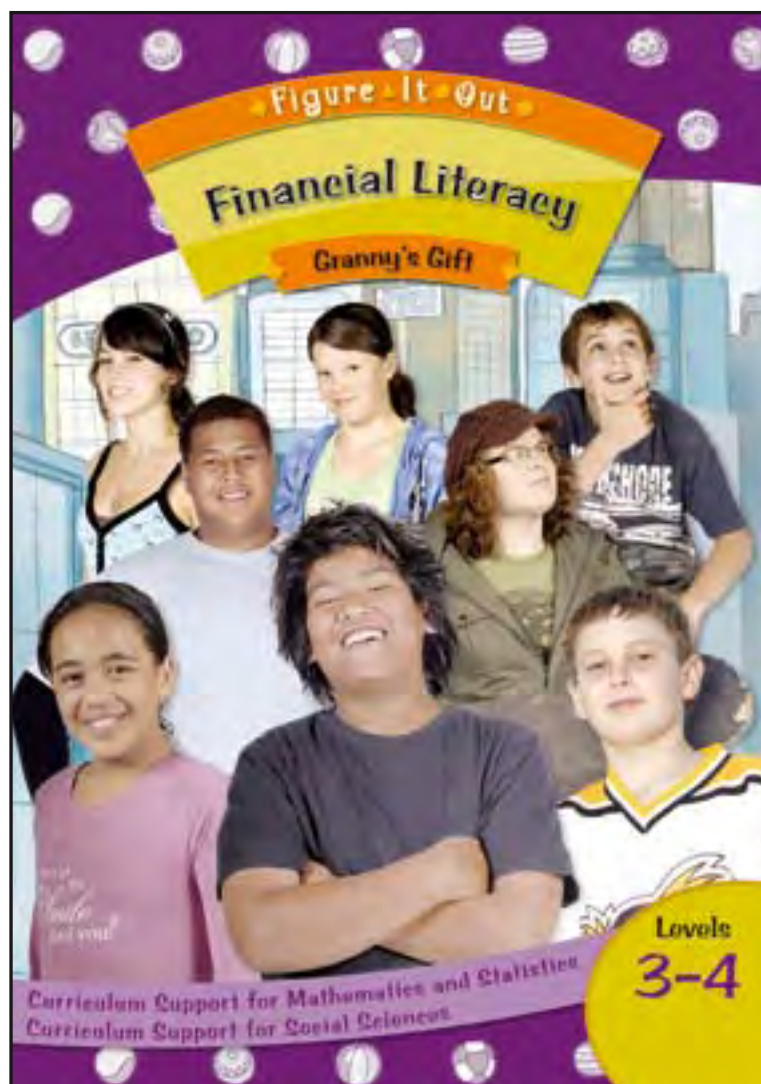


Answers and Teachers' Notes



Contents

Introduction to Financial Literacy	2
Answers	6
Teachers' Notes	15
Copymasters	53

Introduction to Financial Literacy

The Figure It Out *Financial Literacy* books provide teachers with valuable classroom resources that will support and enhance the delivery of the New Zealand Curriculum (2007).

The books introduce students to real-life scenarios that require financial understanding. The main characters, their peers, and their families face a range of choices involving money, and they model financial competency in their approach to setting goals and making decisions. The characters have some great ideas, and they apply enterprising thinking and processes when making their ideas happen. During the activities, students will see enterprising attributes in action and, while doing so, will gain understandings of economic and financial ideas that will support their evaluations of, or recommendations for, the decisions that the characters need to make. Students will learn that making good financial decisions is trickier than it may at first seem.

Many of the activities in the books are cross-curricular, using mathematics and statistics concepts alongside those of social sciences and other learning areas such as English, technology, and health and physical education. The activities provide opportunities for students to exercise skills, such as those involved in statistical literacy, and learn about the processes and understandings covered in the curriculum. The characters, in thinking about and applying enterprising skills and attributes to their situation, also demonstrate the range of key competencies outlined on pages 12–13 of *The New Zealand Curriculum*.

Learning areas

The New Zealand Curriculum identifies learning areas that describe what the students will come to know and do.

Future-focused issues are a rich source of learning opportunities. They encourage the making of connections across the learning areas, values, and key competencies, and they are relevant to students' futures. Issues embedded in the Figure It Out *Financial Literacy* books include:

- sustainability – exploring the long-term impact of social, cultural, scientific, technological, economic, or political practices on society and the environment;
- citizenship – exploring what it means to be a citizen and to contribute to the development and well-being of society;
- enterprise – exploring what it is to be innovative and entrepreneurial.

Learning areas also offer opportunities to:

- develop students' knowledge and understandings in relation to economic shifts of the day;
- develop students' financial capability, positioning them to make well-informed financial decisions throughout their lives.

See *The New Zealand Curriculum*, page 39

Enterprising Attributes

The Ministry of Education has devised fifteen enterprising attributes that link to the key competencies for its Education for Enterprise initiative. They engage students in processes that are important for personal and business success. In the Figure It Out *Financial Literacy* books, students can see these attributes in action. The attributes are:

Thinking:

- generating, identifying, and assessing opportunities
- identifying, assessing, and managing risks
- generating and using creative ideas and processes
- identifying, solving, and preventing problems
- monitoring and evaluating

Managing self:

- matching personal goals and capabilities to an undertaking
- using initiative and drive

Relating to others:

- working with others and in teams
- negotiating and influencing
- being fair and responsible

Participating and contributing:

- identifying, recruiting, and managing resources
- being flexible and dealing with change
- planning and organising

Using language, symbols, and text:

- collecting, organising, and analysing information
- communicating and receiving ideas and information.

These attributes represent many of the competencies that the business community is now expecting from new employees, and they are characteristics that students need to practise to be successful in their own lives. As your students work through the Figure It Out financial literacy activities, you could challenge them to find examples of where these enterprising attributes have been applied by the characters. They could also consider how the application of these could benefit themselves, their family, and their community.

The Figure It Out *Financial Literacy* books will inspire students to look for their own opportunities, challenging them to apply the same enterprising attributes that the characters in the series demonstrate. Information on the Ministry of Education's Education for Enterprise initiative can be found at www.tki.org.nz/r/education_for_enterprise/index_e.php

Financial understanding

From an early age, students begin to understand some of the characteristics of money, which include:

- it can be used to buy what we might want or need
- we can save it for use at a later date (financial goals are important)
- we never seem to have enough of it to get what we want!
- parents often expect their children to earn their pocket money by doing chores around the house or in the neighbourhood.

These and other characteristics of money are all important financial mindsets for young people to acquire while still at school. The activities in the Figure It Out *Financial Literacy* books expose students to many of these mindsets.

Many students like to role-model the actions of parents, caregivers, or others in their community, and in doing so, they learn much about how our households and communities are organised and run. One of the aims of the Figure It Out *Financial Literacy* books is to inspire students to become enterprising in their own lives and to help them to plan wisely, earn income, and manage the financial side of their lives.

Key financial messages for students

- We need to be financially responsible.
- Our personal goals influence how financially successful we are.
- Our financial decisions determine how "well off" we are now and in the future.
- We may make different financial decisions from those made by someone else because we have different preferences or circumstances.

- Financial planning is important for personal and business financial success.
- We need to consider risk before we make a financial decision.
- We can spend now, save and spend later, or invest our savings.
- The law guides us to make legitimate financial decisions.
- There is a consequence for each financial decision we make; a good financial decision brings benefits

Number Framework stages (Numeracy Development Projects [NDP])

The Number Framework Links section for the activities in this book refers to the stages of the Number Framework that are appropriate for the activity.

The relevant stages are:

Stage 5: Early additive

Stage 6: Advanced additive–early multiplicative

Stage 7: Advanced multiplicative–early proportional

Stage 8: Advanced proportional.

NDP material

Many of the NDP resource books include activities and teaching material that develop the skills that students need for this Figure It Out book. The books referred to in these notes are:

Book 4: Teaching Number Knowledge

Book 5: Teaching Addition, Subtraction, and Place Value

Book 6: Teaching Multiplication and Division: Revised Edition 2007: Draft

Book 7: Teaching Fractions, Decimals, and Percentages: Revised Edition 2008: Draft (available March 2008)

Book 8: Teaching Number Sense and Algebraic Thinking

FIO pages	NDP book	NDP pages	Activity name
7	8	19, 21	Whole Number Rounding; Rounding Decimals
8–9	4	9	Linking Money and Decimal Fractions
10–11	7	31	Hot Shots (a useful starting point)
	8	26	Estimating Percentages
12–13	6	57	The Royal Cooking Lessons (division)
	4	9	Linking Money and Decimal Fractions
	5	48	Subtraction with Tenths
	7	22	Pipe Music with Decimals
	6	52	Multiplication Smorgasbord
14–15	7	27	Candy Bars (effect of decimal point)
	8	26	Estimating Percentages
	4	9	Linking Money and Decimal Fractions
16–17	4	9, 28	Linking Money and Decimal Fractions; Sensible Rounding
	5	48	Subtraction with Tenths
	7	27	Candy Bars (effect of decimal point)
	8	19, 21	Whole Number Rounding; Rounding Decimals

continued

FIO pages	NDP book	NDP pages	Activity name
18	8	26	Estimating Percentages (for extension)
	7	34, 31	Mixing Colours (ratios); Hot Shots
19	6	30, 32, 52	Multiplying Tens; A Little Bit More/A Little Bit Less; Multiplication Smorgasbord
	7	27	Candy Bars (effect of decimal point)
20	7	31	Hot Shots (a useful starting point)
	8	26, 27	Estimating Percentages; Percentages Problems in Two Steps; Percentage Increases and Decreases in One Step
	6	73	Powerful Numbers
21–23	8	30	Cubes and Cube Roots
	7	31	Hot Shots (a useful starting point)
	8	26, 27	Estimating Percentages; Percentages Problems in Two Steps; Percentage Increases and Decreases in One Step
	8	14	Doubling and Halving
24	5	48	Subtraction with Tenths
	4	9	Linking Money and Decimal Fractions
25	5	48	Subtraction with Tenths
	5	48	Adding with Decimal Fractions
26–27	7	27	Candy Bars (effect of decimal point)
	4	9	Linking Money and Decimal Fractions
	5	48	Subtraction with Tenths
	7	27	Candy Bars (effect of decimal point)

Figure It Out
Financial Literacy
 Levels 3-4
Granny's Gift
Answers

Page 1: A Birthday Surprise

Setting the Scene

No answers required, although there is scope for discussion.

Reflective question

Answers will vary. (This question is referred to again at the end of the book.)

Pages 2-3: Terms Time

Game

A game involving financial language. (A table of the terms and their definitions is provided as a copymaster on page 53.)

Reflective questions

Answers will vary.

- Possible answers include: getting further and further into debt; ending up with more monthly payments (for example, for hire purchase or monthly accounts for clothes) than you can pay; spending money impulsively on things you don't need and then not having enough for basics, such as food or power bills.
- Possible answers include: It helps us to think about the need to explore choices before making decisions and to be aware of the possible consequences of our decisions. We are more aware of how budgets can help us in both spending and saving.

Pages 4-6: Never Too Late

Activity One

1. 100 weeks (nearly 2 years)

2. a.

Cash Book				
Date	Description	Money in	Money out	Balance
1 May	Week 1 allowance	\$10.00		\$10.00
1 May	Tuckshop (Monday)		\$5.00	\$5.00
2 May	Tuckshop (Tuesday)		\$4.90	\$0.10
8 May	Week 2 allowance	\$10.00		\$10.10
10 May	Monthly pocket money	\$30.00		\$40.10
11 May	\$2 bargain shop		\$4.00	\$36.10
15 May	Allowance	\$10.00		\$46.10
16 May	CD		\$35.00	\$11.10
22 May	Allowance	\$10.00		\$21.10
22 May	Lost allowance		\$10.00	\$11.10
23 May	School trip x 2		\$10.00	\$1.10

continued

Date	Description	Money in	Money out	Balance
29 May	Allowance	\$10.00		\$11.10
30 May	Lunch		\$4.50	\$6.60
1 June	Jokes		\$6.00	\$0.60
5 June	Allowance	\$10.00		\$10.60
10 June	Pocket money	\$30.00		\$40.60
12 June	Allowance	\$10.00		\$50.60
13 June	Lost wallet and \$5		\$5.00	\$45.60
14 June	New wallet		\$12.00	\$33.60
15 June	Video arcade		\$18.00	\$15.60
19 June	Allowance	\$10.00		\$25.60
21 June	Tuckshop food		\$3.00	\$22.60
22 June	Movies x 2		\$22.00	\$0.60

- b. Answers will vary. For example, “Hayden spends almost all his money each week. He should put some into a savings account.”

Investigation

Records and spending patterns will vary.

Activity Two

- a. 12 weeks b. 8 weeks
c. 6 weeks d. 2 weeks
- He could add some of his pocket money to his savings from his allowance.
- Choices and reasons will vary. It will depend on what you want to use the shoes for, what kind of shoes you are used to having, how much you value brand names, whether you think the good quality no-brand shoes are better value than the lower end brand-name shoes, and whether you think the lower quality no-brand shoes will last at least half as long as the better quality shoes.

Activity Three

- Your sheet should show all the weekly allowances and some of the pocket money saved, and some spending.
- a. Discussion will vary. The balance will keep increasing overall, despite some spending.

b. Discussion will vary. Past records show when and how money has been spent and how much saving has been done (or not).

You can look at spending and decide, in hindsight, if that was good spending or not and what to do in future. You can also look at where you could make future savings.

Reflective questions

Answers will vary. People have different incentives based on their personal goals and circumstances, for example, how much money they have available to spend, how much they want a particular item or activity, or their ability to go without something in order to get something else.

Page 7: Basketball Finances

Activity

- a. \$546.93.
(\$109.99 + \$19.99 + \$46.95 + \$300 + \$70)

b. Yes, with \$453.07 left over

c. Answers will vary. She may have to catch buses, buy lunch, pay for a team uniform, buy a thank you gift for Aunty Jane.
- Answers will vary. She could investigate buying second-hand equipment or wait until sports shops have sales. She could ask around and see if neighbours or anyone in the family is going to Auckland when she needs to go and could take her with them.

Investigation

Answers will vary.

Reflective question

Answers will vary. “Shopping around” means not buying an object from the first place you see it advertised or available. It means comparing prices, quality, warranties or guarantees, availability of replacement parts, and so on. There are consumer websites that help you to do these comparisons.

Advantages: you can choose the best deal, product, or price out of those you have compared; you can get an overview of the product range available so that you can choose the one that is best for your needs; sometimes you can use information that you find out to get a better deal somewhere else if you ask them to match a competitor’s price; or you can compare and weigh up other factors that are important to you, like the product being organic or made using fair-trade principles.

Disadvantages: shopping around is time-consuming and takes a lot more effort than just buying the first one that you see (which might turn out to be the best value and quality after all that searching around!); you might take so long doing it that you miss out on a special deal or sale; or the product might be sold out when you go back to buy it.

Inland Revenue Department [IRD], not to the bank.)

- f. Three withdrawals: \$85, \$30, and \$50. She withdrew \$165 altogether.
- g. \$165.61. ($\$1,213.09 - \$1,047.48$)
- h. i. Connor’s balance is higher than Rebecca’s, so he earns more interest.
ii. The more you save, the more interest you earn.

Reflective question

Answers will vary. Most of the ways that people use to make money involve spending money first (unless they are doing something physical like housework or gardening, with all the equipment supplied). If you are making a product to sell, you need start-up money to buy the resources and equipment to get started, and you also need to have more money available to replace what you have used in making those resources (which might be before you have even sold the first completed product). A shop or business that has no money to replace stock that it has sold will not be able to keep trading.

Pages 8–9: Different Decisions

Activity

1. Answers will vary. You may notice that Rebecca has a lower balance than Connor on 15 June; Connor makes no withdrawals over the time of this statement; Connor gets more interest on his money than Rebecca does (because his balance is higher); Rebecca withdraws quite large amounts of money (in comparison to her income).
2. a. \$90
b. Three deposits for each twin were for \$40 (paper run wages) and the other was for \$1,000 (Granny’s gift).
c. Once a month
d. Interest on the balance at the end of the month
e. Tax on interest. (Interest that the bank pays you is regarded as income, which is why you pay tax on it. The tax goes to the

Pages 10–11: Compound Interest

Activity One

1. a. Betabank’s interest rate is the best (6.7% for 1 year, compared with 5.9% and 5.8%).
b. Connor would have to leave his money in Betabank for 1 year to get that rate of interest.
2. a. Opinions may vary. If Connor wants to save for at least 1 year, he should invest with Betabank. At CC Bank, he could withdraw his money at any time (getting the interest for the time invested), but AWE Bank would be better than CC Bank if he wanted to access his money after 6 months.
b. Answers will vary. It depends on how soon Connor wants to spend some of his money. (He could withdraw up to \$500 from CC Bank at any time and still get the 5.8 percent interest rate on the balance.)

Activity Two

1.

Year	Capital	Interest at 7%	Balance
1	\$1,000.00	\$70.00	\$1,070.00
2	\$1,070.00	\$74.90	\$1,144.90
3	\$1,144.90	\$80.14	\$1,225.04
4	\$1,225.04	\$85.75	\$1,310.79
5	\$1,310.79	\$91.76	\$1,402.55

2. a. \$402.55. (Subtract the initial investment from the balance: $\$1,402.55 - \$1,000$)
- b. 11 years. (A quick way to calculate this on a calculator or spreadsheet is to take the 5 year balance [$\$1,402.55$] and keep multiplying by 1.07, counting the years as you go, until your answer is over $\$2,000$. Note: If you calculated in a tax of 19.5 percent on the interest earned, that would extend the time Connor would need to double his money to 12 years.)
3. a. $\$1,134.23$. (Year 1: $\$1,000 \times 0.065 = \65 , $\$1,000 + \$65 = \$1,065$; or year 1: $\$1,000 \times 1.065 = \$1,065$; year 2: $\$1,065 \times 0.065 = \69.23 , $\$1,065 + \$69.23 = \$1,134.23$; or year 2: $\$1,065 \times 1.065 = \$1,134.23$)
- b. $\$1,102.50$. (Year 1: $\$1,000 \times 0.05 = \50 , $\$1,000 + \$50 = \$1,050$; or year 1: $\$1,000 \times 1.05 = \$1,050$; year 2: $\$1,050 \times 0.05 = \52.50 , $\$1,050 + \$52.50 = \$1,102.50$; or year 2: $\$1,050 \times 1.05 = \$1,102.50$)
- c. $\$1,177.23$. (Year 1: $\$1,000 \times 0.085 = \85 , $\$1,000 + \$85 = \$1,085$; or year 1: $\$1,000 \times 1.085 = \$1,085$; year 2: $\$1,085 \times 0.085 = \92.23 , $\$1,085 + \$92.23 = \$1,177.23$; or year 2: $\$1,085 \times 1.085 = \$1,177.23$)

Activity Three

- a. Approximately $\$1,311$. (Using a spreadsheet, the capital after 4 years is $\$1,310.80$.)
- b. Approximately $\$1,553$. (Using a spreadsheet, the capital after 6 years is $\$1,500.73$; $\$1,500.73 \times 0.07 \times 0.5$ [for a half year] = $\$52.53$; capital after 6.5 years = $\$1,553.26$)

- c. Approximately $\$1,126$. (The capital for 1 year is $\$1,070$; $\$1,070.00 \times 0.07 \times 0.75$ [for $\frac{3}{4}$ year] = $\$56.18$; capital after 1.75 years = $\$1,126.18$)

Investigation

Answers will vary. (Opinions on which term is best value will vary. You might sign up for a 3 year term and then find that interest rates rise after 2 years and you can't take advantage of that rise. Or, if you are reinvesting at the end of the 3 years, you might find you have to reinvest at a lower rate, so your choice of 3 years was good.)

