



**Kindergarten
Cachalú Biological Reserve, Colombia**

Lesson 2: How far away is a tropical rainforest?

Concept

The rainforest in Rio Negro, Colombia is about 3000 miles from New York City (as a crow flies). It will take eight days to travel from New York to Rio Negro, Colombia in a school bus that is driving 55 mph, seven hours per day (a full day of school). (Numbers will change according to students' geographical residence.)

Essential Question

How long will it take to drive to the rainforest in Rio Negro, Colombia?

Total Time: 55+ minutes

Standards

Thinking and Reasoning:

-Effectively uses mental process that is based on identifying similarities and differences.

Topic 1: Uses a variety of strategies in the problem solving process. (K - 2)

-Uses whole number models (pattern blocks, tiles or other manipulative materials) to represent problems.

Topic 4: Understands and applies basic and advanced properties of the concept of measurement. (K - 2)

-Understands the concept of time and how it is measured.

-Knows process for telling time, counting coins and measuring length, weight and temperature, using basic standard and nonstandard units.

Topic 6: Understands and applies basic and advanced concepts of statistic data analysis. (K - 2)

-Understands that observations about objects or events can be organized and displayed in simple graphs.

Objectives

1. Students use the length of their class day as a reference to measure how long it takes to drive from their school to the closest community landmark, town and state. They chart this distance on a calendar and map.
2. Students listen to a story, **Chayo's Andean Home**, a Rainforest Alliance original story, and *Chayo's Challenge Letter*.
3. Using the distance a bus can travel in a school day students predict how long many days it takes to drive to Chayo's home. Students chart this distance on a map and calendar.

Additional Resources

- **Resource Index** – Check out this page at <http://www.rainforest-alliance.org/programs/education/teachers/curriculum/resources/index.html> for additional supplemental materials that complement these dynamic units and to access many of the resources listed below.
- **Slideshow** – The Learning Site provides a slideshow and script about the Cachalú reserve in Colombia that includes background information about the animals, people and landscape of this region. The slideshow can be downloaded for viewing in the classroom, printed out and read as a story, or viewed online with the students.
- **Unit-Specific Story** - The Rainforest Alliance has developed two original stories for use with these units, available in English, Spanish and Portuguese. The stories are available to download and print or can be viewed on-screen.

Chayo's Andean Home Clara and the Armadillo

- **Species Profiles** – The species profiles, available to view on screen or download from the beginning of the unit or the Resource Index, include photos, habitat, foraging behavior, group relationships, threats and many more facts.
 - Andean Condor
 - Cock-of-the-Rock
 - Leaf-Cutter Ant
 - Nine-Banded Armadillo
 - Red-Eyed Tree Frog
 - Spectacled Bear
 - Praying Mantid
- **Rainforest Products** – Visit <http://www.rainforest-alliance.org/resources/forest-facts/lives.html> for a summary of products that we use in our everyday lives that originate in rainforests. Both teachers and students will find information on the products found in their homes and supermarkets that either originated in tropical forests or are currently produced there.
- **Conservation Coffee Summary** – Download this summary, which includes the environmental, social and cultural impact that coffee has had on the Americas, the connection between coffee farms and wildlife and a glossary of relevant terms.
- **Ranger Rick Article** - Download “*Rick and the Gang Find Out Why Some Coffee is Bad for Birds,*” a colorful article from the National Wildlife Federation's *Ranger Rick* magazine which describes the impact some coffee harvesting techniques have on bird habitat.
- **Profiles in Sustainability** – Visit <http://www.rainforest-alliance.org/programs/profiles/index.html> for case studies on companies who work closely with the Rainforest Alliance to ensure that their practices protect wildlife, workers and communities.
- **Fundación Natura (Nature Foundation)** - Check out these online resources for more information about the Rainforest Alliance's partner group in Colombia: www.rainforest-alliance.org/programs/aar/colombia.html
www.natura.org.co
- **Certificate of Accomplishment** – Print out colorful rainforest certificates for your students to commemorate their completion of these units.

Informational Introduction for the Teacher

This series of lessons challenges students to figure out just how far away they live from the Colombian rainforest. Understanding where students live relative to the rainforest provides an important foundation for appreciating in later lessons how interconnected they are to a place so far away and different from their home.

