





About the Investigation

Show day is here again, with fairy floss, rides and show bags galore. Students will use a show guide to negotiate and make choices about spending money. The number concepts of addition and subtraction are practised in calculating a \$60 budget. This Investigation is best done at the time of your local show.

Planning the Investigation

Expected duration of Investigation: 3 weeks

Recommended group size: Pairs

Students will need:

- 🔅 internet access
- ☆ Tear-out 2 Show guide
- $\Leftrightarrow~$ Tear-out 3 My plan for a day at the show
- 🕸 Tear-out 4 Wish list
- ☆ Tear-out 5 Final budget
- ☆ BLM 2.1 Australian notes
- ☆ BLM 2.2 Australian coins
- $\stackrel{_{\scriptstyle \leftarrow}}{_{\scriptstyle \leftarrow}}$ play money (notes and coins)
- 🖈 A3 paper
- 🕸 calculators

Topics for this Investigation

Before starting the Investigation, teach the following Topic	25
NA9 Addition facts	NA14 Subtraction to two digits (with regrouping)
NA10 Addition to two digits (with regrouping)	NA27 Do I have enough money?
NA12 Subtraction facts	MG7 Clocks - quarter past, half past
NA13 Subtraction to two digits (no regrouping)	MG8 Clocks - quarter past, quarter to

Curriculum match for Investigation 2

The table below shows how the Topics in Investigation 2 match the content requirements of the Australian Curriculum.

Content descriptions	iMaths 2 Topics
Number and Algebra Number and place value	
Explore the connection between addition and subtraction.	NA9 Addition facts
 Solve simple addition and subtraction problems using a range of efficient mental and written strategies. 	 NA9 Addition facts NA10 Addition to two digits (with regrouping) NA12 Subtraction facts NA13 Subtraction to two digits (no regrouping) NA14 Subtraction to two digits (with regrouping)
Patterns and algebraSolve problems by using number sentences for addition or subtraction.	NA10 Addition to two digits (with regrouping) NA14 Subtraction to two digits (with regrouping)
 Money and financial mathematics Count and order small collections of Australian coins and notes according to their value. 	NA27 Do I have enough money?
Measurement and Geometry Using units of measurement • Tell time to the quarter-hour, using the language of 'past' and 'to'.	MG7 Clocks - quarter past, half past MG8 Clocks - quarter past, quarter to

The table below shows how students will apply the proficiency strands during each task in this Investigation.

Proficiency strands	Investigation 2 criteria
Understanding, Fluency and Problem Solving	Step 3: Use the information on the <i>Show guide</i> and the <i>Program of events</i> in the Student Book to complete <i>My plan for a day at the show</i> .
	Step 4: Use the <i>Show guide</i> to make a <i>Wish list</i> of show bags, rides, and food and drink. Find the total cost.
	Step 5: Use notes and coins to show different ways to make \$60.
	Step 5: Create a final budget to make sure you spend as close to \$60 as you can.
Reasoning	Step 6: Explain their plan, <i>Wish list</i> , final budget and how they spent the \$60.

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Investigation 2 Show time

Essential word list

Students will need to understand the following terms:

🖈 best value	🕁 final
☆ budget	🕁 total
☆ change (money)	☆ wish list
🛠 expensive	

The rubric

Read and discuss the rubric. Discuss the criteria and have students identify which step of the Investigation each one is describing. The rubric should be revisited after the *Understanding the Investigation* stage, both during and after the *Using maths* stage and during the *Reasoning and reporting* stage.



Investigation 2 Show time

Congratulations, you have won two free passes to the show!

You and a friend have a total of \$60 to make it a fun-filled day by buying show bags, ride tickets and food.

Your task is to choose how best to spend your money.



NA9 Addition facts	4 Subtraction to two digits (with regrouping) p
NA10 Addition to two digits (with regrouping) p50 NA2	7 Do I have enough money?
NA12 Subtraction facts p54 MG7	Clocks – quarter past, half pastp10
NA13 Subtraction to two digits (no regrouping) p56 MG8	Clocks – quarter past, quarter top10
derstanding the Investigation Read and discuss.	Teacher note

1 Read and discuss.

Read the introductory text and discuss the premise of the Investigation.

