



Investigation 7 Fantasy flight

You have won a dream trip around the world, providing you with 50 000 km of free air travel to four major cities. Unfortunately, there is a catch! You have to pay for your own accommodation and provide all your own spending money.

Produce a travel itinerary and a record of expenses to show how much this dream trip will actually cost you.

Look out for discounts and special offers.



☒ Topics

Before you start the Investigation you need to know...

- ☐ **NA15** Decimal addition and subtraction.....p60
- ☐ **NA21** Discountp72
- ☐ **NA22** Operations with money.....p74
- ☐ **MG6** Read and interpret timetables.....p90

- ☐ **MG7** Add and subtract timep92
- ☐ **MG9** International time zonesp96
- ☐ **MG14** Latitude and longitudep106

Understanding the Investigation

I Read and plan.

Make sure you understand the meanings of: *itinerary*, *accommodation*, *map references*, *major city*, *destination*, *budgeting*, 'a catch', *route*, *allotted* and *influenced*.

Read and discuss the rubric.

Download your Investigation plan. This will help you with the organisation and understanding of the Investigation.

Teacher note

- Comprehensive lesson notes, suggestions and resources are available in *iMaths 6 Teacher Book*.
- The Investigation plan and BLM for this Investigation can be downloaded from www.imathsteachers.com.au.

Materials



Internet access



BLM 7.1



Calculator



Atlas



Travel brochures



World map

Using maths

2 Choose your destinations.

Choose your four destinations. Visit the websites listed at imathskids.com.au to find and calculate the total distance you will fly. Ensure that you stay within the allotted 50 000 km. Your journey should begin and end at your nearest capital city.

Design a table and record the distances.

3 Mark your journey.

Find the map references (latitude and longitude) of each city. Record these in a separate table.

Use the world map outline on **BLM 7.1**. Mark the cities and map references on the map. Decide the direction of your route and mark it on the map.

4 Calculate your flying time.

Find suitable flights. Record the departure and arrival times and flying times in a table.

Calculate the total time you will spend flying.

5 Find accommodation and calculate your expenses.

Find accommodation in each city. How long will you stay in each city? How much will your accommodation cost? See how much money you can save with special deals and discounts.

How much spending money will you require daily? Remember you need to eat and visit tourist attractions.

Write a list of all your expenses and calculate the total cost of your trip.

Reasoning and reporting

6 Report on your fantasy flight.

Present your world map, completed tables and list of expenses. Did you find any discounted accommodation? How much did you save?

Discuss some of the factors that influenced the decisions you made when planning and budgeting your trip.

imathskids.com.au



Go to **imathskids.com.au** – the Investigation 7 area contains the Investigation plan, websites and BLM that you need to complete this Investigation.



Inquiry

I visited these places on my dream trip. Where did I go?

(27°10' N, 78°02' E)

(38°00' N, 23°44' E)

(40°41' N, 74°02' W)

(21°25' N, 39°49' E)

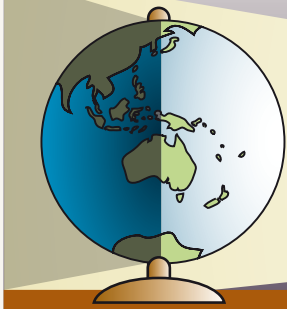
(48°51' N, 2°17' E)

What famous landmark could I see at each place?

