



CALCULATING WITH AUSTRALIAN NOTES AND COINS

Unit of work

Introduction

This unit of work is designed to educate students in the primary years about calculating with money and creating simple financial plans. It can be taught sequentially to form a complete unit, however lessons 1, 2 and 3 are most appropriate for years 3 and 4, lesson 4 for year 5 and lesson 5 for year 6. You should select and adjust the activities to suit the needs of your students.

The activities cover concepts such as the appearance of Australia's currency, adding money amounts, exchanging, calculating change, rounding, creating simple budgets and exploring discounts and sales.

Each lesson contains an introduction, learning outcomes, a list of required resources, lesson steps and assessment options, and may take more than one standard 'lesson' to complete.

Links to Australian Curriculum – Mathematics

Year 3 (lessons 1 to 3)

Represent money values in multiple ways and count the change required for simple transactions to the nearest five cents (ACMNA059)

Year 4 (lessons 1 to 3)

Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies (ACMNA080)

Year 5 (lesson 4)

Create simple financial plans (ACMNA106)

Year 6 (lesson 5)

Investigate and calculate percentage discounts of 10%, 25% and 50% on sale items, with and without digital technologies (ACMNA132)



CALCULATING WITH AUSTRALIAN NOTES AND COINS

Lesson 1: Notes and coins – what do you know?

Introduction

This lesson contains several activities designed to reinforce money concepts learnt in years 1 and 2 including the appearance of Australia's coins/notes, ordering according to value and making equivalent values. The activities provide opportunities to assess prior knowledge and determine the learning needs of students.

Broad learning outcomes

After participating in this lesson students will be able to:

- discuss how they have used money in their own lives
- describe Australia's currency (notes and coins)
- order the notes and coins from lowest value to highest value
- make equivalent amounts and exchange using notes and coins (e.g. showing various ways that \$5 can be made, exchanging five \$1 coins for a \$5 note).

Resources

- Sets of Australian notes and coins. Plastic versions of these can be purchased from discount or education stores. Alternatively, you will find printable '**Coin templates**' and '**Note templates**' (included with the activity sheets) that can be cut out, folded and laminated. There are colour and black and white options (that students could colour before laminating)
- One set of real Australian notes and coins
- Whiteboard
- Maths books
- '**Name that coin or note**' activity sheet (one copy per pair)
- '**Build the currency**' activity sheet (one per student)
- Coloured pencils
- Glue sticks



CALCULATING WITH AUSTRALIAN NOTES AND COINS

- Scissors
- String
- **'Currency continuum'** activity sheet
- Items for a fake auction (toys, stationery, old clothes, vouchers etc.) – these should be labelled with a starting 'auction' value
- **'Currency combinations'** activity sheet
- **'Coin exchange'** instructions (one per small group)
- **'Coin die'** (this is more durable if printed on thin card) – you will need several of these

Lesson steps

Activating prior knowledge

What do students already know about money? Write 'Money is...' on the board. Ask students to discuss with a partner how they might finish that sentence. Begin a KWL chart by recording what students already know. How do students use money? Do they get pocket money? Are they given money on special occasions? (Be mindful of students discussing amounts.)

Pass real coins and notes around the class so students can see them, feel them and describe them to each other.

Appearance of notes and coins

In the lower primary years, students would have become familiar with the appearance of Australian coins and notes. To refresh their memory, play a game of which note/coin am I? This can be done by asking students to select a note/coin from a bag and describe it to their classmates, or students can play in pairs and use the clue cards on the **'Name that coin or note'** activity sheet.

Once they are familiar with the notes and coins, students can complete the templates on the **'Build the currency'** activity sheet. This sheet could also be used as a diagnostic assessment at the beginning of the lesson to determine what students already know about the coins and notes.



CALCULATING WITH AUSTRALIAN NOTES AND COINS

Ordering notes and coins according to value

Take students outside, or to an area where they can run a short distance. Divide students into small groups (approximately 4 to 6 per group). In their groups, students will complete a coin relay where they run to collect a note or coin from a container and bring it back to their group. When all notes and coins have been collected, the group puts them in order from lowest value to highest value. The first group to complete this task wins. You can use laminated copies of the currency (found with the activity sheets) for this activity.

Once you have played this game a few times, students can individually make a currency mobile using the '**Currency continuum**' activity sheet.

