

Contents

Understanding Fractions	Real World Investigations	Student Handouts	Solutions
Unit Launcher	South Shore's Data (Part 1) Create Some Data (Part 2) Your Data (Part 3)	South Shore's Data (Part 1) Create Some Data (Part 2) Your Data (Part 3) Rubric	South Shore's Data (Part 1) Create Some Data (Part 2) Your Data (Part 3)

Key Concept

Rewriting fractions so they have the same denominator is a procedure used when adding and subtracting fractions, including improper fractions and mixed numbers.

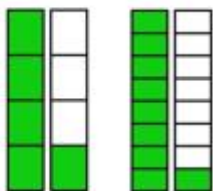
Learning Objective

In this unit, students are working on adding and subtracting fractions greater than 1 with uncommon denominators. The objective for this opening conversation is to anchor student learning in real world application. In this unit launcher, students will make connections and discuss after-school clubs, specifically a running club. Students will be setting a foundation for a 3-part Real World Investigation, *South Shore Running Club*, 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 finding equivalent fractions and set the stage for a 3-part investigation called *South Shore Running Club*. The screens below present a screen-by-screen orientation to the conversation.

Equivalent Fractions



- We are going to be learning about adding and subtracting fractions greater than 1 with uncommon denominators.
- What do we already know about adding/subtracting proper fractions with uncommon denominators?
- What two fractions are represented on the model to the left? How do you think we could add them together?

Screen 1 – Using the sticky notes, guide the students to open a conversation about equivalent fractions. They make connections to what they already know about adding and subtracting fractions with uncommon denominators and extending that knowledge to the model on the screen.

After-School Clubs



Screen 2 – This screen sets the stage for the Real World Investigation. Students discuss various after-school clubs they belong to. They then discuss running club and how fractions greater than 1 might be used here.

South Shore's Running Club



Screen 3 – This screen presents a brief overview of the Real World Investigation, *South Shore Running Club*. Students will be engaging in problems about a running club and distances run each week.

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	What we want to learn so we can solve the investigation	What we have learned that will help us solve the investigation
SAMPLE ANSWERS: 1) Add fractions with common denominators by combining the numerators. 2) Subtract fractions with common denominators by finding the difference between the numerators. 3) Fractions with uncommon denominators can be rewritten as fractions with common denominators.	SAMPLE ANSWERS: 1) In adding/subtracting fractions with uncommon denominators similar to adding fractions with common denominators? 2) Do we need to change the denominators?	

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.

Add/Subtract Fractions Greater than 1 with Uncommon Denominators



- We will learn how to add and subtract fractions greater than 1 with uncommon denominators.
- We will use the "one" fraction to find equivalents with common denominators for improper fractions and mixed numbers.
- We will use models like the one pictured to help us solve these problems.

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.

South Shore's Data (Part 1)

Learning Objective

Students will apply previous learning adding and subtracting proper fractions with uncommon denominators to complete a data table 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. The students at South Shore have a running club. Students will determine the total number of miles run by each member of the club and see if they met their goal.

South Shore's Data

The students of the South Shore Running Club run each day after school and record the number of miles they run.

Runner	Miles on Monday	Miles on Tuesday	Miles on Wednesday	Miles on Thursday	Miles on Friday
Madeira	$1 \frac{1}{2}$	$2 \frac{1}{4}$	$\frac{3}{4}$	$1 \frac{1}{2}$	$1 \frac{1}{10}$
Nataha	$2 \frac{1}{10}$	$2 \frac{1}{2}$	$\frac{1}{2}$	$1 \frac{3}{4}$	$1 \frac{1}{4}$
Oscar	$1 \frac{3}{4}$	$2 \frac{1}{10}$	$1 \frac{1}{4}$	$1 \frac{1}{4}$	0
Patrick	$1 \frac{3}{8}$	$1 \frac{1}{2}$	$1 \frac{1}{2}$	$2 \frac{1}{4}$	$1 \frac{1}{10}$
Quentin	$1 \frac{1}{4}$	$1 \frac{3}{4}$	$\frac{1}{2}$	$1 \frac{1}{2}$	$7 \frac{1}{10}$
Robbie	$2 \frac{1}{4}$	$1 \frac{1}{2}$	$1 \frac{3}{4}$	$2 \frac{1}{10}$	$\frac{3}{4}$



Screen 1 – Using the sticky notes as a guide to introduce the prompt for Part 1. Lead the students to read the information on the screen together and then discuss the information provided in the table. Students discuss their observations within the table.

