

# Hey! Let's have a big day out!

Year 5 Mathematics

ASIC's

**M**  **ONEYSMART** Teaching



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# Hey! Let's have a big day out!

<b>Year level</b>	5
<b>Duration of unit</b>	7.5 hours*
<b>Key learning area</b>	Mathematics

## Unit description

In this unit students will investigate possible costs involved in a family outing. They will discuss the differences between essential and optional costs, and justify reasons for spending preferences.

Students will review addition and subtraction of money, and solve problems involving the multiplication of large numbers by one- or two-digit numbers in the context of producing a simple financial plan. They will investigate how reasonable their answers are using estimation strategies. Students will be encouraged to use efficient mental and written processes, and appropriate digital technologies.

Students will present a financial plan for an outing, modifying it as appropriate to fit a suggested budget. They will show calculations and give suitable justifications for their selections.

## Enduring understandings/Deep learnings

- ▶ Budgets are a way to plan and manage spending.
- ▶ Expenditure can be classified as essential or optional, and choices made have a financial impact.
- ▶ Estimation and rounding can be used to check the reasonableness of answers.
- ▶ Accurate calculations are important when planning and amending a budget.

*\* Timings are provided as a guide only. Teachers will tailor the activities to suit the capabilities and interests of their class. The unit and all the student worksheets can be adapted to teacher's needs.*

# Unit planner

## Links

The following table provides the relevant links to the Australian Curriculum and National Consumer and Financial Literacy Framework.

Australian Curriculum	National Consumer and Financial Literacy Framework
<p><b>Mathematics</b></p> <ul style="list-style-type: none"> <li>▶ <b>Strand: Number and Algebra</b> <ul style="list-style-type: none"> <li>— Sub-strand: Number and place value               <ul style="list-style-type: none"> <li>○ Content Descriptions:                   <ul style="list-style-type: none"> <li>▪ Use estimation and rounding to check the reasonableness of answers to calculations (ACMNA099)</li> <li>▪ Solve problems involving multiplication of large numbers by one- or two-digit numbers using efficient mental, written strategies and appropriate digital technologies (ACMNA100)</li> </ul> </li> </ul> </li> <li>— Sub-strand: Money and financial mathematics               <ul style="list-style-type: none"> <li>○ Content Description:                   <ul style="list-style-type: none"> <li>▪ Create simple financial plans (ACMNA106)</li> </ul> </li> </ul> </li> </ul> </li> </ul>	<p><i>(Note: the student learnings in the National Consumer and Financial Literacy Framework are divided into, and are applicable over, bands covering two chronological years.)</i></p> <p><b>Year 6</b></p> <ul style="list-style-type: none"> <li>▶ <b>Dimension: Knowledge and understanding</b> <ul style="list-style-type: none"> <li>— Student Learning:               <ul style="list-style-type: none"> <li>○ Recognise that families use household income to meet regular financial commitments and immediate and future expenses</li> </ul> </li> </ul> </li> <li>▶ <b>Dimension: Competence</b> <ul style="list-style-type: none"> <li>— Student Learnings:               <ul style="list-style-type: none"> <li>○ Create simple budgets for a range of purposes and explain the benefits of saving for future needs and wants</li> <li>○ Order and justify reasons for spending preferences</li> </ul> </li> </ul> </li> <li>▶ <b>Dimension: Responsibility and enterprise</b> <ul style="list-style-type: none"> <li>— Student Learning:               <ul style="list-style-type: none"> <li>○ Identify and describe the impact that the consumer decisions of individuals may have on themselves and their families, the broader community and/or the environment</li> </ul> </li> </ul> </li> </ul>

## Australian Curriculum

### General capabilities

Literacy, Numeracy, Information and communication technology (ICT) capability and Critical and creative thinking.

### Cross-curriculum priorities

N/A

### Proficiency strands

#### ▶ Fluency

- Use knowledge of procedures to flexibly, accurately and efficiently carry out calculations when creating a budget and calculating costs ('A big day out', 'Let me in!', 'Multiply your money – at the swimming pool')

#### ▶ Problem solving

- Apply knowledge of problem solving to make choices, interpret and investigate problems and develop a solution for a specific learning area i.e. budgeting for an excursion ('Can we go to the...?', 'A big day out at the theatre')

#### ▶ Reasoning

- Evaluate and justify the appropriateness of their budget in relation to their family's needs, and amend the budget accordingly ('Can we go to the...?')

### Pre-requisite skills

- ▶ To undertake this unit, students need to be able to:
  - understand long multiplication
  - use decimal numbers – especially the understanding of the use of the decimal point when writing amounts of money
  - use Excel to create spreadsheets (optional).

### Note

This unit may be better taught towards the end of the year as considerable pre-requisite knowledge and skills are needed to complete it. Students may use calculators for many of their calculations at the teacher's discretion.

## Introducing

Sequenced teaching and learning activities	Assessment tasks	Resources
<p><b>Introduction: A big day out (30 minutes)</b></p> <p>Students brainstorm a list of possible elements to be considered when planning a family outing and select those that have a financial impact. They discuss budgeting and begin a word wall.</p>	N/A	<ul style="list-style-type: none"> <li>▶ Internet access – YouTube access for video clip of DreamWorld <a href="https://www.youtube.com/watch?v=Aefasb0Xkqo">youtube.com/watch?v=Aefasb0Xkqo</a></li> <li>▶ Student items related to family outings – photos, souvenirs, T-shirts, posters, etc.</li> <li>▶ Post-it notes</li> <li>▶ Blu-Tack</li> </ul>
<p><b>Activity 1: Let me in! (90 minutes)</b></p> <p>Students discuss different types of admission tickets. Addition and subtraction of money is revised. Students work independently to calculate the costs of admission, and compare various types and combinations.</p>	<p><b>Diagnostic</b></p> <p>Collect student work samples to determine student understanding of addition and subtraction with money.</p>	<ul style="list-style-type: none"> <li>▶ Three 10-sided dice numbered 0–9 for each pair of students</li> <li>▶ Pen/pencil</li> <li>▶ Photocopied class sets of tables for 'Six in a Row' game</li> <li>▶ Worksheet 1: Let me in!</li> </ul>

## Developing

Sequenced teaching and learning activities	Assessment tasks	Resources
<p><b>Activity 2: Multiply your money – at the swimming pool (90 minutes)</b></p> <p>Students work independently to solve problems, using multiplication by two-digit numbers, involving a class excursion to the swimming pool. Estimation strategies are used to check the reasonableness of answers.</p>	<p><b>Formative</b></p> <p>Collect student work samples to determine students' abilities to multiply by two-digit numbers and use estimation to check their answers.</p>	<ul style="list-style-type: none"> <li>▶ Two 10-sided dice numbered 0–9 for each pair of students</li> <li>▶ Worksheet 2: Multiply your money – at the swimming pool</li> </ul>

