

# Traveling Time

## Teacher Lesson Plan

From Alaska Program: [www.fromalaska.org](http://www.fromalaska.org)

### **Purpose:**

Students will be presented with real life questions that require students to use both math and problem solving skills to answer. Each question will help students understand backcountry wilderness travel methods, while sharpening their analytical skills.

### **Objectives:**

Students will:

1. Consider advantages and disadvantages of different transportation methods
2. Decode word problems, and figure out what information is relevant to a question
3. Understand the relationship between miles per hour and the time it takes to travel a set distance
4. Practice converting a fraction of an hour into minutes

### **Grade Levels:**

4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup>

### **Necessary Materials:**

Lesson Plan  
Printable Student Map/Worksheet  
Suggested Word Problems

### **Lesson Plan/Procedure:**

#### **Main themes to emphasize:**

- Different forms of travel have different characteristics and speeds
  - Traveling uphill slows down some forms of transportation more than others
  - Every form of travel has some advantages, and some disadvantages
1. **Show the video segment** “Transportation in Denali” to students (or instruct them to watch it at a time before the lesson). Access through website.
  2. **Introduce the assignment:**  
“As you just saw in the video segment, people access the wilderness of Alaska in many different ways. Visitors to Denali National Park use many different forms of transportation to access the wilderness. In the summer, a bus system takes visitors into the park. In the winter, however, the road isn’t plowed, and

becomes impassible because feet of snow fall on top of it. At this point, the park is only open to non-motorized forms of transportation.

If you visited Denali National Park, would you want to see Mt. McKinley? Well, in the summer that would be easy: You could hop on a bus and see it under an hour! In the winter, however, you wouldn't be able to use a bus, because the road is closed. Today we are going to evaluate several different forms of transportation, and using math, estimate how long it would take to travel down the park road, reaching a place where people view see Mt. McKinley.

3. **Pass out 'Travel Time: How long was Andy's hike?'** Introduce assignment. If necessary, work through the sample problem with students. Provide assistance depending on student grade level.
4. **Pass out Additional Questions:** Depending on grade level, select easy or difficult set. Assign as homework, or work through problems together as a class.

*Three Lesson Handouts are included on the next pages:*

1. Travel Time: How long will my hike take?  
(all students should receive this page)
2. Travel Time: Additional Questions  
- easier questions
3. Travel Time: Additional questions  
- harder questions (two sheets)

Name \_\_\_\_\_

## Travel Time: How long will Andy's hike take?

Only one road exists in Denali National Park, and visitors utilize it to access the wilderness. People use many different forms of transportation on the road, and can often be spotted hiking along it. This road is very hilly. Since traveling uphill is more difficult, most forms of transportation move slower when going uphill. In this section, using the information provided below, you will calculate how long one particular hike takes.

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*Andy is going hiking in Denali National Park. Winter is coming, and the park road has just been closed to all motorized traffic. Without snow, he can't run his sled dogs into the park: He must walk. To start his hike, Andy parks his car at mile 3.4 of the road, at park headquarters. He then hikes 6 miles to milepost 9.4, to the Mt. McKinley Overlook. This part of the hike is difficult, because the road travels uphill the entire way. Once at the overlook, he takes a 30-minute break, admiring Mt. McKinley and several caribou roaming the tundra. After this break, he retraces his hike to his truck, at mile 3.4.*

*Once back at his truck, he realizes that the second part of his hike took less time than the first part. He looks at his GPS (Global Positioning Unit), and finds that he walked at 3 miles per hour going to the overlook. On the way back he traveled at 4 miles per hour.*

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### Questions:

1. How long, in minutes, did it take for Andy to get to the Overlook?
2. How long, in minutes, did it take for Andy to get back to his truck?
3. How many minutes did he spend hiking?
4. How long, including his break at the overlook, was he away from his truck?

### Useful Formulas:

$$\text{Time Traveled (Hours)} = \frac{\text{Miles Traveled}}{\text{Miles Per Hour}}$$

$$\text{Minutes Traveled} = \text{Hours Traveled} \times 60$$

## Travel Time: Additional Questions

As you learned in the video, people use many different types of transportation to travel into Denali. The four people listed below all use different transportation, and travel at different speeds. After reading about each of these four people, answer the questions below.

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*Debbie, an Iditarod musher, travels at 12 miles per hour when her dog team is going uphill, and 15 miles per hour when traveling downhill.*

*Mike can snowshoe at 2 miles an hour going uphill, and 3 miles per hour going downhill.*

*Jerry can ski at 9 miles per hour going up hill and 25 miles per hour going downhill.*

*Ellie drives the park road at 30 miles per hour in her bus, going the same speed uphill and downhill.*

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### Questions:

1. Which form of transportation goes fastest uphill?
2. Debbie challenges Gerry to a race from the trailhead to the overlook. Who wins?
3. Once at the Mt. McKinley overlook, they decide to race back to the trailhead. Who wins?
4. Did the same person win both races? If not, why?
5. Two visitors travel to Denali in December. They hope to spot a moose in the park, and have no transportation preferences. They know that they are most likely to spot a moose if they travel as slow as possible. Out of the 4 different types of transportation listed above, what would you recommend they use to access Denali? Why?

## Travel Time: Advanced Questions

Every form of transportation utilized in the Denali region travels at a different rate of speed. In this next section, you will calculate how long the 12-mile trip (from the trailhead to the overlook and back) will take 4 different park visitors, each who use a different form of transportation. After that, you will be able to answer several questions comparing how fast they go.

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*Ellie drives the park road at 30 miles per hour in her bus, going the same speed uphill and downhill.*

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### Questions:

1. How long will it take Debbie to complete the 12-mile round trip?

2. How long will it take Mike to complete the 12-mile round trip?

3. How long will it take Jerry to complete the 12-mile round trip?

4. How long will it take Ellie to complete the 12-mile round trip?

5. Hannah wants to see wolves, but doesn't have much time to travel in the park. She knows, however, that the sound of a motor scares wolves away, and if she wants to spot some, she should utilize a non-motorized form of transportation. What should she use? Given her choice of transportation, what season should she plan to visit Denali?

6. Debbie and Mike leave the trailhead at the same time, and both travel to the Mt. McKinley overlook and back. Debbie knows it will take Mike longer to travel the trail, because her dog team travels faster than him on his snowshoes. This means she will have to wait for him after she returns from her run. How many minutes will Debbie have to wait for Mike?