South Shore's Data


The goal for each student in the club is to run at least $7 \frac{1}{2}$ miles each week.

Runner	Miles on Monday	Miles on Tuesday	Miles on Wednesday	Miles on Thursday	Miles on Friday	Total Miles	Met Goal? (Yes or No)
Madeira	$1 \frac{1}{2}$	$2 \frac{1}{4}$	$\frac{3}{4}$	$1 \frac{1}{2}$	$1 \frac{1}{10}$		
Nataha	$2 \frac{1}{10}$	$2 \frac{1}{2}$	$\frac{1}{2}$	$1 \frac{3}{4}$	$1 \frac{1}{4}$		
Oscar	$1 \frac{3}{4}$	$2 \frac{1}{10}$	$1 \frac{1}{4}$	$1 \frac{1}{4}$	0		
Patrick	$1 \frac{3}{8}$	$1 \frac{1}{2}$	$1 \frac{1}{2}$	$2 \frac{1}{4}$	$1 \frac{1}{10}$		
Quentin	$1 \frac{1}{4}$	$1 \frac{3}{4}$	$\frac{1}{2}$	$1 \frac{1}{2}$	$7 \frac{1}{10}$		
Robbie	$2 \frac{1}{4}$	$1 \frac{1}{2}$	$1 \frac{3}{4}$	$2 \frac{1}{10}$	$\frac{3}{4}$		

Screen 2 – Read the text on the screen together and identify the important information presented. Students discuss the process for figuring out the total number of miles run by each runner without actually solving the problem yet.

South Shore's Data

Runner	Miles on Monday	Miles on Tuesday	Miles on Wednesday	Miles on Thursday	Miles on Friday	Total Miles	Met Goal? (Yes or No)	How many more miles needed to reach $7 \frac{1}{2}$ mile goal?
Madeira	$1 \frac{1}{2}$	$2 \frac{1}{4}$	$\frac{3}{4}$	$1 \frac{1}{2}$	$1 \frac{1}{10}$			
Nataha	$2 \frac{1}{10}$	$2 \frac{1}{2}$	$\frac{1}{2}$	$1 \frac{3}{4}$	$1 \frac{1}{4}$			
Oscar	$1 \frac{3}{4}$	$2 \frac{1}{10}$	$1 \frac{1}{4}$	$1 \frac{1}{4}$	0			
Patrick	$1 \frac{3}{8}$	$1 \frac{1}{2}$	$1 \frac{1}{2}$	$2 \frac{1}{4}$	$1 \frac{1}{10}$			
Quentin	$1 \frac{1}{4}$	$1 \frac{3}{4}$	$\frac{1}{2}$	$1 \frac{1}{2}$	$7 \frac{1}{10}$			
Robbie	$2 \frac{1}{4}$	$1 \frac{1}{2}$	$1 \frac{3}{4}$	$2 \frac{1}{10}$	$\frac{3}{4}$			



Screen 3 – This screen leads students to find how many more miles will need to be run if the runners do not reach their goals.

Completing the Investigation: Student Work Using Printout – 15 minutes

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

The students of the South Shore Running Club run each day after school and record the number of miles they run.

- The goal for each student in the club is to run at least $7\frac{1}{2}$ miles each week. Determine if each student met the weekly goal.
- If a runner did not reach the goal, determine how many more miles he or she would need to run in order to reach the goal.