Sequenced teaching and learning activities	Assessment tasks	Resources
<p><b>Activity 3: Can we go to the...? (90 minutes)</b></p> <p>The class brainstorms budget items for a local outing. They estimate the costs for each item and then calculate the total cost for a family. Students discuss their proposals with their families who are asked to comment upon the reasonableness of the results and suggest any additional considerations. Students discuss essential and optional costs. They make a second budget for the family outing, where savings are sought.</p>	<p><b>Formative</b></p> <p>Collect student work samples to determine students' abilities to make accurate calculations and to modify the budget appropriately.</p>	<ul style="list-style-type: none"> <li>▶ Worksheet 3: Can we go to the...?</li> <li>▶ Calculators</li> <li>▶ Computers for using Excel spreadsheets (optional)</li> <li>▶ Digital resource: Fun day out <a href="http://moneysmart.gov.au/teaching/teaching-resources/digital-activity-fun-day-out">moneysmart.gov.au/teaching/teaching-resources/digital-activity-fun-day-out</a></li> </ul>
<p><b>Activity 4: Budgeting and saving (60 minutes)</b></p> <p>In pairs, students play a game to record income and expenditure over a month with the objective of paying for needs and accruing some savings.</p>	<p>N/A</p>	<ul style="list-style-type: none"> <li>▶ Worksheet 4: Budgeting and saving</li> <li>▶ Pencils and paperclips</li> <li>▶ Spinner (see Worksheet 4: Budgeting and saving for instructions)</li> <li>▶ Budgeting table</li> <li>▶ Digital resource: Our big weekend adventure <a href="http://moneysmart.gov.au/teaching/teaching-resources/digital-activity-our-big-weekend-adventure">moneysmart.gov.au/teaching/teaching-resources/digital-activity-our-big-weekend-adventure</a></li> </ul>

## Culminating

Sequenced teaching and learning activities	Assessment tasks	Resources
<p><b>Activity 5: A big day out at the theatre</b> (90 minutes)</p> <p>Students use the mathematics from the unit to create a suitable budget for a theatre outing. They calculate the total cost, justify choices and identify the essential and optional elements. Students then make suggestions for modifications to fit a proposed budget and calculate possible saving.</p>	<p><b>Summative</b></p> <p>Use student work from Activity 5 to gauge student understanding and ability to compose a budget for their family.</p>	<ul style="list-style-type: none"> <li>▶ Paper</li> <li>▶ Pencils</li> <li>▶ Two 10-sided dice</li> <li>▶ Worksheet 5: A big day out at the theatre</li> </ul>

## Diversity of learners

Teachers use the Australian Curriculum content and achievement standards first to identify current levels of learning and achievement, and then to select the most appropriate content (possibly from across several year levels) to teach individual students and/or groups of students. This takes into account that in each class there may be students with a range of prior achievement (below, at and above the year level expectations) and that teachers plan to build on current learning.

## Connection to year level Achievement Standards

This unit of work contributes to the bolded sections in the Achievement Standards in Mathematics for Year 5.

By the end of Year 5, students **solve simple problems involving the four operations using a range of strategies**. They **check the reasonableness of answers using estimation and rounding**. Students identify and describe factors and multiples. They **explain plans for simple budgets**. Students connect three-dimensional objects with their two-dimensional representations. They describe transformations of two-dimensional shapes and identify line and rotational symmetry. Students compare and interpret different data sets.

Students order decimals and unit fractions and locate them on number lines. They add and subtract fractions with the same denominator. Students continue patterns by adding and subtracting fractions and decimals. They find unknown quantities in number sentences. They use appropriate units of measurement for length, area, volume, capacity and mass, and calculate perimeter and area of rectangles. They convert between 12- and 24-hour time. Students use a grid reference system to locate landmarks. They measure and construct different angles. Students list outcomes of chance experiments with equally likely outcomes and assign probabilities between 0 and 1. Students pose questions to gather data, and construct data displays appropriate for the data.

### Assessment rubric

- ▶ This rubric is intended as a guide only. It can be modified to suit teachers' needs and to be integrated into existing assessment systems.
- ▶ Teachers may also wish to collect the worksheets as work samples for individual student folios.

Student's name: \_\_\_\_\_

Skill	Relevant content description(s)	Relevant activities and worksheets	Competent	Developing at level	Needs further development	Notes
The student can estimate and check the reasonableness of an answer.	Use estimation and rounding to check the reasonableness of answers to calculations (ACMNA099)	Activities 2 and 5 Worksheets 2 and 5	The student selects and correctly applies an appropriate and efficient strategy to make a reasonable estimation before calculating answers.	The student selects and applies an estimation strategy before calculating answers.	The student requires teacher guidance to select and apply an estimation strategy before calculating answers.	
The student can use a variety of strategies to solve problems involving multiplication.	Solve problems involving multiplication of large numbers by one- or two-digit numbers using efficient mental, written strategies and appropriate digital technologies (ACMNA100)	Activities 1, 2, 3 and 5 Worksheets 1, 2, 3 and 5	The student uses an appropriate mental or written strategy to multiply large numbers without errors.	The student uses a mental or written strategy to multiply large numbers. Occasional errors are corrected with little or no assistance.	The student attempts to use a mental or written strategy to multiply large numbers but makes errors. Teacher guidance is required to identify and make corrections.	
The student can create a simple budget from given information.	Create simple financial plans (ACMNA106)	Activities 3, 4 and 5 Worksheets 3, 4 and 5	The student creates a sensible and accurate budget.	The student creates a satisfactory budget.	The student requires teacher guidance to plan a budget.	
The student can modify a budget to save money.	See ACMNA106 above.	Activities 3 and 5 Worksheets 3 and 5	The student clearly justifies successful changes to their budget by considering optional spending choices.	The student makes some appropriate changes to their budget and attempts some justification.	The student requires teacher guidance to identify the essential and optional elements in their budget.	

