Te whai hua - kia ora

sorted in schools

Dollars and Sense

Financial mathematics

Getting set up

Are you ready to put your maths skills to work and see how they apply in real-world money situations?

This workbook shows how maths can help you make smart choices—whether you're shopping or running a business. It can also help you to limit the interest you're paying, or increase the interest you're earning.

Let's get calculating!

What am I learning?

By the end of this workbook a whole lot of learning will have happened! But what exactly?

At the end of your mahi you should be able to -

DEFINE and give real life examples of:	CALCULATE	APPLY
• Goods and services • GST • Borrowing and savings.	• GST • Simple interest when borrowing or saving money.	• Markups and discounts on goods and services. On top of this, you'll get the chance to **APPLY** the knowledge and practices to a **side hustle** of your choice.

What's in this booklet?

click on the page number to navigate to the different sections

Topic 1:

Goods, services & tax

The learning

In this section I'm learning about:

GST – Goods and Services Tax

By the end of this, I need to be able to:

- Give a definition for GST
- Calculate GST on dollar amounts

Why am I learning this?

Learning about GST (Goods and Services Tax) helps you understand how the government collects money from things we buy, like games or clothes. It's a chance to practise real-life maths skills, like percentages and decimals, and shows how businesses add taxes to the things they sell. Knowing this makes you wiser about spending, saving, and even starting your own small business one day.

What I need to know

Goods are things that you buy. It can be small things like clothing or a jar of Marmite, or large items such as a computer, car or fridge.

Services are helpful activities provided by other people. For example, a dentist fixing a hole in your tooth or someone giving you a haircut.

Tax is money collected by the government from people and organisations to fund public services like schools, hospitals and roads. Tax systems are important for maintaining a functioning society and supporting everyone's needs.

Goods and Services Tax (GST) is a tax you pay on things that you buy and on services that you pay for. In Aotearoa New Zealand, GST is currently 15%.

GST is already included in the price tag of most things you buy, so you may not be aware that you are paying tax when you purchase them. Services are often advertised as being '**GST inclusive**' or '**GST exclusive'**.

GST inclusive (often shortened to 'incl GST' or 'GST incl') means that the price already includes the GST.

GST exclusive (often shortened to 'excl GST' or 'GST excl') means that the GST is not included in the price. The amount you pay will be 15% higher.

Example: Calculating GST in New Zealand

You want to buy a meal combo that costs **NZ$20** including GST. How much GST is included in the price?

Key words: GST, goods, services, rate, purchase

Step 1: Understand the problem

You're buying something that costs NZ$20 including GST. You want to know how much GST is included.

Step 2: Know the GST rate

In New Zealand, GST is **15%**. That means for every dollar you spend, **15 cents** goes to GST.

Step 3: Work out the GST amount

If the price already includes GST, you can find the GST amount this way:

GST = $20 – (20 ÷ 1.15)

How does this work?

Dividing $20 by 1.15 gives the price excluding GST e.g. $20 ÷ 1.15 = **$17.39**

The GST is the difference between $17.39 and $20. e.g. $20 – 17.39 = **$2.61**

The GST amount is **$2.61**

Giving it a go

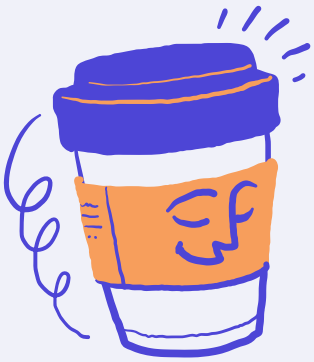
Shristi's café

Shristi is opening her own café. She has written a food and drinks menu. She needs to figure out the GST for each menu item.

Understanding GST

In your own words, explain to Shristi what GST is below -

write here



Calculating GST on everyday goods

Help Shristi to calculate the GST amount for some of the items on her café menu:

a. Calculate the GST amount that Shristi will pay for each of these.

b. Calculate the total amount of GST on these.

write here

Item	GST inclusive price	GST amount
Hot chocolate	$5.50	
Chocolate chip biscuit	$3.70	
Toasted sandwich	$10.80	
Fruit smoothie	$8.10	
Pasta salad	$12.20	
Mince and cheese pie	$7.00	
TOTAL		

Jamie's expenses

Jamie doesn't spend a lot on goods, however, her brother has pointed out that she spends a bit on different services. Use the examples from Jamie's October spending to help figure out the GST.