Teach the Topics (concepts) that provide the knowledge required to complete the Investigation.

Re-read the introductory text and each step of the Investigation. Discuss any procedures to be used, how data will be organised and how solutions will be communicated.

Discuss new terms in the context of the Investigation.

Read and discuss the rubric. Clarify the criteria to be assessed. This rubric should be revisited throughout the investigative process.

Focus questions

- What is this Investigation asking you to do?
- Which Topics are really important to this Investigation?
- What do you think you will be good at?
- What do you think you will need help with?
- Do you understand the meanings of the words on page 10?



4 Make a wish list. Record the prices of the show bags, ride tickets and food you want to buy on Tear-out 4, *Wish list* (p179).

Find the total cost of your wish list.

5 Plan a \$60 budget.

Use notes and coı̈ns to show ways to make \$60. How many combinations can you find? Look at your wish list. Will all those items cost more than \$60 or less than \$60?

Use Tear-out 5 (p181) to create a final budget. Try to spend as close to \$60 as you can.

Reasoning and reporting

6 Value for money. Present and describe the plan for your day at the show, your wish list and your final budget. How much did you spend? Was there any change? How much? Justify your final choices.

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All day events • Art and craft display • Face painting • Camel riding • Car models display • Car models display • Car models display • Car models display

Didaeridoo workshop

Marvin's Magic Sho

Monster trucks and motor cross

Spear and boomerang throwing

• Doll making

School bands

competition

Fireworks

Grand parade

Show jumping

Pet nursery

1:30

3:45

6:30

2 It's show time.

Discuss students' prior knowledge and experiences of seasonal events, such as shows, fairs, festivals and fetes.

Discuss the elements that help identify the uniqueness of the local community, such as location, climate, history, culture, and people. These influence seasonal events, such as rodeos or festivals, and in turn influence the character of local shows.

Brainstorm and list the entertainment, events, rides, show bags, food and drinks that are available at shows or fairs.

Students can visit <u>www.imathskids.com.au</u>, click on *Investigation 2* and use the websites listed to find more information about shows.

Explore the website to find information about events, entertainment, show bags, prices etc.

Ask students to share any new information about your local show with the class.

Note: Each capital city has different dates for their show day. Corresponding websites are available at those times.

Focus questions

- What is a show?
- Why do different communities have shows?
- When is our local show?
- How long does it go for?
- What is the entry fee?
- What other things do you spend your money on?
- How much do you think it would cost to have an enjoyable day at the show?
- Is it an expensive day out?
- What is the best part about going to the show?

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Investigation 2 Show time

2 It's show time. (continued)

Ask students to cut out the *Show guide* on **Tear-out 2** and fold it into a booklet.

Allow sufficient time for students to scan and discuss the *Show guide* with a partner.

As a whole class shared reading activity, read the *Show guide*, discussing its elements, such as fonts, illustrations, titles and subtitles, purpose and intended audience. Identify 'show' vocabulary, for example dodgem cars, inflatable guitar and vouchers.

Look at and compare prices of rides, show bags and food, noting which are cheap, expensive or value for money. It may be useful to create lists under these headings, either in groups or as a whole class, ensuring students justify their choices each time.

Explore and play

You may choose to add depth to the Investigation by engaging students with other fun activities, such as:

- Fantasy show bags Design the show bag of your dreams with coloured card and other craft materials. Label with a theme name or logo, for example Gamestation Max, Pretty Pony, or Magic Mermaid. Decorate and glue pictures of toys, food and games etc. Make a price tag for your show bag.
- Design and play a sideshow game. Try throwing hoops over plastic soft drink bottles filled with sand or tossing beanbags at a target.
- Create a radio advertisement promoting the local show and program of events, giving times and duration of each.
- Organise a show day lunch. Include food such as fruit, ice-cream, sushi, hamburgers, hotdogs, snow cones and toffee apples.