Runner	Miles on Monday	Miles on Tuesday	Miles on Wednesday	Miles on Thursday	Miles on Friday	Total Miles	Met Goal? (Yes/No)	How many more miles needed to reach $7\frac{1}{2}$ mile goal?
Mulroy	$1\frac{1}{2}$	$2\frac{1}{4}$	$3\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{1}{4}$			
Heavne	$2\frac{1}{2}$	$2\frac{1}{2}$	$3\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{4}$			
Clear	$1\frac{1}{4}$	$2\frac{1}{2}$	$1\frac{1}{4}$	$1\frac{1}{4}$	0			
Malick	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$2\frac{1}{4}$	$1\frac{1}{4}$			
Quinn	$1\frac{1}{4}$	$1\frac{1}{4}$	$3\frac{1}{2}$	$1\frac{1}{2}$	$7\frac{1}{2}$			
Robbie	$2\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{1}{4}$	$2\frac{1}{4}$	$3\frac{1}{4}$			

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 help guide a discussion to help summarize student learning of writing and comparing fractions.

← 1 of 4 →

Let's share some of the work we did today. Who would like to share how they filled in the table?

This question elicits information recall as students describe how they filled in their data table.

← 2 of 4 →

Did anyone fill in the table differently?

The second question gives students an opportunity to share different answers and discuss why these differences may have occurred.

← 3 of 4 →

How did you determine which common denominator to use?

The third question allows students to justify the common denominator they chose to use for this problem.

← 4 of 4 →

Explain how you can use your knowledge of adding/subtracting mixed numbers to double check your work.

This last questions allows students to explain how they can use the skills they learned in the unit to double check their answers.

Create Some Data (Part 2)

Learning Objective

Students will complete a data table by determining the unknowns and apply previous learning about adding and subtracting mixed numbers and improper fractions with uncommon denominators to solve a real world problem using appropriate strategies.


Introducing the Investigation: Class Discussion – 7 minutes

The teacher facilitates a student dialogue to introduce to the Real World Investigation. South Shore has set weekly running goals for the club. Students will plan two days for the runners so that they will meet their goals.

Create Some Data

The students of the South Shore Running Club run each day after school and record the number of miles they run. They have increased their running goals and want to make sure they run enough this week. On Wednesday, they asked you to suggest how much they should run on Thursday and Friday in order to meet their goals.

Runner	Miles on Monday	Miles on Tuesday	Miles on Wednesday	Miles on Thursday	Miles on Friday
Madelyn	1 1/2	2 1/4	1 3/4		
Natasha	2 1/10	2 1/2	3 8/10		
Oscar	2 3/4	2 1/10	1 1/4		
Patrick	2 3/10	1 1/2	2 1/4		
Quentin	1 1/4	2 3/4	3 5/10		
Robbie	2 1/2	1 1/10	2 3/4		




Screen 1 – This screen introduces the prompt to students. Read the screen together as a group. Students will discuss the information that is needed to figure out how much more each runner needs to run.

Create Some Data

The Running Club's goal is to have each member run between $8 \frac{1}{2}$ and $9 \frac{1}{2}$ miles in a week.

Runner	Miles on Monday	Miles on Tuesday	Miles on Wednesday	Miles on Thursday	Miles on Friday	Total Miles
Madelyn	1 1/2	2 1/4	1 3/4			
Natasha	2 1/10	2 1/2	3 8/10			
Oscar	2 3/4	2 1/10	1 1/4			
Patrick	2 3/10	1 1/2	2 1/4			
Quentin	1 1/4	2 3/4	3 5/10			
Robbie	2 1/2	1 1/10	2 3/4			



8 1/2 miles 9 1/2 miles

Screen 2 – This screen introduces the running goals for the runners. Upon reading the text on the screen, students will discuss strategies for making sure each runner is running between $8 \frac{1}{2}$ and $9 \frac{1}{2}$ miles.

Create Some Data

The Running Club set a goal for their club to run a total of 55 miles per week.

