VCE VOCATIONAL MAJOR –
NUMERACY

UNIT 3

EARNINGS, EXPENDITURE AND GAMBLING

Acknowledgements

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BE AHEAD OF THE GAME

Introduction

What is Be Ahead of the Game?

Be Ahead of the Game is a school education program about the risks of gambling. Drawing on the latest research, the program's free, curriculum-aligned resources support the whole school community to help students navigate the rapidly evolving gambling landscape and avoid harm from gambling.

Be Ahead of the Game resources are co-developed by the Victorian Responsible Gambling Foundation and Victorian teachers and education professionals. It's one of the ways the Foundation works towards reducing harm from gambling in our communities. The Be Ahead of the Game program offers:

- face-to-face information sessions for teachers, parents and students about the risks of gambling and gaming
- curriculum-aligned teaching resources covering a variety of subject areas
- tools for parents, teachers and schools to develop a gambling harm prevention strategy.

To find out more, visit **beaheadofthegame.vic.gov.au**.

What's the issue?

Gambling has never been more heavily promoted and accessible to young people. Saturation levels of advertising during sport makes it feel like a normal part of the game, while online games and apps put gambling and simulated gambling within easy reach of all age groups. Be Ahead of the Game helps young people cut through the myths and the marketing to be able to think critically about gambling and gaming.

If you are concerned that gambling is affecting a student or someone they know, you can refer them to our free and confidential Gambler's Help Youthline support service on 1800 262 376 or visit gamblershelp.com.au/youthline

Educators and parents can also contact this service for advice or visit gamblershelp.com.au for more information.

Be Ahead of the Game resources for VCE Vocational Major

The Victorian Responsible Gambling Foundation (VRGF) provides resources to support the delivery of the Victorian Certificate of Education Vocational Major (VCE VM) subjects. VCE VM is accredited at two levels: Year 11 Units 1 and 2, and Year 12 Units 3 and 4. The qualification levels cater for a range of students with different abilities and interests, and support development of personal, workplace and subject-specific skills, knowledge, and attributes. They are designed to help students make informed choices about employment and education pathways.

The Foundation's VCE VM resources support the achievement of outcomes in:

- Literacy
- Numeracy
- Personal development skills.

The following table lists the resources, curriculum areas, units and outcomes that are supported. Detailed curriculum alignment can be found in each resource.

	Literacy							
	Unit 1		Unit 2		Unit 3		Unit 4	
Outcome	1	2	1	2	1	2	1	2
Love the game	●	●						
Potential influences					●	●		

	Personal development skills											
	Unit 1			Unit 2			Unit 3			Unit 4		
Outcome	1	2	3	1	2	3	1	2	3	1	2	3
Knowing the score					●	●						
Knowing when it's a concern										●	●	●

	Numeracy											
	Unit 1			Unit 2			Unit 3			Unit 4		
Outcome	1	2	3	1	2	3	1	2	3	1	2	3
Finances and gambling	●	●	●									
What are the chances?				●	●	●						
Earnings, expenditure, and gambling							●	●	●			
Odds and probability										●	●	●

Note: Not all learning outcomes from a VCE VM unit are covered in each resource.

Resource overview of this unit

Resource focus

Earnings, expenditure, and gambling (Numeracy – Unit 3) covers some of the mathematics and numeracy skills required to understand and engage with the topic of earning a living and associated payments such as taxation, superannuation and government support through allowances. It also looks at and investigates national data on what people earn on average, and what Australians spend their money on. Lastly it reviews and analyses some of the data and information that the Victorian Responsible Gambling Foundation (VRGF) and other bodies collect about the financial impact of gambling in Victoria.

Be Ahead of the Game offers four numeracy resources:

- Finances and gambling
- What are the chances?
- Earnings, expenditure, and gambling
- Odds and probability.

Students may work individually, in groups, or as a class to complete the activities. Educators are encouraged to use these worksheets in a manner that both suits student needs and meets the requirements of the VCE Vocational Major curriculum.

The resources model the approach as outlined in the VCE Vocational Major Numeracy Study Design. Further information about the design is available at the Victorian Curriculum and Assessment Authority (VCAA) **website**.

For assessment guidelines and practices, refer to the **VCE Vocational Major Numeracy section** of the website.

Resource elements

This resource consists of:

- information for teachers on how to deliver the supplied activities
- worksheets, templates, and resources for students.

There are three separate activities and ten associated worksheets in this resource.

- Activity 1 - Earnings, taxes, and superannuation
  - Worksheet 1A - Income and earnings: what's what?
  - Worksheet 1B - Taxation and superannuation
  - Worksheet 1C - Awards and allowances
  - Worksheet 1D - Review, reflection and reporting

- Activity 2 - What do Australians earn and spend?
  - Worksheet 2A - Average wages
  - Worksheet 2B - How Australians spend their money
  - Worksheet 2C - Review, reflection, and reporting
- Activity 3 - Expenditure on gambling
  - Worksheet 3A - Comparing available data
  - Worksheet 3B - The spread of gambling
  - Worksheet 3C - Your reflections on gambling

Note: There is a section available at the end of Worksheet 1A that is designed to support students who need to some advice and practice about how to do some expected arithmetical calculations. It is called *A Refresher: some hints and tips on calculations*.

Resource requirements

For the learning activities described in this resource, teachers will need to ensure that students have access to:

- an internet-connected device
- a calculator or a device with calculation software
- software for creating a report or presentation such as PowerPoint, Prezi or Canva.

Assessment

Student competence in *Earnings, expenditure and gambling (Numeracy – Unit 3)* learning outcomes can be assessed by:

- class discussions
- worksheets and related documents
- results of spreadsheets tasks
- research findings
- observations of students' participation in both individual activities and team collaborations
- reports and presentations
- feedback on activities.

Meeting VCE Vocational Major Numeracy requirements

Earnings, expenditure, and gambling (Numeracy – Unit 3) addresses the learning outcomes from VCE Vocational Major Numeracy Unit 3.

The VCE Vocational Major Numeracy units support students to develop numerical and mathematical skills for use in everyday life. This resource requires the student to understand and interpret a range of common numerical data by applying relevant calculation skills. Financial literacy skills are also addressed.

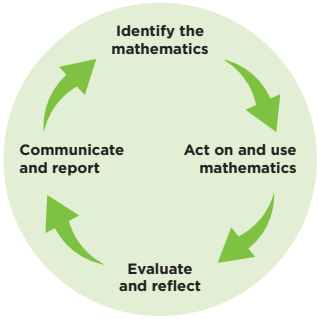
The structure of the VCE Vocational Major Numeracy includes four components.

Outcome 1. Six different numeracy contexts:

- personal numeracy
- civic numeracy
- financial numeracy
- health numeracy
- vocational numeracy
- recreational numeracy.

Outcome 2. The four-stage problem-solving cycle required to solve a real-world mathematical problem:

- identify the maths
- act on and use the maths
- evaluate and reflect
- communicate and report.



Problem-solving cycle

Outcome 3. The development and use of a mathematical toolkit as students undertake numeracy activities and tasks.

Areas of Study. These cover a range of mathematical skills to be applied across the three outcomes. The areas are:

1. number
2. shape
3. quantity and measures
4. relationships
5. dimension and direction
6. data
7. uncertainty
8. systematics.

Differences between Earnings, expenditure, and gambling (Numeracy – Unit 3), and the Unit 1 resource Finances and Gambling

Earnings, expenditure, and gambling (Unit 3) has been developed to address the learning outcomes from VCE Vocational Major Numeracy Unit 3.