# **Teacher notes**

### Introduction: A big day out (30 minutes)

- ▶ Begin by showing the YouTube clip of DreamWorld [youtube.com/watch?v=Aefasb0Xkqo](https://www.youtube.com/watch?v=Aefasb0Xkqo) – or of another local fun park – and explain that these outings can cost a lot of money. Tell the students that this unit will look at the cost of outings and how families can save money when going on an outing, by looking at essential and optional items.
- ▶ At the start of the unit, students bring in items relating to family outings, such as photos, books, souvenirs (posters, CDs, T-shirts) and so on to create a class display of a big day out.
- ▶ As a class, talk about the types of activities that families do together, and whether they involve costs. Discuss special activities that occur within your state or territory (e.g. festivals, special sporting events, exhibitions). What costs do families need to consider when planning an outing of this kind? Some costs may not be direct or visible to students (e.g. a parent/carer taking a day off work, the petrol used to reach a destination). Discuss why families would be interested in **saving money** when engaged in a family outing.
- ▶ Students identify occasions on which they have felt 'ripped off' – they may have experienced having to pay adult prices at restaurants where they must pay for an adult portion but cannot eat it all. Discuss whether this is ethical. Also talk about what might be perceived as excessive charges (e.g. prices in the candy bar at cinemas).
- ▶ Begin a class **word wall** about outings and budgeting. Consider concepts such as compromise, choices, money available, contributions of different people within a group and discretionary spending. The **word wall** is flexible and can change to reflect growing and changing ideas. Consider using an interactive whiteboard, or various IT programs or sticky notes to attach words. These can be moved or categorised after class investigations. Consider involving families in the task by encouraging students to talk with parents/carers and/or grandparents about how they saved for an outing.

#### Notes

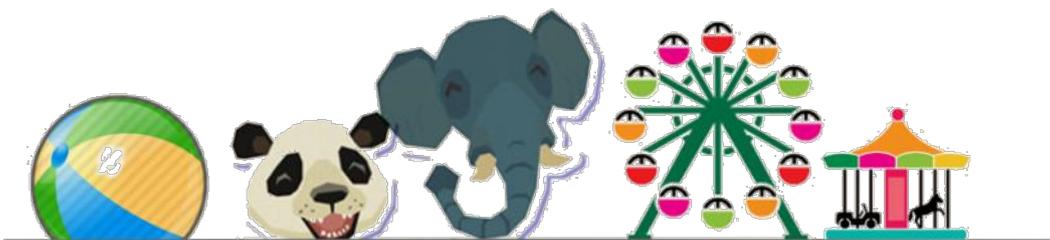
- ▶ Wherever possible give students the opportunity to use 'play' money during this unit.
- ▶ Students may use calculators for many of their calculations at the teacher's discretion.
- ▶ Tasks could be done as group investigations and then budgeting ideas shared with the class at the end of the unit.

#### The decimal point

Students can form many misconceptions as they develop an understanding of decimals, particularly in relation to money. Some typical misconceptions are that the decimal point is like a punctuation mark, and that the decimal point separates two whole numbers.

#### Extension ideas

At the completion of the unit, budget and plan for a real outing that the class may be undertaking.



### Activity 1: Let me in! (90 minutes)

- ▶ **Warm-up:** Play 'Six in a row'.

#### Note

If this game is unfamiliar, play it as a class first. It could be played regularly to build up experience of working with decimal numbers.

#### Game: Six in a row

**Aim:** to be the first to enter six amounts of money, **in order from lowest to highest**, into the table

**Players need:** three 10-sided dice (numbered 0–9), a pen/pencil, one copy each of the table below

Round 1	Round 2

#### How to play:

- ▶ Students play in pairs and use the first column of the table for round one. The column is divided into six rows.
  - The first student rolls three dice. Assume that the numbers rolled are 2, 4 and 3; in monetary terms these numbers could represent \$2.43, \$4.32, \$3.24 and so on. Each student writes **one** of these money amounts on any one of the six levels in their own table. That amount becomes 'locked in' and cannot be altered or moved.
  - The second student rolls the dice. The three numbers thrown by that player are inserted into one of the remaining five levels on his/her table. This time the three numbers must be placed in order from lowest to highest. Students could discuss their various strategies.
  - The first student rolls again and inserts numbers on his/her table, remembering that the three numbers must be placed in order from lowest to highest.
- ▶ Students continue alternating rolling the dice and entering the amounts on their tables.
- ▶ If an amount rolled cannot be placed in order the student misses that turn.
- ▶ Play continues until one student has entered an amount in each of their six levels in order from lowest to highest.
- ▶ The second column is provided in case there is a draw and the game needs to be played again.

- ▶ Ask students: when planning for an outing, what mathematics could be used to help with budgeting? Explain that addition and subtraction are helpful when finding out how much money might be spent, and that there are mental strategies for addition and subtraction of money. For example: my family is going to the school play. It costs 3 dollars for adults and 2 dollars for children. Here is the thinking that I worked out in my head, and the total I arrived at:

3 6 9 11 13 15

What do these numbers tell you about my family and the way I solved the problem?  
(Answer: 3 adults and 3 children)

- ▶ Use the zoo entry prices listed in **Worksheet 1: Let me in!** to model the cost for a family to go to the zoo. Do not use mathematical symbols, and explain the thinking after the modelling has been done. For example:

\$31.50 for one adult    \$63 for two adults    \$81 with one child  
\$99 with two children    \$117 with three children

Questions and ideas for discussion include:

- How could this be written using symbols?
  - Discuss the different ways that it might have been recorded mathematically. How many different ways can be found?
  - Are any ways easier or more efficient than others?
- ▶ Students work independently to complete the table of costs for various family combinations in question 1 of the worksheet.

### Note

The prices shown are for a capital city zoo. You may wish to substitute prices from your local zoo or use another context that is more relevant to the class.

- ▶ Students share their answers and discuss the different techniques they used to calculate addition and subtraction. Assessment questions include:
  - What use did students make of estimation, prior knowledge and strategies?
  - Can students use a diagram to show what they have done?
- ▶ As discussed in question 2 of the worksheet, compare and contrast different families' admission costs as a result of different family compositions using the game.
- ▶ Refer to the special 'family' admission price in question 3 of the worksheet. Model a comparison between **individual costs** and the **family price**. How could the difference be shown? What mathematical process could be used? Subtraction? Addition? Why or why not? Students work independently to calculate the differences between individual costs and a family package. Assessment questions include:
  - Did students understand the link between admission costs and different family compositions?
  - Were they able to add and subtract money successfully?
  - Could they solve one- and two-step problems relating to money in real-life contexts?
  - How well did students cope with completing the tables to record their information?

### Extension idea

This activity could lead to a persuasive argument (with supporting data and calculations) to contact the zoo regarding its pricing policy.

