

Travelling to South Africa: An Application Task

Kim Runnalls

Topic: Time zones

Objectives

- Identify different time zones.
- Determine the relationship between various time zones.
- Research and plan how to travel between time zones in an allotted period of time and budget.
- Convert values of time into different time zones.

Grade Level: 7

Materials

- World map with marked time zones
- Computers with Internet connections (www.timeanddate.com)
- Problem sheet (one copy per student)

Task Description

1. Students will be given the problem sheet and must decide without teacher instruction how to tackle the problem.
2. Using the flight listings sheet and the Internet, students must choose a satisfactory flight itinerary.
3. Students write a rationale for why they chose their itinerary by using descriptions and justifications of the time zone changes, layover and in-flight times, and price.
4. The rationale with a printout of the flight itinerary must be submitted to the teacher for assessment.

Mathematical Concepts: time zones, time zone adjustments, time zone determination and unevenness

Vocabulary: itinerary, time zone, layover/stops, EST, GMT, International Date Line

Adaptations: If students are struggling, they can practise converting between time zones by using a time zone converter online (www.timeanddate.com/worldclock/converter.html). Having Erin fly from Calgary to Capetown rather than going across the International Date Line can make the task easier. Prices can be altered so that exchange rates must be used to increase the difficulty of budgeting. Also, task details can be changed so that Erin's starting location matches wherever the

students completing the task live. This makes the task relevant to any student.

Rationale: By applying the concept of time zones to a highly authentic alternative context, students see the value and need for this mathematical knowledge. This task is highly significant in that it takes on the form of vicarious relevance. This full-class task requires students to integrate and synthesize their knowledge of time zones, number sense and budgeting. Drill and practice text questions (which typically are used for teaching these concepts) cannot attain this level of relevance or require this higher taxonomic level of thinking; whereas a task like this can. Finally, a problem task such as this provides students with a feeling of success and achievement because their work is purposeful and their solution is actually useful for something other than just a mark in the grade book.

Teacher Reflection: This task can be quite engaging as long as the students have a clear idea as to the research/decision-making process and what is expected of their paragraph rationales. This requires the teacher to take time to fully review the new vocabulary terms, such as *itinerary*, and go through exactly how flights are booked and how to read flight itineraries (that is, what do stops mean, what times and time zones are usually given, boarding times and so on). If this is covered well, then students get the idea of how to understand flight plans, how to match them with their flight needs and then how to realistically see how time zones apply to life.

Problem Sheet

Erin Runnalls is doing a law internship this summer in Cape Town, South Africa. She will be working in Cape Town starting July 10, 2006, and living there until the end of August 2006. Before she starts work, she would like to fly from Calgary, Alberta, to Auckland, New Zealand, around June 15 so she can do some travelling before she heads to South Africa for the rest of the summer. She wants to fly from Auckland to Cape Town to be at her job for July 10.

Important things to take note of:

- Erin prefers to fly on well-known airlines with good reputations.
- The maximum total budget for flight costs (including the flight to Auckland plus the flight to South Africa) is C\$6,500.
- Although her job doesn't start until July 10, it would be nice if she had some time to settle in her new house before work starts.
- Erin would like to spend as much time in Auckland as possible.
- Erin doesn't like to be rushed to catch flights in layover destinations.
- More direct flights with fewer layovers are better for Erin.

Through your Internet researching, you must take note of flight times, destination time zones and budget to find an itinerary that satisfies Erin's travelling needs.

After you have found and printed an itinerary, you must write a paragraph explaining why your combination of flights will mathematically work and be appropriate for Erin, while also answering the following questions:

1. Erin's mother wants her to phone home whenever she arrives in a destination. List each of Erin's flight destinations (including layover destinations) and what time it would be at home when she calls her mom in each of these locations.
2. Once Erin is living in Cape Town, what would be an appropriate time for Erin to call her mother so that it's a convenient time for both of them?

Rubric

Score \ Criteria	In-Province Traveller (1–3 marks)	The Tourist Destination Traveller (4–6 marks)	Far Reaches of the World Traveller (7–9 marks)
Time and Date Conversions	Most time and date conversions are incorrect.	Most time and date conversions are correct.	All time and date conversions are correct.
Itinerary	The itinerary chosen satisfies few to none of the parameters.	The itinerary chosen satisfies most of the parameters.	The itinerary chosen satisfies all of the parameters.
Rationale	The rationale is not well thought out and fails to support most of the decisions made.	The rationale is thoughtful and supports most of the decisions made.	The rationale is thoughtful and supports all of the decisions made.

The total score for the application task is out of a total 27 marks.

Kim Runnalls is in her final year at the University of Lethbridge, completing a mathematics education combined degree. She is passionate about mathematics and tries to stimulate an interest in math in every child. She strives to grow and develop her understanding and skills by teaching mathematics in a relevant experiential manner rather than through traditional rote textbook work.