Reflective question

Answers may vary. You are paying tax only on the interest you earn on your savings, not tax on the initial amount put into your savings account. The tax you pay is only a proportion of the interest, so your savings balance is always growing. (Note that interest is paid on income earned – no matter how you earn your income, you pay tax on it. However, there are tax rebates that apply in some cases, for example, if you are a child. Note that children who have an IRD number pay less tax initially than those who don't have one.)

Pages 12–13: Juggling a Business

Activity One

1. a. $\$10.40$. ($\1.99 rice + $\$6.90$ balloons + $\$1.50$ plastic bags)
- b. 7.5 cups of rice, 60 balloons, 15 plastic bags. (Remember that each set has 3 balls in it.)
- c. 8 sets. (8 sets uses 12 cups of rice [2 kg], 96 balloons, and 24 plastic bags.)
2. $\$85.60$. (Profit = sales – cost: $\$96 - \$10.40 = \$85.60$)
3. $\$21.40$. (Time to make 8 sets = 4 hours. $\$85.60 \div 4 = \21.40 per hour)
4. $\$21.60$. ($\$16 \times 4 = \64 wages. $\$85.60 - \$64.00 = \$21.60$)

Activity Two

1. Answers will vary. Some ideas could include: school newsletter, local paper, pamphlet drop, posters in local shops.

2. Answers will vary. The poster should include the three products (juggling balls, hacky sacks, and bungy balls), their prices, information on how to purchase or order them, and a picture or photo of the products, as well as stating that the juggling balls are sold in sets of 3.
3.
 - a. Black and white: \$9; colour: \$149
 - b. Black and white: \$60; colour: \$790
 - c. Answers will vary. 1 000 colour ones would be a big outlay at the start of Anna's business (it would use almost half of Granny's gift). If 50–75% of people ordered from the leaflet, Anna probably wouldn't have time to fill the orders. However, she is unlikely to get that many orders from a leaflet drop, although she should have more chance of getting orders from 1 000 leaflets than from 100. The design cost of \$75 is the same for 100 as for 1 000.
4. \$20
5.
 - a. \$155 for black and white. (\$75 + \$20 + \$60)
 - b. \$885 for colour. (\$75 + \$20 + \$790)

Reflective question

Answers will vary. For example, the business would need to get a loan, issue more shares, or abandon the business venture.

Pages 14–15: Market Day

Game

A game involving earning income and making a profit

After the game

1. Discussion will vary. Strategies may include selling only if less than a 25% discount or selling if there is still plenty of stock in the inventory and the game is more than halfway through.
2. Answers will vary.
3.
 - a. Answers will vary. Money out (expenditure) should total \$115.
 - b. Answers will vary. Profit = income – \$115

- c. The amount is recorded as a loss instead of as a profit. (For example, $\$80 - \$115 = -\$35$)
4. Answers will vary. To maximise profit in a short game (such as only 10 to 15 turns), the players need to sell at every opportunity and take all the market options that they land on. In a long game, if all stock is sold at full price, the player can earn \$250 ($[\$12 \times 10] + [\$8 \times 10] + [\$5 \times 10]$), which is a profit of \$135 after all expenses are deducted.

Reflective question

Answers will vary. Although Anna enjoys making the balls and hacky sacks and seeing people use them, it would be very discouraging after a while to make no profit from them. Also, she needs to make a profit so that she can buy more supplies – she might need new supplies to make more stock before she sells all the ones she has already made.

Pages 16–17: Motorcycle Mayhem

Activity One

1.
 - a. Every fortnight
 - b. \$200
2.
 - a. 1 May
 - b. About 5 months (based on his current savings pattern)
3. Approximately \$2,856

Reflective question

Answers may vary. Daniel was thinking about the fact that he was spending all his income and some of that spending was unnecessary, with nothing to show for it. He was also thinking about the future: his goal is to buy a motorbike, but he can't if he keeps spending all the money he earns.

Activity Two

1. He only has enough money for the Katashi.
2. At \$200 a fortnight, it would take him about another 14–15 months. ($\$8,900 - \$2,856 = \$6,044$. $\$6,044 \div 200 = \30.22 , which is 30 pays, without rounding. With rounding, it

is 31 pays because you normally can't have a part pay. 31 pays is 62 weeks, which is 14–15 months.)

- Answers will vary, including insurance, repairs and maintenance, safety gear (for example, helmet), running costs (for example, petrol, oil).

Reflective questions

- No, because even if two people want the same item, they will have different ideas about how hard to save for it, different choices about how to earn the money, and so on.
- Their "spare" income, their current debts, their ability to look at financial options, other ways they want to spend their money, and so on, might influence their choices.

Page 18: Giving

Activity

- Answers will vary.
- Answers will vary. Examples of ways that Kalala could spend up to \$400 include:
 - sponsor a child for a year (\$365)
 - donate \$100 to church, make a \$200 lump sum donation, pay for 1 Christmas hamper
 - pay for 5 Christmas hampers.

Reflective question

Answers will vary. Helping others doesn't always have to involve money. It can involve time, energy, listening, encouraging, giving, helping, doing ...

Page 19: Spending

Activity

- The Fotalk 700, the Fotalk 800, and the Zardon B34 have all the features that Kalala wants.
- Talkup 992: \$645.84; Fotalk 600: \$525.20; Talkup 973: \$410.80; Fotalk 700: \$767.52; Fotalk 800: \$888.16; Zardon B34: \$767.52
- Kalala would be locked into a plan that would require monthly payments. She needs to make sure she will have enough money to pay the plan fee every month and

any extra costs if she exceeds the plan. (Remember that she has already given some of her money to charity.)

- Answers will vary. Advantages may include: a phone with a plan is often cheaper than buying a phone and using prepaid cards. Disadvantages may include: you may find yourself locked into a plan for 12 or 24 months; you have to pay a set amount even if prices fall or you don't use the phone very often.

- Answers will vary.

Reflective question

Answers will vary. Shopping around and doing research on aspects such as prices, quality, follow-up service, and possible complications are all ways to minimise mistakes. Also, it's important to keep receipts and take note of dates and terms of warranties and guarantees.

Page 20: Investment Choices

Activity

- Buswhiz, Bingcorp, Financeinc, Myson. Tavita has \$1,000 to invest, but the minimum amount for the other companies is more than that.
 - Buswhiz: 3 years; Bingcorp: 3 years; Financeinc: 1 year; Myson: 1 year. (Those terms give the highest interest rates for each company.)
 - Approximately \$340 (Buswhiz), \$295 (Bingcorp), \$277 (Financeinc), and \$295 (Myson)
- With a 6 month term, money is not "locked in" for as long. You can choose a different investment after 6 months if you wish. However, the rate of interest is not as high as for longer time periods.
 - A 3 year term may offer better interest rates than shorter terms. However, your money stays at that interest rate for the 3 years, even if 3 year rates go up (or down) after you have invested your money. If you decide to access your money early, you pay a penalty.

Reflective question

Answers will vary. For example, you can talk to qualified financial advisers, evaluate information in newspapers and on the Internet, talk to the appropriate bank staff, or join an investment group.

Pages 21-23: Investing on the Share Market

Activity One

- The low-risk, low-return investment
 - After 2.5 years (5 rolls)
 - The high-risk, high-return investment
 - A dice roll of 1 decreases your investment by 25%, so you not only don't get any dividends, you may also end up with less money than you started with.
 - Answers may vary. In most cases, there is very little risk of losing your capital investment, but although your capital may be safe, you won't earn as much interest as on riskier investments. However, the advantages of feeling that your money is "safe" may outweigh the lower income from it.

- Answers will vary, depending on the roll of the dice.

Check your dice throw on the table below.
(*The amounts in row 1 are the value of each investment after 6 months, year 6.)

Game

A game simulating investment options, followed by discussion.

- 2. Results and discussion will vary.
- By throwing more 1s, you will either earn less money than you hoped or even lose money.
 - With each investment, you are more likely to earn money than to lose money. (There are three numbers on the dice where you earn money and only one number where you lose money.) However, with the high-risk, high-return plan, the risk of ending up with less money is elevated because of the high percentage involved. (With each individual roll, the risk of losing money is 1 in 6.)

Activity Two

- 400 shares
- \$1,108
 - \$108
- \$32
 - 11 shares

Reflective questions

- Answers will vary.
- If people invest in more than one company (possibly a mix of risk types), there is less chance of losing all your money if any one company fails. For example, if a high-risk investment loses money, you would most likely still have income from your low-risk investment.

If you threw:	High risk, high return: *\$2,041.88	Medium risk, medium return: \$1,397.22	Low risk, low return: \$1,170.17
1	$\$2,041.88 \times 0.75 = \$1,531.41$	$\$1,397.22 \times 0.95 = \$1,327.36$	$\$1,170.17 \times 0.98 = \$1,146.77$
2	No change: \$2,041.88	No change: \$1,397.22	No change: \$1,170.17
3	No change: \$2,041.88	No change: \$1,397.22	No change: \$1,170.17
4	No change: \$2,041.88	$\$1,397.22 \times 1.05 = \$1,467.08$	$\$1,170.17 \times 1.03 = \$1,205.28$
5	$\$2,041.88 \times 1.1 = \$2,246.07$	$\$1,397.22 \times 1.05 = \$1,467.08$	$\$1,170.17 \times 1.03 = \$1,205.28$
6	$\$2,041.88 \times 1.5 = \$3,062.82$	$\$1,397.22 \times 1.1 = \$1,536.94$	$\$1,170.17 \times 1.03 = \$1,205.28$

Page 24: Sione's New Life

Activity

1. Discussion will vary. Flating costs may include bond, rent in advance, whiteware, furniture, bedding, cleaning equipment, basics such as toilet paper, as well as the cost of phone installation and immediate food needs.
2. a.–b. Answers will vary.
3. a. Answers will vary. He might save a lot of money on big second-hand items, such as whiteware, furniture, and a bed.
b. Prices will vary.

Reflective questions

Answers will vary.

- Costs that either you or your parents would need to cover would include power, phone (with or without toll calls), heating if other than power (for example, gas or wood), food, cleaning products, toilet paper, and so on.
- Some people like to live with other people their own age, be closer to university or work, be able to come and go more freely, play louder music, and so on.
- The people living in the flat often end up paying for the food their visiting friends eat, the power they use, toilet paper, phone calls, and so on. Some visitors use their friends' flats (and cars) without thinking of the costs involved.

Page 25: Part-time Work

Activity

1. a. 22 hours
b. \$319. ($22 \times \14.50)
c. \$76.56. ($\$319 \times \0.24)
d. \$242.44. ($\$319 - \76.56)
2. He should budget on an income of \$198.36 per week (18 hours, minus tax: $\$261.00 - \62.64), although some weeks he will get as much as \$275.50 (for 25 hours' work).

Reflective questions

- There might be a fault in the computer program that generated the pay slip or someone may have entered a wrong figure. You might be paid for too many or too few hours; if you have been overpaid, you will owe money later on that you may have already spent or be paid less at a later date.
- The first step would be to double-check it. If you are sure there is a mistake, you might write down what the correct version should be and why, and then ring or go and see the person responsible for pay at your work.

Pages 26–27: Paying the Bills

Activity One

1. a. \$44.50. ($\$133.50 \div 3$)
b. \$4.95. ($\$14.83 \div 3$, rounded)
c. Sione's name is on the bill. Discussion will vary regarding the risks, but if one or both of the other flatmates left without paying their share, Sione might have to pay it all (he couldn't expect new flatmates to pay past costs). If Sione refused to pay more than his share, the electricity company could cut the power off and, later on in his life, refuse to take Sione on as a customer.
d. Sione and Asif: \$15 each; Peter: \$35. (They share the line rental equally, but Peter has to be responsible for his own toll calls.)
2. a. Discussion will vary. Regular expenses will include rent, food, transport, and probably entertainment.
b. Approximately \$15. ($\$44.50 + \$15 = \59.50 per month.) He will need to allow a bit more for higher power bills in winter.
c. Budgets will vary. A budget for Sione should include \$15 for power and phone, \$90 rent, \$18 transport, and at least \$50 on food and household consumables (toilet paper, dish-washing liquid, and so on). This only leaves him about \$27 for savings, entertainment, and clothing, although he may also have a student allowance.

Activity Two

1.
 - a. \$2,950.20. ($\81.95×36; note that the advertisement in the window on page 27 has different terms from those for Sione's laptop.)
 - b. No. The guarantee is for only 2 years, and 36 months is 3 years.
 - c. \$1,151.20. ($\$2,950.20 - \$1,799.00$)
 - d. Discussion will vary. *Advantages* include: He will save himself \$1,151.20 over 3 years; he can sell the laptop whenever he wants to (for example, to get a later model after 1 year) because he owns it; he doesn't have to allow for \$81.95 a month in his budget.
Disadvantages: He has to pay the cost all at once instead of spreading it out. He hasn't got the use of that money for other things.
2.
 - a. $1\frac{1}{4}$ years. ($\$1,799 - \$500 = \$1,299$. $\$1,299 \div \$20 = 64.95$ [weeks]. For easy calculation purposes, you could round this amount to \$1,300.00: $\$1,300.00 \div \$20 = 65$ [weeks]. 65 weeks is 1 year and 3 months.)
 - b. Answers will vary. Sione might have friends or relations with computers; he may be able to budget for renting time on a computer in a shop or library (including the cost of printing out his work). He can use a university computer for free but has to pay printing costs and for Internet use.

Reflective question

Answers will vary. You might advise them to make a budget and stick to it! They could start by making a list of their regular bills and see how much of their income they use to pay them and when in the month they fall due (if all the bills fall in the same week, that makes it very hard to budget); you might discuss wants versus needs; you might suggest they keep a log of all their expenditure for a month to see where their money is going.

Activity One

1. Answers will vary.
2. Answers will vary.

Activity Two

1. Discussion will vary.
2. Answers will vary. Granny may have thought that the younger children might not make sensible decisions about money, or she may have thought it would be better for them to have the extra \$1,000 available when they were 16 and thinking more about their future goals than they might have done when they were younger.

Reflective question

Answers will vary.

Figure It Out
Financial Literacy
 Granny's Gift

Teachers' Notes

Overview: Levels 3-4

Title	Key financial ideas	Page in students' book	Page in teachers' book
A Birthday Surprise	<ul style="list-style-type: none"> • If you receive money you weren't expecting, you have financial choices! • Money can be used in many different ways. 	1	18
Terms Time	<ul style="list-style-type: none"> • People who deal with money (that's most of us!) need to understand financial language. • It's easier to budget if you understand how finances work. 	2-3	19
Never Too Late	<ul style="list-style-type: none"> • Keeping financial records helps you to keep track of your money flow. • Financial records tell stories about spending patterns and help you to make good decisions about future spending. • Saving money now gives you more choices in the future. 	4-6	20
Basketball Finances	<ul style="list-style-type: none"> • Comparing your choices can help you to make good financial decisions. 	7	24
Different Decisions	<ul style="list-style-type: none"> • People have different financial personalities. Some are spenders; some are savers. • Bank statements show the effects of depositing and withdrawing money. • If you save your money, you will have more options available to you in the future. 	8-9	26
Compound Interest	<ul style="list-style-type: none"> • Banks pay interest on money in savings accounts, so your money grows! • Earning interest on interest already earned is called compound interest. Compound interest makes the capital investment (the money you deposit) grow faster. 	10-11	27
Juggling a Business	<ul style="list-style-type: none"> • Businesses need start-up capital to get the business under way and cover initial costs. • Business owners expect to take a share of the profit for their own use. 	12-13	31
Market Day	<ul style="list-style-type: none"> • Profit equals income minus expenditure. • Running out of stock is a lost opportunity to earn income and make a profit. 	14-15	33

Overview: Levels 3-4**continued**

Title	Key financial ideas	Page in students' book	Page in teachers' book
Motorcycle Mayhem	<ul style="list-style-type: none">• Having goals for saving encourages people to put money aside from their income to spend at a later time.• Sensible spending includes shopping around to find the best deals.	16–17	35
Giving	<ul style="list-style-type: none">• Your personality and values influence how you spend your money.• The more money you have, the more you are able to help others in need.	18	37
Spending	<ul style="list-style-type: none">• Shopping around before you buy can help you to make better purchasing decisions.	19	39
Investment Choices	<ul style="list-style-type: none">• Different financial organisations offer different investment opportunities.• Investors have different needs, so they need a range of choices.	20	41
Investing on the Share Market	<ul style="list-style-type: none">• Different people are willing to accept different levels of risk when they invest their money.• You need to evaluate which level of risk you can afford to take.	21–23	43
Sione's New Life	<ul style="list-style-type: none">• A budget is a plan for spending wisely. A budget is also the amount of money set aside for a purpose.• People on limited or fixed budgets need to make realistic financial decisions from a range of choices.	24	46
Part-time Work	<ul style="list-style-type: none">• People earn income in order to pay for their needs and wants.• People pay tax on their income to help cover government expenditure.	25	47
Paying the Bills	<ul style="list-style-type: none">• Making budgets (financial plans) helps manage money, risks, and unforeseen costs.• If you don't have enough money to pay for all your needs and wants, paying for needs should come first.	26–27	49
An Email to Granny	<ul style="list-style-type: none">• You can use past experiences with money to think about and plan for the future.	28	51

Introduction to the Notes for *Granny's Gift*

Use of headings

The notes that follow for the various activities, games, and investigations in the level 3–4 *Figure It Out Financial Literacy* book have headings and sub-headings such as Financial Language, Financial Understanding, and Mathematics and Statistics. These are designed to help you focus on the parts of the notes that are most useful to you as you help your students work through the students' book. Where appropriate, extra investigations and tasks are suggested.

Context for financial understanding in *Granny's Gift*

Although few students will have experienced receiving an unexpected gift of \$1,000–\$2,000, the challenges posed in this book, as the grandchildren decide what to do with Granny's gift, raise issues that students will need to grapple with at various stages in their lives.

