Practice Task: Road Trip

In this task, students determine fuel costs for a trip through the Southeast of the United States using a given cost of fuel and the number of miles per gallon the family car gets.

STANDARDS FOR MATHEMATICAL CONTENT

Perform operations with multi-digit whole numbers and with decimals to the hundredths.

MCC5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

BACKGROUND KNOWLEDGE

You may want to begin this task with a short class discussion about trips, costs of gasoline, and budgets for vacation.

How many miles is it from the starting point to the stopping point on each day?

TRAVELING DAYS	Starting Point	Stopping Point	Total Number of Miles
DAY ONE	Your Home Town	Birmingham, AL	will vary
DAY TWO	Birmingham, AL	Dallas, TX	641.75
DAY THREE	Dallas, TX	Memphis, TN	452.56
DAY FOUR	Memphis, TN	Chattanooga, TN	343.49
DAY FIVE	Chattanooga, TN	Atlanta, GA	118.39
DAY SIX	Atlanta, GA	Your Home Town	will vary

Make sure that students have access to maps, an atlas, or the Internet to determine the total number of miles between the cities. Also, be sure students are careful when they carry their daily miles over from one day to the next.

ESSENTIAL QUESTIONS

- What happens when we multiply a decimal by a decimal?
- What happens when we divide a decimal by a decimal?
- What are the various uses of decimals?
- How do we solve problems with decimals?

MATERIALS

- "Road Trip" recording sheet
- Maps, atlases, and/or internet access
- Markers or highlighters

GROUPING

Individual/partner task

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION:

Comments:
As a class, determine the price you will be using for gasoline. You may want to use the local price while working on the project. For consistency, it will be easier for students to use the same price for the entire trip.

If the primary goal of this task is using decimal numbers in a problem solving setting, you may consider having students use an online mapping service because they will give distances to the closest hundredth of a mile.

TASK:

Students will follow the directions below from the "Road Trip" Recording Sheet.

You and your family want to take a road trip. However, before your family can begin this wonderful adventure, you must first determine how much your trip is going to cost. You are responsible for figuring out how much money you will need for gas.

Using different resources in your classroom, determine how many miles it is to each day's planned stopping point from the starting point.

Your family car can travel 21.2 miles on one gallon of gasoline.

DRIVING DAYS	Starting Point	Stopping Point
DAY ONE	Your Home Town	Birmingham, AL
DAY TWO	Birmingham, AL	Dallas, TX
DAY THREE	Dallas, TX	Memphis, TN
DAY FOUR	Memphis, TN	Chattanooga, TN
DAY FIVE	Chattanooga, TN	Atlanta, GA
DAY SIX	Atlanta, GA	Your Home Town

1. How many miles is it from each day's starting point to the stopping point?
2. How much will it cost your family to make the trip each day? What is the total cost of gasoline for the entire trip? Assume that when your family reaches the stopping point, the car is not driven until the next day.
3. Use the information you collected to organize and display the data using the most appropriate graph.
4. Show at least two of your computations and explain your thinking in words.
5. If your family car's gas tank holds 19.7 gallons of fuel, how far (in miles) can your family car travel on one tank of gasoline? Two tanks? Five tanks?
6. How long will your family spend traveling between cities if your average speed is 65 miles per hour?

FORMATIVE ASSESSMENT QUESTIONS

- Explain your strategy for determining daily mileage.
- How are you organizing your work for this task?
- How does this task help you understand the importance of budgeting for a trip?

DIFFERENTIATION

Extension
- Have students share other cities they could visit at the end of their road trip if they left Atlanta, GA before they had to fill up with gas again. Have them explain why they would/could visit those cities?
- You may want to allow students to use a calculator to check their work after they have completed the task to check for accuracy.
- Have students create a trip they would want to take and determine mileage and cost of gas.
- Have students create a budget for an entire trip that includes cost of gasoline, lodging, and an estimate for food and entertainment.

Intervention
- Give students one city at a time to compute the distance.
- Provide an organizer on which students can record the information required to find costs.

Name _____ Date _____

Road Trip Recording Sheet

You and your family want to take a road trip. However, before your family can begin this wonderful adventure you must first determine how much your trip is going to cost. You are responsible for figuring out how much money you will need for gas.

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DAY SIX	Atlanta, GA	Your Home Town

Be sure to answer all the questions below.

1. How many miles is it from each day's starting point to the stopping point?

2. How much will it cost your family to make the trip each day? What is the total cost of gasoline for the entire trip? Assume that when your family reaches the stopping point, the car is not driven until the next day.

3. Use the information you collected to organize and display the data using the most appropriate graph.

4. Show at least two of your computations and explain your thinking in words.

5. If your family car's gas tank holds 19.7 gallons of fuel, how far (in miles) can your family car travel on one tank of gasoline? Two tanks? Five tanks?

6. How long will your family spend traveling between cities if your average speed is 65 miles per hour?