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Key Concept

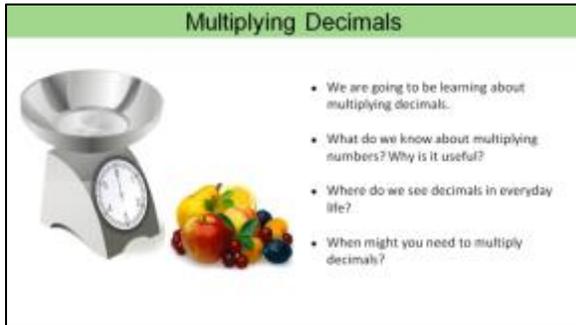
The multiplication algorithm and principles of place value extend to the multiplication of decimals.

Learning Objective

In this unit, students are working on multiplication of decimals. The objective for this opening conversation is to anchor student learning in a real world application. In this unit launcher, students will make connections and discuss how to multiply decimals. Students will be setting a foundation for a 3-part Real World Investigation, *Sarah's Smoothies*, which will unfold part by part over the course of this unit of study.

Unit Launcher: Class Discussion – 20 to 30 minutes

The teacher is facilitating a classroom discussion to create a context for learning about multiplication of decimals and to set the stage for a 3-part investigation called *Sarah's Smoothies*. The screens below present a screen-by-screen orientation to the conversation.



Screen 1 – Using the sticky notes, allow students to make connections about what they know about decimals and multiplying numbers and how it may apply to multiplying decimals.



Screen 2 – This screen sets the stage for the Real World Investigation. Students will discuss their favorite smoothies and the ingredients that are used to make these smoothies. They will then discuss how decimals may be used when measuring fruits and vegetables to make smoothies.



Screen 3 – This screen presents a brief overview of the Real World Investigation, *Sarah's Smoothies*. Students will be engaged in creating recipes for smoothies and determining how much of each ingredient is needed to make small and large cups of smoothies.

The KWL Chart

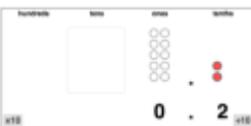
The KWL Chart is presented as part of the unit launcher to offer an optional classroom technique designed to anchor instruction. The purpose for the chart is for the classroom community to record what they already know that provides background knowledge for the unit of study; what they want to learn during the unit of study; and what they learned as they look back on a completed unit of study.

Complete using a large piece of paper and marking pen. Then post in the classroom for reference throughout the unit.

K	W	L
What we know that might help us solve this investigation SAMPLE ANSWERS: 1. When we write decimals, we place a decimal point after the whole number. 2. We know how to read numbers that contain decimals. 3. When we add and subtract decimals, we must line up the decimal points.	What we want to learn so we can solve the investigation SAMPLE ANSWERS: 1. Do you line up the decimals when you multiply decimals? 2. Where is the decimal placed in the product when multiplying decimals? 3. What kinds of problems require multiplication of decimals?	What we have learned that will help us solve the investigation

Screen 4 – This screen introduces the KWL chart. You may choose to skip this screen and just complete the chart on a separate sheet of paper. The sticky notes will act as a guide to fill in the chart.

Learning About Multiplying Decimals



- We will learn about multiplying decimals.
- Understanding how to multiply decimals will help us in planning a smoothie stand.
- We will work with models, like the pictures on this screen.

Screen 5 – In the final screen of the launcher, students are given an opportunity to share what they are excited to learn about in this unit.

Sarah's Data (Part 1)

Learning Objective

Students will apply previous learning about multiplying decimals by ten, one-hundred, or one-thousand in order to complete a data table and to solve a real world problem using appropriate strategies.

Introducing the Investigation: Class Discussion – 7 minutes

The teacher facilitates a student dialogue to introduce the Real World Investigation. Sarah is opening a smoothie stand and is preparing to hand out samples of her smoothies. Students will determine how much of each ingredient is needed to make 100 and 1000 sample cups of each smoothie.