Some of the key differences between the Outcomes and Areas of Study as you move from Units 1 and 2 up to Units 3 and 4 include the following aspects:

- Numeracy contexts are very similar in Outcome 1 but move from the local and personal contexts of Units 1 and 2 to state-wide, national, and global levels in Units 3 and 4. This includes taking a more reflective and critical approach.
- The four stages of the problem-solving cycle are more complex in Outcome 2, with students expected to take more responsibility for implementing each stage. For example:
  - the maths undertaken will be embedded in a range of relevant - but possibly unfamiliar or non-routine - text, materials and tasks, as described in stage 1 of the problem-solving cycle.
  - the maths and problem-solving processes used and applied in stage 2 will be more sophisticated, as described in the relevant Areas of Study.
  - greater reflectiveness when reviewing their work, as described in stage 3 of the problem-solving cycle.

- In Outcome 3, the use of tools and applications will be expanded.
- The mathematical content described in the Areas of Study will require higher levels of mathematical knowledge and skills.

These differences are reflected in this resource through:

- less dependence on worksheets containing explicit information and pre-set questions
- greater expectation of students researching and locating information themselves, along with more open-ended questioning and investigations
- students taking more responsibility in a work context, including requesting support and advice
- the use of technology, especially the use of spreadsheet applications, is at a higher level.

Curriculum links

The activities in this resource support the development of all three learning outcomes and one main area of study from Unit 3.

Unit	Outcome 1	Outcome 2	Outcome 3	Main area of study
3	• Personal • Civic • Financial	●	●	Number

Below is a summary of how this resource and the associated activities can meet the study design requirements.

Outcome 1

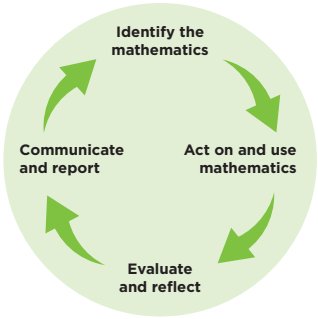
The content of this resource may be used in relation to personal, civic or financial numeracy.

- **Personal numeracy** relates to the mathematical requirements for personal organisational matters involving numbers, data, money, time, and travel.
- **Civic numeracy** relates to participating in civic life by understanding government, political and social information through interpretation of quantitative and statistical information.
- **Financial numeracy** relates to understanding and undertaking financial transactions and making informed judgments and decisions regarding the use and management of money.

Outcome 2

All four stages of the problem-solving cycle can be covered by this resource, which details the following four stages and activities:

- identifying the mathematics to be used
- acting on and using mathematics to solve the problem
- evaluating and reflecting on the results
- communicating and reporting the outcomes.



Problem-solving cycle

Outcome 3

This resource requires students to use various tools and applications from their mathematical toolkit to undertake activities and calculations. These tools or applications could include:

- online access to a range of data sources
- calculators
- spreadsheet software
- report or presentation software.

Areas of Study covered

The focus of the resource is Number. Students are to develop 'number sense' through applying numeracy practices to a range of contexts where whole numbers, fractions, decimals, and percentages are used. They will select the appropriate method and communicate their ideas, as well as perform calculations both manually and with software tools.

Key knowledge

In this resource, students will need to understand:

- whole numbers, fractions, and decimals
- reading numbers expressed in digits or words
- multiplication
- factors and multiples
- rounding whole numbers and decimals up to three decimal places
- positive and negative numbers
- equivalence of decimals, fractions, and percentages
- simple proportions and ratios.

Key skills

Students will need to:

- understand basic numeracy rules
- solve a range of practical calculations, including positive and negative numbers, and rounding whole numbers and decimals up to three places
- solve problems involving fractions, decimals, and percentages, including calculating percentage increase and decrease
- solve simple problems with ratio and proportions.

Not all individual aspects of the key knowledge and key skills under the Number area of study will be covered within this set of activities. Additional information on activities and learning outcomes are detailed in the following section. However, the activities are broad and can be undertaken in different ways. The alignment shows what is possible. It is up to teachers to check the students work against the curriculum.

Outline of activities

The tables below detail each of the activities and worksheets and how they meet the VCE Vocational Major Study design.

Overview of Activity 1. Earnings, taxes, and superannuation

Worksheet 1A - Income and earnings: what's what?

Worksheet 1B - Taxation and superannuation

Worksheet 1C - Awards and allowances

Worksheet 1D - Review, reflection, and reporting

This activity looks at the topic of earning a living and its associated payments, including taxation, superannuation, and government support through allowances.

Worksheet 1A - Income and earnings: what's what? covers Stage 1 of the problem-solving cycle of Outcome 2. It provides background to the issue being investigated and assists students in identifying and preparing for the next steps.

- Start the activity with a class discussion about the purpose of the work unit resource, and what is required.
- Use the worksheet to ensure students understand payments such as taxation and superannuation, as well as key terms in relation to earning an income.
- Inform students of the maths knowledge and skills they will need to use and apply across the whole unit of work — this may present an opportunity to refresh students' knowledge and practise number and calculation skills.
- Use the questions in this worksheet to diagnose, review and practice, a range of relevant mathematics, especially in relation to percentages. A worksheet on the types of maths skills required for this activity is also provided at the end, called *A Refresher: some hints and tips on calculations.*

Worksheet 1B - Taxation and superannuation progresses through Stage 1 to Stage 2 of the problem-solving cycle of Outcome 2. This worksheet focuses on taxation and superannuation and requires students to apply their maths skills to make estimates and calculations.

In **Worksheet 1C - Awards and allowances**, students use their maths skills to consider the issue of allowances relevant and applicable to the student cohort, such as the Youth Allowance.

Stage 3 of the problem-solving cycle, requiring students to review and reflect on their work, is integrated into each worksheet, and explicitly covered in Worksheet 1D - Review, reflection, and reporting.

Worksheet 1D - Review, reflection, and reporting progresses from stage 3 to stage 4 of the problem-solving cycle and requires students to develop their own reports or presentations.

Outcome 1	Outcome 2	Outcome 3	Area of Study: Number
• Personal • Civic • Financial	• identify the maths • act on and use the maths • evaluate and reflect • communicate and report.	• online access to a range of data sources • calculator • spreadsheet software (optional) • Report or presentation software.	• whole numbers, fractions, decimals up to three places, and reading numbers expressed in digits or words • multiplication facts and knowledge of factors and multiples • rounding whole numbers and decimals up to three decimal places • equivalence of decimals, fractions, and percentages • simple proportions and ratios

Overview of Activity 2. What do Australian's earn and spend?

Worksheet 2A - Average wages

Worksheet 2B - How Australians spend their money

Worksheet 2C - Review, reflection, and reporting.

The aim of this activity is to investigate national data about what Australians earn on average and what they spend their money on. It uses three separate worksheets covering the three VCE VM numeracy outcomes.

In **Worksheet 2A - Average wages**, students use their maths skills and knowledge to interpret data collected by the Australian Bureau of Statistics (ABS). The data provides information about average wages across different industries and can be broken down and analysed in different ways, such as by gender. It is also an opportunity to inform students about the ABS and what it does.

Students are required to use spreadsheet software to review and analyse the data. To this end, it is recommended that students should be given training and support about how to do this. Basic instructions are provided in the worksheet for the sorting tasks featured in this exercise.

Worksheet 2B - How Australians spend their money looks at average expenditure by analysing ABS data on what people spend their money on. As one of the activities is an estimating and matching game questions based around comparing spending categories, it is recommended that the materials required for this activity be prepared in advance.