The characters in this level 3–4 book demonstrate sound financial thinking as they explore the potential use of Granny's gift. The students using the book are also challenged about financial thinking. Creating budgets to record expected costs is a skill that students will practise a number of times as they work through the book.

The characters also demonstrate enterprising attributes that support their decision making. Collecting, organising, and analysing information in the process of making a decision is one attribute that students will see in action many times through this book. Students will also experience the integration of mathematics, social sciences, English, and other learning areas as they work through the book.

The mathematics and statistics in *Granny's Gift*

The mathematics and statistics in this book target levels 3–4. However, the topic of the book lends itself to an inquiry learning approach, so it is possible to engage the students in your class who are above and below levels 3–4.

Numeracy links are provided for students at stages 5–8 on the Number Framework. All the students in your class should be involved in the financial literacy, social sciences, and other learning area discussions and tasks.

The financial literacy focus of these activities means that your involvement as the teacher is essential, particularly before you set any of the tasks to be completed independently. Prior teaching and discussion will enable your students to complete the work with understanding.

As in all numeracy work, students benefit greatly from sharing and discussing their ideas. This discussion is important in supporting their conceptual understanding.

Mathematics and Statistics Achievement Objectives

This initial page introduces the overall theme of the book and sets up the premise from which all the other activities follow. There are no specific mathematics and statistics achievement objectives for this page.

Number Framework Links

The reflective question is appropriate for all students who are comfortable reading numbers to 1 000, that is, students who are at stage 5 and above.

Financial Language

(See the full glossary at the end of these teachers' notes.)

Inheritance, will, trust fund

Setting the Scene

Financial understanding

You could use this page to assess students' prior knowledge of financial ideas and understandings.

One purpose of this particular book is to make students aware of the variety of choices they have available to them regarding money and finance. Your class could do the activities in this book in their entirety as a unit of work on financial literacy, or you could choose a selection of activities, depending on students' needs and areas of interest. In either case, it's advisable to work through pages 1–3 to set the scene and familiarise the students with the financial terms.

Whatever decisions a person might make, they should be informed ones, that is, decisions made with an understanding of all the other choices and consequences. All the grandchildren in this book make different decisions with their money gift. This is consistent with the key understanding that people make different financial decisions because they have different preferences.

As you work through the various scenarios with the class, you may need to spend more teaching time on the choices/decisions that your students know little about, such as investments, or that they may be misinformed about, such as hire-purchase agreements and credit cards.

You can use this "setting the scene" page with the whole class or with a group in a discussion format. Some questions you may like to ask are:

Have any of you ever received a gift of money – for example, for your birthday?

What did you do with your money gift?

Did you wish later that you had used it differently?

Alternatively, you could say: *Let's imagine my uncle has just given me \$1,000! What do you think I should do with this money?* Many students are interested in their teachers' lives and may come up with a greater variety of suggestions than if asked what they would do with the money themselves.

You could introduce the book this way: *This book is all about eight lucky grandchildren who receive a gift of money from their grandmother.* (Give students the opportunity to read the email.) Promote discussion by asking questions such as:

Why is Granny giving her money away while she is still alive?

What is a will? (A will is a legal document that outlines how a person wants their estate [their belongings] to be distributed when they die.)

How does a trust fund work? (A trust is a legal structure in which assets, such as house, money, and shares, are placed in safe keeping so that no individual has sole access. There are named beneficiaries of any trust.)

Why do you think the younger children in this book only get \$1,000 at first?

What are some ways the grandchildren might use the money? (Most choices fall into four categories: save, spend, invest, donate. You may like to list students' ideas and then group them under these headings.)

Do you think their age will affect their decision? (Yes. Older children are allowed by law to drive, leave home, and speculate on the stock market without parental supervision. They usually have different interests to those of younger children.)

Do you think all the children will have the same goals?

Do you have goals? Are any of your goals financial ones?

Reflective question

It's a good idea to have students write down their ideas to this reflective question (*What would you do if you were given \$1,000 today?*) because they may need to refer to their decision at the end of the unit, when they are asked to reflect on their earlier answer.

It is important to emphasise that people usually must earn their money. Lottery prizes, gifts, and inheritances are at best "one-off" events and not to be relied upon.

Social Sciences Links

Achievement objectives:

- Understand how people make choices about their needs and wants (Social Studies, level 2)
You could discuss with the students what are needs and wants and how these might influence decisions about access to resources.
- Understand how people make decisions about access to and use of resources (Social Studies, level 3)
You could ask the students *What influences those decisions?* Discussion could include needs, wants, family, experience (or lack of experience), culture, awareness of the environment and other people, how much people already have, and so on.

Other Cross-curricular Links

English achievement objective:

- Purposes and audiences: Show a developing/increasing understanding of how to shape texts for different purposes and audiences (Speaking, Writing, and Presenting, levels 3–4)
Students could:
 - write a thank you letter or email to their grandmother for the gift
 - create an imaginary will.

Pages 2–3: Terms Time

Mathematics and Statistics Achievement Objectives

- Number strategies: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages (Number and Algebra, level 3)
- Number knowledge: Know counting sequences for whole numbers (Number and Algebra, level 3)

Number Framework Links

This activity is appropriate for all students who are comfortable reading and adding up whole numbers, that is, students who are at stage 5 and above. When adding up their total score for the game, students will need to be able to add in hundreds.

Financial Language

See the terms on page 3 of the students' book.

Game

Financial understanding

This game helps students to learn about financial vocabulary as they discuss their ideas. The game is intended to familiarise students with terms they will encounter in the activities that follow. You will also have opportunities to clarify the meanings of these words in smaller chunks as they arise.

Don't expect your students to get all the words correct initially because most of the terms will be new to them and some words (such as income and salary) seem very similar. The students may need to play the game a few times before they achieve much success. Encourage students who complete a large number of the activities in this book to revisit this game at the end. They should find they now know many of the words and their meanings!

To increase the students' chance of success with this game, you could give them the words on cards (see the copymaster provided for this purpose), perhaps with students working together in co-operative groups, and ask them to group the cards into categories of their own choice. Some may group the words into two piles – those that they are familiar with and those that they aren't. Other students may split them into those that relate to spending money, those that relate to receiving money, and those that do neither. Encourage the students to think of new categories and regroup the words accordingly.

You could demonstrate the game to the whole class before they play in small groups. Have some students, in turn, read a definition from a card. Other students, in turn, guess which word it is describing (using the list of words around the board). You could then have a show of hands to express agreement or disagreement with the guess. In the game, a player who gives the correct term for the definition keeps the associated points. You may decide to let the students use a dictionary as they play the game.

Extension

Use the words from the game to create a word wall to display the terminology that your students will encounter during the unit of work. The students could add other unfamiliar financial words to the wall as they encounter them.

Social Sciences Links

Achievement objective:

- Understand how people make decisions about access to and use of resources (Social Studies, level 3)
The students could discuss, as a class or group or at home, how money and the use of financial decisions impact on people's access to resources.

Other Cross-curricular Links

English achievement objective:

- Language features: Use (a range of) language features appropriately, showing a developing/increasing understanding of their effects (Speaking, Writing, and Presenting, levels 3–4)
The terms in the game could form part of your class's spelling programme. The students could generate word finds and/or crosswords to reinforce the terminology.

Pages 4–6: Never Too Late

Mathematics and Statistics Achievement Objectives

- Number strategies: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages (Number and Algebra, level 3)
- Number knowledge:
 - Know counting sequences for whole numbers
 - Know fractions and percentages in everyday use (Number and Algebra, level 3)
- Statistical investigation: Conduct investigations using the statistical enquiry cycle:
 - gathering, sorting, and displaying multivariate category and whole-number data and simple time-series data to answer questions (Statistics, level 3)
- Statistical literacy: Evaluate the effectiveness of different displays in representing the findings of a statistical investigation or probability activity undertaken by others (Statistics, level 3)

Number Framework Links

These activities involve addition and subtraction of simple decimals in the context of money. They are appropriate for students who are working at stage 6. Students at stage 5 will need extra teacher scaffolding, while students at stages 7 and 8 should be able to complete the tasks without a calculator.

Financial Language

Spending, saving, cash book, pocket money, allowance, cash flow, balance, income, expenditure, consumable

Activity One

Financial understanding

In this activity, Hayden learns about the benefits of keeping accurate financial records of his own spending. Monitoring and evaluating his patterns of spending and flows of income will help him to plan effectively and make more informed decisions about his future spending.

This activity encourages students to use financial records as a way of keeping track of money, regardless of how much or little money they have. You could begin a group/class discussion by asking:

How do you keep track of your spending?

How do other people you know keep track of their spending?

Some students may have seen their parents recording details of cheques in their cheque book or keeping their eftpos and/or credit card receipts to reconcile with a bank statement later. Small businesses may use a cash book and from this create an income and expenditure statement. Most businesses today use a computer spreadsheet, which contains the same information but is set up to do all the calculations automatically. You could use **Activity One** to make your students familiar with this use of a computer.

Any record of income and expenditure needs to contain information on date, description, money in, money out, balance. Give the students an authentic example of this, using what would be a realistic amount of pocket money and typical expenses for them:

Date	Description	Money in	Money out	Balance
7 Feb	Pocket money	\$5.00		\$5.00
9 Feb	Ice block		\$1.70	\$3.30

Discuss why it is important to have “description” as a column title (so that spending habits can be analysed).

You could follow this with a discussion of Hayden’s cash book (see copymaster for pages 4–6). To familiarise the students with the different parts of a cash book, ask questions such as:

How much has Hayden spent on lunch so far? (\$9.90)

When does Hayden have the least amount of money left? (2 May)

How much is this? (10 cents)

Why is there no record for 3 May? (Hayden didn’t spend or earn any money.)

What do you think the entry on 11 May might be? How would you record this? (For example, spent \$4 at a bargain shop.)

At this point, many students will be able to complete the activity independently, while others may wish to work in collaborative groups or with you. It’s appropriate here for students to have access to calculators because most adults use calculators when keeping track of their financial records.

You could discuss with students how they think the decisions made by Hayden about the way he uses the \$10 a week may change over time.

Extension

Mathematics and statistics

Students could create a spreadsheet of Hayden’s income and expenditure cash book. For example:

	A	B	C	D	E
1	Income and Expenditure Cash Book				
2	Date	Description	Money in	Money out	Balance
3	1 May	Week 1 allowance	\$10.00		\$10.00
4	1 May	Lunch – Monday		\$5.00	\$5.00
5	2 May	Lunch – Tuesday		\$4.90	\$0.10
6	8 May	Week 2 allowance	\$10.00		\$10.10
7	10 May	Monthly pocket money	\$30.00		\$40.10
8					

The Formula for cell E4

This means the Balance (from E3) minus Money out (from D4) plus Money in (from C4)

Financial understanding

You could also discuss Hayden's spending habits with the students as a class or group. Encourage them to realise that Hayden nearly always spends all his money, that he sometimes loses money, and that he doesn't have a lot to show for his spending. This will lead on to **Activity Two**.

Investigation

Financial understanding

In this investigation, students who have an income keep their own financial records for a 2 week period and then look for patterns and trends in their spending habits. (Students who don't have a regular income may still get money given to them for birthdays, Christmas, or at other times. They could try to remember how they spent that money and use that as the basis for looking at patterns.)

This investigation could be used as a homework activity.

Activity Two

Financial understanding

In this activity, Hayden considers setting a savings goal and thinks about saving some of his income now so that he has more choices about what he can buy in the future. For many students and most adults, choices include spending now, saving and spending later, or investing savings into businesses (their own or other people's).

Hayden demonstrates initiative and drive when he decides to start paying for some of his own clothes and sports equipment from his income. Ask:

Why do you think Hayden's dad offers to pay \$30 towards the shoes?

Why do you think he offers to pay the last \$30 instead of the first \$30?

Would you rather get the \$30 at the beginning or the end?

Would it make any difference to how long you saved for?

The running shoes in the book are fictional brands. However, this activity will be more meaningful for your students and have more scope if it involves real shoe brands. Use your own and your students' knowledge of and interest in current fashions or trends to discuss some different sports shoes currently available.

The students could do research on the Internet, in magazines, or in advertising brochures to come up with actual, known examples of:

- the most expensive, top-performance shoe
- a "trendy" shoe brand
- a good quality shoe of a brand that few students know
- a shoe from a well-known "budget" store.

See the cross-curricular link for Social Sciences. Ask *What could have influenced the decisions Hayden has made about access to and use of resources?*

Discuss with the students the purchasing decision they would make given these choices and why, the various merits of different options, and the trade-off between affordability and desirability. Ask the students to share their own experiences and what they might have learned from them.

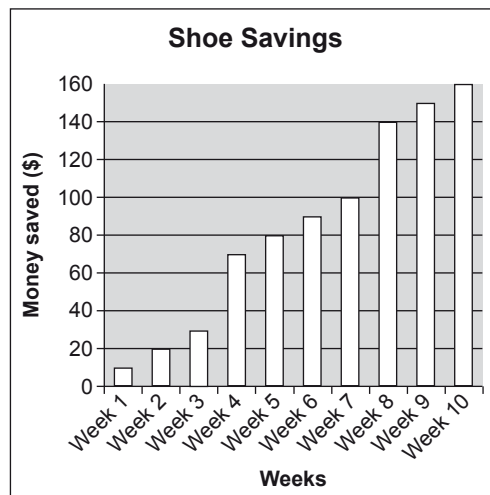
What could have influenced the decisions Hayden has made about access to and use of resources?

Mathematics and statistics

Question 1 can be answered by starting with Dad's \$30 and adding in 10s until reaching or passing the shoe price. Encourage the students to use a more sophisticated strategy, for example, rounding \$149.99 to \$150, subtracting Dad's \$30, and dividing by 10 to get the number of weeks of saving required.

If Hayden also saves his pocket money (question 2), he will have an extra \$30 every 4 weeks to put towards his shoes, effectively cutting his savings time by 3 weeks every month. This savings programme makes an interesting graph (see next page) and could provide an extension activity. An analysis of the graph demonstrates how the savings make a significant jump every time the pocket money is "banked" and grows slowly and steadily with each \$10 allowance saved. The students could also mark on the graph the various points at which Hayden has saved enough for each shoe price. They could then look at how the graph would change when Dad's offer of \$30 is added in.

Savings (\$)	
Week 1	10
Week 2	20
Week 3	30
Week 4	70
Week 5	80
Week 6	90
Week 7	100
Week 8	140
Week 9	150
Week 10	160

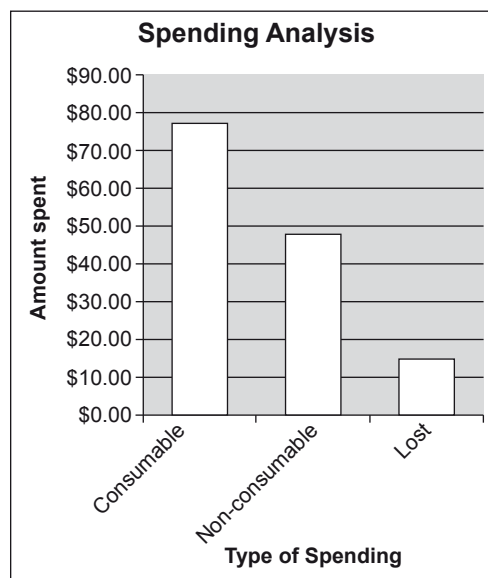
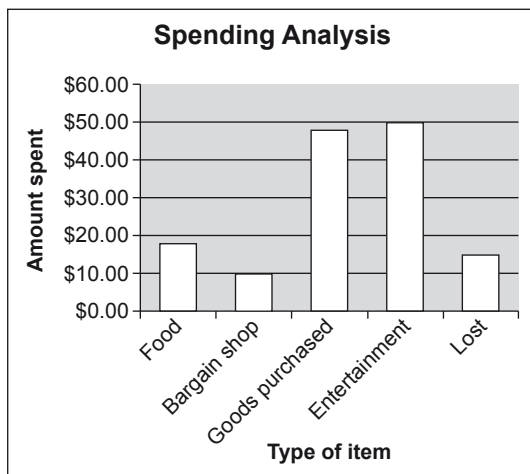


Activity Three

Financial understanding

In this activity, students, acting as Hayden, make more responsible decisions about spending, thereby reducing Hayden's expenditure and giving him a healthier total at the end of the 2 month period. They generate and use creative ideas and processes to construct a more responsible financial record for Hayden during the months of September and October.

The discussion for question 2 is a good one to have with the whole group or class. The students could analyse their records from question 1 by grouping their spending into categories (for example, food, toys, entertainment) or simply into two groups: consumables (things used up and now gone) and non-consumables (things that can be kept). An extension activity might be for students to make a bar graph of the spending habits they imagined for Hayden in question 1. For example, here are graphs based on Hayden's spending in **Activity One**.



From these graphs, it can be seen that Hayden initially spent a large proportion of his money on consumables such as entertainment, food, and cheap items at the bargain shop. He lost a significant amount of his money. He spent less than half his money on items that could be kept (CD and new wallet) and, initially, he didn't save any money for future use. The students could compare these **Activity One** graphs with the ones they made with question 1 data (if they did make graphs). They could then discuss whether their own financial personalities are similar to Hayden's in either **Activity One** or **Activity Three**, or if different from either, how they are different. The students could then discuss what they might actually decide to do if they had the same amount of money as Hayden.

Mathematics and statistics

For question 1, you may need to remind the students that, although Hayden has decided to save all of his \$10 allowance each week from Granny's gift, he will also get \$30 pocket money on 10 September and on

10 October, some or all of which he may decide to spend or save. The students must keep an accurate “running balance”, that is, they should add the money to or subtract the money from the balance with every transaction. They can check this at the end by adding up the total amounts in the Money In column (plus the 50 cents for the starting balance) and then adding up the total amounts in the Money Out column. The difference between these two amounts should be the final balance.

Reflective questions

These questions reinforce the role of incentives, including goals, for saving and the fact that people vary in their approach to saving money and their ability to learn from their past spending experiences. Each student could record their financial goals and share these with their class.

Extension

Financial understanding

- The class (or a group of students) could take responsibility for completing a cash book to record income and expenditure related to an upcoming school trip.
- If the class wants to raise funds for a classroom purchase or contribute to the classroom budget, a group of accountants could be assigned the task of keeping a cash book. (This could also be “audited” by another student to check that the calculations are correct.)

Social Sciences Links

Achievement objectives:

- Understand how people make choices about their needs and wants (Social Studies, Level 2)
- Understand how people make decisions about access to and use of resources (Social Studies, level 3)

You could discuss with students what influences their decisions about how they use and access resources.

The students could research the spending habits of their school and the decisions made about access to and use of resources in the school setting. They could then complete a budget or a proposal for changes and present it to the board of trustees.

Other Cross-curricular Links

English achievement objective:

- Purposes and audiences: Show a developing/increasing understanding of how to shape texts for different purposes and audiences (Listening, Reading, and Viewing, levels 3–4)

Students could do further work on the topic of advertising.

