



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.



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)

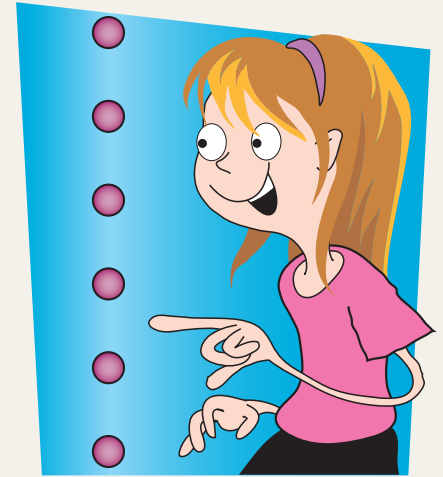
(48°51' N, 2°17' E)

What famous landmark could I see at each place?



NA15 Decimal addition and subtraction

When adding and subtracting decimal fractions it is important to keep the decimal points lined up. This will make sure that you add the ones, tenths, hundredths and thousandths in their correct columns.



$$\begin{array}{r}
 26.214 \\
 + 8.52 \\
 + 1.3 \\
 \hline
 \end{array}
 \rightarrow
 \begin{array}{r}
 26.214 \\
 + 8.520 \\
 + 1.300 \\
 \hline
 36.034
 \end{array}$$

To make sure your answer is reasonable, estimate your answer by rounding each of the three numbers, then add.

$$\begin{array}{r}
 26.214 \text{ round down} \\
 + 8.52 \text{ round up} \\
 + 1.3 \text{ round down} \\
 \hline
 \end{array}
 \rightarrow
 \begin{array}{r}
 26 \\
 + 9 \\
 + 1 \\
 \hline
 36 \text{ (estimate)}
 \end{array}$$

Tip

Fill the empty places with zeros. This keeps the digits lined up.

$$\begin{array}{r}
 35.217 \\
 - 3.8 \\
 \hline
 \end{array}
 \rightarrow
 \begin{array}{r}
 35.217 \\
 - 3.800 \\
 \hline
 31.417
 \end{array}$$

To make sure your answer is reasonable, estimate your answer by rounding both numbers, then subtract.

$$\begin{array}{r}
 35.217 \text{ round down} \\
 - 3.8 \text{ round up} \\
 \hline
 \end{array}
 \rightarrow
 \begin{array}{r}
 35 \\
 - 4 \\
 \hline
 31 \text{ (estimate)}
 \end{array}$$



You can check your answer with a calculator.

Try this

- 1 Round the numbers to ones and add or subtract to find the estimate. Then write each vertically, and calculate the answer.

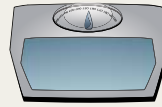
a $7.41 + 1.248 + 0.5$ (estimate)

b $56.14 - 25.072$ (estimate)

2 Max weighs 54.164 kg. Buzz weighs 48.45 kg.

- a Calculate the difference in the mass of the two boys.

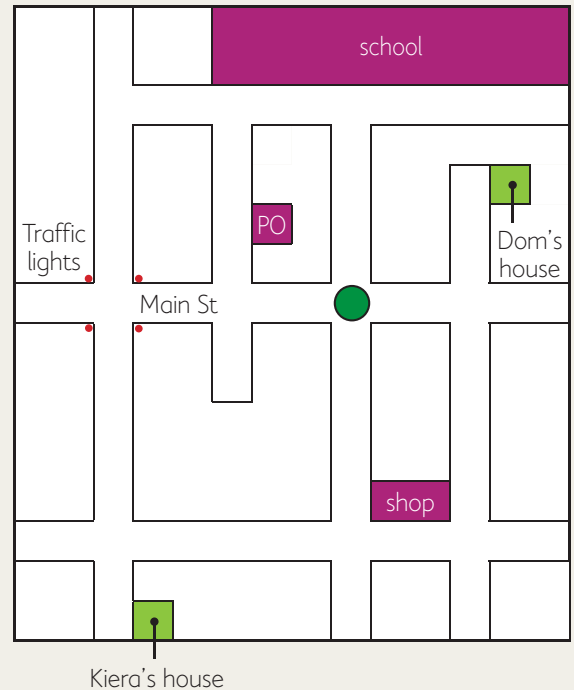
- b Lucy weighs 46.95 kg. Calculate the difference in the mass of Max and Lucy, then Buzz and Lucy.