Exchanging and equivalence

In this activity students will expand their knowledge of exchanging and making equivalent amounts through a fake auction (class), an activity sheet (individual) and a game (small groups).

Provide each student with a bag of notes and coins. All students must have the same amount. Display some items at the front of the room and label them with a starting amount. Conduct an auction and when a student 'wins' an item they must make the amount from their currency and 'pay' the auctioneer (the teacher or a student). Ask other students how else the winning student could make the amount for the item. Record some ideas before moving on to another item.

Once the auction is finalised, students individually complete the '**Currency combinations**' activity sheet. Alternatively, this can be completed with real items and recorded in students' maths books. You can challenge or extend students by applying constraints such as 'you can only use coins' or 'can you do it with exactly 6 notes or coins?'

In small groups, students to play a game of '**Coin exchange**'. The instructions and a coin die template can be found with the activity sheets. Each group will need one \$10 note, one \$5 note per player and lots of coin currency. The aim of this game is for a student to get the \$10 note, but if this is taking too long, you can lower the 'winning' value to \$5 or set a time limit and the winner is the player with the most money at the end of that time.

You may wish to demonstrate this game with the whole class before students play in small groups.



CALCULATING WITH AUSTRALIAN NOTES AND COINS

Assessment options

- Contributions to class KWL
- Observations during relay activity
- Completed '**Build the currency**' activity sheet
- Completed '**Currency continuum**' mobile
- Completed '**Currency combinations**' activity sheet
- Observations during '**Coin exchange**' game



CALCULATING WITH AUSTRALIAN NOTES AND COINS

Lesson 2: Adding totals

Introduction

In this lesson, students will learn to add two or more money amounts together, including carrying amounts over.

Broad learning outcomes

After participating in this lesson students will be able to:

- add multi-digit monetary amounts, with and without carrying, and place the decimal point in the correct place
- calculate a total amount for two or more items selected from catalogues or a class shop and show this amount using currency.

Resources

- Shopping catalogues (printed or online)
- Whiteboard
- Various items for a class shop
- Price tickets – these could be sticky labels
- **‘How much is it? Level 1’** activity sheet
- **‘How much is it? Level 2’** activity sheet
- **‘How much is it? Solutions’**
- Scissors
- Glue sticks
- Maths books
- Calculators (optional)



CALCULATING WITH AUSTRALIAN NOTES AND COINS

Lesson steps

Ask students to make a list of things they have purchased (or have seen a family member or friend purchase) in the last week. Can they remember how much the items cost? An alternative to this is to ask students to select a few items from catalogues.

Record some of the items on the board along with the amounts. Ask students to estimate the total before demonstrating how to add them together. Revise column addition here and explain where to place the decimal point, linking to place value concepts. Demonstrate several examples, asking students to copy some into their maths books. Provide several examples for students to complete on their own or with a partner.

Here are several options for exploring and practising money addition.

- Students can complete one or both of the **'How much is it?'** activity sheets. Level one of this sheet does not require 'carrying' and level two has questions that will require students to carry amounts over.
- Set up a class shop and label items with price tickets. Students select two or more items, record what they have collected and calculate the amounts. They could do this by taking photographs that show the items, their price tags and the correct amount of money (placed next to the items).
- Students use the class shop to go shopping, taking it in turns to be the shop owner and the customer.
- Students use catalogues to select two items, cut out the pictures, glue them in their maths books and show their addition next to the items. They could also show a currency option (or options) for this amount.
- Ask students to write some of their own worded problems, using items from the class shop or catalogues, for a friend to complete. They must also write a solutions sheet.
- Provide some 'working backwards' problems. For example, 'The total amount is \$5.50, how much was each item?'

Assessment options

- All recording during addition activities
- Completed **'How much is it?'** activity sheet



CALCULATING WITH AUSTRALIAN NOTES AND COINS

Lesson 3: Calculating change and rounding

Introduction

In this lesson, students will learn to calculate change using various strategies (e.g. subtracting, counting up and calculators). Students will practice this with coins and notes and then explore the concept of rounding, which is needed in Australia due to the cessation of one and two cent coins.

Broad learning outcomes

After participating in this lesson students will be able to:

- use the 'counting up' strategy to calculate change given when paying without the correct money
- explain the concept of rounding and why we need to do it when using money in Australia.