Sarah's Smoothies

Smoothie Ingredients
Berry Delight
Strawberries
Raspberries
Blackberries
Watermelon
Heaven
Watermelon
Kiwi
Lime
Sunshine
Oranges
Pineapple
Banana



Screen 1 – Use the sticky notes as a guide to introduce the prompt for part 1. Students will discuss their favorite fruit smoothies and then discuss the information in the table about the fruit smoothies that Sarah is making for her smoothie stand.

Sarah's Smoothies



Smoothie Ingredients	Ounces of Fruit in a Sample Cup (8 oz.)
Berry Delight	
Strawberries	2.8
Raspberries	3.3
Blackberries	1.9
Watermelon	
Heaven	
Watermelon	6.5
Kiwi	1.3
Lime	0.2
Sunshine	
Oranges	4.4
Pineapple	2.7
Banana	0.9

Screen 2 – Students will analyze the data table to distinguish that decimals are used when measuring the fruit and to determine the size of the sample cup. They will compare the total number of ounces of fruit for each smoothie to the size of the sample cup to see that they are related (both are 8 oz.)

Sarah's Smoothies

Smoothie Ingredients	Ounces of Fruit in a Sample Cup (8 oz.)	Ounces of Fruit Needed to Make 100 Cups	Ounces of Fruit Needed to Make 1000 Cups
Berry Delight			
Strawberries	2.8		
Raspberries	3.3		
Blackberries	1.9		
Watermelon			
Heaven			
Watermelon	6.5		
Kiwi	1.3		
Lime	0.2		
Sunshine			
Oranges	4.4		
Pineapple	2.7		
Banana	0.9		



Screen 3 – This screen leads students to determine how to calculate how many ounces of each fruit is needed to make 100 and 1000 sample cups of each smoothie.

← 4 of 5 → ×

Sarah must order the strawberries by the pound. Who can explain how you made this conversion and how many pounds she will need to order?

The next question encourages students to identify how they converted the number of ounces of strawberries to the number of pounds.

← 5 of 5 → ×

What do you notice about the amount of fruit needed for 100 cups and 1000 cups? How is this related to multiplying by 10 and place value?

The last question offers students the chance to reflect on their work and make connections to what they know about multiplying by a tens number and place value.

Create Some Data (Part 2)

Learning Objective

Students will apply previous learning about multiplying decimals in order to complete a data table and to solve a real world problem using appropriate strategies.

Introducing the Investigation: Class Discussion – 7 minutes

The teacher facilitates a student dialogue to introduce the Real World Investigation. Sarah will be selling small and large cups of fruit and veggie smoothies. Students will be determining how

many ounces of each ingredient is needed to make a small and large cup based on the size of the sample cup.

Sarah's Smoothies

Sarah's smoothie stand is a success! She would like to expand and offer fruit and veggie smoothies.



Smoothie Ingredients	
Green Smoothie	
Green Grapes	
Spinach	
Powerhouse Smoothie	
Kale	
Blueberries	
High Energy Smoothie	
Spinach	
Cucumber	

Screen 1 – This screen introduces the prompt. Read the text on the screen together. Students will discuss the ingredients that Sarah is using in her smoothies and they will brainstorm additional ingredients that can be added to each smoothie.

Sarah's Smoothies



Smoothie Ingredients	Ounces of Fruit/Veggie in a Sample Cup (8 oz.)
Green Smoothie	
Green Grapes	
Spinach	1.3
Powerhouse Smoothie	
Kale	
Blueberries	4.4
High Energy Smoothie	
Spinach	0.9
Kale	

Screen 2 – This screen guides students through thinking about how to determine the number of ounces for each ingredient in the sample cup. Students must remember that the ingredients must total 8 oz, the size of the sample cup.