## Activity 2: Multiply your money – at the swimming pool (90 minutes)

### Game: Doubling

**Aim:** to solve problems that involve multiplying two-digit numbers by two, using doubling and part-whole strategies

**Players need:** two 10-sided dice (numbered 0–9)

**How to play:**

- ▶ Students play in pairs. The first student rolls both the dice. Their partner uses the numbers rolled to create a two-digit number, and then doubles it. They then explain their strategy to the first student (e.g. I got a 4 and a 3, and made 34; 3 tens and 3 tens is 6 tens; 4 ones and 4 ones is 8 ones; 6 tens and 8 ones is 68, so  $30 + 30 = 60$ ,  $4 + 4 = 8$ ,  $60 + 8 = 68$ ).
  - ▶ Share numbers that were easier/harder to double.
- 
- ▶ Explain that outings can involve more than just an admission price, and that businesses make money from selling both essential and optional items. Talk about an outing to a large swimming centre. Ask students:
    - What items would be sold there?
    - Which of these would be essential for the outing and which would be optional?
    - How could the swimming centre establish how much money had been made from selling a particular item?
    - Is addition the best strategy when large numbers of an item are sold?
  - ▶ Use concrete materials, and mental and written strategies, to model how to multiply large numbers by one- or two-digit whole numbers. Discuss some efficient strategies (e.g. doubling, place value parts). Model the use of different estimation strategies (e.g. 'common sense', front-end estimation and rounding) to check the reasonableness of answers. The Year 3 Mathematics Unit: Sal's Secret (see [moneysmart.gov.au/teaching/teaching-resources/teaching-resources-for-primary-schools](http://moneysmart.gov.au/teaching/teaching-resources/teaching-resources-for-primary-schools)) provides opportunity for revision of mental calculation strategies, specifically Activities 2, 4, 5 and 7.
  - ▶ Discuss and revise various estimation strategies. These could include:
    - common sense. For example, nine pairs of bathers at 47 dollars each could be estimated as 10 pairs at 47 dollars to give an estimate of 470 dollars. The answer will be about 50 dollars less than this, so the total is close to 420 dollars.
    - front-end estimation, in which the leading digit of each amount is used to get a sense of the quantity. Using the example above, nine pairs of bathers at 40 dollars gives an estimate of 360 dollars. The actual answer will be close to this.
    - rounding to one significant figure. For example, the multiplication in the above example would be  $9 \times 50$  – to get an estimated answer of 450 dollars.
  - ▶ Continue to add to the class **word wall**.
  - ▶ Using **Worksheet 2: Multiply your money – at the swimming pool**, question 2, students begin by using estimation strategies before attempting accurate calculations. They should work independently to solve problems involving the multiplication of money (whole dollars and whole cents) by one- and two-digit numbers.

- ▶ Discuss the benefits of first estimating the answer when dealing with money calculations and talk about which estimation strategies were the most efficient. Assessment questions include:
  - Were students able to make reasonable estimations before calculating their answers?
  - What strategies did students use to check their answers?

### Activity 3: Can we go to the...? (90 minutes)

- ▶ **Warm-up:** Count forwards and backwards by 20 cents from 10 dollars.
- ▶ Discuss the expense incurred by a family going to an event, purchasing items at the event and ensuring that each family member is treated fairly. Select an event that might appeal to your students or that would fit into your community. Ideally, the chosen event would present opportunities to spend money in a variety of ways.
- ▶ Brainstorm a list of things a family might have to pay for (e.g. petrol/parking fees or public transport, entry fees, raffle tickets, food, drinks, hire fees, souvenirs, show bags, rides). Students record each item in the table on **Worksheet 3: Can we go to the...?** and then work in pairs to estimate the prices. As a class, modify the price estimates based on prior knowledge.
- ▶ Students then work individually to calculate the expenditure for their own family using their skills of multiplication and addition.
- ▶ Discuss the range of answers. At this stage there is no limit (within reason) to the amount spent, though students should be mindful that their expenditure isn't excessive. Explain that this is called '**budgeting**'.
- ▶ Continue to add to the class **word wall**.
- ▶ Students take the **budget** home to discuss the costs and choices made with their family. Any changes that are suggested at home are recorded and brought to class. Conduct a class discussion on the views and values that different families bring to this type of budgeting exercise.
- ▶ Suggest that the family has \$20 less than what they first budgeted for to go on this outing. What changes would students need to make to their spending to afford this event? Which of these items are essential and which are optional?
- ▶ For more practice in budgeting go to the digital resource: Fun day out [moneysmart.gov.au/teaching/teaching-resources/digital-activity-fun-day-out](https://moneysmart.gov.au/teaching/teaching-resources/digital-activity-fun-day-out). It is recommended that this activity is undertaken before question 4 on **Worksheet 3: Can we go to the...?**
- ▶ Present the activity in question 4 on **Worksheet 3: Can we go to the...?** including expectations about how students will record and present their information. Challenge them to develop a second budget that shows how different **spending choices** can make a significant difference to the overall cost of attending the event. This second budget should reflect the family's desire to have a 'family experience' while wanting or needing to save money – \$20. When considering ways to economise, students need to recognise that food 'taken from home' is not **free**, and that the cost of the food needs to be factored into the cost of the day in order for a genuine saving to be made.
- ▶ Students work in pairs to plan and cost the second budget for a family day at the event, aimed at saving money. Students show their workings in the table on **Worksheet 3: Can we go to the...?**

#### Note

As the objective in this activity is for students to modify their budgets, it is appropriate to use technologies such as calculators or spreadsheets for the calculations. However, students can still show their working at the discretion of the teacher.

- ▶ Discuss the items that students included in their budgets. Questions and directions include:
  - What items were included in budget one but not budget two?
  - How did they decide what was essential and what was optional?
  - Share some of the differences in total costings for the pair of budgets across the class.
  - Ask students to explain what they think was the purpose of preparing two budgets for this activity.
  - What advantages might there be for a family in considering the **potential costs** involved when planning a family outing?
  - What difference might the **money saved** make to the family if they chose to follow budget two rather than budget one?
- ▶ Assessment questions include:
  - Were students able to consider **optional spending decisions**?
  - How effective were they at creating two alternative budgets for the family outing?
  - How well did they use the four mathematical operations to calculate decimal amounts – using written strategies and/or digital technologies?
  - Could they articulate the potential value of budgeting to reduce the cost of a family outing?

#### Activity 4: Budgeting and saving (60 minutes)

- ▶ **Warm-up:** Count up from 5 cents to approximately 25 dollars by doubling (i.e. 5 cents, 10 cents, 20 cents and so on) and then down from 24 dollars by halving (i.e. 24 dollars, 12 dollars, 6 dollars and so on).
- ▶ Discuss family expenditure on essential items as well as on other items that they may want but can do without. Talk about who makes this 'value judgement' about what is or isn't 'needed'.
- ▶ Continue to add to the class **word wall** about money.
- ▶ Model how to play the '**Budgeting and saving**' game as a class activity.