Resources

- Individual whiteboards
- Whiteboard markers
- Class shop and/or catalogues (printed or online)
- Items from the class shop or a catalogue, labelled with prices that end in 5 or 0
- Items from the class shop or a catalogue, labelled with prices that do not end in 5 or 0
- Maths books
- Interactive whiteboard
- Access to YouTube
- 'Getting Change' video (<https://www.youtube.com/watch?v=PZpDeoj1Tqo>)
- Australian notes and coins
- '**80 to 120 number line**' activity sheet
- '**Blank number line**' activity sheet (for printing or displaying on an interactive whiteboard).



CALCULATING WITH AUSTRALIAN NOTES AND COINS

- Calculators (optional)
- Completed **'How much is it?'** activity sheets from lesson 2 (optional)

Lesson steps

Calculating change – no rounding

To prepare for this activity, ensure that all items in the class shop or catalogue are labelled with prices that do not require rounding (i.e. end in a 0 or 5).

Explain to students that when we go shopping we often do not have the correct amount of money to pay for our items, so we give more. This requires the cashier to provide change.

Show students 'Getting Change' (the URL is in the resources list) then discuss what students know about change. Have they ever paid for something and gotten change? You could link this to school lunch orders if applicable.

Select several items from the class shop or a catalogue that are priced at less than \$5 and display these at the front of the class. Give each student a \$5 note.

Select a student and have him/her come out the front to buy an item and pay for it with their \$5 note. As you calculate their change, model your thinking process, showing students that you can do it mentally, possibly providing an estimate before you calculate. Complete a few more examples with other students, asking if anyone can calculate the change in their head too.

On the whiteboard, model the counting up strategy using a number line (you can find videos demonstrating this strategy on YouTube). After demonstrating several examples for students, provide each of them with a small whiteboard and whiteboard marker and ask them to join in while you do more examples. Finally provide examples for students to attempt alone or with a partner.

To practise providing change, students could take it in turns to be the buyer or seller with items from the shop or a catalogue.



CALCULATING WITH AUSTRALIAN NOTES AND COINS

Rounding totals

For this part of the lesson, ensure that all items from the shop or catalogue have prices that do not end in a 5 or 0.

To start this activity, have students go shopping in the class shop and explain that today, they must pay with the exact money. Students should notice that this is not possible as our coins do not allow us to do this. Explain to the class that our coin system means that we must round the totals of our items to be able to pay with the correct money or provide the exact change.

Write 'rounding' on the board and explain that this means we must adjust our totals to the nearest five or ten amount.

Show the '**80 to 120 number line**' on the interactive whiteboard. Ask a student to come and mark the number 92 on the line. Explain that if an item costs 92 cents we could not pay with the correct amount. In this instance the amount would need to be 'rounded' to the nearest 5 or 10 (number ending in zero). Ask students which number ending in 5 is the closest to 92 and which number ending in zero. Students should indicate 95 and 90. But which number is the closest to 92? Show students that it is only two steps on the number line to move from 92 to 90, but three steps to move to 95. Therefore, the total would be rounded to 90 cents and that is what we would pay. Reinforce earlier concepts by asking students to make that amount with some coins.

Provide some more examples between 80 and 120 (making sure to include items that are rounded up and down) to allow students to practice with this concept. If you would like to use other amounts, you can use the '**Blank number line**' activity sheet. This sheet can also be used for students to show their understanding.

Once students are comfortable doing this with individual numbers, explain that when we purchase multiple items, we do not round every item. We add them all together first and then round the total only.

To practice this allow students to select items from the class shop or a catalogue, add the total, record it and then show how it would be rounded up or down.

Students could also return to their completed '**How much is it?**' sheets from lesson 2 and round each of those totals.

To finish the lesson allow students to go shopping again (in the class shop, online or using catalogues) so they can apply their new rounding and change giving skills. Record their learning in their maths books, via short 'shopping videos' or through observations.



CALCULATING WITH AUSTRALIAN NOTES AND COINS

Assessment options

- Contributions to class discussions
- **'Number line'** activity sheets
- Videos, observations or maths books from shopping activity



CALCULATING WITH AUSTRALIAN NOTES AND COINS

Lesson 4: Simple budget

Introduction

In this lesson, students will work individually, or in pairs, to plan and create a budget for a party. They will be required to make decisions about the number of people attending, food, decorations, entertainment etc. There are activity sheets provided that allow for open-ended exploration, but you may wish to set some more criteria or limitations appropriate for your students.