Aspects of stages 3 and 4 of the problem-solving cycle requiring review and reflection are integrated into each worksheet, with particular emphasis in Worksheet 2C - Review, reflection, and reporting.

Outcome 1	Outcome 2	Outcome 3	Area of Study: Number
• Personal • Civic • Financial	• identify the maths • act on and use the maths • evaluate and reflect • communicate and report.	• online access to a range of data sources • calculator • spreadsheet software • report or presentation software.	• whole numbers, fractions, decimals up to three places, and reading numbers expressed in digits or words • multiplication facts and knowledge of factors and multiples • rounding whole numbers and decimals up to three decimal places • positive and negative numbers • equivalence of decimals, fractions, and percentages • simple proportions and ratios.

Overview of Activity 3. Expenditure on gambling

- Worksheet 3A - Comparing available data
- Worksheet 3B - The spread of gambling
- Worksheet 3C - Your reflections on gambling

This activity introduces students to the information that the Victorian Responsible Gambling Foundation (VRGF) and other bodies collect about the financial impact of gambling in Victoria. It consists of three separate worksheets.

Worksheet 3A - Comparing available data requires students to use their maths skills to interpret data about how Victorians gamble, and how much money can be spent, and lost, on different gambling activities. Instructions are provided on how students can download this data, however, it is recommended that educators do so in advance and provide copies to the students. To complete the activity, students are required to work either individually or in groups.

Worksheet 3B - The spread of gambling requires students to download a data spreadsheet from the VRGF website to analyse pokies machine-based gambling information in councils or local government areas (LGAs). It is recommended that students have, or are given, the appropriate training to do this. Basic instructions are provided in the worksheet for the sorting tasks featured in this exercise. Instructions are provided but it is recommended that educators do so in advance and provide copies to the students.

As this information is a more complex set of data to review and analyse, use of a spreadsheet program with sorting functionality is recommended. This may present an opportunity for students to perform the required calculations using the spreadsheet software and functions. If students are not able to sort data using a spreadsheet, it is advised that this process be explained before starting this worksheet. Basic instructions on how to do so are provided in the worksheet. To simplify the exercise, data not relevant to the exercise can be deleted or hidden.

Worksheet 3C - Your reflection on gambling requires students to document their reflections on the data and information in this activity.

Outcome 1	Outcome 2	Outcome 3	Area of Study: Number
• Personal • Civic • Financial	• identify the maths • act on and use the maths • evaluate and reflect • communicate and report.	• online access to a range of data sources • calculator • spreadsheet software • report or presentation software.	• whole numbers, fractions, decimals up to three places, and reading numbers expressed in digits or words • multiplication facts and knowledge of factors and multiples • rounding whole numbers and decimals up to three decimal places • positive and negative numbers • equivalence of decimals, fractions, and percentages • simple proportions and ratios.

Worksheet 1A - Income and earnings: what's what?

Aims and overview

This activity and worksheet introduces you to financial matters related to earning an income. It addresses wages and income, how you can get paid for work or study, and the related payments that depend on your income, such as taxes and superannuation. A refresher on the types of maths skills required for this activity is also provided.

Background information

Learning about finances and balancing your income against your expenses is a critical skill. Understanding the concepts and mathematical processes involved in understanding how you get paid, what you should be paying in taxation, and how much superannuation your employer should be paying, is vital knowledge for all wage earners.

Tasks and questions

The activities in this section can be undertaken individually, in groups, or as a class. Use the Glossary included in this resource to understand words and terms used throughout this activity.

Pre-task activity

In preparation for this unit of work and the activities, students may choose to interview a friend or family member about earning an income. Questions may include:

- how do they earn their income(s)
- how they are paid, and on what basis
- what are their working arrangements and conditions. For example, are they paid in accordance with an Award, or employed casually or permanently.

Task 1. Class brainstorm about earning an income

Teachers and educators will lead a discussion about students' current knowledge of earning an income. Share your thoughts and knowledge with the group. Some questions to consider and discuss may include:

- Do you earn any money?
- Do you get paid an allowance or 'pocket money'? How much?
- Do you get this money for doing set housework or other tasks?

- Do you work? Where? What are your rates of pay?
- If you are working, do you check your pay slip? What does it tell you?
- What are the different ways can you earn an income?
- Who gets paid on a commission basis, and why might a commission approach be used?
- What do you know about government allowances, such as Youth Allowance?
- Are you aware of your work rights? What are they?
- Where could you go for information and advice about your working conditions and pay?

Useful websites for information related to earning an income include:

- **MoneySmart** (moneysmart.com.au)
- **The Fair Work Ombudsman** (fairwork.gov.au)
- **The Fair Work Commission Australia** (fwc.gov.au)
- **Youth Central Victoria** (youthcentral.vic.gov.au)

Task 2. Words and terms

Working in small groups, share and discuss your understanding about the following earning and income-related terms. Use the websites listed previously to assist in your research:

- Award
- Commission
- Earnings
- Gross pay
- Net income
- Payroll
- Salary
- Wage

Consider other words or terms you know that relate to earning a living. Use the Glossary included in this resource to help understand words and terms used throughout this activity.

This discussion will assist in clarifying the primary ways of payment, including:

- wages based on hours worked
- a salary, usually based on an annual amount
- commissions.

What types of maths calculations do you think might be useful in working out earnings and payments?

Task 3. Check and refresh your calculation skills

There are a variety of maths skills, calculations, or applications that you might need to use and apply when dealing with finances and earnings.

Skills you will need to use and apply include:

- understanding and comparing different whole numbers and decimal numbers, as well as positive and negative numbers
- comparing different fractions and percentages
- rounding numbers
- undertaking calculations such as +, -, ×, and ÷

- undertaking calculations with fractions and percentages including percentage increase and decrease
- working out simple proportions and ratios of one value compared to another, including expressing them as a fraction or percentage.

Complete the following tasks and questions to confirm that you can use and apply these maths skills. Try to answer each question using at least two different methods:

- in your head
- using pen and paper
- using a calculator.

NOTE: You will need to use and apply these skills throughout this unit of work. Please make sure you ask your teacher for help and advice about the underpinning maths skills when answering the questions below, especially if you are unsure about how to do them. Advice on how to do these calculations are included in the section at the end of this activity, *A Refresher: some hints and tips on calculations*. Alternatively, ask your teacher or educator for assistance.

But first - a critical skill: rounding off

As results from calculations sometimes don't work out to be an exact amount, rounding off numbers is something that you will regularly undertake.

1. Round off these amounts of money to the nearest dollar:

Amount	Rounded to nearest dollar
$128.86	$
$223.4587	$
$784.76543	$
$2,343.19999	$

2. Round off these amounts of money to the nearest cent:

Amount	Rounded to nearest cent
$56.173	$
$128.862134	$
$221.458711	$
$7.214845	$

Proportion and ratio calculations

3. Work out what proportions each of the following financial transactions or payments are. Give your answers in two forms as:
   - a percentage rounded to the one decimal point
   - a fraction - round your answers to the closest unit fraction (for example, 1/2, 1/3, 1/4, 1/5)

   a) A cash payment of $1,500 towards a new bike worth $4,600.

   b) A share of $25 towards the total cost of a shared 18th birthday present worth $119.55

   c) A late payment penalty of $40.07 on a bill of $320.56

   d) An annual interest credit of $46.95 on a savings of $923.75.