3 Dom walks 1.55 km to the school down Main St and past the roundabout. Kiera walks a distance of 2.25 km to school. She walks to the traffic lights and past the post office.

- a What is the total distance Dom and Kiera walk each day?

- b The shop is 1.10 km from Kiera's house, and 1.45 km from her school. If Kiera walks to school past the traffic lights, then after school walks home via the shop, how far is Kiera's journey that day?



Problem solving task

Carpark fees: Work out the parking fees incurred by the following three vehicles at the City Airport Car Park.

- a **Car 1**
55 min
- b **Car 2**
1 h 45 min
- c **Car 3**
2 h 10 min
- d How much more expensive would it be to pay for a 5-hour stay, paying by the half-hour instead of buying a $\frac{1}{2}$ day ticket?

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

City Airport Car Park Fees

First 30 min	\$5.55
<small>(or part thereof)</small>	
Each 30 min thereafter	\$2.40
<small>(or part thereof)</small>	
Half day	\$14.00
<small>(or part thereof)</small>	
Full day	\$16.00
<small>(or part thereof)</small>	

Challenge

Three-way weigh: When three friends stood together on bathroom scales it read 95.5 kg. One friend stepped off and it read 70.8 kg. After another friend stepped off, the scales read 32.7 kg. How much did each of the three friends weigh?



MG6 Read and interpret timetables



As the word suggests, a **timetable** is a **table** that gives information about **time**. Timetables are most commonly used to give information about the arrival and departure of trains, buses, planes, ferries and other forms of transport. A timetable can also be used to list the lesson times in a school day. Maybe you already use one!

Look at the train timetable below. Notice that some days have an express service that does not stop at some stations.

Summer Beach to The City							XP = Express Service
	Summer Beach	Riverview Harbour	Tranquil Valley	Parklands Stadium	The Mall	Downtown	The City
	am	am	am	am	am	am	am
Monday	8:00 XP					8:35	8:40
	9:00	9:10	9:15	9:20	9:40	9:45	9:50
Tuesday	8:00	8:10	8:15	8:20	8:40	8:45	8:50
Wednesday	8:00 XP					8:35	8:40
	9:00	9:10	9:15	9:20	9:40	9:45	9:50
Thursday	8:00	8:10	8:15	8:20	8:40	8:45	8:50
Friday	8:00 XP					8:35	8:40
	9:00	9:10	9:15	9:20	9:40	9:45	9:50
Saturday	8:00	8:10	8:15	8:20	8:40	8:45	8:50

Try this

1 Refer to the Summer Beach to The City train timetable.

a Which days have an express service?

b What time does the Wednesday express train reach Downtown?

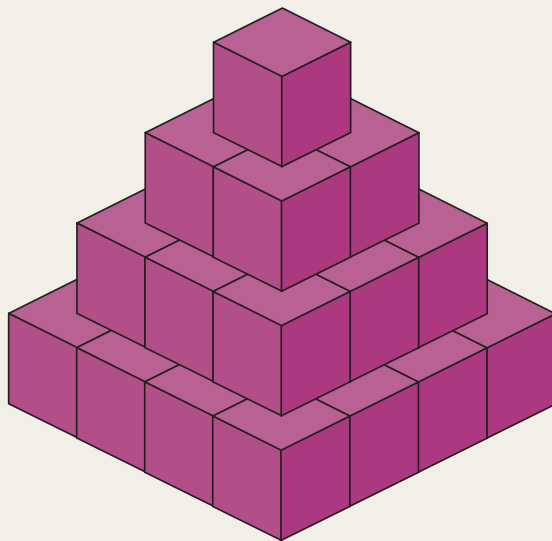
c How long does the regular service take to travel from Summer Beach to The City?



Problem solving strategies

2 Make a table or chart

The **make a table or chart** strategy involves drawing a table with rows and columns. Sorting your ideas or information into a table may help you see the answer more clearly.