Calculating GST on everyday services	GST amount	Is this a good or a service?
1. Haircut Jamie gets a haircut that costs $40. What is the GST?		
2. Dance class subscription A monthly subscription to dance classes costs $80. What is the GST?		
3. Mobile phone repair A phone screen repair costs $120. What is the GST?		
4. Pet grooming appointment A dog grooming service costs $55. What is the GST?		
5. Music lessons A term of music lessons costs $100. What is the GST?		
6. Online gaming subscription A 3-month gaming subscription costs $90. What is the GST?		

write here

Extension

Docket day

Bring five dockets, receipts or invoices to school from purchases made by you or your family, whānau, or aiga.

With a partner or in small groups:

- Discuss how the GST is represented in these dockets, receipts or invoices.
- Calculate the GST amount for each item on the receipt.
- Add up the GST for each receipt. Check your total is the same as the total GST amount on the receipt (if it is there).
- Add up the GST spent in total for each family.

Be sure to show your working!

write here

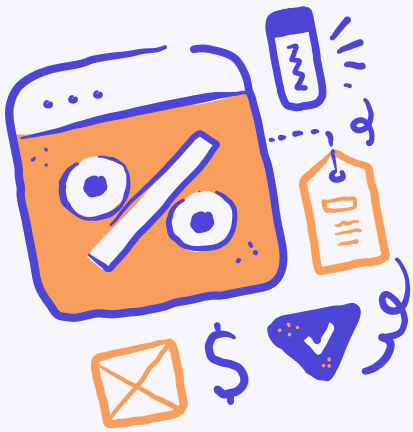
Topic 2:

Markups and discounts

The learning

In this section I'm learning about:

Markups and discounts



By the end of this, I need to be able to:

Describe the differences between markups and discounts.

Apply markups and discounts on goods and services.

Why am I learning this?

Understanding markups and discounts is useful because it tells you how much you'll pay or earn when shopping or selling stuff.

For example, if a video game is on sale, knowing how to calculate the discount shows you exactly how much money you'll save. If you want to sell something, knowing the markup helps you price it fairly, so you make a profit. It also helps you budget, compare deals, and avoid spending too much.

Learning all of this improves your math skills and gives you more confidence when managing your money in everyday life.

What I need to know

What is a markup?

Markup is the difference between what it costs to provide goods or services and how much it is sold for.

A markup percentage is the percentage of your cost price which becomes your profit.

What is a discount?

Think of a discount as a price reduction. Businesses offer discounts to encourage people to buy their goods or services.

There are different ways to calculate a discount or a markup. Here is an example of how to work out a discount and a markup. Your teacher may show you other ways to work this out.

You are shopping in the PlayStation store online and see a video game that normally costs $50. The online store is having a special sale with 20% off. You want to know how much money you will save and how much you need to pay. You figure out that 20% off means you save $10. So instead of paying $50, you only need to pay $40.

Calculating a discount (example: 20% off)

1. **Understand the problem** – a discount makes the item cheaper.
2. **Original price:** $50
3. **Find the discount amount:** 20% of $50 → $50 × 0.20 = $10
4. **Subtract the discount:** $50 − $10 = **$40**

The video game costs **$40** after a 20% discount.

Calculating a markup

1. **Understand the problem** – businesses add markups so they can make money.
2. **The cost price** – The shop bought the game for $30
3. **Know the markup amount** – The shop adds a 66% markup to the cost price.
4. **Find the markup** – multiply the original price by the markup percentage (convert the percentage to a decimal):
   - 66% → 0.66
   - $30 × 0.66 = **$19.80**
5. **Find the selling price** – add the markup to the original price:
   - $30 + $19.80 = **$49.80** ✓

The video game sells for **$49.80** after a 66% markup.

Summary table

Original price	$50
Discount 20%	$10
Price after discount	$40
Markup 15%	$7.50
Price after markup	$57.50

Quick tips

- Always convert percentages to decimals before multiplying (e.g., 20% → 0.20).
- Subtract for a discount, add for a markup.

Giving it a go

Starting a business

Griffin is planning to start a business at the local market. He will be selling dog treats and offering dog sitting services. Let's look at some scenarios using markups and discounts to maximise Griffin's earnings.

Markups

1. Calculating markups on a product or goods - dog treats.

a. For a basic biscuit recipe, it costs Griffin $5 for the ingredients and $2 for packaging. Decide on a selling price and calculate the markup and percentage. Show your working below.

write here

b. Create a mini menu with different treat types and markups. You can choose the treat type, the cost price and the selling price. Think about how the price will change if you add other flavours.