4. Work out what ratios each of the following are and express your answers as simplified whole numbers as shown in the first example.

   a) Two months compared to a year:

   Answer: changing both values to the same unit of months.
   This gives us 2:12, which simplifies to 1:6

   b) An amount of $25 compared to an amount of $75

   c) A weekly salary of $300 compared to one of $200

d) A fortnight compared to five days

e) A fortnightly payment of $200 compared to one of $750.

Percentage calculations

5. Hanh earns $84,000 annually and receives a 7% pay rise.

   a) Calculate the amount of extra money Hanh receives.

   b) Determine the amount that Hanh earns annually after receiving this pay increase.

6. Eli bought a new TV marked at $780 and was given a 15% discount.

   a) Calculate the discount Eli received on the TV.

   b) Determine how much Eli paid for the TV.

7. Khanh's taxable income for the past financial year was $136,000. He must pay 2% of this income as a Medicare levy. Calculate how much Khanh must pay.

8. Serina deposited $8,000 in their bank account, and after 1 year received 6.5% in interest.

   a) Calculate how much interest Serina received after 1 year.

   b) What is Serina's account balance when the interest is added to their deposit?

9. Brian receives a $240 discount on a $699 lawn mower because it is a demonstration model. What is the percentage discount that Brian receives?

10. Calculate the 10% GST applicable on a fry pan that has a pre-GST wholesale price of $59.85.

11. Malik can purchase Rubik's cubes on eBay for $12 each, including postage. Malik then marks them up by 80% to sell at a forthcoming garage sale. How much will Malik sell the Rubik's cube for at the garage sale?

12. At CottonStop shop, Laila buys a pair of jeans marked at $89.95. If the store offers a 15% discount, what does Laila pay for the jeans?

Task 4. Working for a salary or wage – different pay period options

Some workers receive a **wage**, which is paid per hour, day or week. Other workers receive a **salary**, which is a yearly amount usually paid as a regular fixed amount fortnightly or monthly. To calculate pays and compare pay rates between wages and salaries, it is necessary to be able to change the rates from weekly to fortnightly, monthly or yearly. The ability to do this calculation in reverse order is also useful. This was covered in the Unit 1 version of this resource, Finances and gambling.

Note: All key words or terms that are in bold type are explained in the glossary at the end of the unit.

13. Convert the following amounts into the nominated time-period. In each case, state what mathematical operation or operations you had to undertake to get your answer.

    a) An annual salary of $78,500 into an equivalent weekly payment

    b) A fortnightly payment of $125 into an equivalent annual amount

    c) An annual pay of $108,600 into an equivalent fortnightly payment

d) A monthly pay of $245.45 into an equivalent annual amount

e) A weekly pay of $225.00 into an equivalent annual payment.

14. George is a casual bartender who is paid $15.50 an hour for normal working hours. What are his total earnings if he worked for 25 hours?

15. Louise earns a salary of $58,800 a year working in the kitchen with a chef. What is:
    - her weekly income
    - her monthly income?

Task 5. Commissions

Commissions are most common for employees working in car sales and real estate.

A commission is the amount of money paid to an employee for selling something. It is usually based on a percentage on sales income, but there are a range of different approaches and methods used. The most common ways are:

- solely on a commission basis – that is, a proportion of sales made
- a combination of a fixed base amount (sometimes referred to as a retainer), plus commission on sales.

Answer each of the following questions about commissions. In each case, state what mathematical operations you had to undertake to get your answer.

16. Javier is a real estate agent, and last week he sold a house for $350,000 at 3% commission. What did he earn in commission?

17. Taye sells cars. She earns an annual retainer of $50,000 plus a commission of 25% on the profit made on car sales. What did she earn last week when her car sales realised a profit of $ 4,248.00?

18. Natalia sells hair care products on a fortnightly retainer of $350 plus 10% of sales. How much did she earn after selling $1,420 worth of products?

NOTE: You will need to use and apply these skills throughout this unit of work. Please make sure you ask your teacher for help and advice about the underpinning maths skills when answering the questions below, especially if you are unsure about how to do them. Advice on how to do these calculations are included in the section at the end of this activity, *A Refresher: some hints and tips on calculations*. Alternatively, ask your teacher or educator for assistance.

Refer to the Glossary to assist you with understanding specific words or terms.

A refresher: some hints and tips on calculations

Introduction

This section summarises some of the key issues you need to consider when undertaking calculations.

You will need to use and apply these skills when dealing with finances and earnings.

Doing calculations

When calculating, you should do three things:

- Estimate to get a feel for what you think the answer should approximately be
- Calculate the exact answer
- Check your answer against your estimate and your common sense judgement.

How do you work out the exact answer?

You can:

- use a pen and paper
- use a calculator
- calculate them in your head
- use all these methods.

Rounding off

The ability to round off your answers is very important, especially when using a calculator to do money or measurement calculations.

Example

When working out a dollar amount, a calculator might display an answer like this:

26.4375

You may be required to provide an answer to the nearest number of whole dollars. To round off this figure, you must ascertain whether you are closer to the current whole number or next whole number.

If you are past halfway you are closer, so you round up to that next number.

If are you less than halfway and not closer to the next number, you round down to that number.

In this example, 26.5 would be halfway between the two numbers, 26 and 27. Therefore, 26.4375 is not past halfway between the two numbers. Therefore, we round 26.4375 down to 26 whole dollars.

A refresher: some hints and tips on calculations

Rounding off rules

We can summarise rounding off as 'rules'.

Rule 1: Round down

If the next digit (the number to the right) after the rounding off number is a 0, 1, 2, 3 or 4, it means you leave the number as it was, or round down.

Rule 2: Round up

If the next digit after the rounding off number is a 5, 6, 7, 8 or 9, it means you are past halfway and closer to the next number up. Therefore, you round up to the next number.

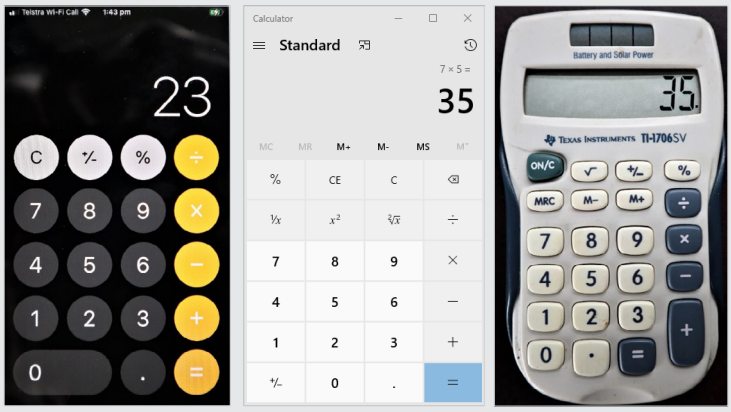
Order of operations

Another important factor to consider when making calculations is the order of operations, did you know that calculators can give you different answers to the same calculation?

An example

How much is 3 + 4 x 5?

Depends on the calculator and how it works? Below are three different calculators giving the answer to this question. Two say it is 35 and the other says it is 23.



Do you remember BODMAS – **the order of operations**?

Order of operations		
B	Brackets (.....)	(3 + 4) x 5 = 35
O	Order ^{2} or ^{3} or $\sqrt{}$	5 + 2^3 = 5 + 8 = 13
D	Division ÷ or /	15 + 6 ÷ 2 = 15 + 3 = 18
M	Multiplication × or *	15 + 6 × 2 = 15 + 12 = 27
A	Addition +	15 + 6 × 2 = 15 + 12 = 27
S	Subtraction –	15 – 6 × 2 = 15 – 12 = 3

BODMAS says that the correct answer to 3 + 4 x 5 is 23, because you need to do the multiplication **before** you do the addition.