Sarah's Smoothies

Smoothie Ingredients	Ounces of Fruit/Veggie in a Sample Cup (8 oz.)	Ounces of Fruit/Veggie in a Small Cup (16 oz.)	Ounces of Fruit/Veggie in a Large Cup (24 oz.)
Green Smoothie			
Green Grapes			
Spinach	1.3		
Powerhouse Smoothie			
Kale			
Blueberries	4.4		
High Energy Smoothie			
Spinach	0.9		
Kale			



Screen 3 – On this screen, students will identify the size of the small and large cups and describe how these sizes relate to the sample cup. This relationship helps students to understand how multiplication is used to complete the table.

Completing the Investigation: Student Work Using Printout – 15 minutes

Begin working on the problem. Be prepared to share your solution.

Sarah's fruit smoothies have been really successful so she decides to offer fruit and veggie smoothies in two sizes. The small cup will be twice the size of the sample cup and the large cups will be 2.5 times the size of the sample cup. Help Sarah determine the amount of fruit and vegetables she will need for each cup.

- For each smoothie, determine the last ingredient and the amount of each ingredient needed for a sample-sized cup.
- How many ounces of each ingredient will be needed to make a small-sized cup and a large-sized cup for each smoothie?
- Sarah is tracking sales of small and large cups for a week to make predictions for ordering ingredients. She estimates that 1000 small cups and 100 large cups of each smoothie were sold per week. At this rate, how many ounces of spinach need to be ordered for the next week? How many ounces of Kale will need to be ordered?

Smoothie Ingredients	Ounces of Fruit/Veggie in a Sample Cup (8 oz.)	Ounces of Fruit/Veggie in a Small Cup (16 oz.)	Ounces of Fruit/Veggie in a Large Cup (20 oz.)
Green Smoothie			
Green Grapes			
Spinach	1.3		
Powerhouse Smoothie			
Kale			
Blueberries	4.4		
High Energy Smoothie			
Spinach	0.9		
Kale			

Screen 4 – Hand out the printed copy of the problem. Students can work individually, cooperatively, or collaboratively. Having students work in groups will allow students to engage in math discourse.

Debriefing on the Investigation: Class Discussion – 8 minutes

Use the sticky notes to guide a discussion about the Real World Investigation in order to summarize student learning.

← 2 of 5 → ✕
Explain how you determined the amount of each ingredient used in the smoothies.

This question encourages students to explain how they determined the amount of each ingredient in the smoothies. Encourage students to relate this information to the size of the sample cup.

← 3 of 5 → ✕
How did you calculate the number of ounces of fruits/veggies needed for the small and large cups?

This question allows students to summarize how they calculated the number of ounces needed for small and large cups.

← 4 of 5 → ✕
If Sarah sold 1000 small cups and 100 large cups per week, how many ounces of spinach will she need per week? How many ounces of Kale will need to be ordered? Explain how you determined your answer.

The next question encourages students to use the data in their table to calculate how much spinach and kale will need to be ordered per week. Encourage students to thoroughly explain their answers.

← 4 of 5 → ✕
If Sarah sold 1000 small cups and 100 large cups per week, how many ounces of spinach will she need per week? How many ounces of Kale will need to be ordered? Explain how you determined your answer.

The last question solicits students to continue utilizing the data in their table to make calculations. Students should thoroughly explain their calculations.

Completing the Investigation: Student Work Using Printout – 20 minutes

Begin working on the problem. Be prepared to share your solution.

You've decided to start your own smoothie stand in your neighborhood. You will offer three types of smoothies in sample-sized, small-sized, and large-sized cups.

- What kinds of smoothies will you make? Determine the name and ingredients you will use for each smoothie. Write them in the data table.
- Determine the number of ounces for the sample-sized cup, small cup, and large cup. (Choose cup sizes that will require multiplication of decimals.)
- Determine the amount of each ingredient you need for a sample-sized cup. How many ounces of each ingredient are needed to make a small cup and a large cup of each smoothie? (Students' chosen sizes must include decimal values.)
- Choose one of your smoothies to be the "Smoothie of the Day". If you sell 1000 small cups and 100 large cups of this smoothie, how many ounces of each ingredient will be needed?