Treat type	Cost price	Selling price	Markup	Percentage

write here

2. Calculating markups on dog sitting services

Griffin charges $15 per hour for dog sitting services but wants to add a 30% markup for weekend and holiday bookings. There is more demand for his services on holidays and weekends because that's when most people want to go away. It also means Griffin is giving up his free time when he could be relaxing or hanging out with his friends, so the extra charge helps make it worthwhile.

a. Calculate the markup amount.

b. Calculate the new rate for weekends or holidays.

c. Griffin wants to investigate some different options for weekend and holiday rates. Calculate the markup amount and selling price below.

write here

	Cost price	Percentage of markup	Markup amount	Selling price
Weekend	**$15**	**44%**		
Holiday	**$15**	**58%**		

d. Discussion: How would Griffin choose a markup that is fair and reasonable? What does he need to think about when figuring out the markup percentage?

write here

3. Calculating discounts on dog treats and dog sitting services

Griffin has decided to offer some discounts to encourage people to buy his treats and dog sitting services.

Calculate the discount percentage, amount and final price in the boxes below.

Original price	Discount percentage	Discount amount	Final price
$12	20%		
$40		$8	
$15		$3	
$20	15%		
$60		$12	
$25		$5	
$18	10%		
$30	25%		

write here

Smart shopping

It's useful to know how to calculate a discount when you're in a shop, or shopping online. That way you know how much you will pay to buy the things you want.

Miss Baigent's students are learning how to calculate discounts by shopping for items they want. Use the examples below to help her students find out how much money they could save on these discounted goods.

write here

Birthday bike

For her birthday, Ana's parents are buying her a bike priced at $250. She finds a store offering 15% off. What's the discounted price?

Concert hoodie

Layson spotted a hoodie at a concert merchandise stand for $75. There's a 20% discount for fans. What's the discounted price?

Book bargain

Tahlia wants a book that costs $30. Her local bookstore is offering a 5% discount. What's the discounted price?

Art supplies

Arwyn wants a new set of art supplies, the one he wants costs $80. The store next to his dad's work is offering a 22% discount. What's the discounted price?

Extension

The best deal

Riley needs some headphones for his summer fitness training. Two shops are selling the same pair of headphones. Calculate the selling price to help Riley choose the best deal.

- **Shop A** offers a **20% discount** on the selling price of **$120**.
- **Shop B** offers a **25% discount** on the selling price of **$130**.

Questions:

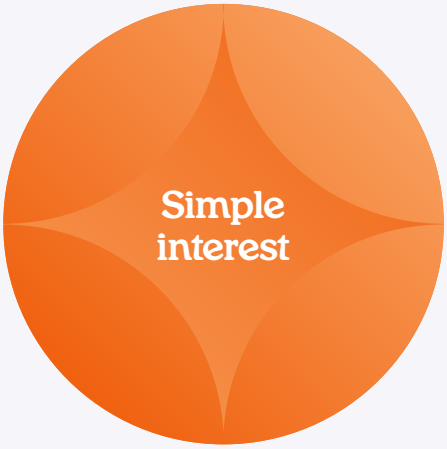
1. What is the final price at **Shop A** after the discount?
2. What is the final price at **Shop B** after the discount?
3. Which shop offers the better deal for Riley?
4. Explain your reasoning and show all your working.

Topic 3:

Simple interest

The learning

In this section I'm learning about:



By the end of this, I need to be able to:

- **Calculate** simple interest
- **Apply** simple interest to borrowing and savings

Why am I learning this?

Learning how to calculate simple interest helps you understand how money grows or how much extra you might have to pay when borrowing. It's useful for things like saving for something you want, borrowing money from someone, or understanding how bank accounts and loans work. Knowing this helps you make smart choices with your money now and in the future.

What I need to know

Borrowing and simple interest

When you borrow money, you are buying goods and services and paying for them later. Borrowing can be informal, such as borrowing $5 from a friend to pay for a bus ticket, or formal, such as borrowing $5000 from the bank to buy a car.

Interest on borrowing means paying extra money when you borrow money from someone or a bank for a certain period of time. For example, if you borrow $100 and agree to pay 10% interest each year, you'll have to pay back $110 after one year. The extra $10 is the interest.

Example: Calculating simple interest

Borrowing for a school trip

Leo wants to go on a school trip that costs $200. His older sister offers to lend him the money, but she says he'll need to pay her back with 6% interest per year. Leo plans to pay her back in 2 years.

Steps to calculate the interest Leo will pay

Step 1: Understand the problem

Leo needs to know how much interest he will pay if he borrows money from his sister.