#### Game: Budgeting and saving

**Aim:** to be the first to pay fully for all of your three **needs** (in order to participate in a tennis competition), and to have **saved** the greatest amount by the end of the game

**Players need:** a pencil; a paperclip and a spinner divided into \$5, \$10, \$20, \$50 and \$100 (see Figure 1 and the instructions in **Worksheet 4: Budgeting and saving**); a budgeting table.

(**Note:** keep an unmarked photocopy of the budgeting table so that you can complete this activity more than once.)

##### How to play:

- ▶ Students play in pairs. The dollar amounts on the spinner represent the amount 'earned' from a part-time job. Students consider the amounts on the spinner and before each round begins they estimate their savings potential.
- ▶ Students then take turns using the spinner **four** times each, and add up and record their total **income** for week one in the **budget**. Each student then decides how they will allocate their earnings across the 'cost of needs' and 'savings' columns, remembering that they must have paid fully for the three needs by the end of the game, as well as contributing to their savings account. The final column should be maintained as a running tally, with each week's savings added to or deducted from (in the case of negative savings) the last.

- ▶ Students begin with \$40 in the bank. If in any week a student 'earns' insufficient income to cover their needs, they must deduct the additional amount they require from their **savings** total. This must be shown on their **budget**.

**Note:**

If students' earnings are insufficient to meet their needs, and they have no savings, they will need to record **negative** numbers in the hope of earning more the following week. This game can be played with no initial savings, which increases the likelihood of using negative numbers.

- ▶ Discuss whether the game relied on skill or chance. Talk about the results, particularly whether students were able to pay for their needs and acquire some savings. Questions and ideas for discussion include:
  - What decisions did students have to make?
  - How important was it to earn enough to cover their needs?
  - Students share their outcomes to compare savings totals and earnings totals.
  - What were the disadvantages of not having savings?
  - Discuss the benefit of having savings as a buffer when unexpected expenses occur.
  - What are some examples of unexpected expenses?
- ▶ Assessment questions include:
  - Were students able to enter the appropriate numbers in their budget?
  - How well did they articulate the link between earnings, paying for needs and the potential for saving?
  - Could students explain the advantages of including a savings component in a budget?
- ▶ Reflect further on the game. You might like to discuss the difficulty of managing money when income fluctuates. There may also be an opportunity to discuss probability.
- ▶ To give students more practice, go to the digital resource: Our big weekend adventure [moneysmart.gov.au/teaching/teaching-resources/digital-activity-our-big-weekend-adventure](http://moneysmart.gov.au/teaching/teaching-resources/digital-activity-our-big-weekend-adventure)

### Activity 5: A big day at the theatre (90 minutes)

#### Game: First to 5 dollars

**Aim:** to be the first team to reach 5 dollars (or more)

**Players need:** paper and a pencil, one 10-sided die per team

**How to play:**

- ▶ The class is divided into two teams. Each team nominates a scribe to write their results.
- ▶ Roll a 10-sided die (numbered 0–9) for each team.
- ▶ The number rolled is multiplied by 10 and a nominated student describes this amount in cents (e.g. 7 becomes 70 cents). The scribe for each team adds on their score from each roll. The winning team is the first to reach 5 dollars (or more).

- ▶ Explain that this activity's event is a big day out to the theatre to see a show. This could be adapted to suit the students' local community – so could become the movies, a football game, etc. In that case teachers should adjust **Worksheet 5: A big day out at the theatre** to reflect the event chosen.
- ▶ Discuss the students' experiences and/or knowledge of these types of events. Show and explain the prices and items on the poster in **Worksheet 5: A big day out at the theatre**: admission charges, souvenirs from the theatre shop and theatre snacks. It may be necessary to explain the difference between stalls and balcony seating and the reasons for their different prices.
- ▶ Explain that students will create a **budget** by using the information from the poster and their skills of estimation, multiplication, addition and subtraction. Provide students with the following instructions:
  - They will estimate the cost for one family member to attend the event, assuming there are no limits on expenditure.
  - They will then estimate the cost for their own family to attend the event. Students will need to show clearly the estimation strategy(ies) used.
  - They will then create a **budget** for a family of two adults and two children to attend the event, again assuming there are no limits on expenditure.
  - Finally, they will be given a limited amount to spend (180 dollars), and will have to modify this **budget** accordingly. In each budget situation students need to decide what they are going to spend their money on and why; they will need to justify their choices using the terms 'essential' and 'optional', and show evidence of their calculations.
- ▶ Ensure that students have a clear understanding of the requirements of the task. **Worksheet 5: A big day out at the theatre** sets out the required tasks for this activity.

# Worksheets

Name: ..... Class: ..... Date: .....

**Worksheet 1: Let me in!****Entry prices for the zoo**

Item	Price
Adult	\$31.50
Child	\$18.00

1. The total cost of tickets can depend upon the combination of people going. Work out the costs for the following family combinations. Show your thinking in the box below.

Family	Cost
1 adult; 3 children	
3 adults; 1 child	
2 adults; 2 children	
2 adults; 5 children	

Name: ..... Class: ..... Date: .....

2. Let's change the game to look at other family combinations. You will need two dice to play this game.

Roll the dice to create new family combinations. Use one dice to represent the number of adults, and the other to represent the number of children. Work out the cost of entry to the zoo for three new families.