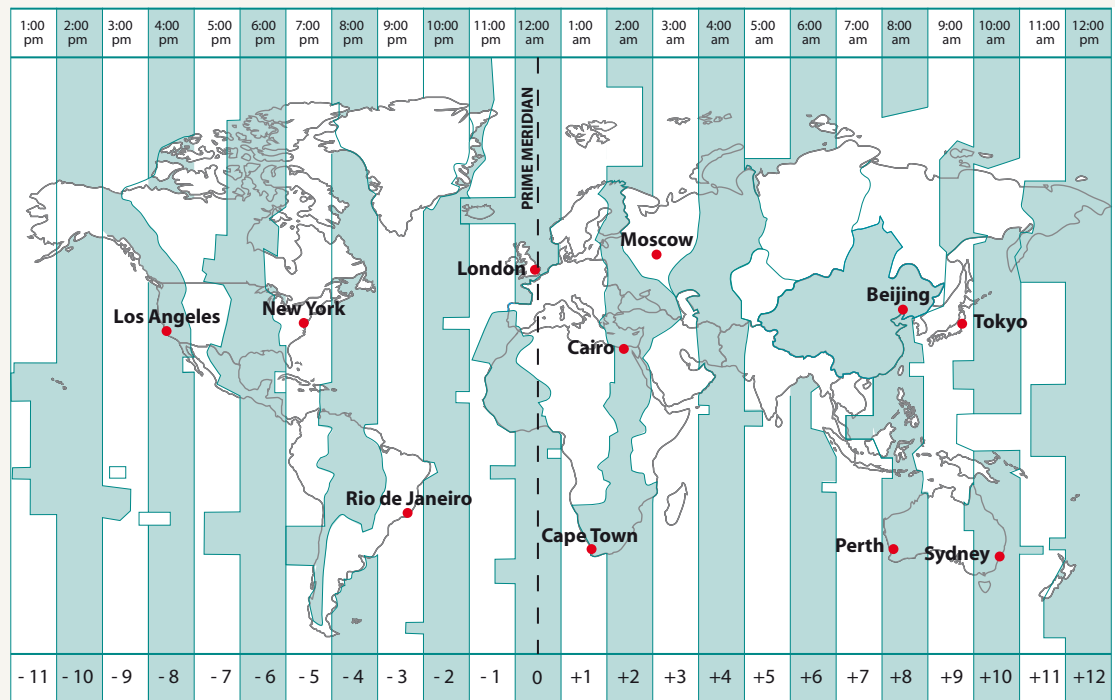


MG9 International time zones

As the Earth turns, various parts of the world pass into daylight then into darkness. Countries around the world experience the cycle of day and night at different times in each 24-hour rotation of the Earth. The world is divided into 24 time zones, each one a long strip from the North Pole to the South Pole and one hour different in time. Everyone living in one time zone sets the time the same way.



This map shows how many hours earlier (–) or later (+) the time zones are relative to the standard time at the Prime Meridian that runs through Greenwich, England.



Try this

1 Use the time zones map to answer these questions.

a Which city on the Prime Meridian has the same time zone as Greenwich?

b Name a pair of cities in the same time zone as each other.

c Find another pair of cities in the same time zone as each other.

d When it is 12:00 am in London, what time is it in Moscow?

e Which city's clocks are set 10 hours ahead of London?

2 When it is 12:00 am in London, what time will it be in each of these cities?

- a Los Angeles b New York c Rio de Janeiro
 d Cairo e Cape Town f Moscow
 g Perth h Beijing i Tokyo
 j Sydney

3 Whenever you cross to the next time zone, you set your watch forward or backward one hour. Travel east means you set your watch forward an hour (+1 h), travel west means backwards an hour (−1 h). How many hours (+ or −) does the time change between these cities?

Cities	Time difference
Sydney to Perth	−2 h
a Beijing to Tokyo	
b London to New York	
c Los Angeles to Cairo	
d Sydney to London	
e Cape Town to Rio de Janeiro	

- 4 a When it is 4:00 pm in Los Angeles, what time is it in New York?
- b When it is 5:00 pm in Los Angeles, what time is it in New York?
- c If I want to phone my uncle in Cape Town at 8:00 am his time, what time should I phone from Sydney?
- d When I watched the Olympic Games on my TV in Sydney at 7:00 pm, what time was it in Beijing?
- e The New Years Eve fireworks went off over Sydney Harbour at midnight. How many hours later did the fireworks go off over Times Square in New York?



Problem solving task

London calling, the clash of times! Grandma wants to talk to me online via the internet on Wednesday at 8:00 am Sydney time. Grandma lives in London, so what time will it be in London when I talk to her?

Use the space provided in *iMaths 6 Tracker Book* to work out your answer.



Challenge

Twisted time zones: You may have noticed that the time zone boundaries in some parts of the world are not straight. Explain why you think this occurs.



Problem solving strategies

10 Work backwards

The **work backwards** strategy involves beginning at the end or with the answer. Do the steps backwards until you understand the problem.