Two of the calculators above did not know or follow the BODMAS rule!

Does your calculator – or calculators – know this rule? CHECK yours now. On your mobile device, on your laptop or computer and on any handheld calculator you might use?

Equivalent fractions, decimals and percentages

When undertaking calculations, we often change between fractions, decimals and percentages. This helps us to quickly calculate, especially in our heads or when using pen and paper. These are called **equivalent** fractions, decimals and percentages.

Percentages or percents are used frequently, especially when comparing things or wanting to see how much things change. Percent means 'per hundred' or 'out of a hundred' So, 10% means 10 out of 100, 25% means 25 out of every 100, 50% means 50 out of 100, and so on.

Here are some of the more common equivalent fractions, decimals and percentages.

Fraction	As a decimal	As a percentage
1/2	0.5	50%
1/3	0.3333...	33.33...%
1/4	0.25	25%
3/4	0.75	75%
1/5	0.2	20%
1/8	0.125	12.5%
1/10	0.1	10%

For fractions that are multiples of these unit fractions, such as 3/4, you multiply the values for 1/4 by the numerator (3) to work out the equivalent decimals and percentages, giving you 0.75 and 75%. Or for 7/10, you multiply by the numerator (7) to work out the equivalent decimals and percentages, which gives you 0.7 and 70%.

As an example, if you need to work out 20% of an amount, you can use equivalent fractions to work this out quickly. Here are two different methods to do this:

Calculating 20% of $48.00

Method 1

- 20% is the same as 1/5 as a fraction
- Therefore 20% of $48.00 is the same as dividing it by 5.
- 48.00 ÷ 5 = 9.60
- Therefore, 20% of $48.00 is $9.60

Method 2

- 20% is double 10%, so work out 10% first, then double the answer.
- 10% of 48.00 is 4.80 (moving the decimal point)
- 20% of $48.00 will be 2 x 4.80 = 9.60
- Therefore, 20% of $48.00 is $9.60

Percentage calculations on your calculator

Calculators have a '%' button. This is very useful, especially when working out difficult percentage calculations.

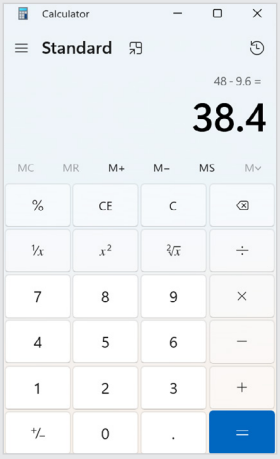
You can also use this button in conjunction with the + or – button to add or subtract a percentage.

How your calculator does percentages

Let us look at the previous example, which requires you to work out the discount price of 20% off a price of $48.00. How much would the reduced price be?

This means that we need to subtract the 20% from the $48.00. The final discounted price would be $48.00 – $9.60 = $38.40.

Let's see how a calculator works this out.



On a computer calculator like this one, you need to hit the = key to see the final answer. On some calculators, you do not need to hit the = key.

Use your calculator to enter this problem: 48.00–9.60%=

- Did you get the answer of 38.4?
- Did you need to hit the = button?

Other percentage calculations

Here are some more examples of different percentage calculations using the '%' key.

Percentage calculation	Buttons to hit
Find out a percentage based on a fraction: For example, 12.5 as a percentage of 35.95	Use ÷ and % keys (and the = key if required) 1 2 . 5 ÷ 3 5 . 9 5 % = 34.77051460361613 Therefore 12.5 as a percentage of 35.95 is 34.8% when rounded off to one decimal place.

A refresher: some hints and tips on calculations

Percentage calculation	Buttons to hit
Find out a percentage of an amount: For example, 12.5% of $35.95 **NOTE:** Enter the original amount first. This enables you to keep calculating 12.5% of other values too. Use x and % keys (and the = key if required)	Use x and % keys (and the = key if required) 3 5 . 9 5 × 1 2 . 5 % = 4.49375 Therefore 12.5% of $35.95 is $4.49 when rounded off to two decimal places or cents.
Find out a percentage **increase**: For example, 12.5% increase on $35.95 This adds on the percentage to the price.	Use + and % keys (and the = key if required) 3 5 . 9 5 + 1 2 . 5 % = 40.44375 Therefore a 12.5% increase on $35.95 is $40.44 when rounded off to two decimal places or cents.
Find out a percentage decrease: For example, 12.5% decrease on $35.95 This takes off the percentage from the price.	Use – and % keys (and the = key if required) 3 5 . 9 5 - 1 2 . 5 % = 31.45625 Therefore a 12.5% decrease on $35.95 is $31.46 when rounded off to two decimal places or cents.

Example

Find out a percentage based on a fraction: For example, 12.5 as a percentage of 35.95 Use ÷ keys (and the = key if required)	1 2 . 5 ÷ 3 5 . 9 5 × 1 0 0 = 34.77051460361613 Therefore 12.5 as a percentage of 35.95 is 34.8% when rounded off to one decimal place.

Weekly, fortnightly, monthly, and annual calculations

When calculating pays, earnings and budgets, you often need to work out income or expenditure for different time periods: weekly, fortnightly, monthly, or on an annual basis.

Fortnightly or weekly values compared to each other

- For a fortnightly value, double the weekly amount.
- For a weekly value, halve the fortnightly amount.

Annual or yearly values compared to weekly or fortnightly values

- For annual or yearly values, multiply a weekly value by 52.
- For annual or yearly values, multiply a fortnightly value by 26.
- For weekly values, divide an annual or yearly value by 52.
- For fortnightly values, divide an annual or yearly value by 26.

Monthly values compared to yearly or annual values

- For a monthly value, divide a yearly value by 12.
- For a yearly value, multiply a monthly value by 12.

It is often common in finance calculations to round calculations to the nearest whole dollar or whole cent.

Worksheet 1B – Taxation and superannuation

Aims and overview

This section explains how tax and superannuation is calculated and paid as part of earning wages. Personal tax is collected by the Australian Taxation Office (ATO) in order for the government to provide goods and services for the community, while superannuation is a way of saving for your future retirement. Both payments are based on your earnings.

Tasks and questions

The activities in this section can be undertaken individually, in groups, or as a class.

Task 1. Discussion

Teachers and educators will lead a discussion about students' current knowledge of taxation and superannuation. Share your thoughts and knowledge. Some questions to consider and discuss may include:

- what is taxation and why do we have it?
- what different taxes do you know of?
- what is superannuation and why do we have it?

Workers usually do not take home the full amount of pay they have earned, which is referred to as 'gross pay'. This is because employers deduct certain amounts, such as tax, which is forwarded to the Australian Tax Office (ATO). Other deductions include compulsory employer superannuation contributions, any extra optional superannuation payments, union membership fees and health fund contributions. Workers receive their net pay, also known as 'take-home' pay, which is their gross pay minus any deductions and tax.

Questions:

- Why do we pay personal tax?
- What types of taxes are there?
- What sort of things are our taxes spent on?

Task 2. Words and terms we use about taxation and superannuation

Working in small groups, share and discuss your understanding about the following terms. Consult the glossary at the end of this resource to assist you.

- Australian Taxation Office (ATO)
- Goods and Services Tax (GST)
- Gross pay
- Net income
- Superannuation
- Tax rates
- Taxable income
- Taxation

Task 3. Calculating how much tax you will pay out of your wages

In Australia, income is taxed on a sliding scale. For personal tax purposes, these rates apply to individuals who are Australian residents.