Smoothie ingredients	Ounces of ingredients in a Sample Cup (____ oz)	Ounces of ingredients in a Small Cup (____ oz)	Ounces of ingredients in a Large Cup (____ oz)

Screen 4 – Hand out the printed copy of the problem. Students can work individually, cooperatively, or collaboratively. Having students work in groups will allow students to engage in math discourse.

Debriefing on the Investigation: Class Discussion – 5 minutes

Use the sticky notes to guide a discussion about the Real World Investigation in order to summarize student learning.

← 1 of 5 →

Let's begin by having a few students explain how you determined the number of ounces in the sample, small, and large cups?

The first question allows students to recall how they determined the number of ounces in each cup. Focus on how students used decimals to calculate the number of ounces.

← 2 of 5 →

Were the cup sizes shared reasonable? Why or why not?

This next question allows students to reflect on their answers and determine the reasonableness of their answers.

← 3 of 5 →

Share your "Smoothie of the Day". Explain how you decided how many ounces of each ingredient is needed if you sell 100 small cups and 1000 large cups.

The third question encourages students to share their best smoothie creation and explain how they calculated the number of ounces of each ingredient needed to make 100 small cups or 1000 large cups.

← 4 of 5 →

Who would like to share how multiplying decimals was useful in completing this table?

The fourth question allows students to reflect on their learning and interpret how multiplying decimals is useful in solving problems.

5 of 5

Think about your smoothies and the smoothies that were shared today. Which would you like to try? Which ones do you think will be the best sellers?

The last question allows students to make a personal connection to the real world investigation.

The Rubric and the KWL Chart

Let's evaluate our work.						
	1-Admitted Problem Solver	2-Proficient Problem Solver	3-Emerging Problem Solver	4-Beginning Problem Solver	Student score	Teacher note
Reasonably understanding of the Big Idea	My solution shows that I have a basic understanding of the Big Idea for this unit. I answered all reflection questions with 3-4 brief explanations.	My solution shows that I have an understanding of the Big Idea for this unit. I answered the reflection questions with some explanations.	My solution shows that I have a good understanding of the Big Idea for this unit. I answered the reflection questions with an explanation.	My solution does not show an understanding of the Big Idea for this unit. I did not answer the reflection questions.		
Ability to read and understand all parts of the problem. I was able to complete the problem with little to no help from others.I stayed focused on the task.	I read and understood all parts of the problem. I was able to complete the problem with little to no help from others. I stayed focused on the task.	I read and understood most of the problem. I was able to complete most of the problem with little help from others. I mostly stayed focused on the task.	I had some difficulty understanding the problem. I completed the problem with help from others on most of the problem. I had other things to do.	I did not read and understand the problem. I did not do the task to solve the problem. I did not stay on task and finish my work.		
Ability to plan and complete many parts of the problem.	My calculations are all of high quality, correct. My answer makes sense. I completed all parts of the problem.	My calculations are mostly correct. My answer makes sense. I completed all parts of the problem.	My calculations have a few mistakes. My answer does not all make sense. I completed most of the problem.	My calculations have many mistakes. My answer does not make sense. I did not complete many parts of the problem.		
Ability to generate math strategies on my own. I used appropriate models or tools to help me solve the problem.	I used a variety of math strategies on my own. I used appropriate models or tools to help me solve the problem.	I used a few math strategies on my own. I used appropriate models or tools to help me solve the problem.	I did not generate math strategies. The models or tools I chose were not clear to me.	I did not use math strategies, models, or tools to solve my problem.		
Ability to explain and justify the solution. I answered all questions from others and provided explanations. My answer was correct.	I explained and justified my solution. I answered all questions from others and provided explanations. My answer was correct.	I explained and justified parts of my solution. I answered some questions from others and provided explanations. My answer is not totally correct. Only a few mistakes.	I mostly explain and justify my solution, but my explanations were unclear or incomplete and somewhat unconvincing. I had trouble answering questions from others.	I did not or could not explain my solution. I could not answer questions from others.		

The rubric is designed to provide the teacher and the students with a meaningful evaluation tool. It can be applied to groups of students (in cooperative or collaborative learning environments) or individuals.