Page 7: Basketball Finances

Mathematics and Statistics Achievement Objectives

- Number strategies: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages (Number and Algebra, level 3)
- Number knowledge: Know fractions and percentages in everyday use (Number and Algebra, level 3)

Number Framework Links

This activity is appropriate for students working at stage 6. It involves estimation, addition, subtraction, and rounding of dollar amounts. Students working at stage 5 will need extra teacher scaffolding, while those students working at stages 7 and 8 will be able to complete the tasks without a calculator. (See the table of NDP material on page 4.)

Financial Language

Needs, wants, budget, expenses

Activity

Financial understanding

In this activity, Rebecca compares prices of different goods she would like to purchase to help her meet her goals. As she identifies some of the expenses involved in her plan, she learns that there are many options to explore before any decision making occurs. People making decisions need to consider personal preferences as well as the cost of the choices available.

For question **1b**, although the \$1,000 will indeed be enough to cover these minimum expenses (with \$453.07 left over), the students may wish to discuss and consider which items are worth paying more for. The cheapest basketball may not be the correct weight, for example, and therefore it may be wiser to invest in a more expensive ball to make shooting practice more worthwhile. This leads to a discussion on the trade-off between quality and price.

Question **1c** lends itself to discussion with a larger group, perhaps using the expertise of students in the class with experience in representative sports. Other costs could include a thank you gift for Aunty Jane, buses, lunches, team uniforms, and so on.

For question **2**, the students may suggest using the Internet to purchase second-hand items.

Mathematics and statistics

The task in question **1a** is fairly straightforward and the students shouldn't need a lot of teacher guidance. It's a good scenario in which to use rounding and estimation as a strategy. Most of the quoted amounts can be rounded up. Rather than calculating $\$109.99 + \$19.99 + \$46.95 + \$300.00 + \$70$, students can estimate the total cost by adding together $\$110 + \$20 + \$50 + \$300 + \$70$. This answer of \$550 is very close to the actual answer of \$546.93. (A sophisticated strategy to then get the actual answer is to add up the rounding errors, that is, $1c + 1c + \$3.05 = \3.07 , then subtract from the estimate of \$550 to get \$546.93, which is much faster than adding the exact amounts together.)

Investigation

Financial understanding

In this investigation, students learn that exploring all the options available to them will help them make more informed financial decisions about their spending.

This investigation could make a good homework activity. If you have an initial class or group brainstorming session for the items related to a chosen sport, suggest that they be separated into "needs" and "wants". You could give the students a budget with which to make their sporting purchases, which would encourage them to make decisions between the necessary and the luxury items and to analyse the various costs of the "needs".

Social Sciences Links

Achievement objective:

- Understand how people make decisions about access to and use of resources (Social Studies, level 3)
Ask: *What is influencing Rebecca's decisions? What else could influence your decisions?* Discuss needs, wants, fashion, cost, reliability, peer pressure, and so on.

Other Cross-curricular Links

English achievement objectives:

- Purposes and audiences: Show a developing/increasing understanding of how to shape texts for different purposes and audiences (Speaking, Writing, and Presenting, levels 3–4)
Students could make an advertising brochure for sports gear, either for basketball or another sport of their choice.
- Processes and strategies: Integrate sources of information, processes, and strategies with developing confidence/confidently to identify, form, and express ideas (Listening, Reading, and Viewing, levels 3–4)
Students could use telephone directories, newspapers, catalogues, the Internet, and other sources to find sports equipment for sale.

Health and Physical Education achievement objective:

- Investigate and describe lifestyle factors and media influences that contribute to the well-being of people in New Zealand (Healthy Communities and Environments, level 3)
If the class is learning skills based around a particular sport, they could investigate the costs involved in playing the sport compared to those of the sport chosen in their investigation.

A representative sportsman/woman could be invited to visit the class and talk about the costs involved in playing their sport and the financial sacrifices they have made for their sport. They should also be encouraged to talk about the benefits involved in their sport, particularly those that involve their health and well-being.

Pages 8–9: Different Decisions

Mathematics and Statistics Achievement Objectives

- Number strategies: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages (Number and Algebra, level 3)
- Number knowledge: Know fractions and percentages in everyday use (Number and Algebra, level 3)

Number Framework Links

This activity is appropriate for students working at stage 6. It involves the reading, addition, and subtraction of dollar amounts. Those at stage 5 will need extra teacher scaffolding, while those students working at stages 7 and 8 will be able to complete the task without a calculator. (See the table of NDP material on page 4.)

Financial Language

Bank statements, transaction, debit, credit, withdrawal, deposit, balance, IRD, interest, tax

Activity

Financial understanding

In this activity, students learn that not everyone has the same financial personality or spending and saving habits and that people make different financial decisions. Connor’s and Rebecca’s bank statements reflect this very well.

The students monitor and evaluate when they discuss the bank records of Connor and Rebecca and identify the different saving and spending trends of each child. Ask:

What might have influenced the different spending decisions that Connor and Rebecca made?

Why do people make different decisions? What might they base those decisions on? (Possibly needs versus wants) (See the social sciences achievement objective below.)

Your students will have varied experiences with bank statements, largely depending on whether they have their own bank account or not. A good introduction to this activity is to show students some real bank statements. Discuss the information contained on these statements. You may wish to revise some of the financial terms that appear on them (see above).

For question 1, the students may not initially notice much difference between the bank accounts. One way to encourage their participation in this task is to have them working in pairs or teams and playing “spot the difference”. This should key them into looking at the finer details to notice differences. If they struggle, point them towards the withdrawal columns of each bank statement. This could lead to a discussion on the different “financial personality” of each twin (Connor is a saver, Rebecca is a spender, albeit a sensible one). You may like to ask the students to suggest what Rebecca might have used the money for on each occasion.

Mathematics and statistics

The mathematics in question 2 is straightforward. You may wish to discuss with students the value of using an algorithm to make calculations with large, “ugly” numbers (for example $\$1,213.09 - \$1,047.48$, as required in question 2g).

Extension

Financial understanding

The students may be interested in further discussion about the financial personalities of different people. They may also enjoy creating a fictional bank statement for someone who is a “spend-thrift” or a “miser”. They could then look at what needs the person may be sacrificing and what wants they choose to do without.

Students could create their own bank statement (real or imaginary) using a spreadsheet (see the teachers’ notes for pages 4–6 for hints on how to set this up).

Social Sciences Links

Achievement objective:

- Understand how people make decisions about access to and use of resources (Social Studies, level 3)
The students could discuss how interests also impact on our decisions and where those interests come from.
The students could research the question “What is the role of banks in our society?” (The students may be under the impression that banks are there simply to provide a service, when in fact, banks are a business and are motivated to make a profit.)

Other Cross-curricular Links

English achievement objective:

- Purposes and audiences: Show a developing/increasing understanding of how to shape texts for different purposes and audiences (Speaking, Writing, and Presenting, levels 3–4)
Students could debate the merits of being a spender or a saver.

Pages 10–11: Compound Interest

Mathematics and Statistics Achievement Objectives

- Number strategies and knowledge:
 - Use a range of multiplicative strategies when operating on whole numbers
 - Find fractions, decimals, and percentages of amounts expressed as whole numbers, simple fractions, and decimals
 - Know the equivalent decimal and percentage forms for everyday fractions (Number and Algebra, level 4)

Number Framework Links

These activities involve calculation of percentages in the context of money and are appropriate for students who are at stage 8. They should also be accessible for strong advanced multiplicative–early proportional thinkers (stage 7). Students who are at stage 6 will need a considerable amount of scaffolding with the mathematics involved.

Students should preferably have had exposure to percentages before attempting these activities. Students will also benefit here from knowing the conversions between basic fractions and percentages, for example, if they know that 10 percent = $\frac{1}{10}$, they will know that calculating 10 percent of 300 is equivalent to finding $\frac{1}{10}$ of 300 (that is, 30). (See the table of NDP material on page 4.)

Financial Language

Compound interest, capital, interest rate, fixed-term deposit, invest, term

Activities

Mathematics and statistics

These activities deal with difficult concepts that most students will not have encountered previously. Before discussing compound interest, students will need to understand how interest is calculated. It is useful to begin with basic amounts such as 10 percent. Explain that banks pay people interest on money in savings accounts. For example, at 10 percent interest, a balance of \$1,000 would earn \$100 after 1 year. (Some students will not realise that the interest rate given is based on a per annum [p.a.] rate, that is, per year of investment, even if the term is shorter than 1 year. Also, in reality, interest is usually calculated and compounded on a monthly not yearly basis, which impacts on the amount of compound interest. Current interest rates are also much lower than 10 percent. However, for the students, working initially on 10 percent per annum is more suited to their numeracy skills.)

Students could practise working out other percentages of \$1,000. A ratio table may help with this:

% (of 1 000)	100%	50%	10%	5%	1%
\$	\$1,000	\$500	\$100	\$50	\$10

Have the students help you complete the \$ amounts in the table. From this table, it is easy to calculate 6 percent of \$1,000 (by combining 5 percent and 1 percent, that is, 6 percent of \$1,000 is \$50 + \$10 = \$60). Similarly, students can calculate that 12 percent of \$1,000 is \$120, 8 percent is \$80, and, as an extension, that 7.5 percent is \$75. Students at stage 8 and some of those at stage 7 will be able to extrapolate that 6.3 percent of \$1,000 is \$63.

Activity One

Financial understanding

In this activity, Connor investigates how much interest different banks would pay him if he deposited money with them for a certain period of time. He learns that they offer different rates and different terms (time periods).

Clearly, when investing money (called capital) in a bank, a higher interest rate is better than a low interest rate. Note that the length of the term (for example, 6 months or 1 year) does not affect which rate is better, but it may affect the decision as to which bank to choose to invest with (see conditions below).

In question **1b**, each investment option contains a condition for investment. AWE Bank requires a 6 month fixed-term deposit, which means the money has to be “locked in” for 6 months; that is, Connor would not be able to withdraw his money for 6 months. Similarly, Betabank requires a 1 year fixed-term deposit. CC Bank requires an investment of \$500 or more. If Connor put his \$1,000 into CC Bank, he could withdraw money at any time and still keep the same interest rate, as long as he maintains a balance of \$500 or more. Betabank has the best rate but requires Connor to invest for an entire year.

Although question **2** says “Discuss with a classmate”, it is also a good question for you to discuss with a group. See the discussion items for this question in the Answers section.

Mathematics and statistics

Encourage the students to complete question **1a**, in the following manner. (Note that 0.1 percent of \$1,000 is \$1.)

5.9% is $5\% + 0.9\% \Rightarrow \$50 + \$9 = \59

6.7% is $5\% + 1\% + 0.7\% \Rightarrow \$50 + \$10 + \$7 = \$67$

5.8% is \$58.

(Note: It is also possible to quickly calculate these interest rates on a calculator. 4.9% of \$1,000 can be calculated simply by pushing: $\boxed{1000} \boxed{\times} \boxed{4.9} \boxed{\%}$. This will make the activity more accessible to emergent stage 7 and stage 6 students).

Activity Two

Financial understanding

In this activity, Connor learns that by having money in a savings account at the bank, his capital (original amount of money) grows. He gets paid interest on the previous interest he has earned. This is called compound interest.

As Connor plans and organises which bank and interest rate is going to give him the best return for his money, he is also identifying, assessing, and managing the risks associated with each of his options before he makes a decision.

A good way to begin this activity is a discussion about compound interest. Modelling this physically with money demonstrates the concept well. For example, have a student give “the bank” \$1,000 in January. In December that year, the bank pays 10 percent interest of \$100 and adds it to the pile. The following December, the bank adds \$110 to the pile because this is 10 percent of \$1,100. The following December, \$121 is added to the pile.

(Note that this is a very simplistic example. In reality, as noted above, the interest is calculated and compounded on a monthly, not yearly, basis. It is also taxed [as noted on the students’ page but left out of the calculations there for the sake of simplicity] and currently may be more or less than 10 percent per annum.)

Have the students continue modelling the effect of compound interest on the total amount in the bank: before each “December”, have them count the new balance and calculate 10 percent (using a calculator: $\boxed{\times} \boxed{0.1} \boxed{=}$ if necessary).

After the modelling, the students could complete the following table or set it up on a spreadsheet:

	A	B	C	D
1	Year	Capital	Interest at 10%	Balance
2	1	\$1,000.00	\$100.00	\$1,100.00
3	2	\$1,100.00	\$110.00	\$1,210.00
4	3	\$1,210.00	\$121.00	\$1,331.00
5	4	\$1,331.00	\$133.10	\$1,464.10
6	5	\$1,464.10	\$146.41	\$1,610.51

You may need to remind the students that the balance at the end of the year becomes the capital invested at the start of the next year. Students may be surprised at how quickly the balance grows – in this example, the \$1,000 invested earns more than \$600 in just 5 years.

Mathematics and statistics

Question 1 requires the students to complete a similar table, but this time it is for 7 percent. Although a 10 percent interest rate provides very clean, tidy numbers at first, the numbers are a little more untidy when calculating 7 percent interest. If they have done the 10 percent example, some students will be able to complete this question independently, while others may need to work with you. See below for working:

Year	Capital	7% of capital	Calculation	Balance	Balance from each year becomes capital for the following year.
1	\$1,000.00	\$70.00	$\$1,000 + \$70 =$	\$1,070.00	
2	\$1,070.00	\$74.90	$\$1,070 + \$74.90 =$	\$1,144.90	
3	\$1,144.90	\$80.14	$\$1,144.90 + \$80.14 =$	\$1,225.04	
4	\$1,225.04	\$85.75	$\$1,225.04 + \$85.75 =$	\$1,310.79	
5	\$1,310.79	\$91.76	$\$1,310.79 + \$91.76 =$	\$1,402.55	

See the note below on rounding sensibly when using calculators. Doing this as a table means that the students will need to be conscious of the working required, but doing it as a spreadsheet will offer different learning opportunities (see notes below).

For question 2a, to find Connor’s earnings from interest, subtract the balance from the initial investment. The balance at the end of the fifth year is \$1,402.55, so he has earned \$402.55 ($\$1,402.55 - \$1,000$) for his investment. (See the table of NDP material on page 4.)

Using calculators

Although you may wish to have your students use a calculator for this activity, keep in mind that they may lose some overall understanding of the numeracy concepts involved if they do. Knowing how to convert a percentage into a decimal is important prior knowledge. Calculating 7 percent of \$1,000 is equivalent to calculating $0.07 \times \$1,000$. The result is added to \$1,000, giving \$1,070. Repeat for as many years as necessary: $\$1,070 \times 0.07 = \74.90 , add this to \$1,070 and repeat: $\$1,144.90 \times 0.07 = \80.143 , and so on.

At this point, the students need to understand how to round decimal answers sensibly. A final answer of \$93.312 should be rounded to \$93.31 because it is a money context and the decimal answer should represent dollars and cents. (See the table of NDP material on page 4.)

Extension

Mathematics and statistics

The information below will be useful for the students who are interested in creating a spreadsheet to calculate compound interest. Note that if the figures in the table were calculated using a calculator, there would be some minor differences because the computer spreadsheet does its working on unrounded numbers even though only two decimal places are shown. The cells are formatted for currency, which involves rounding to two decimal places.

In cell B2 is the original capital investment.

In cell C2, students will need to type a formula such as $=B2*0.07$. This means “The amount in cell B2 multiplied by 0.07 (or 7%)”.

In cell D2, students will also need a formula such as $=SUM(B2,C2)$. This means “Add cells B2 and C2 together.”

Finally, in cell B3, the students will need to type $=D2$ because the balance of the previous year becomes the capital for the following year.

Every row will be similar, so rather than retyping using B3, C3, D3, and so on, you can use the Fill Down function by highlighting cell B2 and dragging the bottom right corner down as far as required (you will notice a little + sign as you do this).

	A	B	C	D
	Year	Capital	Interest	Balance
1	1	\$1,000.00	\$70.00	\$1,070.00
2	2	\$1,070.00	\$74.90	\$1,144.90
3	3	\$1,144.90	\$80.14	\$1,225.04
4	4	\$1,225.04	\$85.75	\$1,310.80
5	5	\$1,310.80	\$91.76	\$1,402.55
6	6	\$1,402.55	\$98.18	\$1,500.73
7	7	\$1,500.73	\$105.05	\$1,605.78
8	8	\$1,605.78	\$112.40	\$1,718.19
9	9	\$1,718.19	\$120.27	\$1,838.46
10	10	\$1,838.46	\$128.69	\$1,967.15
11	11	\$1,967.15	\$137.70	\$2,104.85
12	12	\$2,104.85	\$147.34	\$2,252.19
13				
14				

The method shown below to calculate the answers in question 3 keeps the capital, interest, and balances separate and identifiable.

For question 3a: Year 1: $\$1,000 \times 0.065 = \65 , $\$1,000 + \$65 = \$1,065$

Year 2: $\$1,065 \times 0.065 = \69.23 , $\$1,065 + \$69.23 = \$1,134.23$

For question 3b: Year 1: $\$1,000 \times 0.05 = \50 , $\$1,000 + 50 = \$1,050$

Year 2: $\$1,050 \times 0.05 = \52.50 , $\$1,050 + \$52.50 = \$1,102.50$

For question 3c: Year 1: $\$1,000 \times 0.085 = \85 , $\$1,000 + \$85 = \$1,085$

Year 2: $\$1,085 \times 0.085 = \92.23 , $\$1,085 + \$92.23 = \$1,177.23$

Activity Three

Financial understanding

In this activity, the students learn that having money (capital) invested in a term investment account at the bank allows their savings to grow. The younger cousins can't spend this money now, but in the future they could, or they could choose to put it into a new term investment account and spend it later or invest it in businesses.

Mathematics and statistics

To work out how much each cousin might get when they turn 16 (tax on interest is ignored for the purposes of this activity), the students will first need to calculate the time of investment for each grandchild. Hayden will turn 16 in 6.5 years, Kalala will turn 16 in 4 years, and Tavita will turn 16 in 1.75 years. Students will need to be comfortable with converting between fractions and decimals to make these calculations.

The spreadsheet shown in these notes for **Activity Two** can be used to read across how much interest the grandchildren might have made in this time (before tax):

Kalala: $\$1,310.80 = 4$ years

Hayden: $\$1,500.73 = 6$ years, $\$1,500.73 \times 0.07 \times 0.5$ (for a half year [6 months]) = $\$52.53$, which gives a total of $\$1,553.26$

Tavita: $\$1,070.00 = 1$ year, $\$1,070.00 \times 0.07 \times 0.75$ (for $\frac{3}{4}$ year [9 months]) = $\$56.18$, which gives a total of $\$1,126.18$.

Investigation

Financial understanding

In this investigation, the students do an investigation of rates and terms similar to the one that Connor did earlier. They need to consider all the variables (including fees charged) to identify the one that offers the "best value" for their investment. The risks and rewards associated with each bank option need to be considered before a financial decision is made.

