# Unit 1: Community Tour Overview

*How can ratios help us create maps and tours of our communities?*

**Learning Task 1: Get Started on the Culminating Project**

**Check for Understanding: Write Ratios**

**Learning Task 2: Ratios and Measurement Conversion**

**Check for Understanding: Equivalent Ratios**

**Learning Task 3: Find Your Stride Length and Walking Rate**

**Check for Understanding: Unit Rates**

**Culminating Project: Community Tour**

**Students will create a tour of local points of interests.**

**Individual Performance Task**

## Learning Objectives

Students will be able to

- Use ratios to describe connections between two quantities.
- Represent ratios in a variety of ways (words, fraction, double number line, tape diagram, coordinate plane, etc.).
- Demonstrate whether or not ratios are equivalent.
- Use ratios to convert units of measurement.
- Use unit rates and other ratio reasoning to find missing information.
- Apply the use of ratios to find information about time, distance, and rate.
- Apply the use of ratios to find information about scaled maps.
- Collaborate with peers.

## Standards

### Aligned Common Core State Standards for Mathematics

- 6.RP.A.1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*
- 6.RP.A.2. Understand the concept of a unit rate $a/b$ associated with a ratio $a : b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."* (Expectations for unit rates in this grade are limited to non-complex fractions.)
- 6.RP.A.3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
- 6.RP.A.3.A. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
- 6.RP.A.3.B. Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*
- 6.RP.A.3.D. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.
- 7.G.A.1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

# Community Tour Overview

## Learning Task 1: Get Started on the Culminating Project

In the Culminating Project, students will work in teams to create a tour of a specific location in their community. During the unit, the teams will represent ratios, convert units of measurement, and work with unit rate to determine distances to the location in terms of stride length, walking rate, and the time it takes to walk the entire tour. The teams will present their tours to another class, other teachers, parents, community members, and so on.

## Learning Task 2: Ratios and Measurement Conversion

In this Learning Task, students will focus on measurement and conversion of distances between important places at their tour location. They will estimate the walking time between their tour location, school, and neighborhood, and share the ways that distance and time are used in tour examples from Learning Task 1 and students' lives (google map directions, etc.).

Students will learn to show equivalency between ratios in various ways and eventually decide which of those ways works best for them.

## Learning Task 3: Find Your Stride Length and Walking Rate

Students will find their walking rates and stride lengths, and use ratios and unit rates to compare the two. They will use this information to determine the time it will take someone to walk to different locations in their tour.

## Culminating Project: Community Tour

Students produce a scaled map of their Community Tour including interesting sites, distances, times for different modes of transportation, and numbers of steps taken. If possible, have community members take the tour!

## Individual Performance Task

Students individually complete a performance task to display evidence of student mastery of the skills related to this unit.

# Community Tour Culminating Project

In Learning Task 1, you will divide your class into teams and have each team pick a community tour location. During the unit, the teams will use the concepts they learn to create a Tour Guide that shows points of interest and identifies distances between locations in terms of stride length, walking rate, and time to walk.

After Learning Task 3, give teams time to finish their tours and prepare a presentation. The teams may present their tour as a website, brochure, book, video, or other idea.

## Culminating Project Specifications

Students will be given the following checklist and rubric to prepare for their presentation. You will use the rubric to judge their project.

1. Where is your tour location, and who is your audience for the tour?
2. Your team may create your Tour Guide as a website, brochure, book, video, or other idea (check with your teacher).
3. **Make sure your Tour Guide includes**
   - ❑ A statement explaining why you chose your location
   - ❑ A scaled map of your tour location (label the ratio, or scale, that you use)
   - ❑ Labels or a key to show the important places or points of interest at your tour location (include descriptions of these places; for example, "What happened at this place?" "Why is this place important to the community?" "What is this place used for?" "How does this place represent your community?" (done in Learning Task 1)
   - ❑ Labels for the distances between at least three points of interest at your tour location (done in Learning Task 2)
   - ❑ Labels for the stride lengths of each team member (done in Learning Task 3)
   - ❑ Labels for the walking rates of each team member (done in Learning Task 3)
   - ❑ How you estimated your team's walking times between at least three points of interest at your tour location (done in Learning Task 3)
     (Optional: Estimation of biking, skateboarding, or razor time between your tour location, your school, and your neighborhood; keep in mind that you will need to calculate your biking, skateboarding, or razor speed)
   - ❑ How you estimated your team's number of steps taken between at least three points of interest at your tour location (done in Learning Task 3)
4. Practice your presentation with your teammates. (Your teacher will tell you whether or not you will be able to give the tour during class time.)