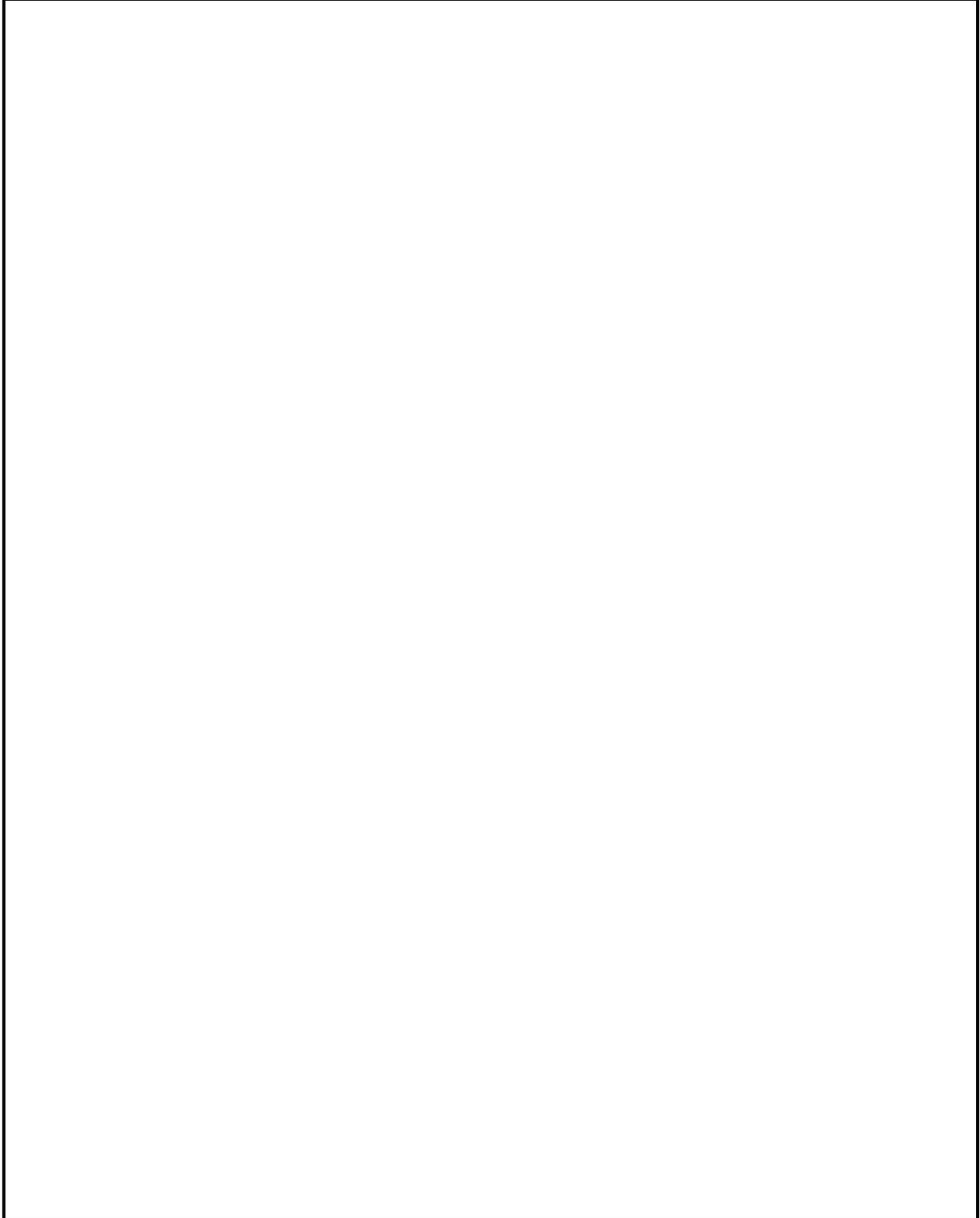
Family	Cost	Working out

3. Some places offer discount prices for family groups. This zoo classifies a typical family as two adults and two children. The family discount price is \$85. Using the entry prices at the start of this worksheet, complete the 'Your costing' column in the table below. Decide if each group can buy the family ticket, then work out whether the family discount offers them a better price for their trip to the zoo. Show your working out in the box on the next page.

Family	Your costing	Family discount price	If they can buy a family ticket, is it better value? Yes or No
1 adult; 3 children		\$85	
3 adults; 1 child		\$85	
2 adults; 2 children		\$85	
2 adults; 5 children		\$85	

Name: ..... Class: ..... Date: .....

*Working-out space*



Name: ..... Class: ..... Date: .....

## Worksheet 2: Multiply your money – at the swimming pool

Multiplication can be used when you purchase a number of identically priced items. Estimation is a good way to check if your answer is about right.

### Swimming centre prices poster

The poster below lists items available for sale at a swimming pool.

#### *Swimming centre prices*

towels \$67.00  
 bathers \$47.00  
 programs \$25.00  
 goggles \$23.00  
 swimming caps \$15.00  
 temporary tattoos \$3.00  
 club stickers 99c  
 lolly bags 50c

1. Think about what you need to go to a swimming pool and sort all the items on the poster into Essential and Optional items.

Essential items	Optional items

Name: ..... Class: ..... Date: .....

2. Now use the swimming centre prices list to complete the table and answer the questions. Don't forget to estimate your answer first. Complete the table below to show how much money the swimming pool collects if it sells the following items. The first row has been done for you.

Item	Estimated answer	Calculation	Answer
9 pairs of bathers	Cost \$47 each e.g. 10 pairs = $47 \times 10 = \$470$	$\begin{array}{r} 47 \\ \times 9 \\ \hline 423 \end{array}$	423
25 programs			
68 tattoos			
115 stickers			
14 swimming caps			
17 pairs of goggles			
3 towels			
212 lolly bags			
<b>TOTAL</b>			

Name: ..... Class: ..... Date: .....

3. Choose three of your estimations from the table in question 2. Was your estimation about right? Why or why not?

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4. What was the total amount made by the swimming pool from the sale of these three items on the given day? Estimate your answer first.

Estimate	Answer

5. Here is a mathematical sentence:

$$25 \times 17 = 425$$

Using the swimming centre prices list from the start of this worksheet, tell a story to explain what might have been purchased.

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Name: ..... Class: ..... Date: .....

6. Using the swimming centre prices list, write similar stories for other purchases. Show the mathematical sentence for each story.

Story 1: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Mathematical sentence: \_\_\_\_\_

Story 2: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Mathematical sentence: \_\_\_\_\_

Story 3: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Mathematical sentence: \_\_\_\_\_



Name: ..... Class: ..... Date: .....

2. How much would your family spend on this outing? Choose items from the table in question 1 and complete the table below, showing all the working out in the column provided.

Number of adults in my family \_\_\_\_\_

Number of children in my family \_\_\_\_\_

Item	Revised cost (see table from question 1)	My family's cost	Working out
<b>TOTAL</b>			

The total cost for my family to go on this outing is \_\_\_\_\_

Name: ..... Class: ..... Date: .....

3. What comments did your family make when you showed them your budget for this event? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4. Unfortunately your family has \$20 less than what you budgeted for in question 2. You will have to revise your budget to accommodate this smaller total so that your family can still go on their outing. **(Hint: perhaps remove the optional items!)**

Item	My family's cost	Working out
<b>TOTAL</b>		

5. How much money was saved using your second, revised budget?

\_\_\_\_\_

Name: ..... Class: ..... Date: .....

## Worksheet 4: Budgeting and saving

Play 'Budget and saving' with a partner.