Newspapers provide interest rates offered by banks – or students could visit banks (in actuality or virtually via the Internet) to find these rates. You may need to reinforce for students that high rates are good for investors, although they do come with higher risks. For example, they may invest for 4 years at a certain rate, but after 2 years, the bank is offering even higher interest rates and they are locked into 2 more years at their contracted interest rate.

Extension

Financial understanding

Students could research and compare savings and investment accounts with cheque accounts. They may like to investigate the "small print" involved, that is, the terms and conditions involved with any deposit (for example, some banks offer a high interest rate if, and only if, no withdrawals are made).

Social Sciences Links

Achievement objective:

- Understand how people make decisions about access to and use of resources (Social Studies, level 3)

Students could research:

- What is interest and why do banks pay interest to people who deposit money with them? How is this paying for access to the people's money?
- Why do interest rates change?
- What is the Reserve Bank and what does it do?

Mathematics and Statistics Achievement Objectives

- Number knowledge: Know fractions and percentages in everyday use (Number and Algebra, level 3)
- Number strategies and knowledge:
 - Use a range of multiplicative strategies when operating on whole numbers
 - Find fractions, decimals, and percentages of amounts expressed as whole numbers, simple fractions, and decimals
 - Know the equivalent decimal and percentage forms for everyday fractions (Number and Algebra, level 4)

Number Framework Links

These problem-solving activities involve addition, subtraction, multiplication, and division of whole numbers and decimal amounts. They are appropriate for students who are at stages 7 and 8, but with teacher scaffolding, they can also be accessed by students who are at stage 6. (See the table of NDP material on page 4.)

Financial Language

Capital, initial or start-up costs, materials, profit, labour, reinvest

Activity One

Financial understanding

In this activity, Anna identifies and calculates the start-up costs of the business she wants to start with Granny's money. This is a vital part of her financial planning to ensure that her business is a success. She also needs to match her personal goals and capabilities to the business she is starting up.

(Note: Juggling balls can be made by tying a supermarket bag around half a cup of rice then encasing in a balloon with the neck cut off. Three more balloons are placed around the ball. The balloons have holes snipped out of them so that the colour of the balloons underneath will be partially revealed for a multi-coloured effect.)

Mathematics and statistics

This activity involves solving multiplicative problems based on the data given.

The adding of the costs for question **1a** is straightforward. Encourage the students to estimate their answer first. $\$1.99 + \$6.90 + \$1.50$ can be approximated as $\$2 + \$7 + \$1.50 = \10.50 , which is very close to the actual answer of $\$10.40$.

In question **1b**, Anna needs to make 15 juggling balls (5 sets containing 3 balls each). This involves $7\frac{1}{2}$ cups of rice ($15 \times \frac{1}{2}$), 60 balloons (5×12 or 15×4 , depending on whether calculated as sets or individual balls), and 15 supermarket plastic bags.

For question **1c**, Anna has enough balloons to make 25 balls (that is, if 12 are needed for one set of 3, then 4 balloons are needed for each ball because $12 \div 3 = 4$ and 100 balloons in a packet $\div 4$ is 25). She has enough supermarket bags to make 30 balls and enough rice to make 24 juggling balls because there are 24 halves in 12. (You may need to teach your students that dividing by $\frac{1}{2}$ is the same as multiplying by 2.) Therefore, Anna can make 24 balls before needing to buy more rice. Her juggling balls are sold in sets of 3, so the problem $\square \times 3 = 24$ must be solved to answer the question.

For question **2**, Anna will sell 8 sets of juggling balls for $\$96$ (as $8 \times \$12 = 96$). Her start-up costs were $\$10.40$ (from question **1**). Profit = sales – expenses (the students may need elaboration on this equation), that is, $\$96.00 - \$10.40 = \$85.60$.

For question **3**, 30 minutes $\times 8$ can be calculated as 240 minutes then divided by 60 ($240 \div 60 = 24 \div 6$) to get 4 hours. A quicker method is to calculate $\frac{1}{2}$ (an hour) $\times 8 = 4$ hours of labour. To find how much money Anna makes per hour, the students need to take their answer from question **3** ($\$85.60$) and divide by 4 to get $\$21.40$. Advanced multiplicative students may notice that the problem: $\square \times 4 = 84$ (because 84 is the nearest multiple of 4 to 85.60) will give an estimate of $\$21$, which is very close to the actual answer.

In question **4**, Anna decides to pay herself $\$16$ an hour, so $\$16 \times 4 = \64 is an expense (wages) that needs to be subtracted from her profit of $\$85.60$. This leaves her $\$21.60$ to reinvest in her business.

As an extension question, ask *What should Anna do with this leftover money?* (She could use it to buy 2 more bags of rice, 200 balloons, and 60 supermarket bags, costing $\$20.78$ [rounded to $\$20.80$], that is, double the original purchase.)

Activity Two

Financial understanding

In this activity, Anna knows that, for her business to be successful, it needs to cover all the costs of the initial start-up expenses. By taking this into account, she is planning for financial success.

Anna uses initiative and drive to advertise and market her products. She also uses the skills of others around her, paying them to do particular services.

Students may respond to question **1** more fully in a large group discussion. Question **2** is ideally linked to students' knowledge of visual language, that is, static images.

To help with question **3**, ask *Why does it cost less per copy for more copies?* (The reason for the lower price on larger quantities may be to entice the buyer to purchase a larger number or perhaps because the photocopying centre buys its paper in bulk and passes on this saving to those who want larger orders; running off a few copies is also more labour-intensive than setting up the copier for a big run.)

Answers for question **3c** should consider the percentage of orders expected from a leaflet drop, whether Anna has the time to fulfil these orders, whether the profit made on the orders is worth the expense of the leaflet drop, and whether a colour leaflet might generate more orders than a black and white one (enough to justify the extra cost).

For question **4**, ask:

Is this a good deal for Anna? (Anna only needs to sell two sets of juggling balls to earn the profit to cover the \$20 delivery expense.)

Is it a good deal for her cousin Tavita? (It depends on how long it takes to deliver 1 000 leaflets. Some students in the class may have experience with doing paper routes and could therefore calculate the time to deliver 1 000 leaflets and an hourly rate [\$20 divided by time]. The time taken would depend on how populated the delivery area is.)

For question **5**, students may need to be reminded of all the costs incurred (including design and delivery), after which this problem is simply an addition problem using previous answers. Ask *Which option should Anna choose?* Answers may depend on discussion generated in question **3c**.

Extension

Financial understanding

Anna's experiences with her own business could motivate students to engage in establishing an enterprising business for themselves. The issues Anna faces, such as start-up costs, expenses, time and advertising, will provide scaffolding for students as they consider these same important aspects in relation to their business.

Social Sciences Links

Achievement objective:

- Understand how producers and consumers exercise their rights and meet their responsibilities (Social Studies, level 4)
The students could consider what rights and responsibilities Anna has to herself as a business owner and to her customers.

Other Cross-curricular Links

English achievement objective:

- Purposes and audiences: Show a developing/increasing understanding of how to shape texts for different purposes and audiences (Speaking, Writing, and Presenting, levels 3–4)

Students could design their own leaflet either for Anna's business or a similar business of their own.

Technology achievement objectives:

- Technological products:
 - Understand the relationship between the materials used and their performance properties in technological products (Technological Knowledge, level 3)
 - Understand that materials can be formed, manipulated, and/or transformed to enhance the fitness for purpose of a technological product (Technological Knowledge, level 4)

Students could try making their own juggling balls or other craft items and estimate the costs involved.

Mathematics and Statistics Achievement Objectives

- Number strategies and knowledge:
 - Use a range of multiplicative strategies when operating on whole numbers
 - Find fractions, decimals, and percentages of amounts expressed as whole numbers, simple fractions, and decimals
 - Know the equivalent decimal and percentage forms for everyday fractions (Number and Algebra, level 4)

Number Framework Links

All students at stage 7 and above should be able to play this game, which is also accessible for those at stage 6 with teacher guidance in calculating discounts. They will need to be able to calculate half price and 10 percent or 20 percent discounts. The game and the activity that follows it also require students to be able to add and subtract decimals in the context of money. (See the table of NDP material on page 4.)

Financial Language

Income, barter, expenditure, cash book, inventory, stock, profit, loss

Game

Financial understanding

In this game, students learn about the range of variables that need to be considered to meet the market demand and make the most profit at market day. This knowledge helps students to understand the importance of taking the right quantity of stock to the market and selling it at the “right” price. They learn that there are consequences for each business decision made and that the market place is risky.

This game has a number of instructions and will be difficult at first for students to play independently. A short demonstration with you may be necessary. Once the students understand the game fully, it involves a bit of strategising and will be enjoyed more if played a number of times.

The game simulates a market stall, which is a different selling situation to that of a shop, where normally the prices are fixed. At a stall, people can barter and try to get a bargain. In this game, the students are all stall owners – each trying to make as much money through sales as possible (the “buyer” is imaginary). When students land on a *Sale* space, they make a sale at the advertised price (that is, \$12 for juggling balls, \$5 for hacky sacks, and \$8 for bungy balls); rolling the J, J, B, B, H, H dice will decide which item is sold. When students land on a *Market Option* space, it means a buyer is trying to barter a deal. The player has the option of selling or not (this is where the strategising comes into play). For example, one market option space reads: “Sell 3 bungy balls and give a 4th free.” This means the player has to cross off four bungy balls from their inventory but will only get \$24 (the price of three balls). The player may choose to turn down this offer, in which case, they keep their bungy balls for later full-price sales and receive no money on this turn.

Some students may wish to take short cuts and only record the money they receive and not keep track of their inventory. It is important to keep a record of stock because this will make the game more realistic and require more thoughtful decision making and strategising when the stock runs low. One adaptation some students may find helpful is to have 30 counters of three different colours to represent their inventory of juggling balls, hacky sacks, and bungy balls respectively. With every sale, they can hand in the requisite counter and record the money intake as per usual. In fact, kinaesthetic learners may wish to play the game with paper money so that it becomes a role-playing simulation of the market day. Note: When the counters run out, the player can't make a sale of that item.

Mathematics and statistics

In order to play this game successfully, students need to be comfortable with their 5, 8, and 12 times multiplication tables. The students also need to be comfortable with finding half price and 10 percent and 20 percent discounts. Knowing how to convert between percentages and fractions is essential. Using a simple example helps. Ask:

What is half price of \$10? (This is $\frac{1}{2} \times \$10 = \5)

What is 10 percent discount on \$10? ($\frac{1}{10}$ of \$10 = \$1.00. \$10 discounted by 10 percent is \$9.00.)

What is 20 percent discount on \$10? ($\frac{2}{10}$ of \$10 = \$2.00. \$10 discounted by 20 percent is \$8.00.)

It may be useful to clarify with students the following calculations before the game:
 half price for \$12 is \$6, 10 percent discounted from \$12 is \$10.80, 20 percent discounted from \$12 is \$9.60;
 half price of \$8 is \$4, 10 percent discounted from \$8 is \$7.20, 20 percent discounted from \$8 is \$6.40;
 half price for \$5 is \$2.50, 10 percent discounted from \$5 is \$4.50, 20 percent discounted from \$5 is \$4.

After the game

Financial understanding

For the question 1 discussion, strategies will depend on the length of time or the number of turns the students choose to play. If they are playing for a long time, it's better to avoid market options of half price because this will deplete stock quickly and will probably mean missing out on a full price sale. If the students only play for a short time, it's better to take every market option because every sale will bring in a profit and the more stock sold, the more money earned.

Mathematics and statistics

For question 2, encourage the students to keep a running total of their income from sales. They can perhaps check their balance at the end of the game by adding up all the money they have received. Note that the answer to question 2 can be checked by adding up the amounts in the "money in" column.

For question 3a, the cost of making the stock and the stall rental should technically be entered first because the outlay comes before the income. However, this means the balance begins with negative amounts, which makes calculation of the balance quite challenging. The students will need to be at least at the advanced multiplicative stage to be able to do this. As an alternative, perhaps while they are playing the game, have the students record their sales (money in) before the expenditure (money out). This will give an order that should not involve difficult calculations with negative numbers.

Income and Expenditure – Cash Book		For Market Day – July 23	
Description	Money in	Money out	Balance
3 bungy balls at $\frac{1}{2}$ price	\$12.00		\$12.00
3 sets of juggling balls 10% off	\$32.40		\$44.40
...			
...			
...			
Cost of juggling balls		\$20.00	
Cost of hacky sacks		\$10.00	
Cost of bungy balls		\$15.00	
Stall rental		\$70.00	

For question 4, to maximise profit in a short game (such as only 10 to 15 turns), the players need to sell at every opportunity and take all market options. In a long game, if all stock is sold at full price, the player can earn \$250 ($[\$12 \times 10] + [\$8 \times 10] + [\$5 \times 10]$), which is a profit of \$135 after all expenses (\$115) are considered.

Extension

Financial understanding

Ask *Is a profit of \$135 worth the time taken to make the stock and the time involved in sitting at the stall?* This depends on the time involved. The previous activity states that Anna takes 30 minutes to make a set of juggling balls. If it takes 15 hours to make the stock for the stall, this means that Anna will be earning less than \$10 per hour, not including the time at the stall. However, often making two or more sets does not take as long as the first set because a production line can be set up. It is likely that bungy balls and hacky sacks take less time because they are just one piece each, not three. Anna may also be able to use the time at the stall to continue making her stock, or she may share a stall with a friend to minimise costs.

Students sometimes want to set up cake stalls to raise funds for classroom events. They may like to use Anna's experiences to estimate whether a cake stall is in fact financially viable. The students could find out the cost of cake ingredients, estimate the cost of the cakes, the income they generate, and also consider the time taken to engage in the endeavour.

Social Sciences Links

Achievement objective:

- Understand how producers and consumers exercise their rights and meet their responsibilities (Social Studies, level 4)
Students could investigate what rights and responsibilities the consumers at Anna's stall have.

Other Cross-curricular Links

English achievement objective:

- Purposes and audiences: Show a developing/increasing understanding of how to shape texts for different purposes and audiences (Speaking, Writing, and Presenting, levels 3–4)
Students could perform a drama enactment of the sort of sales pitch Anna may need to use to attract customers to her stall.

Pages 16–17: Motorcycle Mayhem

Mathematics and Statistics Achievement Objectives

- Number strategies: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages (Number and Algebra, level 3)
- Number knowledge: Know fractions and percentages in everyday use (Number and Algebra, level 3)

Number Framework Links

These activities are appropriate for students who are very comfortable working at stage 6 and for those who are at stages 7 and 8. The activities involve the reading, addition, subtraction, multiplication, and division of dollar amounts and whole numbers. (See the table of NDP material on page 4.)

Financial Language

Credit, debit, transfer, bank fee, interest, savings incentive, expenses

Activity One

Financial understanding

In this activity, Daniel realises that having a goal will help him to save the money he needs to buy the motorbike he wants.

Students will benefit from doing pages 8–9 before they start this activity because those pages give an introduction to bank statements. Alternatively, you could begin with a general discussion on bank statements (see the notes for pages 8–9), especially to clarify new terms such as those above and their abbreviations. Showing students some real bank statements is also useful.

Have your students look at the bank statement on page 12. Some questions you could ask to cue students into the features of this statement include:

What are the opening and closing dates for this bank statement? (31 March and 30 May. Note this doesn't mean the account itself was opened and closed on these days.)

What will be the dates on Daniel's next bank statement? (Opening 31 May and closing 31 July)

How much and how often is Daniel charged a bank fee? (\$2.50 monthly)

Why do you think Daniel is charged a bank fee? (The bank is providing a service in handling Daniel's money. The bank fee is the cost of this service.)

How much money has Daniel saved during these 2 months? ($4 \times \$200 = \800)

After discussion, your students should be able to complete **Activity One** independently, in collaborative groups, or with you.

Activity Two

Financial understanding

In this activity, Daniel has researched a number of different deals to help him make a more responsible financial decision. His decision will depend on the preferences he has and the criteria he sets.

Mathematics and statistics

For question 1, the students need to compare the closing balance with the prices. Question 2 can be tackled either as it is described in the Answers section (which requires students to be at least at stage 7) or more simply if students use rounding to estimate the answer. Rounding \$2,856.10 to \$2,900 is appropriate in this context. (You may wish to have some discussion on the subject of choosing the appropriate accuracy for rounding. Rounding to the nearest 100 is sensible because the savings are added \$200 at a time. If the savings were less than \$100, then rounding to the nearest 10 would make more sense.) The students will need to reconsider this rounding when applying the answer to the problem because it could mean Daniel would be at least \$43 short of the full amount due to the rounding error.

Students who are at stage 6 may approach this task by adding \$200 to \$2,900 repeatedly (doing this 30 times gives \$8,900, which is enough to buy the Wild Cat RV250). A more sophisticated strategy is to subtract \$2,900 from \$8,900 and divide by 200; $\$6,000 \div \$200 = 30$, that is, 30 fortnights, which is approximately 14 months. However, because the current amount in Daniel's account was rounded up to \$2,900, he will need one more pay to cover the cost, that is, 31 fortnights or $14\frac{1}{2}$ months.

Students who calculate the answer without rounding first (that is, $\$8,900 - \$2,856.10 = \$6,043.90$; $\$6,043.90 \div \$200 = 30.22$ [fortnights]) will still need to round their answer to make sense of it in the context of the problem. Daniel wouldn't receive 0.22 of a fortnight's pay, so the answer must be rounded up to 31 pay periods (fortnights).

Extension

As an extension, the students could work out how long it would take to save for the other two bikes.

Note: Students may have difficulty in problem solving that uses weeks, months, and years. A common error is to consider 1 month = 4 weeks. In fact, 11 out of the 12 months in a year are slightly more than 4 weeks; 52 (weeks in a year) $\div 4 = 13$, but there are only 12 months in a year.

Financial understanding

Buying vehicles is a very appropriate context in which to look at insurance. The same types of insurance for cars are:

- Full insurance covers any costs if the bike is involved in an accident – no matter whose fault it is. It also covers the value of the bike if it is stolen or the cost of repairs if it is damaged in a way covered by the policy conditions.
- Third party insurance covers the cost of damage to another vehicle if it is involved in an accident that was the bike driver's fault, but it doesn't cover repairs to the bike itself.
- Fire and theft insurance will pay the value of the bike only if it is destroyed in a fire or stolen.

All of these types of insurance also involve an excess. This is the amount the owner has to pay before the insurance company will cover the rest. (The amount of excess will vary, depending on factors such as the type of bike and the age of the owner.)

The following table provides insurance quotes from three companies for the above types of insurance for each of the different bikes Daniel is choosing from.