STUDENT EDITION

## Community Tour Rubric

| MATHEMATICAL PRACTICE | MASTERS | ACHIEVES | APPROACHES | NOT YET |
|---|---|---|---|---|
| **Construct viable arguments (MP3) Show why your location matters** | We give evidence and supporting details to support our claim about why we chose our location. | We give some evidence to support our claim about why we chose our location. | We explain why we chose our location but do not support our claim with evidence. | We do not explain why we chose our location. |
| **Model with mathematics (MP4) Scaled map** | We include a scale that shows the ratio between our map and real life. It has labeled units. The distances on our map are labeled and consistent with the distances in real life. We use labels or a key to identify important places. | We include a scale that shows the ratio between our map and real life. It has labeled units. The distances on our map are labeled and **mostly** consistent with the distances in real life. We use labels or a key to identify important places. | We include a scale that shows the ratio between our map and real life, but it is incorrect or mislabeled. The distances on our map are mislabeled or inconsistent with the real distances. We use labels or a key to identify important places. | We do not include a scale or we do not include a map. |
| **Reason abstractly and quantitatively (MP2) Walking rate** | We show the walking rate (with labels) for each person in our team. We show how long it would take each person in our team to walk three distances. We show and explain how we found out this information. | We show the walking rate (with labels) for each person in our team. We show how long it would take each person in our team to walk three distances. We **partially** show how we found this information. | We show the walking rate for each person in our team. We show how long it would take each person in our team to walk three distances, but there are some errors in our reasoning. | We do not show each person's walking rate or how long it would take them to walk three distances. |
| **Reason abstractly and quantitatively (MP2) Stride length** | We show the stride length (with labels) for each person in our team. We show how many steps each person would take to walk three distances. We show and explain how we found out this information. | We show the stride length (with labels) for each person in our team. We show how many steps each person would take to walk three distances. We **partially** show and explain how we found out this information. | We show the stride length for each person in our team. We show how many steps each person in our team would take to walk three distances, but there are some errors in our reasoning. | We do not show each person's stride length or how many steps they would take to go three distances. |
| **Attend to precision (MP6)** | We accurately label all quantities with meaning and units. | We accurately label most quantities with meaning and units. | We accurately label some quantities with meaning and units. | We do not use labels. |

# Community Tour Assessment

## Check for Understanding

At the end of each Learning Task, there is a Check for Understanding that reviews the math content in that Learning Task. Answer keys are provided in this Teacher Edition.

Learning Task 1: Check for Understanding • Write Ratios

Learning Task 2: Check for Understanding • Equivalent Ratios

Learning Task 3: Check for Understanding • Unit Rates

## Individual Performance Task (including a Group Preview)

You will administer a Group Preview and an Individual Performance Task at the end of the unit.

The Group Preview is an introduction to the Individual Performance Task that has students work in groups. It is meant to make the Individual Performance Task more accessible, but it is not meant to be a summative assessment in and of itself. You will find an answer key on pages 7–9.

The Individual Performance Task should be administered to each student. You will find an answer key and rubric on pages 10–14.

## GROUP PREVIEW • Fun Day in the Park

You, your family, and your friends want to visit Golden Gate Park in San Francisco.

Examine the map of Golden Gate Park.


List three areas within the park that you would like to visit.

1. Answers may vary.
2. Answers may vary.
3. Answers may vary.

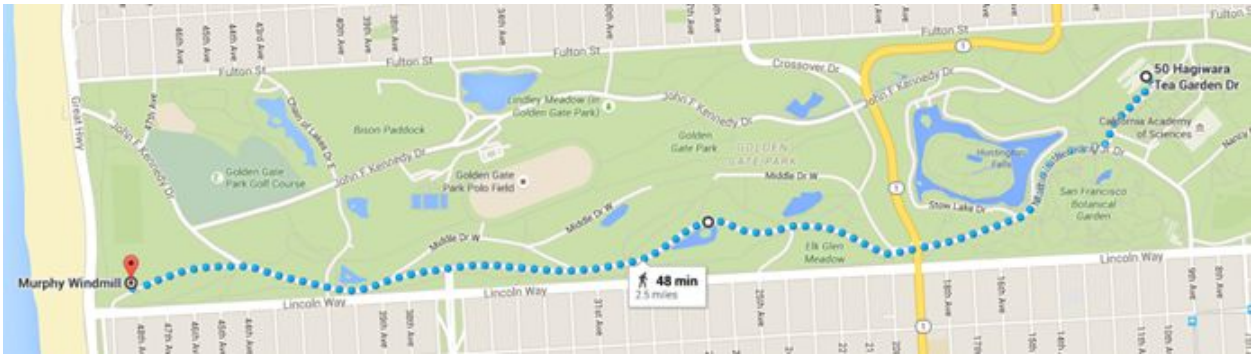
Discuss with your group how to determine the distance between the areas within the park that you would like to visit. Only discuss **how** you can determine the distance, you do not need to measure the distances.