Broad learning outcomes

After participating in this lesson students will be able to:

- list the items they would like to have for their ultimate party
- recognise that these elements cost money
- create a simple financial plan for a party, making decisions to stay within a set budget.

Resources

- Butcher's paper
- **'It's party time!'** activity sheet
- Computers with internet access
- Catalogues (optional)
- Calculators
- **'Perfectly planned party'** activity sheet



CALCULATING WITH AUSTRALIAN NOTES AND COINS

Lesson steps

Ask students to think about a party or function they have been to. Individually, in pairs or small groups, students record all the things they can remember about the party. This can be recorded on a sheet of butcher's paper. Share some of the memories as a class.

Now ask students to think about planning their own ultimate party. What would they include? Would they have a theme? What food and drinks would be served? Would there be entertainment? Would the party be held at a free venue (such as their house or a park) or would they hire somewhere? How many people would they invite?

On a new sheet of butcher's paper, students record what they would include in their party. Share some of these ideas and ask students to think about how they could be grouped into categories such as food and drinks, entertainment, decorations, venue etc.

Students will be working individually or in pairs to create a plan for a party with a budget of \$200 (this can be adjusted as needed). They will be required to research costs for the items they wish to include. There are instructions and spaces for recording information on the **'It's party time!'** activity sheet. Remind students that they must consider quantities in their planning. For example if they are having 10 people, they will need to ensure that it is reflected in their costs.

You could set further criteria or limitations for this activity, such as:

- specifying the number of people
- allocating mini-budgets for each area (e.g. half the money must be used for entertainment)
- making the party a fundraising event, so students would have to set a reasonable entry cost that would still allow for a profit.

Students can record their final budget on the **'Perfectly planned party'** activity sheet or they could create their own using computer programs such as Word or Excel.

Assessment options

- Completed **'It's party time!'** activity sheet
- Completed **'Perfectly planned party'** activity sheet or self-created final budget



CALCULATING WITH AUSTRALIAN NOTES AND COINS

Lesson 5: Discounting and sales

Introduction

This lesson requires students to have some knowledge of how to calculate percentages as they will be working with catalogues and advertisements to calculate prices and amounts saved.

Broad learning outcomes

After participating in this lesson students will be able to:

- locate discount and sale offers in printed or online catalogues
- calculate new prices of items after a discount is applied
- calculate how much they save after applying a discount.

Resources

- Printed or online catalogues
- Computers with internet access
- Calculators
- Maths books
- Completed party budget from lesson 4 (optional)
- Items to make catalogues (e.g. cardboard, glue, scissors, textas, recording equipment etc.)

Lesson steps

Provide a mini-lesson on how to calculate percentages. This could be in written format or with the support of a calculator.

For classes that have created a party budget in Lesson 4: Simple budget

Ask students to have their final party budget in front of them. As students will be writing on these, you may wish to photocopy them beforehand to keep one 'clean' copy.



CALCULATING WITH AUSTRALIAN NOTES AND COINS

Ask your students what would happen to their budget if some of the items were on sale or had special offers? Provide some price adjustments for your students to consider and use to calculate new totals. How does this effect their budgets and their party plans?

Here are some ideas:

- All food is half price.
- All food is buy one get one free.
- Decorations are 25% off.
- The venue is 30 percent cheaper if the party is held on Monday, Tuesday or Wednesday.

For classes that have not completed Lesson 4: Simple budget

Provide students with copies of printed catalogues or allow them to find online examples. In pairs, students locate sale offers or discounts and record, or cut out and paste them in their maths books. If the advertisement does not provide the final price for the item, ask students to calculate it in written form and then use a calculator to check their answer.

Create a catalogue

Students to work in pairs to create a party supplies catalogue filled with discounts and special offers. They can use pictures of items that they have cut out of catalogues or printed from online versions, but they must create their own price element. The catalogues should include the original price, the offer or discount and the final price. As an extension or alternate option, students may wish to create and record a television or radio version of their advertisement, but this should be accompanied by a storyboard or a script.

Assessment options

- New versions of budgets from lesson 4
- Maths books with offers from catalogues
- Completed catalogues