Runner	Miles on Monday	Miles on Tuesday	Miles on Wednesday	Miles on Thursday	Miles on Friday	Total Miles
Madelyn	1 1/2	2 1/4	1 3/4			
Natasha	2 1/10	2 1/2	3 8/10			
Oscar	2 3/4	2 1/10	1 1/4			
Patrick	2 3/10	1 1/2	2 1/4			
Quentin	1 1/4	2 3/4	3 5/10			
Robbie	2 1/2	1 1/10	2 3/4			
Total Run by All Members						

Screen 3 – On this screen, students are introduced to the final piece of key information. The students will discuss strategies for making sure the club goals are met and also the implications this will have on the amount each runner needs to run.

Completing the Investigation: Student Work Using Printout – 15 minutes

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

The students of the South Shore Running Club run each day after school and record the number of miles they run. They have increased their running goals and want to make sure they run enough this week, so on Wednesday, they asked you to suggest how much they should run on Thursday and Friday in order to meet their goal.

- The Running Club's new goal is to have each member run between $8\frac{1}{2}$ and $9\frac{1}{2}$ miles in a week. Complete the chart to show how many miles each student should run in order to meet the goal.
- The Running Club also set a club goal. The goal is for their club to run a total of 55 miles per week. Based on your suggestions would they meet this goal? If not, how could you modify your suggestions so they could meet the goal?

Runner	Miles on Monday	Miles on Tuesday	Miles on Wednesday	Miles on Thursday	Miles on Friday	Total Miles
Hobbes	1.50	2.00	1.00			
Antonia	2.50	2.00	1.00			
Steve	2.50	2.00	1.00			
Patrick	2.50	1.00	2.00			
Quentin	1.50	2.00	1.00			
Justin	2.50	1.00	2.00			
Total for the 6 Members						

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 help guide a discussion to help summarize student learning of writing and comparing fractions.

← 2 of 5 →

Did you need to find a common denominator to solve this problem? If so, what was the common denominator you chose?

The first question elicits information recall as they describe whether or not they needed to find a common denominator.

← 3 of 5 →

What strategies did you use to determine how many more miles each runner should run given their running goal of $8\frac{1}{2}$ to $9\frac{1}{2}$ miles?

This second question asks students to share and discuss the strategies they used to determine how much more each runner should run.

← 4 of 5 →

Explain how you figured out if the Running Club reached their goal of running 55 miles.

This question asks students to justify how they made sure the running club made their goal of running 55 miles.

← 5 of 5 →

Do you think these goals were reasonable? Why or why not?

This questions solicits students to reflect and explain whether or not they find the goals reasonable for students to run in an after-school club.

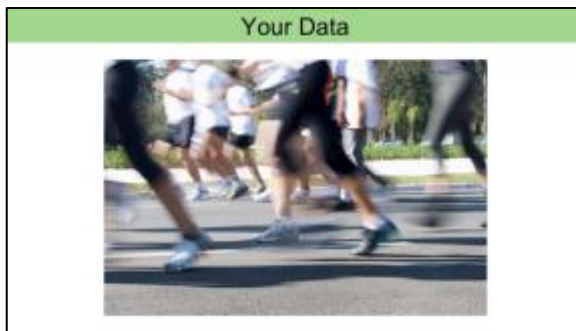
Your Data (Part 3)

Learning Objective

Students will apply previous learning about adding and subtracting proper fractions with uncommon denominators to solve real-world problems, using appropriate tools, structures, and reasoning.

Introducing the Investigation: Class Discussion – 5 minutes

The teacher facilitates a student dialogue to introduce to the Real World Investigation. In this problem, students are solving an open-ended prompt in which they generate their own data about the goals they would set for their club if they were starting a running club at their school.



Screen 1 – This screen begins by introducing the students to the prompt. They discuss running and whether or not they enjoy it. They also discuss what an appropriate goal range should be for each person in their club.