3 Plan your day at the show.

For this step of the Investigation, students will need Tear-out 3 *My plan for a day at the show.*

With the class, read the *Program of events* in the Student Book on page 11.

Students will allocate time to visit their chosen events, take meal breaks, buy show bags and go on rides, then record them on Tear-out 3. Remind students they may choose to do the 'all day events' at any time.

Students then write the missing times on the digital clocks to match their chosen schedule.

Focus questions

- At what time is (Marvin's Magic Show)?
- Which even is your favourite? What time is it on?
- When would be a good time to have lunch? Why?
- When is the best time to buy show bags? Why?
- How long after the gates open is the puppet show?
- How long after the fireworks do the gates close?

Fig 2.1 – Example My plan for a day at the show



My plan for a day at the show

Time	Event, show bags, rides, food	
B:30 RM	Pet parade	
9:45 am	African music	
(10:30 am)	Go on rides	
(11:15 am)	Championship dog show	
(12:30 pm)	Meal break	
(1:30 pm)	Marvin's Magic Show	
2:15 pm	Camel riding	
3:45 pm	Monster trucks and motor cross	
(1) 12 12 (1) 12	Face painting	Tear-out
(1) 12 12 (1) 12	Buy show bags	
6:30 pm	Fireworks	1
SBN 978 74135 177 4	Maths 2 Student Book	177

4 Make a wish list.

For this step of the Investigation, students will use **Tear-out 2** *Show guide*, and **Tear-out 4** *Wish list*.

In pairs, students should use the *Show guide* to create a wish list of all the things they would like to buy at the show, listing them and their prices under the headings *Show bags, Rides* and *Food and drink* on Tear-out 4. Explain to students that a wish list means whatever they want – no limits!

Ask students to total how much they have spent under the three headings (see Fig 2.2).

It would be useful to review the turnaround concept, as it will assist students in adding their totals, for example:

3 + 4 = 7 and 4 + 3 = 7.

Also, review grouping strategies. When using addition, no matter how the numbers are grouped, the answer will always be the same. For example:

(3 + 3) + 4 = 6 + 4 = 10 or 3 + (3 + 4) = 3 + 7 = 10

This would also be an ideal time to review the concept of money, especially comparing coins and notes, and using them to make up prices given in the *Show guide*.

For example:

- A Frozie is \$1. What coins make up \$1?
- A hotdog is \$2. What are the different ways we can show \$2?

5 Plan a \$60 budget.

For this step of the Investigation, students will need play money (notes and coins) to make \$60. Alternatively, you could print copies of **BLMs 2.1–2.2**, *Australian coins and notes*, for each student.

Explain to the class that in this Investigation, they have a budget or limit of \$60 to spend on three categories – show bags, rides, and food and drink.

Focus questions

- What is a budget? (A budget is a plan of spending or setting money aside for a particular purpose.)
- Why have a budget?
- What sorts of things might you or your family want to budget for at home?

Ask students to use play money and coins to make \$60 in different ways. Students could cut and paste the \$60 representations in their workbooks. Also, students may draw other representations for \$60. Collect these and use them for assessment later.

Creative thinking strategy

Use the APC thinking tool (Alternatives, Possibilities, Choices) to make students aware of all the options and possible choices presented in the *Show guide* (see Fig 2.3).

With their partners, students should look at their *Wish list* again and modify it by choosing and listing items that fit within their total budget of \$60.

