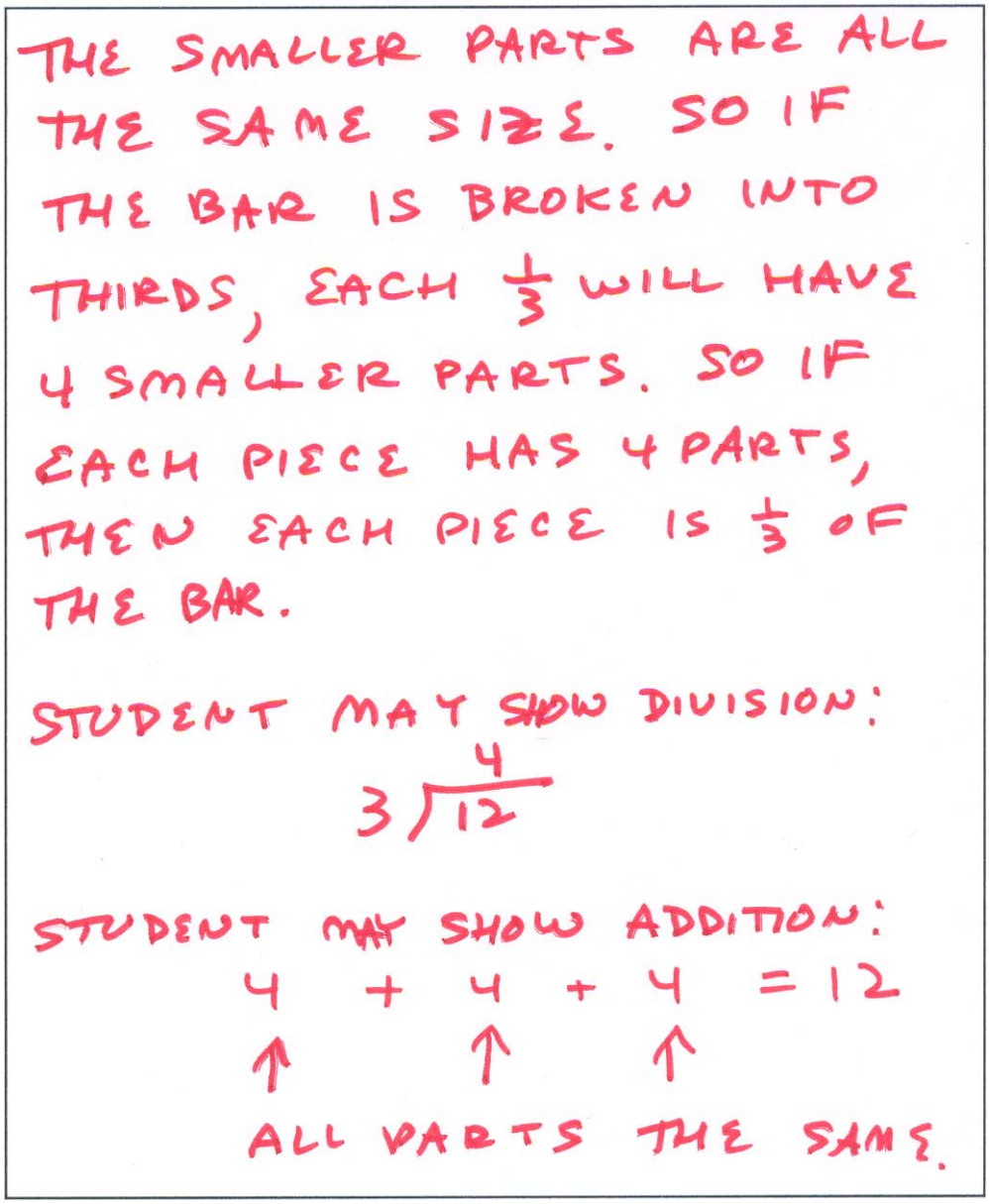


☐ Yes ☒ No



☒ Yes ☐ No

c. How can you tell if the parts are $\frac{1}{3}$ of the bar?



SITES-M Mathematics Challenge

Grade 2–Focus on Fractions
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**. In part (a) student indicates that the sprinkles part is more than half and explains why. In part (b) student indicates that the peanuts part is equal to half and explains why. **Task 2**. Student indicates that 1/2 of the strip has sprinkles and explains why. Student indicates that 1/4 of the strip has peanuts and explains why. **Task 3**. Student answers "wrong" and explains why the 3 parts cannot each be 1/2. **Task 4**. Students answers 12 in part (a) and answers part (b), as shown on answer sheet. In part (c) student is able to explain how to tell which bars have been divided into thirds.	Response shows evidence in only 3 of the tasks described in category 4.	Response shows evidence in only 2 of the tasks described in category 4.	Response shows evidence in 1 or fewer of the tasks described in category 4.