			Yamimoto FZX250	Aiko Ninja 250	Wild Cat RV250	Katashi RV250
Company A	Full insurance	– per year	\$340	\$475	\$820	\$190
		– per month	\$30	\$43	\$75	\$18
Company B	Third party only	– per year	\$85	\$85	\$85	\$85
		– per month	\$8	\$8	\$8	\$8
Company C	Full insurance	– per year	\$450	\$670	\$1,090	\$260
		– per month	\$41	\$62	\$100	\$24
Company B	Third party, fire, theft	– per year	\$340	\$500	\$820	\$200
		– per month	\$30	\$46	\$75	\$18
Company C	Full insurance	– per year	\$593	\$830	DECLINE	\$370
		– per month	\$55	\$76		\$34
Company C	Third party, fire, theft	– per year	\$220	DECLINE	DECLINE	\$180
		– per month	\$20			\$16.50
Company C	Third party only	– per year	\$80	\$80	DECLINE	\$80
		– per month	\$7.50	\$7.50		\$7.50

Possible questions:

Which type of insurance is the most expensive – full, third party, fire and theft, or third party only? (Full)

Which bike is the most expensive to insure? (The Wild Cat RV250)

Which company offers the best deals for full insurance? (Company A is the cheapest for every bike.)

Why do you think company A doesn't quote for insuring the bikes for fire and theft? (Possibly because motorbikes are comparatively easy to steal and therefore not worth the risk)

Why do you think company C won't insure the Wild Cat RV250 bike? (Possibly because the Wild Cat RV250 is expensive, which implies that it would be more desirable to steal, or it may be faster than the others, making it more likely to be involved in a crash. Either situation means the risk for the insurer is too great.)

If Daniel wanted to insure a Katashi RV250 bike against theft only, which insurance company should he use? (Company C; their quote of \$180 is cheaper than Company B's quote of \$200 [both also include third party and fire] or Company A's full cover of \$190. Although for an additional \$10 a year, he might be wise to look at full cover.)

If Daniel decides to buy the Yamimoto FZX250 bike and take out full insurance, which company should he choose?

(Probably company A; it is the cheapest at \$340 per year. However, he should also find out how much excess each company would require him to pay if he made a claim. Company A might have lower rates because it has a high excess.)

The students could also consider the reputation of various insurance companies. This is a factor that often influences our decision making.

Social Sciences Links

Achievement objectives:

- Understand how people make decisions about access to and use of resources (Social Studies, level 3)

Ask Why do you think Daniel initially decides to save his money and not "access" it?

- Understand how producers and consumers exercise their rights and meet their responsibilities (Social Studies, level 4)

Ask: Apart from price, what else could influence Daniel's decision about what bike to purchase?

What are some of Daniel's rights as a consumer if he purchases one of these bikes?

Page 18: Giving

Mathematics and Statistics Achievement Objectives

- Number strategies: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages (Number and Algebra, level 3)
- Number knowledge: Know fractions and percentages in everyday use (Number and Algebra, level 3)

Number Framework Links

This activity involves calculating simple percentages, estimation, and whole-number multiplication and addition. Students at stage 6 and some students at stage 7 may need help to find 10 percent of \$1,000 (see the table of NDP material on page 4), but all other aspects of the activity should present no problems for students at these stages.

Financial Language

Donate, charity, sponsor, lump sum

Activity

Financial understanding

In this activity, Kalala is aware that her financial decision to support a charity will bring benefits to others. The decision on which charity to support will be influenced by her personality, values, and personal preferences.

For question 1, a larger group discussion on different charities will generate a greater range of answers.

Encourage the students to look at the pros and cons of donating to each charity they look at. Ask:

How would you decide which charity to support?

Can you only give money to charity? What about time, effort, labour, special talents?

How do some “celebrities” support charities? Have the students interview someone who gives to charity. They could find out why they do this and what they “get” from giving money.

For question 2, students will need to know that there are 365 days in a (non-leap) year.

Encourage the students to combine \$100, \$365, \$200, and \$75 (or \$150, \$225, \$300, or \$375 for two or more hampers) in as many different combinations as possible to reach \$400. Encourage them to be systematic.

Extension

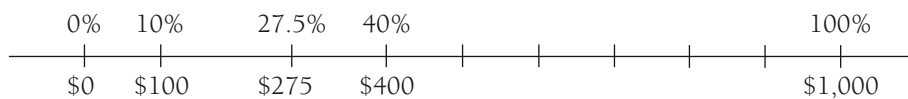
Mathematics and statistics

Ask: If Kalala received \$3,000, how much do you think she would wish to donate to charity? This leads to a context for ratios, that is, \$400:\$1,000 is equivalent to \square :\$3,000 ($\square = \$1,200$). (See the table of NDP material on page 4.)

What percentage of her money would Kalala give to charity if she donates \$400? (40 percent)

How much of \$1,000 would you be prepared to donate to charity? What percentage is that?

A double number line is useful for such questions:



Social Sciences Links

Achievement objectives:

- Understand how people make decisions about access to and use of resources (Social Studies, level 3)
- Understand how people participate individually and collectively in response to community challenges (Social Studies, level 4)

Ask: Why do people donate money?

How do our decisions regarding charity reflect who we are?

Students may wish to form inquiry questions related to philanthropy. They may decide to engage in a social enterprise endeavour in which they choose a charity to fund-raise for. This project could also involve accounting and record-keeping of financial transactions.

Other Cross-curricular Links

Health and Physical Education achievement objective:

- Community resources: Participate in communal events and describe how such events enhance the well-being of the community (Healthy Communities and Environments, level 3)

Students could examine the individual mental health and community health benefits associated with charity.

Mathematics and Statistics Achievement Objectives

- Number knowledge: Know fractions and percentages in everyday use (Number and Algebra, level 3)
- Number strategies and knowledge:
 - Use a range of multiplicative strategies when operating on whole numbers
 - Find fractions, decimals, and percentages of amounts expressed as whole numbers, simple fractions and decimals
 - Know the equivalent decimal and percentage forms for everyday fractions (Number and Algebra, level 4)
- Statistical investigation: Conduct investigations using the statistical enquiry cycle:
 - gathering, sorting, and displaying multivariate category and whole-number data and simple time-series data to answer questions (Statistics, level 3)

Number Framework Links

This activity involves the multiplication of decimals in the context of money. Students will need to be comfortable with treating money as decimal numbers and be using advanced multiplicative strategies (stage 7). Students at stage 6 can use strategies such as multiplying by 100 and place value partitioning, but they may need some teacher assistance or calculator help when applying these to the multiplication of decimal numbers. (See the table of NDP material on page 4.)

Financial Language

Shop around, ongoing costs, hire purchase

Activity

Financial understanding

In this activity, Kalala shops around and investigates the different deals there are on telephones. This will help her to make a more financially responsible decision and to manage the different risks involved in deciding which telephone package to purchase.

The question 1 task requires the students to read each advertisement carefully to see if it has the three special features that Kalala is looking for.

In each case in question 2, it is worthwhile having the students compare the hire purchase price with the plan price. For example, the Talkup 992 plan price is \$499. This means the hire purchase price is an extra \$146.84 (the others are an additional \$126.20; \$111.80; \$168.52; \$189.16, and \$168.52 respectively).

Students will respond more fully to questions 3a and 3b if they are discussed in a group. It may be useful to find examples of mobile phone plans that are currently available and familiar to the students and work together to calculate the likely yearly cost of these plans.

For question 4, ask *Which phones does Kalala have enough money to buy?* (Note: If the students have completed the previous page, they need to consider that she has already given some of her \$1,000 to charity.) When the students answer the question of which phone they themselves would buy, they should consider the “ongoing costs”, that is, how much they will be spending each month on phone calls or plan costs.

Mathematics and statistics

For question 2, each phone offers a hire purchase option over a period of 24 months, that is, 104 weeks. Multiplying by 100 will give a quick estimate of the price. To find the exact cost, students can use a range of strategies, such as multiplying by 100, multiplying by 4, and adding the results together (see examples 1 and 2 below); or using place value (see examples 5 and 6 below) or tidy numbers or rounding and compensating (see example 3).

Students may benefit from using a simpler example first, such as:

\$4.50 per week would cost a little more than \$450 after 24 months (that is, 104 weeks) because 4.5×100 is \$450. To calculate the cost for 104 weeks, add $4.50 \times 4 = \$18$ (double $4.5 = 9$, and double again) to \$450 to get the exact price of \$468.

Working examples:

1. Talkup 992: $\$6.21 \times 104 = \$621 + \$24.84$ (that is, $\$6.21 \times 2 \times 2$) = \$645.84
2. Fotalk 600: $\$5.05 \times 104 = \$505 + \$20.20 = \525.20
3. Talkup 973: $\$3.95 \times 104$; $(\$4.00 \times 104) - (\$0.05 \times 104) = \$416 - \$5.20 = \$410.80$
4. Fotalk 700: $\$7.38 \times 104 = \767.52 (as for 3)
5. Fotalk 800: $\$8.54 \times 104 = \$854 + \$32 + \$2.00 + \$0.16 = \888.16
6. Zardon B34: $\$7.38 \times 104 = \$738 + \$28$ (that is, $\$7 \times 4$) + $\$1.20$ (that is, $\$0.30 \times 4$) + $\$0.32$ (that is, $\$0.08 \times 4$) = \$767.52

Statistics

Cellphone usage may be an interesting topic to investigate. Students could ask questions such as: “Do young people use cellphones more than adults?” “Do people spend more money on texting, ‘pexting’, or talking?”

Students should be encouraged to use the PPDAC (problem, plan, data, analysis, conclusion) statistical investigation cycle when completing these investigations. (See Census At School website, www.censusatschool.org.nz)

Extension

Financial understanding

Cellphone plan providers often have websites that offer an online service to work out the best plan for a person’s needs. Students may wish to estimate the type of usage Kalala (or a typical 12-year-old) is likely to incur and work out the appropriate plan.

Social Sciences Links

Achievement objectives:

- Understand how people make decisions about access to and use of resources (Social Studies, level 3)
- Understand how exploration and innovation create opportunities and challenges for people, places, and environments (Social Studies, level 4)

Ask: *Is price the only thing that Kalala will think about when deciding on a phone? Might she be influenced by brand or what her friends might think? Should she worry about those things?*

Other Cross-curricular Links

English achievement objective:

- Purposes and audiences: Show a developing/increasing understanding of how to shape texts for different purposes and audiences (Speaking, Writing, and Presenting, levels 3–4)

Students could do a close reading of the terms and conditions of current cellphone contracts.

Mathematics and Statistics Achievement Objectives

- Number strategies and knowledge:
 - Use a range of multiplicative strategies when operating on whole numbers
 - Find fractions, decimals, and percentages of amounts expressed as whole numbers, simple fractions, and decimals
 - Know the equivalent decimal and percentage forms for everyday fractions (Number and Algebra, level 4)
- Probability: Investigate simple situations that involve elements of chance by comparing experimental results with expectations from models of all the outcomes, acknowledging that samples vary (Statistics, level 3)

Number Framework Links

These activities involve finding percentages of decimal amounts and calculating percentages. They are appropriate for students who are at stage 8 and should also be accessible for those at stage 7. Students who are at stage 6 will need a lot of scaffolding with the mathematics involved. It is desirable for students to have had exposure to percentages before attempting these activities. It will also help them if they know the conversions between basic fractions and percentages, for example, that 10 percent = $\frac{1}{10}$, and therefore know that calculating 10 percent of 300 is equivalent to finding $\frac{1}{10}$ of 300 (= 30). (See the table of NDP material on page 4.)

Financial Language

Investor, interest rate, p.a. (per annum), compound interest, fixed-term deposit

Activity

Financial understanding

In this activity, Tavita finds out about different options available to him for investing the money from Granny and which options best meet his needs as an investor. The financial decision Tavita makes will determine how “well off” he will be in the future.

One dramatic approach to beginning this activity is to give a student an envelope with \$1,000 in it and say *You need to pay me back this loan in a year’s time.* (You might prefer to use toy money!) Ask the students: *How do you think I feel about lending this money?* Encourage responses which consider the risk of not getting the money back. *What would make it worthwhile then for me to lend this money?* Discussion should centre round the idea of there being an incentive for lending the money. This incentive is called interest.

What risks are involved in lending money? (The risk is that you might not get the money back.)

What amount of interest is worth this risk? (This depends on a number of factors and explains why interest rates on offer are often different.)

Different banks and finance companies offer different interest rates. Check to see that the students realise that when you are investing your money, the higher the interest rate, the more money you make. If necessary, you can illustrate this using two students with a strip of paper each. This is the “initial investment”. The students will invest at rates such as 10 percent and 25 percent. At the “end of the year”, students estimate the appropriate percentage increase (by matching the current size of the strip folded to the appropriate percentage) and tape it on. They repeat this the following year, and a third year, each time estimating from the new size of the strip. The higher interest rate grows at a much faster rate.

Student A (10% interest):

Initial investment	Y1	Y2	Y3
--------------------	----	----	----

Student B (25% interest):

Initial investment	Y1	Y2	Y3
--------------------	----	----	----

NOTE: The term of investment guarantees the stated interest rate for the time of the term. A 3 year term deposit at 10 percent interest means the investment will earn 10 percent every year for 3 years, regardless of whether interest rates change. From the investor’s perspective, longer term deposits are a good idea if interest rates are expected to drop and shorter term deposits are better if interest rates are expected to rise.

Before beginning the activity, some students will need help from you to understand the investment table. Some questions which may help with this are:

What are the different investment companies in this table? (Growgroup, Earnlots, Buswhiz, Bingcorp, Farmbankers, Financeinc, and Myson.)

What does minimum amount mean? (This is the minimum amount of money that can be invested in the company. Tavita will not be able to invest with XYZ bank because he does not have \$10,000.)

What does a 3 year deposit entail? (The money invested is locked in for 3 years – that is, the investor will not be able to access their money before then without facing penalties. It will earn the stated interest rate each year.)

Why do you think companies offer different amounts of interest for different terms of deposit? (The longer the company has the money invested with them, the longer they have to use that money for their business purposes. Often companies will offer a higher rate for a longer term as an incentive for people to invest for a longer time.)

Mathematics and statistics

Following this discussion, some students will be able to complete the activity independently, others will need your assistance. Question **1c** is the most challenging and may well need teacher assistance for all students.

To be successful with question **1c**, students need to have completed the activities on pages **10–11**. They need first to be able to convert the percentages into decimals, $10.25\% = 0.1025$; $9\% = 0.09$; $8.5\% = 0.085$. (These can be found by dividing the percentage amount by 100.) They could discuss in groups the various methods for calculating the answers to this question. Here are three methods for calculating compound interest:

Method 1 involves calculating the interest and adding it to the capital at the end of each year. For example:

Method 1	Year 1 interest	Year 2 interest	Year 3 interest	Total at end of year 3
Buswhiz	$\$1,000.00 \times 0.1025$ = \$102.50	$\$1,102.50 \times 0.1025$ = \$113.01	$\$1,215.51 \times 0.1025$ = \$124.59	\$1,340.10 (original capital plus \$340.10 interest)

Method 2 involves calculating the new capital (with interest added) by multiplying by one whole plus the interest. For example:

Method 2	Year 1 end-of-year	Year 2 end-of-year	Year 3 end-of-year	Total at end of year 3
Buswhiz	$\$1,000.00 \times 1.1025$ = \$1,102.50	$\$1,102.50 \times 1.1025$ = \$1,215.51	$\$1,215.51 \times 1.1025$ = \$1,340.10	\$1,340.10 (original capital plus \$340.10 interest)

Method 3 involves calculating three years of interest plus capital all at once. For example:

Buswhiz	$\$1,000.00 \times 1.1025 \times 1.1025 \times 1.1025$ (or $\$1,000 \times 1.1025^3$) = \$1,340.10 (Slight differences in answers are caused by rounding errors.)
---------	---

The students may need to discuss question **2** with you. See the notes in the Answers section.

Extension

As an extension, the students could find the current investment rates in the newspaper. Ask *Which would be Tavita's best option today?*

Financial understanding

Some students will be interested in further discussion regarding why banks offer different rates, including term of investment, and how the risk for the investor affects their decision. (Many students will be able to complete the activity now and will not be interested in further discussion.) These ideas can be illustrated with the following skit: *The prince of Dodgyland has just emailed my financial adviser an offer of 25 percent interest rate for an investment in his personal bank. What a fabulous rate! I've saved \$1,000. Should I invest this in this bank for a year?*

Hopefully, students will suggest ideas pertaining to the risk level of the investment. Although 25 percent provides a great return on investment, the chances of the bank going under are perhaps very high. In New Zealand, banks are a very low-risk investment because it is extremely unlikely that a bank will become bankrupt. Students may wish to investigate what happens when a finance company does become bankrupt.

Social Sciences Links

Achievement objective:

- Understand how people make decisions about access to and use of resources (Social Studies, level 3)
Ask (for **Activity One**) *What factors other than interest rates should Tavita consider before he invests money with a company?*

Students could research interest rates in other countries and compare them to New Zealand's rates. This could lead into an investigation of the role the Reserve Bank plays in setting interest rates and the various effects on the economy of having high or low interest rates.

Students could investigate what rights and responsibilities the banks in New Zealand have and what rights and responsibilities consumers have in New Zealand when dealing with banks. Ask *Who and what "protects" (governs) these rights and responsibilities?*

Pages 21-23: Investing on the Share Market

Mathematics and Statistics Achievement Objectives

- Number strategies and knowledge:
 - Use a range of multiplicative strategies when operating on whole numbers
 - Find fractions, decimals, and percentages of amounts expressed as whole numbers, simple fractions, and decimals
 - Know the equivalent decimal and percentage forms for everyday fractions (Number and Algebra, level 4)
- Probability: Investigate simple situations that involve elements of chance by comparing experimental results with expectations from models of all the outcomes, acknowledging that samples vary (Statistics, level 3)

Number Framework Links

These activities involve finding percentages of decimal amounts and calculating percentage increases and decreases. They are appropriate for students who are at stage 8 and could also be accessible for those at stage 7 with teacher help. Students who are at stage 6 will need a lot of scaffolding with the mathematics involved. Students should preferably have had exposure to percentages before attempting these activities. (See the table of NDP material on page 4.) It will also help students if they know the conversions between basic fractions and percentages, for example, that 10 percent = $\frac{1}{10}$ and that therefore calculating 10 percent of 300 is equivalent to finding $\frac{1}{10}$ of 300 (= 30).

Financial Language

Risk, shares, share market, investment, dividend, return, secure

Activity One

Financial understanding

In this activity, Tavita learns that there is always an element of risk in investing and that it's important to identify the level of risk a person is prepared to take and is comfortable with before making a decision.

A key idea for this activity is the notion of risk. One way to introduce this to your students is within the context of probability and popular culture.

Say: At the Fear Factory, you are offered the chance to win prizes on the roll of a dice after doing a special task. If you eat a worm and then roll a 1, you win \$100. If you eat a dry wheat biscuit and roll a 2, 3, 4, 5, or 6, then you win \$10. Which prize chance do you choose?