### Game: Budgeting and saving

**Aim:** to be the first to pay fully for all of your three **needs** (in order to participate in a tennis competition), and to have **saved** the greatest amount by the end of the game

**You will need:** a pencil, a paperclip, spinner artwork copied onto light card and cut out (Figure 1), and a budgeting table (from the next page)

#### How to play:

Place a pencil point on the centre of the spinner with a paperclip around the point (see Figure 2). Flick the paperclip to make it spin. The amount it lands on represents the amount you 'earn' each week from your part-time job. This is the money you use to pay for your needs over the 4-week period. Your teacher will explain all the rules.

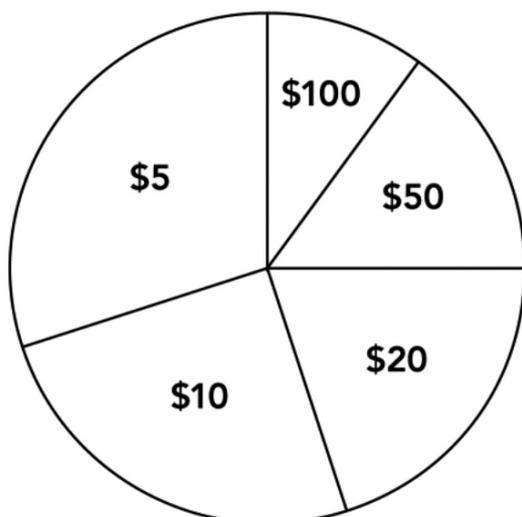


FIGURE 1: Spinner

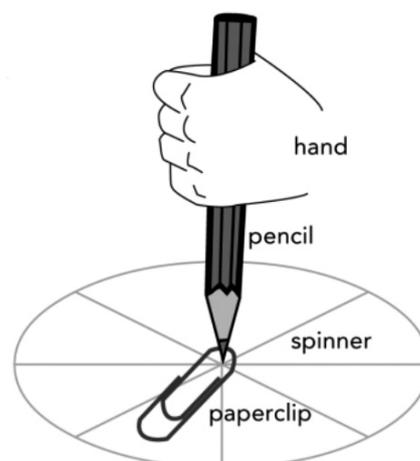


FIGURE 2: Using the spinner

Name: ..... Class: ..... Date: .....

### Budgeting table

Income		Cost of needs				Savings	
Week	Total amount earned	Court entry (\$12 pw)	Club membership and coaching (\$20 pw)	Uniform (\$5 pw)	Total cost of needs	Weekly savings	Running tally of savings (you have \$40 to start with)
Week 1							
Week 2							
Week 3							
Week 4							
<b>Totals</b>							

Name: ..... Class: ..... Date: .....

## Worksheet 5: A big day out at the theatre

### Theatre price list

<b>THEATRE PRICES</b>	<b>Admission costs:</b>	
	Level A (stalls seating):	\$42.50 (adults) \$25.00 (children) \$122 (family of 2 adults and 2 children)
	Level B (balcony seating):	\$34.50 (adults) \$18 (children) \$99 (family of 2 adults and 2 children)
	<b>Theatre shop:</b>	<b>Theatre snacks:</b>
	t-shirts \$22.45	soft-drink \$6.50
	stickers \$5.95	chocolate bar \$6.00
	card games \$8.95	nuts \$6.00
	watch \$16.00	ice-cream \$5.50
	greeting cards \$3.95	combo family pack (4 drinks, 2 snacks) \$19.00
	bag-pack \$24.95	
	program \$35.00	
	DVD \$45.00	

- Use the information in the theatre price list above to estimate the cost for one family member to attend the theatre, if there are no limits to their spending. Show your thinking.

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Name: ..... Class: ..... Date: .....

2. Estimate the cost for your whole family to attend. Show your thinking.

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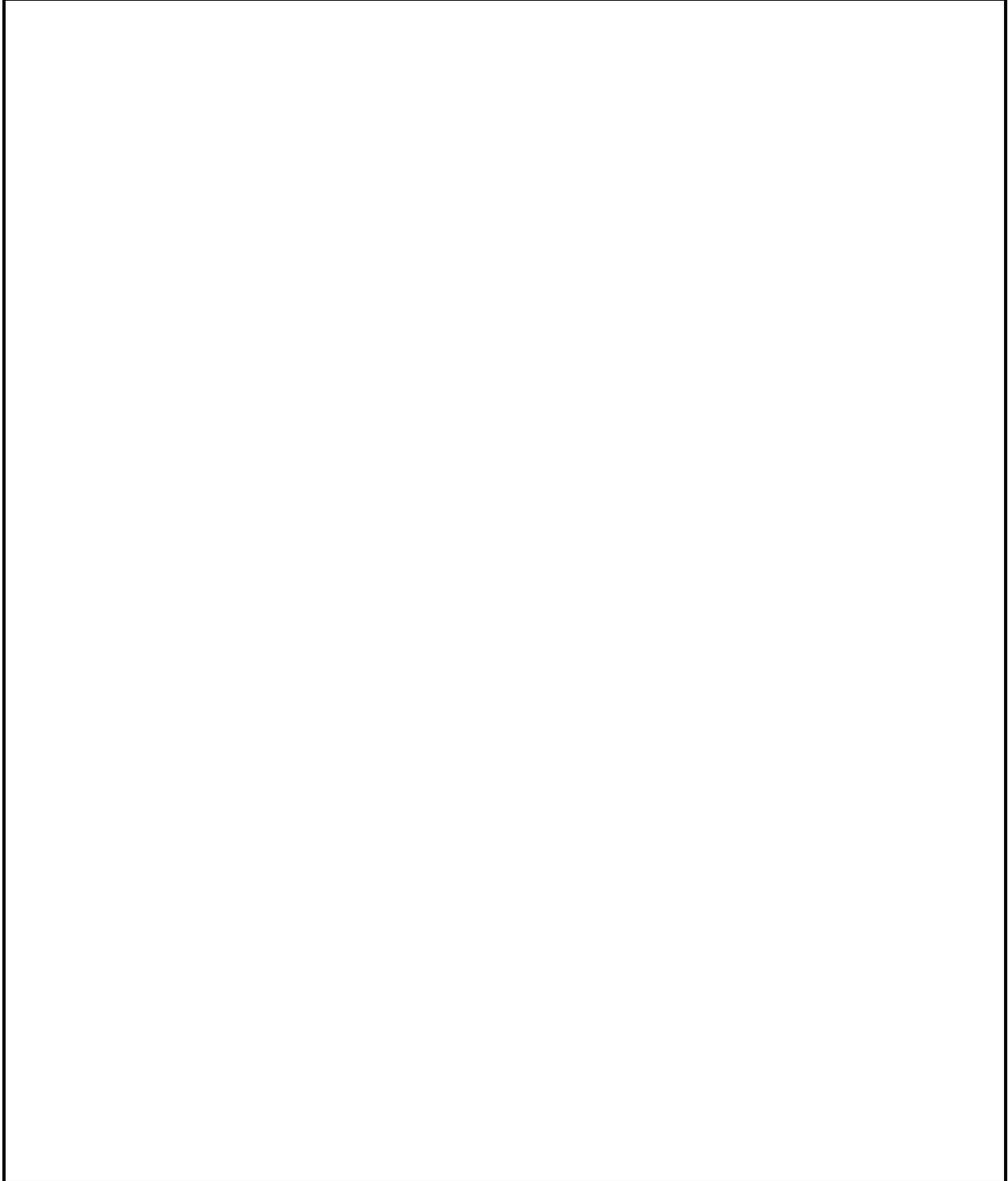
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3. A family of two adults and two children decide to go to the theatre to celebrate a special occasion.
- a. Create a table and use it to prepare a budget for this family. Justify the choices that you make. Show your calculations or thinking in the space below and on the following page.