Share this problem

This pyramid is built from layers of small cubes.

Two more layers are added to the bottom of the pyramid to continue the pattern.

How many small cubes does the new pyramid contain?

Discuss the solution

Make a table or chart will be a useful strategy here.

For each layer of the pyramid, write the number of cubes needed.

Layer	Cubes
1	1
2	4
3	9
4	16

Do you recognise the numbers in the second column? They are the square numbers.

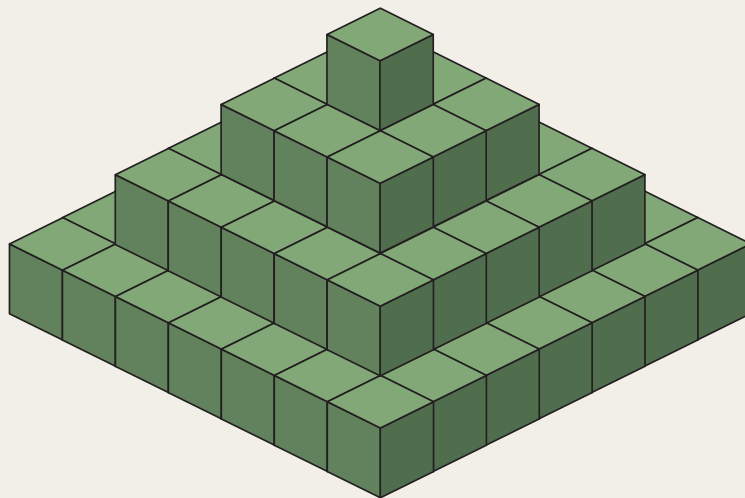
Layer	Cubes
1	1 (1×1)
2	4 (2×2)
3	9 (3×3)
4	16 (4×4)

Continue the table to find the number of cubes for two more layers. Add to calculate the total number of cubes in the pyramid.

YOUR TURN

This pyramid is built from layers of small cubes.
Three more layers are added to the bottom of the pyramid to continue the pattern.
How many small cubes does the new pyramid contain?

Use the **make a table or chart** strategy to 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



Problem solving strategies

6 Check for relevant or irrelevant information



The **check for relevant or irrelevant information** strategy is good to use when a problem has lots of extra information that you don't need. Try to find only the information that you actually need and ignore the rest.

Share this problem

The school cross country event finished with the judges having trouble deciding the order of the runners. Here's what the judges had to say, with enough information for you to sort out the order of the runners.

- 1 "Matt finished before Andy."
- 2 "Andy wore special running shoes."
- 3 "Andy finished in front of Robbie."
- 4 "Robbie tripped at the start."
- 5 "Connor was beaten by Robbie."
- 6 "Robbie won last year."
- 7 "Tim finished in front of Robbie, but behind Andy."
- 8 "Connor won the 100 m sprint this year."
- 9 "Tim ate a special breakfast this morning."
- 10 "I saw Robbie stop for a rest."

Discuss the solution

The **relevant** comments will help us find the correct order.

Some of the comments are not helpful at all. They are **irrelevant**.

Read each sentence carefully and ask yourself, "Is this helpful?"

If not, cross it out. Here are the four relevant sentences – 1, 3, 5 and 7.

Here is the order of the runners at the finish of the cross country.

Matt, Andy, Tim, Robbie, Connor.

YOUR TURN

Those judges are at it again!

This time they're totally confused at the swimming carnival. There are enough relevant comments for you to work out who placed first to fifth.

Here's what they said:

- 1 "Mel did a great dive."
- 2 "Ava finished in front of Sarah."
- 3 "Tia's swimming costume is just gorgeous!"
- 4 "Poor Charlotte! Her goggles fell off."
- 5 "Didn't Ava win last year?"
- 6 "Mel finished in front of Ava."
- 7 "Ava swims like a fish."
- 8 "Charlotte was beaten by Sarah."
- 9 "Sarah is a champion at nippers."
- 10 "Tia finished in front of Sarah, but behind Ava."

Use the **check for relevant or irrelevant information** strategy to 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
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