Discuss with students how the worm option is the riskiest (you could eat a worm and still win nothing) but involves the biggest reward. The wheat biscuit option also has a risk of winning nothing but there is a much greater chance of winning something, although the prize money is less. To understand this concept of risk, students need to also understand that the probability of rolling just one of six numbers is much less than that of rolling any one of five out of six numbers. When investing money, there is always risk involved. At the fear factory, you may have to eat something horrible and win nothing; similarly, when you invest money, you may receive nothing extra – or get back even less than you invested.

The purpose of question 1 is for students to understand what happens when money is invested with different types of investments rather than understanding the actual calculations being made. It may be useful to ask them a number of questions about the table in order to guide their own reading of the situation. For example:

What is the starting investment amount? (\$1,000)

What happened with the first dice roll? (A 1 was rolled, so all investments lost money.)

Why might investments lose money? (There might be a downturn in the market.)

Which investment option made the most money after 2 years? (Low risk, after 4 rolls, with \$9.40 profit)

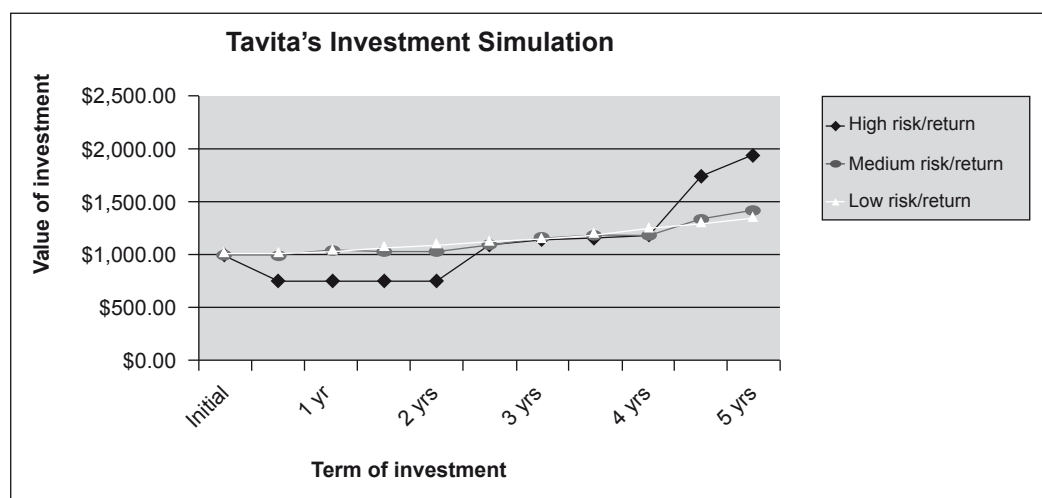
Which investment option made the most money after 3 years? (High risk, with \$237.50 profit)

How long did it take the medium-risk investment to make \$200? (7 rolls, that is, $3\frac{1}{2}$ years)

(Note: In order to understand the simulation, students may also need it reinforced that each dice roll stands for 6 months.)

After the above discussion, the students should be able to cope independently or in collaborative groups with the similar questions in the book.

As an extension, the students could create a triple line graph of the simulation to provide a picture of what is happening to the funds, for example:



This graph makes it clear that the low-risk, low-return investment is slow and steady, whereas even though the high-risk investment suffered a setback in the first 6 months, which had an impact until the end of the second year, over time it recovered and made the most money. People who are able to invest for a longer period of time often choose an investment option that is high risk and high return, but if they want to invest just for a short term (perhaps because they need or want access to their money earlier) they choose a lower risk, low-return option – such as a bank.

Mathematics and statistics

The investment simulation involves complex mathematics. It's important that the students can relate the percentages to risk and to probabilities. One way to examine the effects of the dice rolls is to imagine that all outcomes will happen (that is, every number will be rolled once) to get an expected value.

In the high-risk, high-return situation, if all numbers are rolled once, the net result can be approximated as $-25\% + 0 + 0 + 0 + 10\% + 50\% = +35\%$. The medium-risk, medium-return investment approximates as $-5\% + 0 + 0 + 5\% + 5\% + 10\% = +15\%$. The low-risk, low-return will approximate as $-2\% + 0 + 0 + 3\% + 3\% + 3\% = +7\%$.

Ask: *Which investment gives the greatest return?* (High risk, high return is potentially best, for example, 35 percent of \$1,000 is \$350 [compared with \$150 or \$70].)

What if we roll only a 1? Which investment is riskiest? (High risk, high return is riskiest as it will lose 25 percent, for example, 25 percent of \$1,000 is \$250, compared with losing \$50 or \$20.)

Question 2 does require students to be able to calculate percentages, which with these “untidy” figures provides quite a challenging context. It is therefore appropriate to use a calculator. The activities on pages 10–11 will provide students with an introduction to calculating difficult percentages with large numbers.

There is a table in the Answers section for **Activity One**, question **2**, that shows the effect of possible dice throws on investments after 6 years. It starts like this:

If you threw	High risk, high return: \$2,041.88	Medium risk, medium return: \$1,397.22	Low risk, low return: \$1,170.17
1	$\$2,041.88 \times 0.75 = \$1,531.41$	$\$1,397.22 \times 0.95 = \$1,327.36$	$\$1,170.17 \times 0.98 = \$1,146.77$

Note that with dice roll 1, rather than calculating 25 percent and subtracting it from the previous total, it is much quicker to calculate 75 percent of the previous total. Using a multiplier of 0.75 means a one-step calculation. Multiplying by 0.25 would involve multiple steps (and increase the possibility of errors).

Original total	
Original x 0.75 = original – (original x 0.25)	Original x 0.25

Similarly, use “multiply by 0.95” instead of “multiply by 0.05 and subtract” for medium risk and “multiply by 0.98” instead of “multiply by 0.02 and subtract” for low risk. (See the table of NDP material on page 4.)

Note that, on some calculators, if you enter “original figure” – percentage (for example, 2041.88 – 25) and then press the % button on the calculator, you also get the answer very quickly.

Game

Financial understanding

In this game, students compare the results from the games they play and discuss the effects of the different types of risk. In this way, they learn the effect of different levels of risk when investing in the share market. The simulation illustrates that although you can “calculate” the probability of such risks, chance can also have an effect.

The game provides students with the opportunity to take part in their own simulation. Students will need to successfully complete question **2** and understand how to use the multipliers used in the above table in order to be able to attempt the investment simulation game. By multiplying in this way, they can keep a running total on the calculator rather than writing down multi-step calculations.

Activity Two

Financial understanding

In this activity, Tavita learns that he can make money from the share market by selling his shares for a profit, cashing in his dividends, or reinvesting his dividends by buying more shares (and therefore potentially getting more dividends the next time they are due). As an investor, the decisions Tavita makes now will determine how well off he will be in the future. Note that, although in the scenario the share price increases, in reality, a share price can move both up and down, so there is risk in this type of investment in that some of the initial money invested can be lost. This is a valuable discussion to have with the students.

Tavita monitors and evaluates the success (or otherwise) of his share portfolio so that he can have the best information on which to base his next financial decision.

In question **3**, the students will most likely need to have the concept of a dividend explained to them. (A dividend is part of a company’s profit that is paid to shareholders; see the definition on page **21** of the students’ book.) Investors are often given the choice of reinvesting their total dividend as new shares or taking the dividend as money. Note that, in question **3b**, Tavita has enough to buy only 11 shares because, although 11.55 rounds up to 12, in the context of this problem, Tavita does not receive enough to buy a twelfth share, so the answer must be rounded down.)

Mathematics and statistics

Question **1** is a simple division problem. A good strategy is to recognise that $1\,000 \div 2.5$ is equivalent to $2\,000 \div 5$ (and also to $4\,000 \div 10$), which is 400 (shares). (See the table of NDP material on page 4.)

For question **2a**, $400 \times \$2.77$ is equivalent to $4 \times \$277$. The students could solve this in a variety of ways, such as: $4 \times 200 = 800$, $4 \times 70 = 280$, $4 \times 7 = 28$, therefore $4 \times 277 = 800 + 280 + 28 = 1\,108$; or: $2 \times 250 = 500$ and $2 \times 27 = 54$, therefore $4 \times 250 = 1\,000$ and $4 \times 27 = 108$, therefore $4 \times 277 = \$1,108$.

Extension

Financial understanding

Many students are very motivated by the idea of investing in the share market.

At the start of term, you could assign the students various sums of virtual money. Pairs of students (randomly assigned) are able to invest their “money” on the share market. Have students look in the financial pages of the newspaper to select how they will invest their money. It is useful to have outside visitors (for example, someone from the local bank) come to discuss with students how to invest wisely. The investment is then “locked in” for the rest of the school term and the one following. At the end of that second term, students can find the value of their shares and calculate their gain (or loss).

Social Sciences Links

Social Sciences achievement objectives:

- Understand how people make decisions about access to and use of resources (Social Studies, level 3)
- Understand how producers and consumers exercise their rights and meet their responsibilities (Social Studies, level 4)

For **Activity Two**, the students could consider investigating the following questions: What rights and responsibilities does Tavita have as an investor (consumer of the stock exchange)? Who and what “protects” (governs) these rights and responsibilities?

Page 24: Sione's New Life

Mathematics and Statistics Achievement Objectives

- Number strategies: Using a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages (Number and Algebra, level 3)
- Number knowledge: Knowing fractions and percentages in everyday use (Number and Algebra, level 3)

Number Framework Links

This activity is appropriate for students working at stage 6 and above. It involves the addition and subtraction of whole numbers and simple decimal numbers. (See the table of NDP material on page 4.)

Financial Language

Budget, start-up costs, ongoing costs, needs, wants

Activity

Financial understanding

In this activity, Sione needs to be financially successful and independent when he goes flatting with his friends, so he needs to develop a budget (make a financial plan) of the costs he will incur to set himself up for flatting. Financial planning is important for personal and financial success.

The students are required to create a budget for the items that Sione needs and wants to set up his flat. A whole-group discussion for question 1 may be more beneficial than discussion within pairs. Students will need to clarify their understanding of start-up costs versus ongoing costs. Some flatting examples include:

Start-up Costs	Ongoing Costs
Bond	Rent
Whiteware	Food
Furniture	Basics (e.g., toilet paper)
Bedding	Bills

The activity in question 2 may be more meaningful for students if they have to research real catalogues and the Internet using current prices. The students first need to clarify the items they would need to begin flatting rather than the items they may want (that is, luxury items). The students may need help from you to clarify the difference!

The whiteware required for flatting usually includes a fridge and a washing machine (although students may argue that they could use a laundromat instead). Basic furniture items include a bed and perhaps a desk, couch, table, and chairs. Also needed are utensils to cook with, something to eat off, and basic bathroom essentials (for example, towels).

Students may like to work in groups of three (as Sione is flatting with two others) and decide what to buy together. Perhaps each student could be responsible for purchasing one major item (such as a fridge, a washing machine, or furniture) and a few of the kitchen pieces. Each will need their own bed, bedding, towels, and so on.

Encourage students to prioritise their spending. An iron, vacuum cleaner, and coffee mugs should come before stereo systems, flat screen TVs, and DVD players. Total spending must not exceed \$2,000 per flatmate.

If flatting is not something that your students are interested in at this point, you could explore the concept of budgeting by framing the activity around budgeting for a class trip. They could prioritise aspects such as fun activities, food, and costs for the trip, transport, accommodation, and so on.

Extension

Financial understanding

Budgeting for purchases is an excellent way to practise estimation in a real context. A follow-up activity could include giving the students a budget to redesign their bedroom from scratch. Students must purchase needed items first (for example, bed, drawers, desk) and may spend the rest of their budget on wants.

Social Sciences Links

Achievement objectives:

- Understand how people make choices about their needs and wants (Social Studies, level 2)
- Understand how people make decisions about access to and use of resources (Social Studies, level 3)

The students could discuss what they think is influencing Sione's decisions more: his needs or his wants. They could then compare what they chose for Sione to purchase first to satisfy his needs or wants.

Other Cross-curricular Links

English achievement objective:

- Processes and strategies: Integrate sources of information, processes, and strategies with increasing confidence/confidently to identify, form, and express ideas (Speaking, Writing, and Presenting, levels 3–4)
- Students could use telephone directories, catalogues, the Internet, and other sources to find items such as furniture for sale.

Page 25: Part-time Work

Mathematics and Statistics Achievement Objectives

- Number strategies and knowledge:
 - Use a range of multiplicative strategies when operating on whole numbers
 - Find fractions, decimals, and percentages of amounts expressed as whole numbers, simple fractions, and decimals
 - Know the equivalent decimal and percentage forms for everyday fractions (Number and Algebra, level 4)

Number Framework Links

This activity involves the addition of decimal numbers. It also requires calculation of tax, which involves multiplication and interpretation of decimal numbers. This activity is appropriate for students who are very comfortable working at stage 6 and for those who are at stages 7 and 8. (See the table of NDP material on page 4.)

Financial Language

Income, tax, wages, net income, tax rates

Activity

Financial understanding

In this activity, Sione uses the extra income he earns to help cover his ongoing costs. However, he must pay part of his earnings to the government as tax (used to cover government expenditure). He keeps accurate records of his work hours and checks these against what he has been paid.

You could relate this activity to the students' world by looking at the money they might need to earn to buy a popular gaming console. If they have or would like to have part-time work, ask them how they (would) fit this in with school hours, homework, chores at home, sport, dance, swimming practice, rugby practice, and so on.

With regard to question **1c**, the students may have questions such as "What is tax?", "Why do people have to pay tax?", and "What is tax for?" (Part of Sione's tax will be subsidising his tertiary education, health care, and his siblings' schooling, among other things).

Mathematics and statistics

Question **1a** is a straightforward question, requiring students to add up the total number of hours Sione works. Question **1b** requires students to multiply 22 (hours worked) by \$14.50 (hourly wage). This can be calculated mentally, using a strategy such as $(\$14.50 \times 10 \times 2) + (\$14.50 \times 2) = \$290 + \$29 = \$319$.

Extension

Mathematics and statistics

An extension to questions **1c** and **1d** could be to find out the current tax rates. These are usually in graduated rates and thus more complicated to calculate than one rate multiplied by earnings. For example, someone might pay 19.5 percent on their first \$20,000 earned in a year and 24 percent on their earnings beyond that. If Sione earns \$319 every week, his gross total for the year would be \$16,588 ($\319×52 weeks), so he would pay the lowest tax rate on this. Someone who earned \$27,000 might have to pay $\$20,000 \times 0.195 + \$7,000 \times 0.24$ (= \$5,580 tax for the year).

Question **2** provides an opportunity to practise the above calculation with new figures. It is worthwhile calculating income, tax, and net income for the range of Sione's hours (18 to 25). Sione should only count on receiving \$198.36 a week because this is the lower end of his earning range. For budgeting ease, he may consider his income to be \$200.

Financial understanding

Students may also like to do some research into employment issues, for example: What is the minimum wage? What is tax? Why do we pay tax? Why do people pay different rates? Is it fair that people who earn more have to pay more?

Social Sciences Links

Achievement objective:

- Understand how producers and consumers exercise their rights and meet their responsibilities (Social Studies, level 4)

Students could investigate the following: As an employee, who protects your rights and responsibilities? What are some rights and responsibilities of employers and employees?

Other Cross-curricular Links

English achievement objective:

- Purposes and audiences: Show a developing/increasing understanding of how to shape texts for different purposes and audiences (Speaking, Writing, and Presenting, levels 3–4)

Students could write a job application on behalf of Sione for his café job and include a CV (curriculum vitae; work and experience history).

Mathematics and Statistics Achievement Objectives

- Number knowledge: Know fractions and percentages in everyday use (Number and Algebra, level 3)
- Number strategies and knowledge:
 - Use a range of multiplicative strategies when operating on whole numbers
 - Find fractions, decimals, and percentages of amounts expressed as whole numbers, simple fractions, and decimals
 - Know the equivalent decimal and percentage forms for everyday fractions (Number and Algebra, level 4)

Number Framework Links

These activities are appropriate for students who are very comfortable working at stage 6 and for those who are at stages 7 and 8. The activities involve the reading, addition, subtraction, multiplication, and division of dollar amounts and whole numbers. (See the table of NDP material on page 4.)

Financial Language

Budget, bills, hire purchase, guarantee

Activity One

Financial understanding

In this activity, Sione develops a weekly budget to help him predict and plan for his regular expenses. Financial planning is important for personal and business financial success.

Sione needs to identify, assess, and manage the risks of additional expenses in his flat. Students are often very interested in the adult world of paying bills and other living expenses. Having some real bills on hand to show students will make this activity more real.

As an extension, the students might be interested in hunting for a flat for Sione in the newspaper or on the Internet. It needs to have three bedrooms to accommodate Sione and his two flatmates. Suggest that they work out the initial payment for each person, including bond (for example, the equivalent of 4 weeks' rent), rent in advance, and any fees to an agency. The total may amaze them!

Mathematics and statistics

Question 1 focuses on utility bills. Sometimes it's hard to navigate the information on a bill because it shows past balances and payments as well as those that are current. Usually, the most important information is in bold font. On this bill, the opening balance is \$0.00, which means the last bill was paid in full. \$148.33 is the current charge, and \$133.50 is the discounted charge. Flatmates usually share power bills equally. The extra cost for each person for paying this bill late would be $\$14.83 \div 3 = \4.9433333 , which rounds up to \$4.95. Students may need to discuss this question with you to understand the issues raised in the Answers.

Question 2 focuses on a weekly budget. Rent, food, and transport are basic expenses. The students may also be interested in discussing whether or not Sione needs any kind of insurance (such as medical or contents insurance). For question 2b, the students will have already worked out that Sione's share of the power and phone bills for 1 month is $\$44.50 + \$15 = \$59.50$. When budgeting, rounding up is appropriate because sometimes bills are slightly more and it is financially better to overbudget than to underbudget. Rounding the bills to \$60 per month is sensible because it's easy to divide by 4 to estimate a weekly allowance. (Note that a month has slightly more than 4 weeks. Allowing \$15 per week will generate a "bonus" \$15 every 3 months, which will provide some cushioning for any extra-large bills.)

A useful template for Sione's budget in question 2c is:

Sione's Weekly Budget			
Description	Money in	Money out	Balance
Wages (after tax)	\$200.00		\$200.00
Rent		\$90.00	\$110.00
Phone and power		\$15.00	\$95.00
Food		\$50.00	
Transport		\$18.00	
Entertainment			
Clothing			
Savings			

After compiling a weekly menu and making a shopping list, students could visit a supermarket (after school hours or online) to find the total cost for the week. Students also need to consider consumables such as toilet paper, dishwashing liquid, and soap, although these items don't need to be purchased every week.

Extension

Mathematics and statistics

Students may wish to imagine Sione has his own car instead of relying on the bus to get to university. He would need to include weekly petrol costs plus an estimate of the weekly costs incurred with owning a car. To calculate this, they need costs for insurance, registration, warrant of fitness, and servicing, divided over the 52 weeks of the year. Students may also wish to add to this the possible costs of maintenance, such as having to replace tyres.