SITES-M Mathematics Challenge

Grade 2–Focus on Fractions
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**. In parts (a) and (b), student may show evidence of folding the cut-out strips in half. Student may also show evidence of putting lines on the drawing to divide the strip in half visually. **Task 2**. Student may show evidence of folding the cut-out strips in half and in half again. Student may also show evidence of putting lines on the drawing to divide the strip into halves and quarters. **Task 3**. Student may show evidence of folding cut-out strips into thirds. Student may also show evidence of drawing lines to divide strip into halves, quarters, or thirds. **Task 4**. Look for evidence of pencil marks to indicate counting of individual pieces with parts has taken place. Student may also indicate dividing 12 by 3 somewhere on the paper.	Response shows evidence in only 3 of the tasks described in category 4.	Response shows evidence in only 2 of the tasks described in category 4.	Response shows evidence in 1 or fewer of the tasks described in category 4.

SITES-M Mathematics Challenge

Grade 2–Focus on Fractions
Rubric

CATEGORY	4	3	2	1
Explanation/ 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.**
	Response shows evidence in ALL of the following tasks. **Task 1**. In part (a) student explains that the strip is divided into two parts that are not equal in size. The part with the sprinkles is larger than the part without, so the part with the sprinkles must be greater than half. In part (b) student explains that strip is divided into two parts that are equal in size. One part has peanuts and the other part does not. It is not necessary to describe the part without peanuts, although this part has been divided in half again. Student may explain that strip is divided as half, quarter, quarter. **Task 2**. Student explains that strip is divided into two parts of equal size. One part has sprinkles and the other part does not. However, student must address the part without sprinkles as being divided again into two equal parts, one part with peanuts. Student may say that strip is divided as quarter, quarter, half. **Task 3**. Student explains that strip has been divided into 3 parts of equal size, so each part is 1/3, not 1/2. Student may also refer to all parts adding to a whole, that is, 1/2 + 1/2 + 1/2 is more than a whole. **Task 4**. Student must explain that each part contains 4 of the smaller sections.	Response shows evidence in ALL explanations described in category 4, but may lack detail. For example, student does not refer to parts being equal in size when dividing in half, quarters, or thirds.	Response shows evidence in only 2 or 3 explanations described in category 4.	Response shows evidence in 1 or fewer explanations described in category 4.

SITES-M Mathematics Challenge

Grade 2–Focus on Fractions
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 indicates more than half and nothing else in part (a) and equal to half and nothing else in part (b). **Task 2**. Student answers 1/2 and 1/4, as shown on answer sheet. **Task 3**. Student indicates statement is wrong. **Task 4**. Student answers 12 in part (a) and completes part (b), as shown on answer sheet.	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 correct answers for 1 or fewer of the tasks described in category 4.

Scoring notes checklist

Task	Check Yes	Category
Task 1		
In part (a) student indicates that the sprinkles part is more than half and explains why. In part (b) student indicates that the peanuts part is equal to half and explains why.		Concept
In parts (a) and (b), student may show evidence of folding the cut-out strips in half. Student may also show evidence of putting lines on the drawing to divide the strip in half visually.		Strategy
In part (a) student explains that the strip is divided into two parts that are not equal in size. The part with the sprinkles is larger than the part without, so the part with the sprinkles must be greater than half. In part (b) student explains that strip is divided into two parts that are equal in size. One part has peanuts and the other part does not. It is not necessary to describe the part without peanuts, although this part has been divided in half again. Student may explain that strip is divided as half, quarter, quarter.		Explanation
Student indicates more than half and nothing else in part (a) and equal to half and nothing else in part (b).		Accuracy
Task 2		
Student indicates that 1/2 of the strip has sprinkles and explains why. Student indicates that 1/4 of the strip has peanuts and explains why.		Concept
Student may show evidence of folding the cut-out strips in half and in half again. Student may also show evidence of putting lines on the drawing to divide the strip into halves and quarters.		Strategy
Student explains that strip is divided into two parts of equal size. One part has sprinkles and the other part does not. However, student must address the part without sprinkles as being divided again into two equal parts, one part with peanuts. Student may say that strip is divided as quarter, quarter, half.		Explanation
Student answers 1/2 and 1/4, as shown on answer sheet.		Accuracy
Task 3		
Student answers “wrong” and explains why the 3 parts cannot each be 1/2.		Concept
Student may show evidence of folding cut-out strips into thirds. Student may also show evidence of drawing lines to divide strip into halves, quarters, or thirds.		Strategy
Student explains that strip has been divided into 3 parts of equal size, so each part is 1/3, not 1/2. Student may also refer to all parts adding to a whole, that is, 1/2 + 1/2 + 1/2 is more than a whole.		Explanation
Student indicates statement is wrong.		Accuracy

Task 4		
Students answers 12 in part (a) and answers part (b), as shown on answer sheet. In part (c) student is able to explain how to tell which bars have been divided into thirds.		Concept
Look for evidence of pencil marks to indicate counting of individual pieces with parts has taken place. Student may also indicate dividing 12 by 3 somewhere on the paper.		Strategy
Student must explain in some manner that each part must contain 4 of the smaller sections to be divided into thirds.		Explanation
Student answers 12 in part (a) and completes part (b), as shown on answer sheet.		Accuracy

SITES-M Mathematics Challenge

Grade 2–Focus on Fractions

Analyzing Student Responses Protocol

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.