Personal tax is paid on your taxable income. If you have a part-time job and earn a gross wage of more than $350 per week (in the 2022–23 financial year), your employer will have deducted personal tax from your wages and paid it to the ATO.

If you earn less than $350 per week, you are below what is known as the tax-free threshold, and tax is not required to be paid.

PAYG (Pay As You Go)

When your employer deducts (or withholds) an amount of tax from your wages every pay day, you are part of the PAYG (Pay As You Go) system. This means you are paying tax while you earn your income. At the end of the financial year, your ATO Income Statement details how much you were paid in the year, and how much tax your employer withheld from your income. This means that when you lodge your tax return at the end of each financial year, you shouldn't have to pay any more tax, unless you have another income additional to you wages.

The Australian Government sets tax rates, which are shown in the following table. The tax rates for the current year can be found on the ATO **website**. This does not include the Medicare levy of 2% which is payable by some taxpayers.

Tax rates for 2022-23

Taxable income	Tax on this income
$0–$18,200	Nil
$18,201–$45,000	19c for each $1 over $18,200
$45,001–$120,000	$5,092 plus 32.5c for each $1 over $45,000
$120,001–$180,000	$29,467 plus 37c for each $1 over $120,000
$180,001 and over	$51,667 plus 45c for each $1 over $180,000

Example

If you earned $60,000 during the 2022-23 tax year, your tax would be calculated like this:

Taxable income range	Taxable income amount	Tax rate	Tax payable
$0–$18,200	$18,200	x nil	= $0
$18,201–$45,000	$26,800 (income between $18,200 and $45,000)	x 19c per dollar = .19 x $26,800	= $5,092
$45,001–$120,000	$15,000 (the amount of income above $45,000: ($60,000 - $45,000)	x 32.5c per dollar = .325 x $15,000	= $4,875
$120,001–$180,000	Nil – no income in this ranges		$0
	TOTAL income: $60,000	**TOTAL tax payable:**	**$9,967**

1. The following amounts represent yearly taxable incomes. Based on these amounts and the tax table above, how much is the total annual tax payable? Round your answers to the nearest dollar.

   a) $17,500

   b) $74,500

   c) $39,600

   d) $89,560

   e) $125,790

2. The following amounts represent fortnightly taxable incomes. Based on these amounts and the tax table above, how much is the total annual tax payable? Round your answers to the nearest dollar.

   a) $500

   b) $2,500

   c) $4,560

   d) $5,790

3. For each annual salary from question 1 above, work out the proportion of the tax paid to the total annual income. Express your answers as a percentage. Round your answers to the nearest whole percentage.

   NOTE: These are the salaries used to calculate the tax payable in question 1. Therefore, you do not need to calculate the tax payable again, but ensure your answers are correct before calculating the proportion.

   a) A yearly taxable income of $17,500

   b) A yearly taxable income of $39,600

   c) A yearly taxable income of $74,500

d) A yearly taxable income of $89,560

e) A yearly taxable income of $125,790

f) For the above taxable incomes and tax payable, why are the percentage proportions different, and how do they vary compared to the annual salary? Explain why this happens.

Checking your tax deducted from your pay online

If you want to know how much your employer (or other payer) is required to withhold from payments to you, you can use either the **ATO** (ato.gov.au) or **MoneySmart** (moneysmart.gov.au/work-and-tax/income-tax-calculator) tax calculators.

Task 3. Superannuation

In early 2023, it was reported that workers across Australia lost billions of dollars through underpaid superannuation. Research estimated that over a period of seven years, Victorian tradespeople, labourers, and machine operators missed out on almost $3 billion in super that they were owed.

Superannuation is money put aside by your employer over your working life for when you retire from work. Super is important, because the more you accrue, the more money you will have for your retirement. You can only withdraw your super money in certain circumstances – for example, when you retire or turn 65 years old.

When you work, your employer should pay an amount into a superannuation fund on your behalf, exclusive from your wage. There are rules, known as the 'super guarantee', about how much your employer contributes to superannuation on your behalf. However, it is recommended that you monitor your superannuation to ensure that your employer is paying the correct amount.

Age limits

If you are under 18 years of age, you must be working more than 30 hours per week to be entitled to super contributions. This applies whether you work casual, part-time or full-time hours, and if you are a temporary resident. Prior to 1 July 2022, you needed to be paid $450 or more (before tax) in a month, in addition to meeting other requirements, to be eligible.

As well as the contributions your employer pays, you can add to your super by making regular contributions to your superannuation above the compulsory amount. This is called 'salary sacrifice'. Money that you salary sacrifice into your superannuation is taken from your before-tax income. There are limits called 'caps' on the amount you can contribute to your super each financial year without having to pay additional tax.

Superannuation guarantee percentage

Up to the 2020–21 financial year, superannuation was 9.5% of your wages. It is legislated to rise by 0.5% each year until it reaches 12% in 2025–26, where it will remain steady unless the government legislates that the amount be changed. Here is a table showing the superannuation guarantee rates:

Financial year	Superannuation Guarantee Percentage
1 July 2020 – 30 June 2021	9.5%
1 July 2021 – 30 June 2022	10%
1 July 2022 – 30 June 2023	10.5%
1 July 2023 – 30 June 2024	11%
1 July 2024 – 30 June 2025	11.5%
1 July 2025 – 30 June 2026	12%

Superannuation companies use their member's super funds for a variety of investments, including stock market shares. Your super balance grows from both your employer's contributions and the returns (or profits) made on those investments.

Answer the following sets of questions about calculating superannuation payments. Check the previous table for the current financial year and the Superannuation Guarantee Percentage to use and apply.

4. Omar has been working part-time and earns $1,327.00 per fortnight gross. Calculate the amount per fortnight that Omar's employer should be contributing into his super fund.

5. Jorge works as a plumber and earns $2,326.92 per week. Calculate the super amount Jorge's employer should contribute each week.

6. Zhenna works full-time in a bookstore and earns $3,543.33 per month. Calculate the amount Zhenna's employer must contribute into super each month.

7. Carla is a dance teacher earning an annual salary of $69,375. Calculate the amount of money Carla's employer should have contributed into her super last financial year.

8. Manuel is 15 years old. Calculate the amount of superannuation their employer must contribute in each of the following circumstances. Consult the 'age limits' information on the previous page to assist you with this question.

   a) Manuel earns a total of $437 from 32 hours of work in November.

b) Manuel is on school holidays and works for 27 hours per week, earning $1,782 in the month of December.

Checking your superannuation payments online

If you want to know how much superannuation your employer is required to make for you, or to check some of the answers you have supplied, you can use the **MoneySmart calculator** (moneysmart.gov.au/work-and-tax/income-tax-calculator). You can enter your income on a weekly, fortnightly, monthly or annual basis.

- Are you surprised by the amount of taxation and superannuation that gets paid? Reflect on and review what you have learnt about taxation and superannuation.

Task 4. Superannuation return fluctuations

When your money is invested in superannuation funds, the fund value can fluctuate depending on how the financial markets are performing and how your fund manages your money and investments. You need to be aware of the fees you will pay against other factors such as risk, investment returns, services and insurance.

The following table shows the annual calendar year performance of the median superannuation growth fund since 2000.

