

# Road Trip Challenge Problem

*Seventh and Eighth Grade Math*



**Developed by:**

The teachers, students, and mentors in the  
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## 1. ROAD TRIP CHALLENGE PROBLEM

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### 1.1. INTRODUCTION

Buckle up because you are about to embark on a journey of epic proportions. In this project you will be expected to travel to 3 different cities, located in 3 different states, in 3 different time zones. Traveling from point A to point B may seem easy in a textbook, but it isn't always so simple in real-life. Throughout the project you will face different rates and proportions tasks, decimals, percentages, graphs, and much more. The purpose of this project is to link rates and proportions and previously learned math concepts back to the real-world and for you to learn a bit about the cost of traveling. This project will require you to research, make selections, provide rationale for your decisions, and to think critically.

### 1.2. PROBLEM

#### 1.2.1. DESTINATION AND ROUTE SELECTION

- Your three cities need to be located in three different time zones.
  - City 1:
  - City 2:
  - City 3:

#### 1.2.2. CAR COMPARISON AND SELECTION WITH GAS COST ESTIMATION

Prior to departure you must research 4 different car models and compare the cost of gas to complete this trip with each model of car by setting up a proportion. For this part you may use the average national price per gallon of gas. You have three options for the car selection process: renting, leasing, and purchasing a vehicle. You need to decide what option is best for your group and why.

**Table 1:** Fill in the table below.

Car Model and Year	Total Cost for Gas
1	
2	
3	

Select the vehicle you will use from this point on:

### 1.2.3. THE FIRST REFUEL STATION

You encounter 4 fuel stations: Marathon, Speedway, BP, and Shell. Each gas station is charging a different price per gallon of gas and you need to represent the different costs in the following formats: table, rate, words, and graph. Note: The average cost per gallon of gas at your 4 fuel stations must be equivalent to that state's average gas cost. Finally, you are expected to represent the total cost you have spent on gas with an equation, e.g.  $y=mx+b$ .

### 1.2.4. SECOND REFUEL STATION

You arrive at your second fuel station. How much does it cost to refuel? How fast have you been traveling and how long did it take you to reach the second refuel station? Do not forget to factor in rest breaks!

### 1.2.5. SECOND REFUEL STATION

At this point your traveling companions have become weary and wish to know how much longer it will take to reach home. Calculate your remaining distance as well as the remaining number of refuel stations.

## 1.3. PARAMETERS

- Your start location and end location cannot be different.
- You must provide rationale for any decision made, and you must show math work if applicable.
- Your trip must last a minimum of 28 days, but cannot exceed 31 days.
- Tax must be factored in on this problem.
- Calculate the total travel time (How long did you drive? How long did the entire trip take?).
- Calculate the total cost for gas during the entire trip.
- Illustrate the average rate of travel for the entire trip.
- Calculate the average cost for a gallon of gas for the entire trip.
- Create an itinerary for each city you stop at and include the total price of food for the entire trip as well as the price for events and motels/hotels.
- Reflection Section - What did you take from this project? What changes would you go back and make if given the opportunity?

## 1.4. PROJECT WRITE-UP

- The write-up of this project must include:
  - A statement of the problem
  - Work and rationale for Parts 1-5

- Work and rationale for Additional Requirements
- Description of parameters you set for your project along with rationale

### 1.5. RUBRIC

Category	Needs Work	Good	Great	Points
<i>Math Content</i>	- Student did not show math work for multiple sections OR student showed incorrect math work for multiple sections	- Student showed work for each section of project with minimal errors	- Student showed correct and clearly labeled math work for every section of project	/15
<i>Explanation</i>	- Student provides only 1 or 2 relevant and clear explanations for all math work, parameters, purchases, and decisions	- Student provides 3-4 relevant and clear explanations for all math work, parameters, purchases, and decisions	- Student provides 5 or more relevant and clear explanations for all math work, parameters, purchases, and decisions	/10
<i>Grammar and Mechanics</i> (grammar, punctuation, spelling, etc.)	- Student's writing contains more than 5 errors - Student's work is messy and difficult to follow	- Student's writing contains 3-5 errors - Student's work is mostly clear and easy to follow	- Student's writing contains 2 or fewer errors - Student's work is clear and easy to follow	/5
<i>Reflection (1 Page minimum)</i>	- Student does not provide a reflection page -Student does not discuss potential changes -Student does not state what they took from this project -Student does not meet 1 page minimum	- Student provides a reflection that discusses potential changes, but does not provide rationale for changes -Student discusses what they learned from this project, but does not discuss why it was important	- Student provides a detailed reflection that discusses potential changes and provides rationale for changes - Student discusses what they took from this project and why it was important	/5
<i>Statement of Problem</i>	- Student does not provide a statement of the problem	-Student provides incorrect statement of the problem	- Student provides a statement of the problem	/3
<i>Itinerary</i>	- Student does not provide an itinerary	- Student provides an itinerary with 2-3	- Student provides a detailed itinerary	/7

		scheduled events per stop	with 4 or more scheduled events per stop	
<i>Total</i>				/45