Name: ..... Class: ..... Date: .....

*Working-out space*



Name: ..... Class: ..... Date: .....

- b. Imagine that the most this family can spend is 180 dollars. What changes would you make to their budget? Justify your choices. Show your calculations in the box below.

Name: ..... Class: ..... Date: .....

4. How much money was saved by using the second budget rather than the first?

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5. Describe two things that you have learned in this unit.

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# Solutions

## Solutions for Worksheet 1: Let me in!

1.

Family	Cost
1 adult; 3 children	$31.5 + 3 \times 18 = \$85.50$
3 adults; 1 child	$31.5 \times 3 + 18 = \$112.50$
2 adults; 2 children	$31.5 \times 2 + 2 \times 18 = \$99$
2 adults; 5 children	$31.5 \times 2 + 5 \times 18 = \$153$

2. Children roll two dice to create three other family combinations and work out the cost.

3.

Family	Your costing	Family discount price	If they can they buy a family ticket, is it better value? Yes or No
1 adult; 3 children	\$85.50	\$85	Can't buy ticket – not a typical family group
3 adults; 1 child	\$112.50	\$85	Can't buy ticket – not a typical family group
2 adults; 2 children	\$99	\$85	Yes (a typical family group)
2 adults; 5 children	\$153	\$85	Yes ( $\$85 + 3 \times \$18 = \$139$ )

## Solutions for Worksheet 2: Multiply your money – at the swimming pool

1.

Essential items	Optional items
Towels	Programs
Bathers	Goggles
	Swimming caps
	Temporary tattoos
	Club stickers
	Lolly bags

2.

Item	Estimated answer	Calculation (may use other strategies/calculator)	Answer
9 pairs of bathers	$\$47 \times 10 = \$470$	$47 \times 10 - 47 = 423$	\$423
25 programs	$\$25 \times 30 = \$750$	$25 \times 30 - 25 \times 5 = 625$	\$625
68 tattoos	$\$3 \times 70 = \$210$	$3 \times 70 - 3 \times 2 = 204$	\$204
115 stickers	$\$1 \times 115 = \$115$	$1 \times 115 - 1.15 = 113.85$	\$113.85
14 swimming caps	$\$15 \times 10 = \$150$	$15 \times 10 + 15 \times 4 = 210$	\$210
17 pairs of goggles	$\$23 \times 20 = \$460$	$23 \times 20 - 23 \times 3 = 391$	\$391
3 towels	$\$70 \times 3 = \$210$	$70 \times 3 - 3 \times 3 = 201$	\$201
212 lolly bags	$\$0.5 \times 200 = \$100$	$0.5 \times 200 + 0.5 \times 12 = 106$	\$106
<b>TOTAL</b>	\$2465	N/A	\$2273.85

3. and 4. Students choose three of their estimates from question 2 to answer these questions.

- The swimming pool made a total of \$425 from the sale of 17 programs, each costing \$25.
- Students write similar stories for other purchases using the swimming centre prices list and show the mathematical sentence for each story.

### Solutions for Worksheet 3: Can we go to the...?

- Students complete the table after a class brainstorming session on the cost of taking a family to an event.
- Students complete the table for their own family.
- Students record comments that their family made when shown their budget for the chosen event.
- Students revise their budget with \$20 less to spend so that their family can still go on the outing. They should recognise and remove optional items from their budget.
- Students calculate how much money was saved using their second, revised budget.

### Solutions for Worksheet 4: Budgeting and saving

**Game: Budgeting and saving** to be modelled by the teacher. Students play in pairs and complete the table.

## Solutions for Worksheet 5: A big day out at the theatre

(Suggested summative assessment)

1. *Example*

Estimated cost (no limits to spending) for the student to attend the theatre

Admission cost to Level A: \$25

Theatre shop: T-shirt \$22.45 + watch \$16 + backpack \$24.95 + program \$35 + DVD \$45 = \$143.40

Snacks: soft drink \$6.50 + chocolate bar \$6 + ice-cream \$5.50 = \$18

TOTAL = \$25 + \$143.40 + \$18 = \$186.40

2. Students estimate the cost for their whole family to attend.

3. a. *Example*

Item	Cost for 2 adults	Cost for 2 children	Total
Admission to Level A	–	–	\$122 (Family)
Program	\$35	–	\$35
Backpack	–	\$24.95 x 2 = \$49.90	\$49.90
T-shirts	\$22.45 x 2 = \$44.90	\$22.45 x 2 = \$44.90	\$89.80
DVD	–	\$45	\$45
Greeting cards	\$3.95 x 2 = \$7.90	–	\$7.90
Card games	–	\$8.95 x 2 = \$17.90	\$17.90
Stickers	–	\$5.95 x 2 = \$11.90	\$11.90
Soft drinks	\$6.50 x 2 = \$13	\$6.50 x 2 = \$13	\$26
Ice-cream	–	\$5.50 x 2 = \$11	\$11
Nuts	\$6 x 2 = \$12	–	\$12
<b>TOTAL</b>			<b>\$428.40</b>

3. b. Budget \$180 (omit most optional items from Budget 3. a.) – *example*

Item	Cost for 2 adults	Cost for 2 children	Total
Admission to Level A	–	–	\$122
Combo family pack	–	–	\$19
Card games	–	$2 \times \$8.95 = \$17.90$	\$17.90
Ice-creams	–	$2 \times \$5.50 = \$11$	\$11
<b>TOTAL</b>			<b>\$169.90</b>

4. *Example*

$$\text{Saving} = \$428.40 - \$169.90 = \$258.50$$

5. Students describe two things that they have learned in this unit.