Calendar year	Return (%)
2022	-4.60%
2021	13.40%
2020	3.70%
2019	14.70%
2018	0.80%
2017	10.80%
2016	7.50%
2015	5.70%
2014	8.50%
2013	17.20%
2012	12.80%
2011	-1.90%
2010	4.70%
2009	15.10%
2008	-21.50%
2007	8%
2006	13.80%
2005	14.30%
2004	15.50%
2003	9.20%
2002	-4.80%
2001	4%
2000	7.30%

Answer the following sets of questions about the median returns on superannuation funds over this period.

9. What do the percentages for 2022, 2011, 2008 and 2002 tell you?

10. Which year had the highest returns?

Which year had the lowest returns?

11. Nerea had $345,675 sitting in her super account at the start of 2022. Based on the return shown in the table, and assuming no other funds were paid into the account and no other fees were deducted:
    - what would the value of her fund be at the end of that year?
    - What would have been the annual return if she had had the same amount sitting in her fund at the start of 2021?
    - How much is the difference between those two returns?

Worksheet 1C – Awards and allowances

Aims and overview

This worksheet requires you to apply your maths skills in understanding and interpreting workplace awards, allowances and related pay rates.

Background information

When considering when and where you work, how much you work or what career you might follow, it is important to know about working conditions and pay rates. It is also important to know about study or training allowances that may be available to you.

The following websites provide useful information related to workplace awards, allowances and related pay rates:

- **The Fair Work Ombudsman** (fairwork.gov.au)
- **The Fair Work Commission Australia** (fwc.gov.au)
- **Youth Central Victoria** (youthcentral.vic.gov.au)

Tasks and questions

Complete the following individual, small group and class activities.

Task 1. Information about awards and employment conditions

In pairs or small groups, consider the following information about awards and employment conditions and share your thoughts.

Australian employment standards

Australia has a set of 11 National Employment Standards (NES) that apply to employees. These outline the minimum standards and entitlements for employees across Australia.

The NESs are legislated under The *Fair Work Act* and applies Australia-wide. This Act includes a set of industry or workplace awards that apply to different industries across Australia. An 'Award', in this context, is a legal document that is negotiated with the Fair Work Commission.

An award sets out the minimum pay and conditions for a particular industry or occupation. While some employees are not covered by an award or agreement, all employees in Australia are entitled to a minimum wage and working conditions set out by the NES legislation.

For most employees, you can find their minimum pay rates and employment conditions in the relevant award or agreement. Award wages refer to the minimum pay entitlements that those covered by a certain award are entitled to. These awards provide for more specific minimum entitlements for specified occupations, including:

- pay rates
- hours of work
- penalty rates and conditions
- break times
- leave entitlements.

When you first start working in an industry, you may begin at the bottom of the pay scale. The pay scale is a series of steps, or increments, in which the pay increases.

Casual employment loading

For many young people in Australia, their first job will be paid on a casual basis. If you are a casual employee, you do not get paid for the days you take sick leave, or time off for holidays. Instead, casual employees are paid an extra amount per hour worked called a 'loading' or 'leave loading' which is usually 25% extra on top of your ordinary hourly rate.

A permanent employee doing the same job may have a lower hourly rate of pay than casual employees, but will receive benefits such as paid sick leave and holiday leave.

The extra amount that casuals receive is set out in the current industrial awards, which can be found at Fair Work Australia.

Finding an Award

Awards legal documents that outline the minimum pay rates and conditions of employment. They are also referred to as 'industry awards'. If you want to investigate what conditions of employment and pay rates you are entitled to as part of an Award, check out the following websites:

- **The Fair Work Ombudsman** (fairwork.gov.au/pay-and-wages/minimum-wages/pay-guides#a-z-list-of-awards)
- **The Fair Work Commission Australia** (fwc.gov.au/agreements-awards/awards/find-award)

Below are three common awards that cover young people and their casual or junior pay arrangements. Copies of these awards can be downloaded from the Fair Work Ombudsman and Fair Work Commission Australia websites:

- Fast Food Industry Award
- General Retail Industry Award
- Hospitality Industry (General) Award

To locate actual pay rates, you may need to search for terms such as 'Junior' or 'Casual'. This will provide you with tables that show hourly pay rates for different ages, days, times and levels of work.

1. In pairs or groups, discuss and answer the following questions:
   a) Were you aware of industry awards and what they cover?
   b) Did you try to download one of the awards? If so, which one?
   c) Were you able to find some tables showing some different pay rates?
   d) What have you learnt about industry awards and pay rates?

Task 2. Calculations related to an award pay rate

Below is a table extracted from the award pay rates for casual junior employees working at Level 1 in the hospitality industry (as of March 2023). In answering any questions, round off your answers to the nearest cent.

Note:

- Ordinary hours are Monday to Friday – 7.00 am to 7.00 pm
- Outside of those ordinary hours, hours are paid at the rates below plus $2.48 per hour.

Level 1 award rates	Ordinary hours	Saturday	Sunday	Public holiday
16 years of age and under	10.99	13.74	16.49	24.73
17 years of age	13.18	16.48	19.77	29.66
18 years of age	15.38	19.23	23.07	34.61

2. Work out the pay for each of the following people if they are paid the award rates.

   a) Malik is 16 years old and works a shift from 2 pm to 5 pm on Saturday.

   b) Basia is 17 years old and works four ordinary hours on each of two weekdays.

c) Bella is 17 years old and works two shifts from 8 am to 1 pm on Saturday and Sunday.

d) Kala is 16 years old and works a shift from 5 pm to 10 pm on Monday.

e) Laila is 18 years old and works two shifts from 1:30 pm to 6:30 pm on Sunday and Monday. Monday is a public holiday.

3. Work out the following percentage comparisons of the salaries.

a) What is the ordinary hours rate of pay for a person aged 16, compared with a person aged 17? What is this as a percentage increase?

b) What is the percentage decrease in hourly income you would have if you were 18 years old and dropped from working on a Sunday to a Saturday?

c) What is the percentage increase you get as a 17-year-old worker for working on a public holiday, compared to the ordinary hours rate of pay?

4. If the above award rates were all increased by 4.1%, use a spreadsheet to create a new set of rates of pay for each of the above pay rates. Round off your answers to the nearest cent.

Casual employment loading

If you are a casual employee, your employer is required to pay you extra for each hour worked. This is called a 'loading' and is intended compensate you for not receiving some of the benefits of permanent employment, such as holidays and sick leave. It is usually 25% extra on top of your ordinary hourly rate.

Answer the following questions related to casual loading:

5. Work out the pay rates for a casual worker if the ordinary pay rates are the following. Round off your answers to the nearest cent.

a) $11.59

b) $14.55

c) $19.57

d) $21.21

Task 3. Youth and Study Allowances

In Australia, students are entitled to special government allowances, dependent on age. These are designed to help students focus on their studies and goals, rather than having to also find work. If you are studying, training or undertaking an apprenticeship, you may be eligible for one of these payments:

- **Youth Allowance** is financial assistance for full-time students or full-time apprentices aged 24 or younger. Anyone who reaches the minimum school leaving age in their state or territory may apply.
- **Austudy** is financial assistance for people 25 years or older who are studying or completing an Australian apprenticeship.
- **ABSTUDY** is financial assistance for Aboriginal and Torres Strait Islander students or apprentices.

More information about study allowances can be found at **Services Australia** (servicesaustralia.gov.au/education).

Most student payments are administered by Services Australia. The amount distributed to each young person depends on various factors, such as whether they live away from home. Each recipient receives a cost-of-living payment, as well as support for other expenses such as rent, utilities and transportation.