Weekly Plan to Run	Miles per Week	Miles on Monday	Miles on Tuesday	Miles on Wednesday	Miles on Thursday	Miles on Friday	Total Miles
Weekly Plan 1							
Weekly Plan 2							
Weekly Plan 3							
Weekly Plan 4							
Weekly Plan 5							

- Will the members in the club have to run every day?
- Does each member have to run the same distance every day?
- How will you incorporate fractions greater than 1 with uncommon denominators?

Screen 2 – The students are introduced to the table they will be using. They will strategize with a partner to figure out the week goals for each person and then develop 5 different plans.

Completing the Investigation: Student Work Using Printout – 20 minutes

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

You have been asked to start a running (or walking) club at your school.

- Determine what the weekly goal range for each person in the club should be.
- Create at least 5 different ways members of your club can reach that goal. Be sure to use fractions greater than 1 with uncommon denominators.

Weekly Plan to Run — or — Miles per Week	Miles on Monday	Miles on Tuesday	Miles on Wednesday	Miles on Thursday	Miles on Friday	Explain.
Weekly Plan 1						
Weekly Plan 2						
Weekly Plan 3						
Weekly Plan 4						
Weekly Plan 5						

Questions for Reflection:

- Is your goal a reasonable distance for students to run after school?
- Do you think your friends would want to join your walking or running club?

Screen 3 – 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 help guide a discussion to help summarize student learning.

← 2 of 5 →

What strategy did you use to fill in the data table? Did anyone use a different strategy?

This first question elicits information recall as they share their solutions and describe the strategies they used to solve the problem.

← 3 of 5 →

Are the goals you set for each day reasonable for students to run/walk after school?

This question asks students to rationalize their daily goals.

← 4 of 5 →

How did you incorporate fractions greater than 1 with uncommon denominators in your solution?

The third question asks students to explain how they used fractions greater than 1 with uncommon denominators.

← 5 of 5 →

Explain how your knowledge of adding/subtracting fractions greater than 1, with uncommon denominators, was useful for solving this problem.

The fourth question requires students to make a connection with how what they learned in this unit was useful for solving the problem.

The Rubric and the KWL Chart

Let's evaluate our work.						
	1. Advanced Problem Solver	2. Proficient Problem Solver	3. Emerging Problem Solver	4. Beginning Problem Solver	Student Name	Teacher Note
Demonstrates understanding of the Big Idea	My solution shows that I have a clear understanding of the Big Idea for this unit.	My solution shows that I have an understanding of the Big Idea for this unit.	My solution shows that I have some understanding of the Big Idea for this unit.	My solution does not show understanding of the Big Idea for this unit.		
Makes sense of problems and perseveres in solving them.	I read and understood all parts of the problem. I was able to complete the problem with little to no help from others.	I read and understood most of the problem. I was able to complete most of the problem with little help from others.	I had some difficulty understanding the problem. I completed the problem with help from others on most of the problem.	I did not read and understand the problem. I did not help to solve the problem. I did not use graphs and drawing tools.		
Attempts to generalize	My calculations are all final results, correct. My answer is clear. I completed all parts of the problem.	My calculations are mostly correct. My answer is clear. 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.		
Uses appropriate strategies, models and tools.	I chose appropriate math strategies on my own. I used appropriate models or tools to help me solve the problem.	I looked for help by choosing appropriate math strategies. I used appropriate models or tools to help me solve the problem.	I did not choose appropriate math strategies. The models or tools I chose were not clear to me.	I did not use math strategies, models, or tools to solve the problem.		
Communicates viable arguments.	I explained and justified my solutions. I answered all questions from others with detailed explanations. My answer is very correct.	I explained and justified parts of my solutions. I answered some questions from others with detailed explanations. My answer is very mostly correct. There is few mistakes.	I made a few mistakes and justify parts of my solutions, but my explanations were unclear or incomplete. I answered some questions from others.	I did not explain or justify my solutions. 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 this investigation	What we have learned that will help us solve this investigation
<p>SAMPLE ANSWERS:</p> <p>1) Add/subtract fractions with common denominators.</p> <p>2) Add/subtract fractions greater than 1 with common denominators.</p> <p>3) Multiply/divide equivalent fractions.</p>	<p>SAMPLE ANSWERS:</p> <p>1) Will we be using the "one" fraction procedure?</p> <p>2) Will we need to convert between improper fractions and mixed numbers?</p>	

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



Student Name: _____

Fractions

Big Idea 7: Adding/Subtracting Mixed Numbers/Improper Fractions with Uncommon Denominators
Real World Investigation: South Shore Running Club

South Shore Running Club: South Shore's Data (Part 1)

The students of the South Shore Running Club run each day after school and record the number of miles they run.