Step 2: Start with the amount borrowed

Leo borrows $200.

Step 3: Find the interest rate per year

His sister charges 6% interest each year.

Step 4: Work out how much interest is charged in one year

6% of $200 is $12.

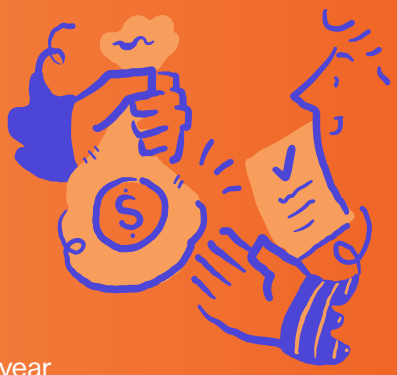
Step 5: Multiply the interest by the number of years

$12 × 2 years = $24.

Answer

Leo will pay **$24** in interest after 2 years.

So, he will need to repay a total of **$224.**



Key words:

Interest, principal, rate, time, repayment, lend, credit card, debt, borrow, fortnight

Giving it a go

Borrowing and simple interest

Have a go at calculating the interest on the following -

	Interest
1. You are $300 in debt. The interest rate is 6% p.a. and you plan to pay it off in 2 years. How much interest will you pay?	
2. You are $1278 in debt. The interest rate is 20% p.a. and you plan to pay it off in 2 years. How much interest will you pay?	
3. You are $6000 in debt. The interest rate is 14.5% p.a. and you plan to pay it off in 5 years. How much interest will you pay?	
4. Phone purchase plan Ethan borrows $300 from his older brother to buy a new phone. His brother charges 6% interest per year. Ethan agrees to pay it back over 3 years. How much interest will Ethan pay?	
5. Concert ticket Talia borrows $150 from her cousin to help pay for a ticket to a concert. Her cousin says she'll charge 5% interest each year. Talia plans to pay her back in 1 year. How much interest will Talia pay?	

write here

P.A. = per annum (every year)

Extension

Lily needs help

Lily is a Year 13 student. Recently, she was asked if she wanted to sign up for a credit card. She applied for a low interest card. When Lily received the card, she was careful about not using it for everyday purchases. However, near the end of her school year, she used her card and bought clothing, food and tickets to an event.

A month later, Lily received her statement for the $535 she owed. She noticed that the minimum monthly payment was $17.50. Lily was relieved at first but then wondered if that was the best option.

Investigate the different choices Lily could use to pay off her debt. You will need to show Lily some different options around paying off her credit card.

Use the **Sorted Debt Calculator** to complete the table below. Hint: use the interest rate and repayment rate given in the calculator.

Credit cards

A credit card is a bank card that lets you borrow money from a bank to buy things now and pay for them later. When you use a credit card, you're promising to pay the bank back, usually at the end of the month. If you don't pay it all back on time, the bank charges you interest. Some card interest rates can be as high as 29.99%!

Credit card information

Credit card amount: | **Annual interest rate (%):**

	Weekly	Fortnightly	Monthly
Amount owed	**$535**	**$535**	**$535**
Repayment amount			
Total repayment			
Amount of interest paid			
Length of repayment			

write here

Questions

1. What is the difference between the columns (weekly, fortnightly and monthly)?

write here

2. What would happen if you changed the repayment amount to a higher or lower amount?

In the box below, write down your advice to Lily.

What I need to know

Saving and simple interest

Saving is putting aside money separately for the things we want. The more we save, the easier it is to achieve our goals and get ahead. Depositing money into a **savings account** is one way to save. When you have money in a bank account, the bank usually pays you interest because they use your money over time. Saving accounts are a low-risk way to invest your money.

Simple interest on savings means you earn extra money just for keeping your money in a bank or savings account. The bank gives you a small percentage of your savings as a reward each year. For example, if you save $100 and the bank gives you 5% interest, you'll earn $5 after one year. The longer you save, the more interest you earn. It's a great way to grow your money over time!

Example: Saving for a bike

Ella wants to buy a new bike that costs $300. She decides to put her money in a savings account that earns 5% interest each year. She leaves her money in the account for 2 years.

Steps to calculate simple interest

Step 1: Understand the problem

Ella wants to know how much interest she will earn for her savings account.

Step 2: Start with the amount of money saved

Ella saved $300.

Step 3: Find the interest rate per year

The bank gives 5% interest each year.

Step 4: Work out how much interest is earned in one year

5% of $300 is $15.

Step 5: Multiply the interest by the number of years

$15 × 2 years = $30.

Answer

Ella will earn $30 in interest after 2 years.