Share this problem

The Brizvegas Poker Tournament has attracted 128 of the world's best card players. Each player hopes to pocket a large share of the one million dollar total prize money.

\$500 000 is allocated for the tournament winner, \$200 000 for second and \$50 000 for third. All the other entrants will share the remaining prize money equally.

How much prize money will each of the players placed 4th to 128th receive?

Discuss the solution

Work backwards will be a useful strategy to solve this problem.

Working backwards from the \$1 000 000 total prize money, subtract \$500 000, \$200 000 and \$50 000.

$$\$1\,000\,000 - \$750\,000 = \$250\,000$$

From 4th to 128th place there are 125 players (128 minus the top 3 = 125), so \$250 000 shared among 125 players is

$$\$250\,000 \div 125 = \$2\,000$$

Players placed 4th to 128th receive \$2 000 each.

YOUR TURN

Fifteen finalists were selected in a photography competition with a total prize pool of \$2000 to be awarded to the finalists.

Third place was awarded \$200 prize money. Second place was double that. First place was awarded double second place.

After the first three place getters were awarded their prize money, the remaining finalists shared the rest of the \$2000 equally.

How much was given to each photographer from 4th to 15th place?

Work backwards to help you solve this problem.



1	Guess and check	6	Check for relevant or irrelevant information
2	Make a table or chart	7	Find smaller parts of a large problem
3	Draw a picture or diagram	8	Make an organised list
4	Act out the problem	9	Solve a simpler problem
5	Find a pattern or use a rule	10	Work backwards



C Friendly and fix

Question

Strategy: Make numbers friendly then fix the change.

Answer

1 \$1.20 + \$0.95	$\$1.20 + \$1.00 = \$2.20, - 5c$ (friendly) (fix)	\$2.15
2 150 + 165	$150 + 150 = 300, + 15$ (friendly) (fix)	315
3 \$2.75 + \$2.50	$\$2.50 + \$2.50 = \$5.00, + 25c$ (friendly) (fix)	\$5.25

D Friendly pairs

Question

Strategy: Find compatible pairs of numbers that are easy to add.

Answer

1 $37 + 6 + 5 + 13 + 5 + 4$	$\underbrace{37 + 13}_{50} + \underbrace{6 + 4}_{10} + \underbrace{5 + 5}_{10}$	70
2 $\$3.90 + \$2.35 + \$1.10$	$\underbrace{\$3.90 + \$1.10}_{\$5.00} + \2.35	\$7.35
3 $0.7 + 0.4 + 0.9 + 0.3 + 0.1$	$\underbrace{0.7 + 0.3}_{1.0} + \underbrace{0.9 + 0.1}_{1.0} + 0.4$	2.4

E Place value

Question

Strategy: Add each place in turn.

Answer

1 $3.6 + 4.3$	$(3 + 4) + (0.6 + 0.3)$	7.9
2 $6.2 + 0.5 + 0.09$	$6 + (0.2 + 0.5) + 0.09$	6.79
3 $5.41 + 3.28$	$(5 + 3) + (0.4 + 0.2) + (0.01 + 0.08)$	8.69



Mental computation strategies

– Subtraction strategies

- A Friendly chunks
- B Friendly balance
- C Friendly and fix
- D Place value
- E Discount

A Friendly chunks

Question	Strategy: Count back in friendly chunks.	Answer
1 $\$3.50 - 75c$		\$2.75
2 $1 - 0.36$		0.64
3 $\$1.80 - 55c$		\$1.25

Question	Strategy: Count on in friendly chunks.	Answer
1 $0.54 - 0.45$		0.09
2 $\$9.00 - \4.55		\$4.45
3 $\$5.00 - \2.40		\$2.60

B Friendly balance

Question	Strategy: Make numbers friendly by adding the same to both.	Answer
1 $\$9.40 - \2.90	$\begin{array}{r} \$9.50 - \$3.00 \\ (+10c) \quad (+10c) \end{array}$	\$6.50
2 $\$3.25 - \1.95	$\begin{array}{r} \$3.30 - \$2.00 \\ (+5) \quad (+5) \end{array}$	\$1.30
3 $3.7 - 1.9$	$\begin{array}{r} 3.8 - 2.0 \\ (+0.1) \quad (+0.1) \end{array}$	1.8