- The goal for each student in the club is to run at least $7\frac{1}{2}$ miles each week. Determine if each student met the weekly goal.
- If a runner did not reach the goal, determine how many more miles he or she would need to run in order to reach the goal.

Runner	Miles on Monday	Miles on Tuesday	Miles on Wednesday	Miles on Thursday	Miles on Friday	Total Miles	Met Goal? (Yes or No)	How many more miles needed to reach $7\frac{1}{2}$ mile goal?
Madelyn	$1\frac{1}{2}$	$2\frac{1}{4}$	$\frac{3}{4}$	$1\frac{1}{2}$	$1\frac{3}{10}$			
Natasha	$2\frac{1}{10}$	$2\frac{1}{2}$	$\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{1}{4}$			
Oscar	$1\frac{3}{4}$	$2\frac{1}{10}$	$1\frac{1}{4}$	$1\frac{1}{4}$	0			
Patrick	$1\frac{3}{4}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$2\frac{1}{4}$	$1\frac{1}{10}$			
Quentin	$1\frac{1}{4}$	$1\frac{3}{4}$	$\frac{1}{2}$	$1\frac{1}{2}$	$\frac{7}{10}$			
Robbie	$2\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$2\frac{1}{10}$	$\frac{3}{4}$			



South Shore Running Club: Create Some Data (Part 2)

The students of the South Shore Running Club run each day after school and record the number of miles they run. They have increased their running goals and want to make sure they run enough this week, so on Wednesday, they asked you to suggest how much they should run on Thursday and Friday in order to meet their goals.

- The Running Club’s new goal is to have each member run between $8 \frac{1}{2}$ and $9 \frac{1}{2}$ miles in a week. Complete the chart to show how many miles each student should run in order to meet the goal.
- The Running Club also set a club goal. The goal is for their club to run a total of 55 miles per week. Based on your suggestions would they meet this goal? If not, how could you modify your suggestions so they could meet the goal?

Runner	Miles on Monday	Miles on Tuesday	Miles on Wednesday	Miles on Thursday	Miles on Friday	Total Miles
Madelyn	$1 \frac{1}{2}$	$2 \frac{1}{4}$	$1 \frac{3}{4}$			
Natasha	$2 \frac{1}{10}$	$2 \frac{1}{2}$	$1 \frac{6}{10}$			
Oscar	$2 \frac{3}{4}$	$2 \frac{1}{10}$	$1 \frac{1}{4}$			
Patrick	$2 \frac{3}{10}$	$1 \frac{1}{2}$	$2 \frac{1}{4}$			
Quentin	$1 \frac{1}{4}$	$2 \frac{3}{4}$	$1 \frac{9}{10}$			
Robbie	$2 \frac{1}{2}$	$1 \frac{1}{10}$	$2 \frac{3}{4}$			
<i>Total Run by All Members</i>						



Student Name: _____

Fractions

Big Idea 7: Adding/Subtracting Mixed Numbers/Improper Fractions with Uncommon Denominators

Real World Investigation: South Shore Running Club

Your Running Club: Your Data (Part 3)

You have been asked to start a running (or walking) club at your school.

- Determine what the weekly goal range for each person in the club should be.
- Create at least 5 different ways members of your club can reach that goal. Be sure to use fractions greater than 1 with uncommon denominators.