Fig 2.2 - Example Wish list

Investigation 2: Sl	now time
Wish list	
Show bags	
<u>Mega show bag</u>	\$ 18
Princess show bag	\$ 15
Rockstar show bag	\$ 10
	\$\$
	Total \$_43
Rides	
<u>Ghost train</u>	<u>\$_3</u>
Pony ride	\$_7
Dodgem cars	\$_4
	\$\$
	Total \$_14
Food and drink	
Hamburger	\$_3
Dagwood dog	\$_3
Fried rice	\$_4
	\$
	· · · · · · · · · · · · · · · · · · ·

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Fig 2.3 - Example APC for \$60 budget

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Alternatives	Possibilities	Choices
Rides Food and drink	 Some bags contain free rides and food 	 Mega show bag (4 rides and food for 1) = \$18
Show baas	 Buy rides, food and drink or 	 Princess show bag (2 rides) = \$15
Show bugs	show bags separately	 2 x Munchies bags = \$8
		• 2 x Dodgem car rides = \$8
		• 2 x hamburgers = \$6
		• 2 x ice-creams = \$4

They should prioritise their items and tick the ones they really want, check to see if the totals are above or below \$60, and add or subtract accordingly.

This is an open-ended activity. Remind students that all problem solving is about risk taking and having a go. In this activity there is no 'right' answer or solution.

Students can also use their knowledge of addition and subtraction operations, mental computation strategies and use calculators.

Encourage students to keep a running total of spending using the addition key on their calculators. Alternatively, students may wish to begin with \$60 and use the problem solving strategy *work backwards*, subtracting using the calculator to see what they have left each time.

This collaboration process will require a lot of talking, sharing of ideas, trialling and checking, for the pair to reach agreement on their final choices. This is an ideal time to discuss and role-play effective communication.

Investigation 2 Show time

5 Plan a \$60 budget. (continued)

Discuss things such as being considerate of others and respecting differences by listening and taking turns, being fair, being kind and patient, managing emotions, and valuing others' feelings and contributions.

Students may need to complete a few drafts before finalising their budgets. Ask students to write a final copy of their budget on **Tear-out 5** *Final budget*, including prices of all items, totals spent under each heading and the total amount spent. All drafts and final copies will be submitted for assessment.

6 Value for money.

Students present their original *Wish list* and total expenditure, then show their *Final budget* (Tear-outs 4 and 5). They should explain and justify their choices.

Students then show the total expenditure, indicate if there is any change from \$60 and if so, how much.

This will require a series of sessions for all students to have a turn. As a class, discuss and decide which budgets provided the best value for money.

Students should submit:

Tear-out 3 - My plan for a day at the show (Step 3)

Tear-out 4 - Wish list

Tear-out 5 - Final budget

different note and coin combinations of \$60.

Focus questions

- Is \$60 enough to buy all the things on your *Wish list*?
- How are you and your friend going to decide which items to spend your money on?
- What is a fair way to choose?
- Are some items better value for money? (For example, some show bags also include free ride vouchers or food.)

Communicating and reflecting

The following questions are designed to help you assess students' proficiency in reasoning.

- How did you decide which events and activities to include in your plan?
- How did you decide which show bags, rides and food from your *Wish list* to include in your final budget?
- Were you able to include everything from your *Wish list* in your final budget? Why or why not?
- How did you make sure you spent as close to \$60 as possible?
- Was there any change left from your \$60? How much?
- How many different combinations of notes and coins did you find that make up \$60?

Inquiry

Students who need an extra challenge could be engaged in the following activity, which extends the application of the Topics used in the Investigation.

- Use your *Show guide* or a show website to create your own, value for money show bag. Justify your choices.
- Use the *Show guide* or a show website to find out how much it would cost for your family to have an enjoyable day at the show. Explain and justify your choices.

Tear-outs & Black Line Masters

Tear-outs are found at the back of the Student Book. Downloadable Black Line Masters and Tear-outs are exclusive to classes that booklist iMaths Student Books and can be downloaded from <u>www.imathsteachers.com.au</u>.