Informational Introduction for the Students

How far away is your home from school? How long would it take you to walk, bike and drive to get home from here? These distances make sense because you live this distance almost every day, both in terms of the physical distance and the length of time it takes to travel between them. But just how far is the rainforest we're studying in Colombia from here? If someone told you it is 3000 miles away, what does that really mean? Our challenge is figure out just how far away the Colombian rainforest is from our school in a way that will make sense to us.

Step 1 - CONNECT (The Concept to Prior Knowledge)

20 minutes

Challenge

Challenge students to: (1) Predict how long it will take to drive from school to a local landmark; (2) Indicate on a map how far they can travel by bus in one school day (seven hours); and (3) Predict how many school days it will take to travel by bus to a neighboring city or state.

Materials (per whole class)

- Large map of your local region that can be seen by entire class
- Large map of United States that can be seen by entire class
- 12, 3" cut outs of a yellow school bus
- A large calendar illustrating morning, afternoon and evening and days of the week over a generic one-month period

Procedure

1. Show students a local map. Pick a significant site on the map that all the students know (a landmark, grocery store or community center) and ask students to decide with a partner how long they think it will take to drive from school to this spot if they left at the beginning of circle time, for example. Rather than think in terms of minutes or hours, ask students to think in terms of shared time periods (from morning circle to choice time, from choice time to afternoon recess). Tell students how much time it would take in these terms.
2. Ask pairs of students to stick a small cut-out of a yellow school bus on the same map to indicate where they think they can drive to if they were to drive as far as they could in one school day (seven hours). Let students know how far on the map equals one mile. After all students have marked their respective distances, ask, "What do you notice about our answers?" Indicate the radius to where you think you could drive in one school day. Ask students to describe what strikes them about some of their answers and your answer.
3. Using a map that includes several states, ask students to decide with a partner how long it will take to travel by school bus to a neighboring town and state. Let students know what distance on the map represents one mile. Represent their answers by illustrating the number of days traveled to their selected place on a calendar as well as by moving a yellow bus from their hometown to the destination. Share your own answer.

Step 2 - LITERATURE/DISCUSS (Give Expert Information Book: Ask Questions)

20 minutes

Challenge

After reading a **Chayo's Andean Home**, an original Rainforest Alliance story told by a girl living near a Colombian tropical rainforest, challenge your students to predict how far it is from their school to the girl's home.

Materials (per whole class)

- One copy of story, **Chayo's Andean Home**, a Rainforest Alliance story
- One copy of *Chayo's Challenge Letter* to students
- Six, 2" cut-outs of a red school bus
- Two small paper cut-outs of homes (one blue and one green)

Procedure

1. While reading **Chayo's Andean Home** ask questions such as:
 - a. How many people are in Chayo's family, including her mother and father?
 - b. How many more people are in Chayo's family than in your family?
 - c. Look at the picture of Chayo's dad raking the coffee beans. What kind of pattern do you notice he's making? Why do you think he's making this pattern?
 - d. What kinds of fruits or vegetables do you eat that grow around here that need to grow under trees or in shade like coffee does?
 - e. Look at any 2 of the bird pictures at one time. Describe 4 ways that each pair of birds is different from each other.
 - f. Why do you think birds that live in Colombia for half the year would leave Colombia to build nests and lay eggs? Why don't they just do that in Colombia?
 - g. What have you noticed in the story that looks different from where you live?
 - h. What have you noticed that looks the same?
 - i. How far away do you think Chayo lives from us?

2. Read *Chayo's Challenge Letter* to the class:

Dear Friends:

I'm so glad that you've read my story. I live in a wonderful place and I would like to share that place with you. I think that our homes are full of many similarities and differences. I hope you will learn about my home. But first, I would like to know: How far away do you live from me?

-- Chayo

3. Ask pairs of students to discuss and predict, "How many school days do you think it would take to drive a bus from here to Chayo's home in Rio Negro, Colombia?"
4. Write students' names and predictions on board in a two-column chart.