Describe how you and your group decided to determine the distances between specific areas within the park. Include any information from the map that supports your explanation:

An example might include "We used the scale at the bottom of the map to see how long 1 mile is. Then we compared how many times that line would fit between our locations to see how many miles the distance would be."

Jasmine and Miguel just visited the Murphy Windmill. They are both going to the De Young Museum.

The map below is from Google Maps. The dotted blue line indicates the route between Murphy Windmill and the De Young Museum.




The total distance is 2.5 miles. Google Maps states it will take 48 minutes to walk the route. However, Jasmine is going to rollerblade and Miguel is riding his bike.

Jasmine's average speed to roller blade is 10 miles per hour and Miguel's average speed riding his bike is 12 miles per hour.

Miguel wants to ride his bike at the same speed that Jasmine roller blades so they can go together.

Miguel says that if he rides at 10 miles per hour he will arrive 2 **minutes** later than if he rides at his average speed of 12 miles per hour.

Discuss Miguel's claim with your group.

Do you agree with Miguel's claim? Use words and numbers to support your answer.

If Jasmine rollerblades 2.5 miles at a speed of 10 miles per hour, she will arrive in 0.25 hours or 15 minutes. This is because 2.5 is ¼ of 10. If she travels ¼ of the distance it will take her ¼ of the time. If Miguel rides his bike at a speed of 12 miles per hour, he will arrive in 0.208333 hours or 12.5 minutes. This is because 12 miles is 4.8 times greater than 2.5 miles. So, if Miguel slows down to ride with Jasmine, he will actually arrive 2.5 minutes later than if he rides at his average speed.

| Distance (miles) | Rollerblade time (minutes) |
|---|---|
| 10 | 60 |
| 2.5 | 15 |

| Distance (miles) | Biking time (minutes) |
|---|---|
| 12 | 60 |
| 2.5 | 12.5 |

## INDIVIDUAL PERFORMANCE TASK • Fun Day in the Park

Name _____ Period _____ Date _____

Mason, his sister Savannah, and his mother are visiting Golden Gate Park in San Francisco.

Plans for their day:

- Savannah has a soccer game that Mason and their mother will watch together.
- After the soccer game, Mason is meeting his friends to play Frisbee Golf.
- Their mother and Savannah are going to the playground after the soccer game.
- Mason must meet their mother and Savannah at the De Young Café at 5:00 p.m. to have dinner.

Figure 1 is a map of Golden Gate Park. The red stars on the map indicate a location that either Mason, their mother, or Savanah will visit during the day.

**Figure 1. Golden Gate Park**


Table 1 tells the walking distances between specific locations on the map.

**Table 1. Walking Distances**

| Locations | Distance (in miles) |
|---|---|
| Frisbee Golf to Café | 0.94 |
| Frisbee Golf to Playground | 0.63 |
| Soccer Game to Frisbee Golf | 0.32 |
| Soccer Game to Playground | 0.84 |
| Playground to Café | 0.47 |

For this task, use the average walking rate of 3 miles per hour.

**Your task is to help Mason create a schedule for their visit to Golden Gate Park.**

1. Savanah's soccer game ends at 2:33. What is the earliest time Mason can meet his friends to play Frisbee Golf? Support your answer.

2:39 or 2:40 is the earliest he can meet his friends. The distance from the Soccer Game to Frisbee Golf is 0.32 miles. He is walking at a rate of 3 miles per hour. It will take him 6.4 minutes, or almost 6 minutes and 30 seconds, to walk. This means he will arrive at 2:39 or 2:40 depending on if he is able to leave right at 2:33 or not.

| Distance (miles) | Time (minutes) |
|---|---|
| 3 | 60 |
| 0.32 | 6.4 |

2. Savannah says that she will be able to play at the playground for 2 hours. Do you agree with Savanah's claim? Use words and numbers to support your decision.