K	W	L
What we know that might help us solve this investigation.	What we want to learn so we can solve the investigation.	What we have learned that will help us solve the investigation.
<p>SAMPLE ANSWERS:</p> <p>1. When we write decimals, we place a decimal point after the whole number.</p> <p>2. We know how to read numbers that contain decimals.</p> <p>3. When we add and subtract decimals, we must line up the decimal points.</p>	<p>SAMPLE ANSWERS:</p> <p>1. Do you line up the decimals when you multiply decimals?</p> <p>2. Where is the decimal placed in the product when multiplying decimals?</p> <p>3. What kinds of problems require multiplication of decimals?</p>	

If the class began this unit with a KWL chart, this is a good time to complete the L section by making a list of what students have learned.

Sarah's Smoothies: Sarah's Data (Part 1)

Sarah has decided to open a smoothie stand and will offer free samples on the first two days. She has created three different smoothie recipes to sample.

- The first day, Sarah predicts she will give away 100 samples of each fruit smoothie. How many ounces of each fruit will she need the first day?
- The second day, Sarah predicts she will give away 1000 samples of each fruit smoothie. How many ounces of each fruit will she need the second day?
- Sarah is purchasing strawberries for the first two days. How many ounces of strawberries must she order? Strawberries are ordered by the pound. There are 16 oz in a pound. How many pounds of strawberries must Sarah order?

Smoothie Ingredients	Ounces of Fruit in a Sample Cup (8 oz.)	Ounces of Fruit Needed for 100 Samples	Ounces of Fruit Needed for 1000 Samples
Berry Delight			
<i>Strawberries</i>	2.8		
<i>Raspberries</i>	3.3		
<i>Blackberries</i>	1.9		
Watermelon Heaven			
<i>Watermelon</i>	6.5		
<i>Kiwi</i>	1.3		
<i>Lime</i>	0.2		
Sunshine			
<i>Oranges</i>	4.4		
<i>Pineapple</i>	2.7		
<i>Banana</i>	0.9		

Sarah's Smoothies: Create Some Data (Part 2)

Sarah's fruit smoothies have been really successful so she decides to offer fruit and veggie smoothies in two sizes. The small cup will be twice the size of the sample cup and the large cups will be 2.5 times the size of the sample cup. Help Sarah determine the amount of fruit and vegetables she will need for each cup.

- For each smoothie, determine the last ingredient and the amount of each ingredient needed for a sample-sized cup.
- How many ounces of each ingredient will be needed to make a small-sized cup and a large-sized cup for each smoothie?
- Sarah is tracking sales of small and large cups for a week to make predictions for ordering ingredients. She estimates that 1000 small cups and 100 large cups of each smoothie were sold per week. At this rate, how many ounces of spinach need to be ordered for the next week? How many ounces of kale will need to be ordered?

Smoothie Ingredients	Ounces of Fruit/Veggies In a Sample Cup (8 oz.)	Ounces of Fruit/Veggies In a Small Cup (16 oz.)	Ounces of Fruit/Veggies In a Large Cup (20 oz.)
Green Smoothie			
<i>Green Grapes</i>			
<i>Spinach</i>	1.3		
Powerhouse Smoothie			
<i>Kale</i>			
<i>Blueberries</i>	4.4		
High Energy Smoothie			
<i>Spinach</i>			
<i>Cucumber</i>	0.9		

Sarah's Smoothies: Your Data (Part 3)

You've decided to start your own smoothie stand in your neighborhood. You will offer three types of smoothies in sample-sized, small-sized, and large-sized cups.

- What kinds of smoothies will you make? Determine the name and ingredients you will use for each smoothie. Write them in the data table.
- Determine the number of ounces for the sample-sized cup, small cup, and large cup. (Choose cup sizes that will require multiplication of decimals)
- Determine the amount of each ingredient you need for a sample-sized cup. How many ounces of each ingredient are needed to make a small cup and a large cup of each smoothie? (Amounts chosen must include decimal values.)

