

World Traveling: 2012 Olympics in London

NCTM Standards: Algebra, Data Analysis, Connections, and Representation

Goals:

- Students will use Algebra to study how time changes across world time zones and using mathematical equations to converting distances and currency.
- Students will use the Internet to explore different countries that will participate in the 2012 Olympics games held in London including: how far the countries are from London, how long it would take to travel, the time differences, how the travel distance, and the amount of money it would cost to travel.
- Students will present their finding on a specific country in the form of an artistic brochure.

Introduction:

Athletes from over 205 countries will participate in the 2012 Olympics in London. Some of these countries include: China, Russia, Germany, Australia, Korea, France, Ukraine, Netherlands, Jamaica, Spain, Kenya, Belarus, Cuba, Kazakhstan, Japan, and Italy Where are these countries located, how will there teams get to the Olympics, and what makes these countries stand out? The follow activities will help us explore these questions.

Activities:

Activity 1. True/ False Game: The teacher will read out loud questions for groups of students to answer on the History of the Olympics.

Activity 2. Time Zone Map: During this class activity the teacher would have students come up to the world map and tag countries that participate in the Olympic Games. Then explain definitions of time zones involving these counties and Coordinated Universal Time. Students would answer questions on time zones in order for the teacher to check for understanding.

Assessment/ Project:

Through this discovery learning activity, I hope students will be inspired to learn about the countries that participate in the Olympic Games and become more aware of these different cultures. The students, in groups, would research an assigned country. They would complete given questions on time, distance, and currency conversions. Then after these questions are completed, they would create a brochure on their country including conversions and the cultural aspects of their Country in respect to the Olympics. All brochures would be presented to the class.

Grading:

1. "Ticket out the door," will act as an individual form of assessment. Ask students to use the information on times zones to write down what time it is in Paris, if it is 12:00 pm in London
2. The brochure must include information regarding the time the flight leaves for London, both local and London times, how much the flight costs, and the exchange rate between the country and London. The grade will be based on the accuracy of the information, the calculations (they must show any pertinent work), the appearance of the brochure, amount of details the students included, and the presentation of the country to the rest of the class.

Resources:

"Fact Files." 2012 London Olympic and Paralympic Games. 27 Oct. 2008.
<<http://getset.london2012.com/home>>

"World Time Zones and Time Zone Map." Infoplease. © 2000–2007 Pearson Education, publishing as Infoplease. 27 Oct. 2008
<<http://www.infoplease.com/ipa/A0855474.html>>.

Teacher References**Activity One**

Here are some example questions that could be used for the true/ false Olympic game to introduce the lesson. The information below each question could be read when going over the right answer.

True or False: The first recorded Olympic Game took place in Greece.

This is **True**. 766 BC and it was one race in the nude!!

True or False: An organized committee was needed in order for the Olympics to occur.

This is **True**. 1894 the International Olympic Committee is founded.

True or False: The first modern Olympic Games took place in 1788.

This is **False**. 1896 and it included tourists who just happened to be in Athens.

True or False: For the first time in 1928, women were allowed to compete in Track and Field events at the Olympics in Amsterdam.

This is **True**. But so many women collapsed at the end of the 800- meter race that the event was banned until 1960.

True or False: In the early decades of the 1900s, the Olympics were not popular to watch.

This is **True**. Ticket sales struggled at the Los Angeles games in 1932 and TV stars tried to help bring in crowds.

True or False: In 1956, the Amsterdam Summer Olympics were held in May.

This is **False**. The summer games were actually held in November, for this is when it is summer in the Southern Hemisphere.

True or False: The Olympics were never aired on television until 1990.

This is **False**. 1960 was the first time the Games were seen on TV.

True or False: The first Gymnast to receive seven perfect 10s was a young woman from China.

This is **False**. She was a 14-yrs. old Romanian girl. No one ever score a 10 before her. (1976).

True or False: Sailing is not a sport in the Olympics.

This is **False**. Sailing was first introduced to the Atlanta Paralympics in 1996 and now is a full metal sport.

True or False: The Sydney Olympic Stadium is the largest ever built for an Olympic Games.

This is **True**. Four jumbo jets could fit side by side under the main roof arch.

Activity Two

Notes for Explaining Time Zones. These would be good to display on a transparency for the students to copy down into their notebooks.

- A time zone is a region of the earth that has uniform standard time, usually referred to as the local time.
- Time zones around the world can be expressed as positive or negative offsets of Coordinated Universal Time (UTC).
- Coordinated Universal Time is a time standard based on International Atomic Time, which tracks time on Earth by calculating the surface of the Earth as a mathematical figure.
- The Royal Observatory in Greenwich, UK is where the time is calculated. Therefore Greenwich, UK is referred to as UTC time. The definition for time zones can be written in short form as $UTC \pm n$, where n is the offset in hours.