It will take Savannah 16.8 minutes to get to the playground from her soccer game.

| Distance (miles) | Time (minutes) |
|---|---|
| 3 | 60 |
| 0.84 | 16.8 |

Later, it will take her 9.4 minutes to walk from the Playground to the café for dinner.

| Distance (miles) | Time (minutes) |
|---|---|
| 3 | 60 |
| 0.47 | 9.4 |

This means Savannah will need a total of 26.2 minutes to travel to the playground and then to dinner. There are 2 hours and 27 minutes between the end of her game (2:33) and the start of dinner (5:00).

I agree with Savannah's claim because she will be able to stay at the playground for 2 hours, travel for a total of 26.2 minutes, and make it to dinner in slightly less time than 2 hours and 27 minutes.

3. Mason's mother wants him to leave Frisbee Golf by 4:40 so he has enough time to make it to the café for dinner at 5:00. Mason wants to stay with his friends as long as possible.

Mason thinks he will be able to stay at Frisbee Golf until 4:50 and still make it to dinner on time if he runs at a rate of 6 miles per hour.

Do you agree with Mason's claim? Use words and numbers to support your decision.

I agree with Mason. If he changes his rate to 6 miles per hour, he will be able to travel 0.94 miles in only 9.4 minutes. If it takes 60 minutes to travel 6 miles, then it will take Mason 10 minutes to run each mile. 0.94 miles is almost one whole mile. This means it will take slightly less than 10 minutes for Mason to run from Frisbee Golf to dinner.

4. Create a schedule for Mason and his family to show the times for each activity.

(Answers may vary slightly due to estimation)

Additional information:

- The beginning and ending time for the soccer game is provided
- The family eats at the café for 1 hour
- The family travels on a city bus for 16 minutes to get home

| **Activity** | Beginning Time | Ending Time |
|---|---|---|
| Soccer Game | 1:45 p.m. | 2:33 p.m. |
| Mason and his friends play Frisbee Golf | 2:40 pm | 4:40 pm |
| Savannah and her mother are at the playground | 2:50 pm | 4:50 pm |
| Mason, Savannah, and their mother have dinner | 5:00 pm | 6:00 pm |
| Mason, Savannah, and their mother travel home. | 6:05 pm | 6:21 pm |

## Community Tour Individual Performance Task Rubric

| MATHEMATICAL PRACTICE | MASTERS | ACHIEVES | APPROACHES | NOT YET |
|---|---|---|---|---|
| **Construct viable arguments (MP3)** | Achieves Plus:<br>I provide more than one way to verify that my argument is correct. | I support my arguments and claims with evidence.<br>I evaluate and improve incomplete or flawed arguments. | I provide partial or inconsistent evidence to support my conjectures, arguments, and claims. | I am still working to provide evidence (that someone else will understand) to support my conjectures, arguments, and claims. |
| **Critique the reasoning of others (MP3)** | Achieves Plus:<br>I provide more than one way to verify the reasoning of others. | I explain how I tested the reasoning of others. If there is a flaw, I can identify it.<br>I use evidence to support or refute others' arguments and claims. | I explain how I tested the reasoning of others. If there is a flaw, I can identify it.<br>I use evidence to support or refute others' arguments and claims. | I need assistance to provide evidence to support or refute others' conjectures, arguments, and claims. |
| **Model with mathematics (MP4)** | Achieves Plus:<br>I describe the conditions for which my model is valid. | I represent situations, questions, and problems in multiple and effective ways (pictures, diagrams, charts, graphs, expressions, numbers, words, etc.).<br>I adjust, revise, and update my model when I receive new information and document that I did this. | I provide partial or inconsistent evidence to support or refute others' conjectures, arguments, and claims. | I need assistance showing how to represent the given situation. I am unsure what information I should use in my model. |

## Materials, Supplies, and Technology

### Learning Task 1: Get Started on the Culminating Project

- Examples of community maps and tours
- Examples of video tours and virtual tours
- Computers with internet access for research
- Example artifact collections pre-organized so they can be sorted into ratios
- Copies of Check for Understanding • Write Ratios (see Handouts and Assessments)

### Learning Task 2: Ratios and Measurement Conversion

- Computer to use Google Maps
- Copies of Check for Understanding • Equivalent Ratios (see Handouts and Assessments)

### Learning Task 3: Find Your Stride Length and Walking Rate

- Measuring tapes (for each group)
- Timer (for each group)
- Computer to use Google Maps
- Copies of Check for Understanding • Unit Rates (see Handouts and Assessments)