Choose one of your smoothies to be the "Smoothie of the Day". If you sell 1000 small cups and 100 large cups of this smoothie, how many ounces of each ingredient will be needed?

Smoothie Ingredients	Ounces of Ingredients in a Sample Cup (____ oz.)	Ounces of Ingredients in a Small Cup (____ oz.)	Ounces of Ingredients in a Large Cup (____ oz.)

Questions for Reflection:

- Is the amount of ounces you chose for the cups reasonable? Why or why not?
- How did you determine the ingredients and the amount of each ingredient to include in your smoothies?
- Explain how multiplying decimals was useful in completing this table.



Student Name: _____

Multiplication and Division

Big Idea 6: Multiplication of Whole Numbers and Decimals

Real World Investigation: Sarah's Smoothies

	3- Advanced Problem Solver	2- Proficient Problem Solver	1- Emerging Problem Solver	0-Beginning Problem Solver	Student score	Teacher score
Demonstrates understanding of the Big Idea	<input type="checkbox"/> My solution shows that I have a deep understanding of the Big Idea for this unit. <input type="checkbox"/> I answered all reflection questions with detailed explanations.	<input type="checkbox"/> My solution shows that I have an understanding of the Big Idea for this unit. <input type="checkbox"/> I answered the reflection questions with some explanation.	<input type="checkbox"/> My solution shows that I have some understanding of the Big Idea for this unit. <input type="checkbox"/> I answered the reflection questions with no explanation.	<input type="checkbox"/> My solution does not show understanding of the Big Idea for this unit. <input type="checkbox"/> I did not answer the reflection questions.		
Makes sense of problems and perseveres in solving them.	<input type="checkbox"/> I read and understood all parts of the problem. <input type="checkbox"/> I was able to complete the problem with little to no help from others. <input type="checkbox"/> I stayed focused on the task.	<input type="checkbox"/> I read and understood most of the problem. <input type="checkbox"/> I was able to complete most of the problem with little help from others. <input type="checkbox"/> I mostly stayed focused on the task.	<input type="checkbox"/> I had some difficulty understanding the problem. <input type="checkbox"/> I completed the problem with help from others on most of the problem. <input type="checkbox"/> I was often off task.	<input type="checkbox"/> I did not read and understand the problem. <input type="checkbox"/> I did not ask for help to solve the problem. <input type="checkbox"/> I did not stay on task and finish my work.		
Attends to precision	<input type="checkbox"/> My calculations are all, if not mostly, correct. <input type="checkbox"/> My answers make sense. <input type="checkbox"/> I completed all parts of the problem.	<input type="checkbox"/> My calculations are mostly correct. <input type="checkbox"/> My answers make sense. <input type="checkbox"/> I completed all parts of the problem.	<input type="checkbox"/> My calculations have a few mistakes. <input type="checkbox"/> My answers do not all make sense. <input type="checkbox"/> I completed most of the problem.	<input type="checkbox"/> My calculations have many mistakes. <input type="checkbox"/> My answers do not make sense. <input type="checkbox"/> I did not complete many parts of the problem.		
Utilizes appropriate strategies, models and tools	<input type="checkbox"/> I chose appropriate math strategies on my own. <input type="checkbox"/> I used appropriate models or tools to help me solve the problem.	<input type="checkbox"/> I asked for help in choosing appropriate math strategies. <input type="checkbox"/> I used appropriate models or tools to help me solve the problem.	<input type="checkbox"/> I did not choose appropriate math strategies. <input type="checkbox"/> The models or tools I chose were not appropriate.	<input type="checkbox"/> I did not use math strategies, models, or tools to solve this problem.		
Constructs viable arguments	<input type="checkbox"/> I explained and justified my solutions. <input type="checkbox"/> I answered all questions from others with detailed explanations. <input type="checkbox"/> My answers were correct.	<input type="checkbox"/> I explained and justified parts of my solutions. <input type="checkbox"/> I answered some questions from others with detailed explanations. <input type="checkbox"/> My answers were mostly correct. Only a few mistakes.	<input type="checkbox"/> I tried to explain and justify my solutions, but my explanations were unclear or contained some mistakes. <input type="checkbox"/> I had trouble answering questions from others.	<input type="checkbox"/> I did not or could not explain my solutions. <input type="checkbox"/> I could not answer questions from others.		