Step 3A - PRACTICE

15 minutes

Challenge

Challenge students to observe where Chayo's and their home are located on a larger map that includes North and South America, consider the distances provided in the table below ("As a Crow Flies") and then modify their previous prediction for how long they think it will take to drive from school to Chayo's home.

Materials (per whole class)

-Large map of western hemisphere which includes both North and South America, with a small blue paper house representing students' home area and a small green paper house representing where Chayo lives in Rio Negro, Colombia (near the Andean Mountain Range).

-As a Crow Flies: Distances and Time

New York: 3000 miles, 54 hours @ 7 hours/"school day" = 8 days

Chicago: 3200 miles, 58 hours @ 7 hours/"school day" = 8.5 days

Seattle: 4600 miles, 84 hours @ 7 hours/"school day" = 12 days

Note: These are relative times and distances as the crow flies to Rio Negro, Colombia. They are an approximation. Please add or subtract distances and times to represent the distance to your local area. Assume the school bus drives 55 mph and you will travel approximately 380 miles per day.

Materials (per 2 students)

-One, 12" ruler

Procedure

1. Show students the map of North and South America and ask them which homes (theirs or Chayo's) they think are represented by the green and blue paper houses on the map. Tell students the correct answer.
2. Tell students what distance represents one mile on this map that covers a larger area than the previous map they looked at. To help them adjust their conception of the scale on this map, place a red school bus along the radius that you indicated a bus could take them in one school day.
3. Ask students to work with their partner to modify their earlier prediction on how many school days they think it will take to travel from their school to Chayo's home.
4. Add a third column to the chart you created earlier and add their new predictions.
5. Ask students to explain and show how they arrived at their new prediction and if they notice any patterns between the class's previous and new predictions.

Step 3B – CREATE (Performance Tasks Related to Standard Indicators)

Challenge

Ask students to compare their final prediction with your answer and to imagine that they will begin traveling to Chayo's home tomorrow. Challenge the class to help you mark your journey on both a map and a calendar over the next week or so.

Materials

-Large map of western hemisphere which includes both North and South America, with a small blue paper house representing students' home area and a small green paper house representing where Chayo lives in Rio Negro, Colombia (near the Andean Mountain Range)

-A large calendar illustrating 7 days of the week over a generic one-month period.

-10, 2" yellow school buses

-10, 2" red school buses

Procedure

1. Tell students how many school days it will take them to travel by bus from their town to Chayo's home. Ask each pair of students to tell you how many more or fewer days their prediction was than your answer.
2. Tell students that they are going on an imaginary trip to Chayo's home. Each day they will tape a yellow school bus onto the large map of North and South America to indicate how far they would have driven by the end of that day. They will also put a red school bus on the large class calendar to indicate each day of their trip.
3. When they finally reach the end of their trip, ask students, "About how many school days of riding in a bus will it take to travel from their home to the tropical rainforest in Rio Negro, Colombia where Chayo lives?"

Step 4 - PRESENT (Edit Work/Students Present Projects)**Challenge**

Students write a class letter to Chayo describing their process for figuring out how far away they live from her.

Materials

-Easel paper

-Art supplies

Procedure

1. After students have determined how long it will take to travel from their home to Chayo's home, tell students they will write a class letter back to Chayo explaining their findings.
2. As a group, using a piece of easel paper, ask students to dictate what you should write to Chayo so she can understand what you did to figure out how far away they live from her.
3. Ask students to draw a picture for Chayo of two of their favorite places they like to go to and indicate on their drawing how far away (in distance or time) from their home it is to each place.

LESSON 2 ASSESSMENT RUBRIC:

Teacher observations of tasks with rubrics as listed below, as well as collected work samples.

Assessment Guidelines	3 = P (Proficient)	2 = S (Satisfactory)	1 = NW (Needs Work)
1. Student works well with partner to make predictions about how long it will take to drive different distances and explains his/her thinking behind the prediction.			
2. Student works well with partner to predict how far their school is from the Colombian rainforest using newly acquired knowledge. Student can explain how he/she came to this conclusion.			
3. Student actively (and accurately) participates in charting times and distances on calendar and map with appropriate help from the teacher.			
4. Student actively participates in writing letter to Chayo. Student draws at least two places they like to go and indicate how far it is from their home.			