Activity Two

Financial understanding

This activity emphasises that you sometimes have to sacrifice the things you want in order to buy the things you need. People make different financial decisions because they have different preferences. For example, Sione is prepared to save and wait for his laptop rather than getting it immediately and committing to a hire purchase agreement.

Mathematics and statistics

Question 2a is a good opportunity to use tidy numbers and halving.

Extension

Financial understanding

Most students are very motivated to complete an extra investigation in the form of a flatting assignment. Given a specified income (for example, \$28,000) they can calculate income tax, find a flat in the newspaper or on the Internet, and complete their own budget for a week or a month. In small groups, students can look for a flat and plan meals. Imagining the location of "work" to be in the vicinity of the school makes it easy to calculate transport costs and provides a limitation to the location of the flat. The students need to be reminded that they would have to pay adult fares for bus travel and entertainment such as movies!

Social Sciences Links

Achievement objectives:

- Understand how formal and informal groups make decisions that impact on communities (Social Studies, level 4)
- Understand how the ways in which leadership of groups is acquired and exercised have consequences for communities and societies (Social Studies, level 4)

Students could investigate the following: How do people in flats organise themselves (that is, so that bills get paid, food gets cooked, supplies get bought, the house gets cleaned)? Do they need a leader? If they did have someone in charge, how might that work? What consequences might there be as a result?

Other Cross-curricular Links

Technology achievement objective:

- Technological Products: Understand the relationship between the materials used and their performance properties in technological products (Technological Knowledge, level 3)
Students could discuss the relative merits of buying cheap or second-hand equipment (for example, whiteware or a communal DVD player) to save on costs. Should people who are flatting include in their budget a sum for replacement costs?

Page 28: An Email to Granny

Mathematics and Statistics Achievement Objectives

There are no specific mathematics and statistics achievement objectives or Number Framework links for this activity.

The students' use of financial terms will vary, depending on their choice of grandchildren.

These activities are intended to be a reflection on the entire unit. Hopefully, students will demonstrate that they are now more aware of the different choices available to them regarding money and spending. It's important to emphasise that no one decision is necessarily the right decision, that is, none of the grandchildren are "better" than the others simply because of the decision they made but that decisions are better when they are informed by the full range of choices available.

Activity One

Financial understanding

In this activity, students, each acting as one of the grandchildren, report to Granny on how her gift was spent and what they have learned through that experience. This process reinforces to the students that there are consequences for each financial decision that people make (for example, a good financial decision brings benefits) and that people should use their past experiences with money to help them make more responsible decisions with their money in the future.

The students review the spending, saving, and investment stories of one of Granny's grandchildren. Encourage them to reflect on their own financial personality when they put themselves in that person's shoes and also when they consider whether they would have done the same thing or something different.

Encourage the students to include details, such as profit calculations and what the grandchild learned through the experience. Students should justify why they would make a different decision. It may be a minor difference, such as choosing a different business to start or a different sport to invest in, or a major difference, such as staying at home instead of flatting in order to save up money to go travelling.

Activity Two

Financial understanding

This activity reinforces the idea that people make different decisions because they have different preferences and are in different situations (such as age or location).

It could be argued that someone's financial personality has the most impact on their decisions, for example, some people are spenders, some are savers, some people like to take risks for high returns, while others like to play it safe. However, older children are allowed by law to drive, leave home, attend tertiary education, and speculate on the stock market, as well as having different interests to that of younger children, so it seems likely that age will also affect decisions.

Reflective question

Students will be matching personal goals and capabilities to an undertaking when they reconsider how they would spend \$1,000.

Students may answer this question in a very similar way to the way they answered the same question on page 1. They may have given a financially responsible answer to that question initially, but if you think there are some who have not learned as much as they could have from the unit, ask *If you were given another \$1,000, what would*

you do with that money? This may encourage students to think more creatively about how they would utilise the money because it doesn't require them to contradict their earlier reasoning.

Extension

Financial understanding

Students could revisit the Terms Time game on pages 2–3. Students interested in furthering their understandings of financial literacy could look at the other books in this series. Those who found the maths challenging in this unit could try the level 3 Figure it Out book, *Financial Literacy: Saving for a Holiday*, while those who would like more of a mathematical challenge could try the level 4–4+ Figure it Out book, *Financial Literacy: Young Entrepreneurs*.

Social Sciences Links

Achievement objectives:

- Understand how people make decisions about access to and use of resources (Social Studies, level 3)
Students could discuss what some of the major decisions were that the grandchildren had to make about how to use the money given to them.
- Understand how producers and consumers exercise their rights and meet their responsibilities (Social Studies, level 4)

Have the students write definitions for producer, consumer, rights, responsibilities. Ask:

In what way have the grandchildren been producers? ... consumers?

How can the grandchildren exercise their rights and responsibilities?

Other Cross-curricular Links

English achievement objective:

- Purposes and audiences: Show a developing/increasing understanding of how to shape texts for different purposes and audiences (Speaking, Writing, and Presenting, levels 3–4)

This achievement objective is met through the students' letters to Granny.

Copymaster: Terms Time, pages 2-3

The words and their definitions are:

Hire purchase	Payment in regular instalments for something you already have the use of
Capital	Money invested to produce further wealth
Dividend	Part of a company's profits paid to shareholders
Donation	A gift (usually money) to a charitable cause
Share	An equal part of a company's capital
Return	Profit from investment
Tax	Money paid to the government from income
Profit	The money you make after you have paid for all your costs
Loss	Amount of extra expenses over income
Wage	Regular payment for work (usually calculated by the hour)
Salary	Fixed payment for work, usually paid per fortnight or month
Rent	Payment made by a tenant to the owner of a property
Budget	Plan for income and expenses over a period of time
Guarantee	Promise of replacement if a product is faulty
Insurance	Financial protection against loss or damage
Income	Money you earn or get from other sources apart from work
Expenditure	Income spent
Allowance	A sum of money paid to a person regularly
Bank statement	List of transactions in a bank account
Deposit	Money put into a bank account
Withdrawal	Money removed from a bank account
Credit	Account entry to record money received
Debit	Account entry to record money withdrawn or spent
Investment	Money deposited for financial return
Interest	The amount of income earned from saving money in a bank or that you pay someone else for lending you money
Savings	Money put away (for example, in a bank) for use at a later time
Term investment	Money invested for a period of time
Automatic payment	Money transferred to a different bank account on a specified day
Transaction	The exchange between buyer and seller, usually money, for what is purchased
Compound interest	The interest paid on the total of the capital and previous interest earned

Hire purchase	Income
Capital	Expenditure
Dividend	Allowance
Donation	Bank statement
Share	Deposit
Return	Withdrawal
Tax	Credit
Profit	Debit
Loss	Investment
Wage	Interest
Salary	Savings
Rent	Term investment
Budget	Automatic payment
Guarantee	Transaction
Insurance	Compound interest

Copymaster: Terms Time

Game cards (front side)

500	400	300	200	100
500	400	300	200	100
500	400	300	200	100
500	400	300	200	100
500	400	300	200	100
500	400	300	200	100
500	400	300	200	100

Copymaster: Terms Time

Game cards (back side)

A gift (usually money) to a charitable cause (Donation)	Money you earn or get from other sources apart from work (Income)	Income spent (Expenditure)	Amount of extra expenses over income (Loss)	The interest paid on the total of the capital and previous interest earned (Compound interest)
Financial protection against loss or damage (Insurance)	Regular payment for work (usually calculated by the hour) (Wage)	Promise of replacement if a product is faulty (Guarantee)	The money you make after you have paid for all your costs (Profit)	Part of a company's profits paid to shareholders (Dividend)
Money removed from a bank account (Withdrawal)	Fixed payment for work, usually paid per fortnight or month (Salary)	A sum of money paid to a person regularly (Allowance)	Account entry to record money withdrawn or spent (Debit)	Profit from investment (Return)
Money put into a bank account (Deposit)	Money invested to produce further wealth (Capital)	Plan for income and expenses over a period of time (Budget)	Account entry to record money received (Credit)	Money invested for a period of time (Term investment)
Payment made by a tenant to the owner of a property (Rent)	The amount of income earned from saving money in a bank or that you pay someone else for lending you money (Interest)	List of transactions in a bank account (Bank statement)	Money deposited for financial return (Investment)	An equal part of a company's capital (Share)
Money put away (for example, in a bank) for use at a later time (Savings)	Money paid to the government from income (Tax)	Money transferred to a different bank account on a specified day (Automatic payment)	The exchange between buyer and seller, usually money, for what is purchased (Transaction)	Payment in regular instalments for something you already have the use of (Hire purchase)

Copymaster: Terms Time

Game board

Row 1	500	400	300	200	100
Row 2	500	400	300	200	100
Row 3	500	400	300	200	100
Row 4	500	400	300	200	100
Row 5	500	400	300	200	100
Row 6	500	400	300	200	100

Hayden's record of his money use – May and June

Cash Book

Date	Description	Money in	Money out	Balance
1 May	Week 1 allowance	\$10.00		\$10.00
1 May	Tuckshop (Monday)		\$5.00	\$5.00
2 May	Tuckshop (Tuesday)		\$4.90	\$0.10
8 May	Week 2 allowance	\$10.00		\$10.10
10 May	Monthly pocket money	\$30.00		\$40.10
11 May				
15 May				
16 May				
22 May				
22 May				
23 May				
29 May				
30 May				
1 June				
5 June				
10 June				
12 June				
13 June				
14 June				
15 June				
19 June				
21 June				
22 June				

Hayden's record of his money use – September and October

Cash Book

Date	Description	Money in	Money out	Balance
				\$0.50
4 Sept	Allowance	\$10.00		

Income and Expenditure – Cash Book		For Market Day – July 23		
Description	Money in	Money out	Balance	

Inventory:										
Juggling balls (sets)	1	1	1	1	1	1	1	1	1	1
Hacky sacks	1	1	1	1	1	1	1	1	1	1
Bungy balls	1	1	1	1	1	1	1	1	1	1

Tavita's Investment Simulation

Rules			
	High risk, high return	Medium risk, medium return	Low risk, low return
Simulation: Roll dice for every 6 months of the investment.	If you throw: 1: decrease by 25% 2, 3, or 4: no change 5: increase by 10% 6: increase by 50%	If you throw: 1: decrease by 5% 2, 3: no change 4, 5: increase by 5% 6: increase by 10%	If you throw: 1: decrease by 2% 2, 3: no change 4, 5, or 6: increase by 3%

Value of Investment			
Effect of dice throws	High risk, high return	Medium risk, medium return	Low risk, low return
Starting amount	\$1,000.00	\$1,000.00	\$1,000.00
Dice number: _____			
Dice number: _____ (end yr 1)			
Dice number: _____			
Dice number: _____ (end yr 2)			
Dice number: _____			
Dice number: _____ (end yr 3)			
Dice number: _____			
Dice number: _____ (end yr 4)			
Dice number: _____			
Dice number: _____ (end yr 5)			
Dice number: _____			
Dice number: _____ (end yr 6)			

Microwave:  \$189	Sewing machine:  \$149
Iron:  \$42.25	Double bed sheets set:  \$33.99
Duvet:  \$89.99	Wall mirror:  \$11.99
Two-pack of towels:  \$18.99	Wall clock:  \$22.49
Mini-fridge:  \$289	Fridge-freezer:  \$849.99
5 piece cooking pot set:  \$199	75-piece kitchen cookware set:  \$289
Vacuum cleaner:  \$169	Cutlery set:  \$59.89
Set of drinking glasses:  \$19.79	Electric frypan:  \$78.85
Coffee mugs:  \$1.99 each	16-piece dinnerset:  \$69.99
Flat screen TV:  \$549.99	Mini stereo system:  \$349.99
DVD player:  \$99.99	DVD/VCR recorder:  \$699.99
Washing machine:  \$799.99	Toaster:  \$35.00
Kettle:  \$40.00	Double bed:  \$659.00

Glossary of Financial Terms for Levels 3-4: Granny's Gift

Allowance	A sum of money paid to a person regularly
Automatic payment	An amount of money transferred regularly to a different bank account on a specified day of, for example, a month or fortnight
Balance	The difference between money in and money out at a particular point in time
Bank	A financial institution that offers services related to money and investment as a means of making profit for its shareholders
Bank account	A service provided by a bank for holding and transferring funds on your behalf
Bank balance	The amount of money held in an account or borrowed from it (a negative balance)
Bank fee	A charge imposed by banks, for example, for processing transactions
Bank statement	A printed bank record of transactions in and out and the balance
Bill	A statement of the money you owe for goods or services
Borrowing	Using someone else's money with an agreement to repay it (usually with interest)
Budget	A plan showing where your income will come from and how you will use it
Business	A commercial activity run for profit
Capital	Money invested by owners of a business to make a profit
Cash	Money in coins or notes
Cash book	A book in which money in and money out are recorded
Cash flow	Money passing in and out of a business or of a person's account
Charity	An organisation set up to help those in need
Cheque account	A bank account for settling day-to-day transactions; the account may include the provision of printed forms to use as instructions to pay other people
Choices	A range of options from which to choose
Compound interest	Interest that you earn or that you have been charged (for example, yearly) on interest that you have already earned or been charged on a loan
Consequences	What happens because of a decision you make
Consumables	Things that you use up and may need to replace
Consumer	The person who buys goods and services
Cost	The purchase price of goods or services
Costs	The money that needs to be spent for setting up or running a business or enterprise
Credit	The supply of goods or services under an arrangement to pay later; an account entry to record money received
Credit card	A card issued by a business, such as a bank, to allow the holder to make purchases and pay later
Debit	An account entry to record money withdrawn or spent
Debt	What you owe other people or organisations
Decision	Selection from a range of choices
Deposit	Money you put into an account, for example, at the bank or electronically
Discount	A deduction from the usual price of something
Dividend	Part of a company's profits paid to shareholders
Donation	Money or goods given free to a person or organisation

Glossary of Financial Terms for Levels 3-4: Granny's Gift

Earn	Obtain income in exchange for labour or services or else as interest or profit
Earnings	Income earned
EFTPOS	Electronic funds transfer at point of sale
Enterprise	A project or undertaking, especially a bold one; a business or company
Entrepreneur	A person who sets up a business, taking on greater than normal financial risks to do so
Expenditure	Money spent
Expenses	The costs of doing a job or task
Expensive	Costing a lot of money
Financial plan	A plan of future income and spending, based on money you expect to earn
Financial records	Records of income and expenditure and of the financial position of a person or business
Fixed budget	A definite amount of money available for a particular purpose
Fixed term	A definite period of time for which money is invested
Goal	What you set out to achieve
Goods	Items made or produced for sale
GST	Goods and services tax: a government levy added to the cost of some goods, services, and transactions
Guarantee	Promise of replacement if a product is faulty
Income	Money you earn from work or get from other sources
Insurance	Financial protection against loss or damage
Interest	Money that you earn from saving or investing; the extra money you pay for borrowing money
Interest rate	The percentage of a loan amount currently being paid or charged by banks or other financial institutions
Inventory	A complete list of a business's stock or unsold goods
Investment	Money committed with the expectation of financial returns
Investor	Someone who puts money into financial schemes, businesses, shares, or property with the expectation of making a profit
IRD	Inland Revenue Department: a government organisation that collects tax payments from individuals, companies, and organisations
Labour	Physical work, usually as a means of earning money
Limited budget	A restricted amount of money needed or available for a particular purpose
Loss	The amount by which your costs are higher than your income
Minimum amount	The lowest amount of money that can be paid or invested
Money	A system used for buying and selling, based on coins, banknotes, and bank transfers
Monthly account	An arrangement to repay a seller each month for goods or services you received or used the month before
Needs	Items you must have
Net income	The amount of money earned after tax
Non-consumables	Things that can be kept and aren't used up
Ongoing costs	Costs that continue

Glossary of Financial Terms for Levels 3-4: Granny's Gift

Options	Choices
Outgoings	Expenditure from income
Per annum	For each year
Price	The amount of money a seller asks for their goods or services
Profit	Financial gain from a business or enterprise, such as the income you have left after you have paid for all your costs
Purchases	Things bought
Rent	Payment made by a tenant to the owner of a private or commercial property
Return	Profit made from sales or investment
Risk	The chance of losing income or even making a loss
Saving	Money not spent, due to buying items on special or second-hand
Saving(s)	Money put away (for example, in the bank) for use at a later time
Selling price	The amount of money set as the purchase price for customers
Services	Work done for a person, group, or community
Share	One of the equal parts of a company's capital
Shareholder	An owner of shares in a company
Special offers	Prices that are lower than the usual ones (financial incentives)
Spending	Paying for goods or services
Start-up costs	The costs of beginning a business or enterprise
Start-up money	Money needed to begin a business or enterprise
Stock	A supply of goods or materials available to a company for sale or use (inventory); the capital raised by a company by selling its shares
Tax	An amount of money deducted from personal income or business profit and paid to the government, or an amount added to the cost of some goods, services, and transactions
Tax rates	The percentage of income paid to the IRD, depending on income levels or profit
Term investment	Money invested for a set period of time
Trade-off	What you are prepared to give up to get what you want (opportunity cost)
Transaction	The exchange between buyer and seller, usually money for what is purchased
Wages	Money that an employer pays to an employee at an hourly rate (less tax) for work done
Wants	What you'd like to have but don't really need
Withdrawals	Money you take out of an account, for example, at the bank or at an ATM

Acknowledgments

The Ministry of Education and Learning Media would like to thank Lisa Darragh, Kowhai Intermediate School and mathematics consultant, Auckland, for developing these teachers' notes.

Thanks also to Kathie Willis, Enterprise Learning Associates, for reviewing the material; Dianne Prendergast, Lauriston School, for her financial expertise contribution; Rhys Hill, Centre for Educational Development, Massey University, for his social sciences input; and Sandra Morgan, numeracy adviser, Wellington, and Liz Stone, Shepston Editing Services, Auckland, for their mathematics review of the answers and notes.

The photographs on the cover are by Anthony Russell. The background illustration on the cover is by Mathew Hunkin. The illustrations of the juggling balls on the cover and on pages 1–5 and 15–17 are by Ned Barraud.

All other illustrations and diagrams are by Bunkhouse graphic design.

The photographs and all illustrations are copyright © Crown 2007.

Series Editor: Susan Roche

Designer: Bunkhouse graphic design

Published 2007 for the Ministry of Education by
Learning Media Limited, Box 3293, Wellington, New Zealand.
www.learningmedia.co.nz

Copyright © Crown 2007

All rights reserved. Enquiries should be made to the publisher.

Note: Teachers may copy these notes for educational purposes.

The *Answers and Teachers' Notes* are available online at
www.tki.org.nz/r/maths/curriculum/figure/level_3_e.php

Dewey number 510

ISBN 978 0 7903 2642 9

Item number 32642

PDF ISBN 978 0 7903 2641 2