Tear-out 2	Tear-out 3	Tear-out 4	Tear-out 5	BLM 2.1	BLM 2.2
Investigation 2: Show time	The set of Investigation 2: Show time	Transa d Investigation 2: Show time	Transact 5 Investigation 2: Show time	ELM 21 Invertigation 2 Store tree	BLM 2.2 Investigation 2. Non-tree
		With file		Autorilian notes	Actriain and 1 a 0 a 0 b 20 b 50 b 50 c 0 a 0 b 20 b 50 c 0 c 0 c 0 c 0 c 0 c 0 c 0 c 0 c 0 c 0 c 0 c 0 c 0

2	/est	tigation 2 S	now time	Name:			Due date:	
	Step	p Ability to	A	В	C	D	Е	
	gnivlo2	Use the information on the Show guide and the Program of events to complete My plan for a day at the Show.	Independently recognised each analogue time and wrote the equivalent digital time correctly. Used the <i>Show guide</i> and <i>Program of</i> <i>events</i> to make a sensible and workable plan for their day at the show.	Recognised each analogue time and corrected any errors when writing the equivalent digital time. Chose items from the <i>Show guide</i> and <i>Program of events</i> to make a reasonable plan for their day at the show.	Made some errors reading the analogue clocks and writing the equivalent digital times. Needed to revise their selection of items from the <i>Show guide</i> and <i>Program of</i> <i>events</i> to make a workable plan.	Had difficulty reading the analogue time. Needed guidance to write the equivalent digital time. Had trouble understanding how to use the <i>Show guide</i> and the <i>Program of events</i> to make a plan.	Was unable to read the analogue time and write the equivalent digital times. Did not make a plan for the day using the <i>Show guide</i> and the <i>Program of events</i> .	
spu	Iuency and Problem	Use the <i>Show guide</i> to make a <i>Wish list</i> of show bags, rides, and food and drink. Find the total cost.	Used a logical approach to select appropriate items in each category from the <i>Show guide</i> . Accurately and efficiently calculated the total cost of the <i>Wish list</i> .	Chose items from the <i>Show</i> <i>guide</i> to make a reasonable wish list. Needed prompting to make any necessary revisions. Corrected any errors when calculating the total cost of the <i>Wish list</i> .	Selected items from the <i>Show</i> guide, but needed some help to interpret the <i>Show</i> guide and revise the choices. Made only minor errors when calculating the total cost of the <i>Wish list</i> .	Had trouble understanding the <i>Show guide</i> . Needed help choosing items to make a <i>Wish list</i> . Needed considerable help to find the total cost.	Was unable to interpret the <i>Show guide</i> to choose events. Was unable to complete the <i>Wish list</i> .	
Proficiency strai	nderstanding, I	Use notes and coins to show different ways to make \$60.	Independently found many combinations of notes and coins to make \$60. Made no mistakes.	Found some combinations of notes and coins to make \$60. Made no mistakes.	Needed some help to find combinations of notes and coins to make \$60. Made some mistakes but was able to correct them.	Needed guidance to find combinations of notes and coins to make \$60.	Was unable to find combinations of notes and coins to make \$60, even with help.	
	ΙΩ	Create a final budget to make sure you spend as close to \$60 as you can.	Selected items from the <i>Wish list</i> and chose new items, where required. The total amount spent was as close to \$60 as possible. Made no errors in calculations.	Selected items from the <i>Wish list</i> and chose new items, where required, until the amount of the <i>Wish list</i> was close to \$60. Made very few errors in calculations.	Needed some help to choose items, from the <i>Wish list</i> and select new items where required, so the total was close to \$60.	Needed guidance to modify the <i>Wish list</i> so the total was close to \$60.	Did not make any changes to the <i>Wish list</i> so that it was close to \$60.	
	Keasoning	Explain their plan, <i>Wish list</i> , final budget and how they spent the \$60.	Explained the plan for the day and gave detailed reasons for their choice of show bags, rides, and food and drink. Explained how the total cost of the list was calculated and how they got as close to \$60 as possible.	Described the plan and gave some simple reasons for their choice of show bags, rides, and food and drink. Explained how they calculated the total cost and how much change was left from \$60.	Described the plan and the choice of show bags, rides, and food and drink. Described how the total cost was calculated and how this was close to the \$60 limit.	The description of the plan was sometimes confused. Knew the total amount spent but was unable to describe how this was close to the \$60 limit.	Did not describe the plan or the budget.	
		Teacher com	ments					

Rubric

Overall rating