Give examples of time zones for the students. Have these on a transparency for the students to reference when completing questions to check for understanding.

Paris, France: UTC + 1
Athens, Greece: UTC + 2
New Delhi, India: UTC + 5:30
China: UTC + 8
Tokyo, Japan: UTC + 9
Sydney, Australia: UTC + 10
New York City, United States: UTC - 5
London, UK: UTC

Some questions to ask the students (I would have them just raise their hands). Have these written down for the students to read, while you read them aloud:

If it is 1:00 pm in Greenwich, what time is it in
Paris, France? **2:00 pm**
Athens, Greece? **3:00 pm**
China? **9:00 pm**
If it is 2:00 pm in Tokyo, Japan, what time is it in
Greenwich? **5:00 am**
London, UK? **5:00 am**
New York City, United States? **12:00 am.**

How many hours ahead is Tokyo, Japan from New York City, United States? Another way to phrase the questions is: If Greenwich is five hours ahead of NYC, and Tokyo is nine hours ahead of Greenwich, how many hours ahead is Tokyo from NYC.

$$9 + 5 = 14 \text{ hours}$$

How would your team get to the 2012 Olympics?

Names of Group Members: _____

What is your country? _____

Directions: Your team is to pretend that you all are natives of your chosen country. Access some of the website provided or any other appropriate websites to answer the following questions. Please write out all math calculations.

The currency calculator:

<http://www.x-rates.com/calculator.html>

2012 London Olympics' site:

<http://www.london2012.com/>

Website to find flights to London:

<http://www.kayak.com>, <http://cheaptickets.com>, <http://www.expedia.com>,
<http://www.lowfares.com>, <http://www.britishairways.com>,
<http://www.cheapflights.com/london> , <http://www.flylondon.com>,
<http://www.ryanair.com>, <http://www.1800flyeurope.com/flight-guides/London.cfm>

Since most websites do not post flight information that far in advance, let's assume flights in July, 2012 will be similar to July, 2009. Use the date July 20, 2009 to find information. Just find one-way flights.

After your group has finished these questions, it will be your challenge to create a travel brochure for your country. Include all these questions, important information regarding traveling to the 2012 Olympics, and your country's culture surrounding the Olympics.

How would your team get to the 2012 Olympics?, Page 2

Distance Questions:

What is the distance between your country and London in miles?

What is an equation for converting miles to kilometers?

What is the distance between your country and London in kilometers?

Travel Time Questions:

How will the team travel? (By plane, car, train....)

If they take a plane, what airport will they fly to and from?

What time does the plane leave their home country?

What time does this convert to in London?

Will there be a layover, or can you fly direct to London?

Where is the layover?

If there is a layover, what time is it in this city when you land?

What time does this convert to in the home country?

What time will it be in London?

What time does the team get to London?

What time is it back in your home country?

Currency Questions:

What currency does your country use?

What is the currency in London?

What is the exchange rate between the two?

Can you write a mathematical equation for converting the exchange rates? London's currency can be represented by x .

How much does the flight cost for one person in London currency?

How much does the flight cost for one person in your country's currency?

How much would this convert to in United States dollars?

Sample Student Work

Name: Beth Allen

Country: Paris, France

Distance Questions:

What is the distance between your country and London in miles?

209 miles

What is an equation for converting miles to kilometers?

1 mile = 1.61 kilometers; 1 mile/ 1.61 kilometers = 209 miles/ x kilometers

What is the distance between your country and London in kilometers?

336.35 kilometers

Travel Time Questions:

How will the team travel? (By plane, car, train....)

British Airways Plane Flight

If they take a plane, what airport will they fly to and from?

The team will fly from Ch. De Gaulle Airport and land at Heathrow Airport.

What time does the plane leave their home country?

9:55 p.m.

What time does this convert to in London?

8:55 p.m.

Will there be a layover, or can you fly direct to London?

This is a direct flight

What time does the team get to London?

10:05 p.m.

What time is it back in your home country?

11:05 p.m.

Currency Questions:

What currency does your country use?

Euro

What is the currency in London?

Euro

Can you write a mathematical equation for converting the exchange rate between London's currency and US Dollars. London's currency can be represented by x.

1 Euro/ 1.24 Dollars = x/ 143 dollars

How much does the flight cost for one person in London currency?

114.50 Euros

How much does the flight cost for one person in your country's currency?

114.50 Euros

How much would this convert to in United States dollars?

\$143.00