Key words:

saving, account, risk, invest, deposit, earn, annual interest rate

Giving it a go

Saving and simple interest

Practise calculating simple interest when saving on the examples below.

	Interest
1. Saving for a scooter Jack saves $200 in a bank account that pays 5% interest each year. He keeps the money in the account for 2 years. How much interest will Jack earn?	
2. Birthday money savings Sam puts their $150 birthday money into a savings account with 4% interest per year. They don't touch it for 3 years. How much interest will Sam earn?	
3. Saving for a car Mia has a part-time job at a local cafe. She is putting some money aside into a savings account. She plans to use her savings to buy a car in the future. **Calculate the amount of interest Mia gains (remember to show your working).**	
1. Mia deposits $500 at 5% for 4 years.	
2. Mia deposits $250 at 3% for 2 years.	
3. Mia deposits $150 at 2% for 1 year.	

write here

Extension

Save or borrow? Which makes more sense?

Amira is planning for a trip to visit her cousins in Australia. She has two options:

- **Option A - Save and earn interest**

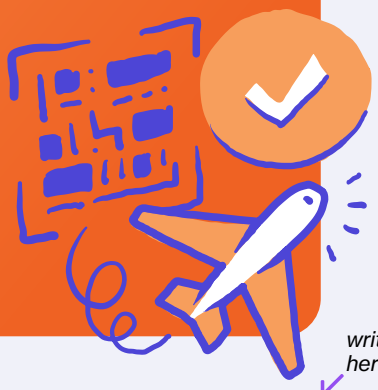
She saves $400 in a bank account that gives 5% interest per year. She plans to leave it there for 3 years.

- **Option B - Borrow and pay interest**

Instead of saving, she borrows $400 from her cousin to pay for her trip. Her cousin charges 6% interest per year, and Amira will repay the loan in 3 years.

Your task:

1. Calculate how much interest Amira will **earn** if she chooses to save.
2. Calculate how much interest Amira will **pay** if she chooses to borrow.
3. Compare the two options. Which one is better for Amira financially?
4. Explain your reasoning clearly.



write here

Wrapping it up

Do your dollars make sense?

The side hustle

You have developed your mathematical skills, and you will now apply this knowledge and expertise managing money in your own business.

Use the guidance below to work through developing your business idea, making your **dollars** make **sense**.

Name your business

Business name

Description

write here

Goods or services?

List what you will sell

Goods:

Services:

write here

Markups and discounts

Work out the cost price and selling price for the good or services.

Calculate markup and markup percentage.

Decide if you will offer discounts and calculate final price after discount.

GST

If your GST inclusive price is the price above, how much GST will you pay?

Do you need to adjust your markup to make more profit? If so, adjust it now.

Borrowing and simple interest

Will you borrow money to start? What for and how much?

Check out one of the main banks to see what their current interest rate is on a personal loan.

How long will you take out a loan for?

How much interest will you pay?

Savings and simple interest

How much would you like to sell within a year? How much money will you make?

Check out one of the main banks to see what their current interest rate is on a savings account.

If you save the money you make from your business, how much interest will you earn in 12 months?

write here

Extension

How might the discounts you offer affect how much money you make?

Reflection

What did you learn about managing money in your business?

How will you use markups, discounts, and interest calculations to make smart decisions?

What challenges do you expect, and how will you overcome them?

write here

Extra bits

Glossary

Account – A place where you keep your money at a bank or online.

Annual – Annual means something that happens every year.

Borrow – To take money from someone for a while and promise to give it back later.

Credit card – A bank card that lets you borrow money from a bank to buy things now and pay for them later.

Debt – Money you need to pay back because you borrowed it or bought something with money you don't have.

Demand – how much people want something and how many people want it.

Deposit – Putting money into your bank account.

Earn – To get money by working or getting interest on savings from the bank

Fortnight – Two weeks (14 days).

Goods – Things you can buy, like food, clothes, or toys.

GST – Goods and services tax.

Interest – Extra money you pay when you borrow money, or extra money you get when you save money in a bank.

Interest rate – The percentage of money you pay extra when you borrow,or earn extra when you save.

Lend – To give someone money for a while and expect them to pay it back.

Purchase – To buy.

Repayment – The minimum amount you have to pay back on money you borrowed.

Risk – The chance that you might not reach your goal.

Saving – Money you keep instead of spending, usually in a bank.

Services – Things people do for you that you pay for, like getting a haircut or fixing your car.

Te whai hua - kia ora

sorted
in schools

sortedinschools.org.nz