**Around the World in a Linear Way**

***What’s your Function?***

A WebQuest for 8th grade Math

Designed by

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**Introduction**

I often hear students ask about how mathematics can be used in the “real world”. In today’s lesson, we’ll do just that. Linear functions have use way beyond the classroom. To prove it, you will be going on a trip around the world. During your trip, you will discover how to form and solve linear functions. Just as importantly, you will discover just how important this skill can be when traveling abroad. Bon voyage!

Click on the video below to begin:

[Linear Functions](http://www.youtube.com/watch?v=5acgPT0ECCo)

**The Task**

In this WebQuest, you will be provided a destination, its distance from Florida, an amount of money that you will have with you and the temperature there. You will need to use linear functions to convert this information into miles, American dollars and degrees Fahrenheit respectively. You will then use this information to create a visual presentation that displays the data that you have collected.

**The Process**

You will be separated into groups of three students for this Webquest and will work together to accomplish the given tasks. As you proceed, one student will need to keep track of all of the places you’ve visited and the equations created to solve each problem. A second student will track the solutions for currency conversion, temperature and distance. Finally, the last student will read the instructions aloud and operate the computer along the way.

Below is a list of your destinations and the pertinent data. Please follow the links to help you learn more about the conversions and how to create each equation. You may find that some equations are used more than once since many countries share systems of measure, currencies and temperature.

Remember to record and organize the data so that you can easily assemble a chart in terms that you and your peers can relate to and understand. Also be aware that the online resources are labeled but the links are spread throughout the WebQuest. In these links, you will find everything that you need to complete your conversions.

**Destination 1: London, England **

Welcome to London! You have travelled nearly 7140 kilometers from home. The temperature is a mild 20 degrees (Celsius of course). I’m sure that you’re glad that you brought the equivalent of 505 British Pounds for your trip. How much is that anyway? Cheerio!

[**Exchange Rates**](http://www.x-rates.com/)

**Destination 2: Berlin, Germany**

Guten Tag! After a great day in London, you have arrived in Berlin. It’s cool and rainy today with a temperature of 15 degrees Celsius. Since your trip was a relatively short 938 kilometers, it really didn’t take you long to get here. With 530 Euro in your pocket, you venture out to see the now fallen Berlin Wall. I’ve got goose bumps just thinking about it!



[**Temperature and Currency Conversions**](http://voices.yahoo.com/real-life-examples-linear-equations-2659303.html)

**Destination 3: Melbourne, Australia**

Crikey, that was an exhausting trip but it was definitely worth it. You’ve traveled 15960 Kilometers from Berlin but that’s not going to keep you down. After all, it’s 23 Celsius degrees and you still have 530 Australian dollars. Hoo roo!

[**Video Example**](http://www.youtube.com/watch?v=7ys3Mudikd0)

**Destination 4: Moscow, Russia** 

After another 14200 Kilometers, you have arrived in Moscow. It’s a rather chilly 9 degrees Centigrade today. You still have 11000 Russian Ruble available so enjoy the day. You will be travelling home tomorrow.

**Welcome Home! **

Well, you made it and you even have a few dollars to spare. Now take the information that you’ve compiled and create a visual presentation that captures your trip (You may create this on a poster board or on the computer). You should include the following:

1. **Map** – With your destinations identified and the temperature in Fahrenheit displayed beneath.

2. **Chart** – With distance travelled in miles to each destination as well as total miles traveled.

3. **Pie Chart** – showing how much you spent in dollars at each destination and how much you have left.

**Evaluation**

Since this is a group project, you will be graded as a group. Your grade will be based upon the following:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Beginning****1** | **Developing****2** | **Accomplished****3** | **Exemplary****4** | **Score** |
|  Accuracy of conversions  | Careless errors, many inaccuracies and general lack of effort. | 4 or more errors in calculation or lack of effort | 2-3 errors but generally accurate overall. | 1 or fewer errors, carefully done and accurate overall. |  |
|  Followed Directions | Didn’t read or chose not to follow directions. | Read and followed some of the directions while ignoring others. | Generally followed directions but missed an item or two. | Followed directions exactly as they were presented. |  |
|  Visual Presentation   | Many errors, disorganized and poorly though out | A few errors and some organization but still needs to be improved in both areas. | Few errors and generally organized but lacks visual appeal. | Few errors, well organized and good visual appeal. |  |
|  Worked Cooperatively  | Consistently argued and did not cooperate with each other. | Some cooperation but too much disorganization  | Fairly well organized but did not work together the whole time. | Worked cooperatively and put the project above selfish interest |  |

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**Conclusion**

I hope you enjoyed your trip. Now that you’ve seen the way that linear equations can be used every day, you can think about new ways to use your newly developed skill. Follow the links below to more learning about linear equations:

[**Practice with Linear Equations**](%20http%3A/www.coolmath.com/algebra/algebra-practice-solving.html)

[**Linear Equation Game**](http://www.mathplayground.com/SaveTheZogs/SaveTheZogs.html)

**Teacher Page**

**Introduction**

This WebQuest was created to apply real world thinking to linear equations. Students should have a grasp of how to solve linear equations prior to attempting. It was designed to have students think critically about the input and output data of the equations.

**Process**

Students will work cooperatively in groups of three. Each student is assigned a role but the project is designed to be completed and graded as a group. Links were supplied to give students the resources necessary to complete all facets of the required work. Students will need to consider what information is helpful to their specific need while discarding information that is not needed. Further, students will need to decipher graphics and charts on some of the supplied websites in order to obtain the necessary information. The project will conclude with creation of a visual presentation that encompasses all of the data that they acquired.

**Curriculum Standards**

Big Idea: Analyze and represent linear functions, and solve linear equations and systems of Linear Equations.

Benchmark: MA.I.A.1.3 – Use tables, graphs and models to represent, analyze and solve real-world problems related to systems of linear equations.

This WebQuest lesson was designed to encourage critical thinking with regard to the creation of linear functions and the resulting data. Further, the lesson requires analysis to solve real-world problems related to linear equations and their output data. Through teamwork, careful observation and creative problem-solving, students will create their own equations, solve them and compile a list of useful output data.

**Credits**

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