Weekly Plan to Run ___ to ___ Miles Per Week	Miles on Monday	Miles on Tuesday	Miles on Wednesday	Miles on Thursday	Miles on Friday	Total Miles
Weekly Plan 1						
Weekly Plan 2						
Weekly Plan 3						
Weekly Plan 4						
Weekly Plan 5						

Questions for Reflection:

- Is your goal a reasonable distance for students to run after school?
- Do you think your friends would want to join your walking or running club?



Student Name: _____

Fractions

Big Idea 7: Adding/Subtracting Mixed Numbers/Improper Fractions with Uncommon Denominators
Real World Investigation: South Shore Running Club

	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.		

South Shore'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.

Runner	Miles on Monday	Miles on Tuesday	Miles on Wednesday	Miles on Thursday	Miles on Friday	Total Miles	Met Goal? (Yes or No)	How many more miles needed to reach $7\frac{1}{2}$ mile goal?
Madelyn	$1\frac{1}{2}$	$2\frac{1}{4}$	$\frac{3}{4}$	$1\frac{1}{2}$	$1\frac{3}{10}$	$7\frac{3}{10}$	No	$\frac{2}{10}$
Natasha	$2\frac{1}{10}$	$2\frac{1}{2}$	$\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{1}{4}$	$8\frac{1}{10}$	Yes	
Oscar	$1\frac{3}{4}$	$2\frac{1}{10}$	$1\frac{1}{4}$	$1\frac{1}{4}$	0	$6\frac{7}{20}$	No	$1\frac{3}{20}$
Patrick	$1\frac{3}{4}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$2\frac{1}{4}$	$1\frac{1}{10}$	$8\frac{1}{10}$	Yes	
Quentin	$1\frac{1}{4}$	$1\frac{3}{4}$	$\frac{1}{2}$	$1\frac{1}{2}$	$\frac{7}{10}$	$6\frac{7}{10}$	No	$\frac{8}{10}$
Robbie	$2\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$2\frac{1}{10}$	$\frac{3}{4}$	$8\frac{7}{20}$	Yes	

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 each runner should run a total of $8\frac{1}{2}$ to $9\frac{1}{2}$ miles each week and when the mileage of all of the members is combined, the total should be at least 55 miles.

Runner	Miles on Monday	Miles on Tuesday	Miles on Wednesday	Miles on Thursday	Miles on Friday	Total Miles
Madelyn	$1\frac{1}{2}$	$2\frac{1}{4}$	$1\frac{3}{4}$			
Natasha	$2\frac{1}{10}$	$2\frac{1}{2}$	$1\frac{6}{10}$			
Oscar	$2\frac{3}{4}$	$2\frac{1}{10}$	$1\frac{1}{4}$			
Patrick	$2\frac{3}{10}$	$1\frac{1}{2}$	$2\frac{1}{4}$			
Quentin	$1\frac{1}{4}$	$2\frac{3}{4}$	$1\frac{9}{10}$			
Robbie	$2\frac{1}{2}$	$1\frac{1}{10}$	$2\frac{3}{4}$			
Total Run by All Members						

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, that in order to add or subtract fractions with uncommon denominators, they must be rewritten so that they have the same denominator.

Weekly Plan to Run ___ to ___ Miles Per Week	Miles on Monday	Miles on Tuesday	Miles on Wednesday	Miles on Thursday	Miles on Friday	Total Miles
Weekly Plan 1						
Weekly Plan 2						
Weekly Plan 3						
Weekly Plan 4						
Weekly Plan 5						

Extend/Modify

Are there other groups that might want to create a training plan? How could students use the skills they acquired in this problem to solve a problem for another group?

Indicators of Understanding (As assessed by the rubric)

- ✓ Demonstrates an understanding that improper fractions and mixed numbers with uncommon denominators need to be rewritten so that they have the same denominator before they can be added or subtracted.
- ✓ Makes sense of problems and perseveres in solving them.
- ✓ Attends to precision.
- ✓ Utilizes appropriate strategies, models and tools.
- ✓ Constructs viable arguments.