Sarah's Data (Part 1) Solution

Check for Understanding

Ask students to share their work on the investigation. Ask students to explain their reasoning and to share any models they created to support their answer. Correct answers are shown in the table below.

Smoothie Ingredients	Ounces of Fruit in a Sample Cup (8 oz.)	Ounces of Fruit Needed for 100 Samples	Ounces of Fruit Needed for 1000 Samples
Berry Delight			
<i>Strawberries</i>	2.8	280	2800
<i>Raspberries</i>	3.3	330	3300
<i>Blackberries</i>	1.9	190	1900
Watermelon Heaven			
<i>Watermelon</i>	6.5	650	6500
<i>Kiwi</i>	1.3	130	1300
<i>Lime</i>	0.2	20	200
Sunshine			
<i>Oranges</i>	4.4	440	4400
<i>Pineapple</i>	2.7	270	2700
<i>Banana</i>	0.9	90	900

Indicators of Understanding

- ✓ Creates an organized plan for solving a multi-step problem.
- ✓ Solves a multi-step story problem involving the use of multiple operations.
- ✓ Explains thinking when asked to justify a method or solution.
- ✓ Selects appropriate tools and/or strategies to solve the problem.

Create Some Data (Part 2) Solution

Check for Understanding

Ask students to share their work on the investigation. Ask students to explain their reasoning. Explore the strategies students used.

Answers will vary, but the three ingredients must total 8 oz for the sample cup. The amounts chosen for the sample cup should then be multiplied by 2 to find the amount in the small 16 oz cup and multiplied by 2.5 to find the amount in the large 20 oz. cup.

Smoothie Ingredients	Ounces of Fruit/Veggies In a Sample Cup (8 oz.)	Ounces of Fruit/Veggies In a Small Cup (16 oz.)	Ounces of Fruit/Veggies In a Large Cup (20 oz.)
Green Smoothie			
<i>Green Grapes</i>			
<i>Spinach</i>	1.3		
Powerhouse Smoothie			
<i>Kale</i>			
<i>Blueberries</i>	4.4		
High Energy Smoothie			
<i>Spinach</i>			
<i>Cucumber</i>	0.9		

Indicators of Understanding

- ✓ Creates an organized plan for solving a multi-step problem.
- ✓ Solves a multi-step story problem involving the use of multiple operations.
- ✓ Explains thinking when asked to justify a method or solution.
- ✓ Selects appropriate tools and/or strategies to model and solve the problem.

Your Data (Part 3) Solution

Check for Understanding

Ask students to share their work on the investigation. Ask students to explain their reasoning. It is important that student responses demonstrate an understanding of the Big Idea. (The multiplication algorithm and principles of place value extend to the multiplication of decimals.)

Smoothie Ingredients	Ounces of Ingredients in a Sample Cup (___ oz.)	Ounces of Ingredients in a Small Cup (___ oz.)	Ounces of Ingredients in a Large Cup (___ oz.)

Extend/Modify

Choose one of your smoothies. Estimate or research how much each ingredient costs per ounce. (Students may need to research how much each ingredient costs per pound and use a calculator to divide the cost per pound by 16.) Determine how much it will cost to make a small smoothie. Set a reasonable selling price for your smoothie that will enable you to make a profit.

Indicators of Understanding (As assessed by the rubric)

- ✓ Demonstrates an understanding that the multiplication algorithm and principles of place value extend to the multiplication of decimals.
- ✓ Makes sense of problems and perseveres in solving them.
- ✓ Attends to precision.
- ✓ Utilizes appropriate strategies, models and tools.
- ✓ Constructs viable arguments.