Allowances are automatically paid into a nominated bank account on a fortnightly basis. The rate of payment depends on factors such as:

- if you are employed
- how much you earn through employment
- whether you live away from home
- whether you have children.

Youth Allowance rates

Services Australia use 'income and assets' tests to work out how much Youth Allowance you are entitled to. The following table details the rates current as of April 2023.

Your circumstances	Your maximum fortnightly payment
Single, no children, younger than 18, and live at your parent's home	$332.90
Single, no children, younger than 18, living away from your parent's home to study, train or look for work	$562.80
Single, no children, 18 or older and live at your parent's home	$389.40
Single, no children, 18 or older and need to live away from your parent's home	$562.80
Single, with children	$720.40
A couple, with no children	$562.80
A couple, with children	$612.60

Austudy rates

Your circumstances	Your maximum fortnightly payment
Single, no children	$562.80
Single, with children	$720.40
A couple, no children	$562.80
A couple, with children	$612.60

Questions regarding allowances

6. Look at the different categories of payments for Youth Allowance. How much are each of these payments as an annual income? You can use a spreadsheet to work out these amounts.

7. Compare the different categories of payments for Youth Allowance.

   a) What is the difference in fortnightly payments for a 16-year-old and a 20-year-old living at home?

   b) What percentage extra do you receive if you are 17 years old and living away from home, compared to living at home?

   c) What percentage extra do you receive if you are 21 years old and living away from home, compared to living at home?

8. Compare these allowances with earning a wage through employment. About how many hours work per fortnight would be equivalent to the allowance for a 17-year-old living at home, compared to working at Level 1 in the hospitality industry award above which is at $13.18 per ordinary hour?

9. What are your thoughts and reactions about these allowances? Were you aware of their availability? Are you surprised about the amounts you can get paid?

Worksheet 1D – Review, reflection, and reporting

Aims and overview

This worksheet requires you to review and reflect on what you have learnt about earnings, taxes and superannuation, and create a brief summary report.

Tasks and questions

1. Reflect on the previous sets of questions where you were required to apply a range of different calculations. Indicate if you had to use the following skills or not.

Maths skill	Did you use this skill?
Understanding and comparing different whole numbers	YES ☐ NO ☐
Understanding and comparing different decimal numbers	YES ☐ NO ☐
Understanding positive and negative numbers	YES ☐ NO ☐
Comparing different fractions and percentage	YES ☐ NO ☐
Rounding numbers	YES ☐ NO ☐
Undertaking calculations such as +, -, ×, and ÷	YES ☐ NO ☐
Undertaking calculations with fractions and percentages including percentage increase and decrease	YES ☐ NO ☐
Working out simple proportions and ratios of one value compared to another, including to express them as a fraction or percentage	YES ☐ NO ☐

2. Indicate how often you had to use and apply a range of different methods for calculating or using different technologies.

Method used for calculating	Did you use this skill?		
In your head	A little ☐	Quite a bit ☐	A lot ☐
Using pen-and-paper	A little ☐	Quite a bit ☐	A lot ☐
Using a calculator/technology	A little ☐	Quite a bit ☐	A lot ☐
Using a spreadsheet	A little ☐	Quite a bit ☐	A lot ☐

3. What were some of the key things you learned when undertaking this activity? Were any concepts new to you?

4. Did the activity and questions help you to better understand how you use mathematics, especially calculations with percentages, in our lives and at work? In what areas and ways?

Your report

Write and present a summary of what you have learnt from this activity and the previous worksheets about earnings, taxes and superannuation. The summary may be in the form of a one-page report, presentation or poster.

You should include:

- the key information and knowledge about earnings, taxes and superannuation you have learned
- a summary of what sorts of mathematics and what calculations you needed to undertake
- what technology and tools you used
- any surprising and interesting new information you discovered when completing the activity.

ACTIVITY 2. WHAT DO AUSTRALIANS EARN AND SPEND?

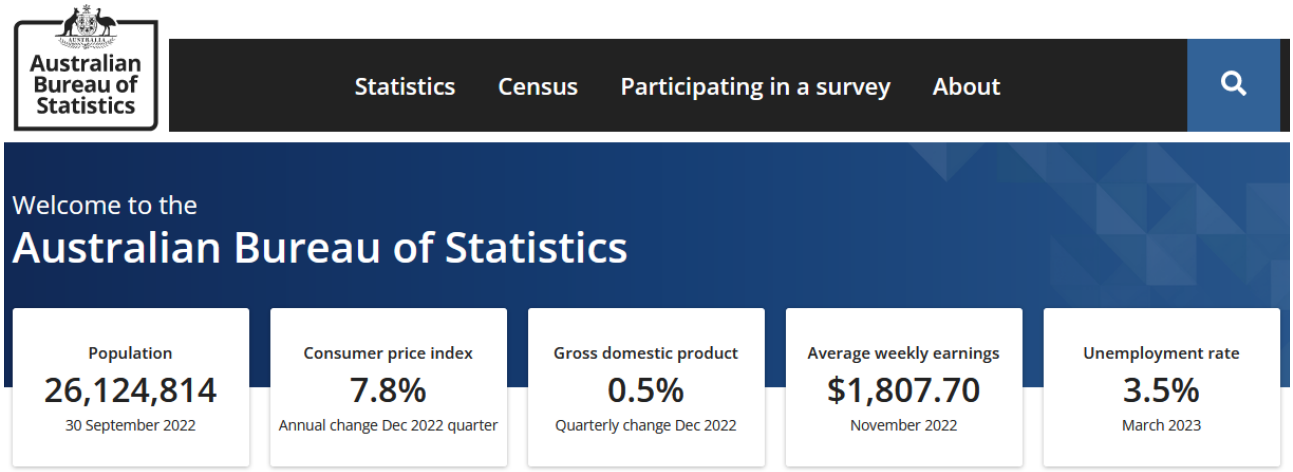
Worksheet 2A – Average wages

Aims and overview

This activity looks at some national data about what Australians earn and what they spend their money on.

Background information

This first worksheet requires to you to analyse data collected by the **Australian Bureau of Statistics (ABS)**, and see what patterns and issues arise from your analysis. The data includes information about average wages across different industries and can be broken down and analysed in a variety of ways.



Tasks and questions

Complete the following individual, small group and class activities.

Task 1. Discussion on the role of ABS

The Australian Bureau of Statistics (ABS) is Australia's national statistical agency. It is considered the official source of independent, reliable data and information about Australia.

Working in small groups, discuss what you know and can find out about the ABS from their website and other information sources. Then answer the following questions:

- What do you know about ABS and what they do?
- What are the key sets of data they collect and report on?
- What do you know about the Census that they undertake?
- Who do you think uses ABS and their data?
- Do you think ABS is a reputable and reliable source of data and information? Why?
- Did you find out anything particularly interesting during your research?

Task 2. Who earns the most?

Every May and November, the ABS collects and reports data on average weekly earnings. This data is based on the average weekly wage before tax (gross income) of normal wage and salary earners, and does not include overtime payments, director's fees, and other forms of income.

This data is organised according to the following industry categories:

- Accommodation and food services
- Administrative and support services
- Arts and recreation services
- Construction
- Education and training
- Electricity, gas, water and waste services
- Financial and insurance services
- Health care and social assistance
- Information media and telecommunications
- Manufacturing
- Mining
- Other services
- Professional, scientific and technical services
- Public administration and safety
- Rental, hiring and real estate services
- Retail trade
- Transport, postal and warehousing
- Wholesale trade.

Discuss the following questions:

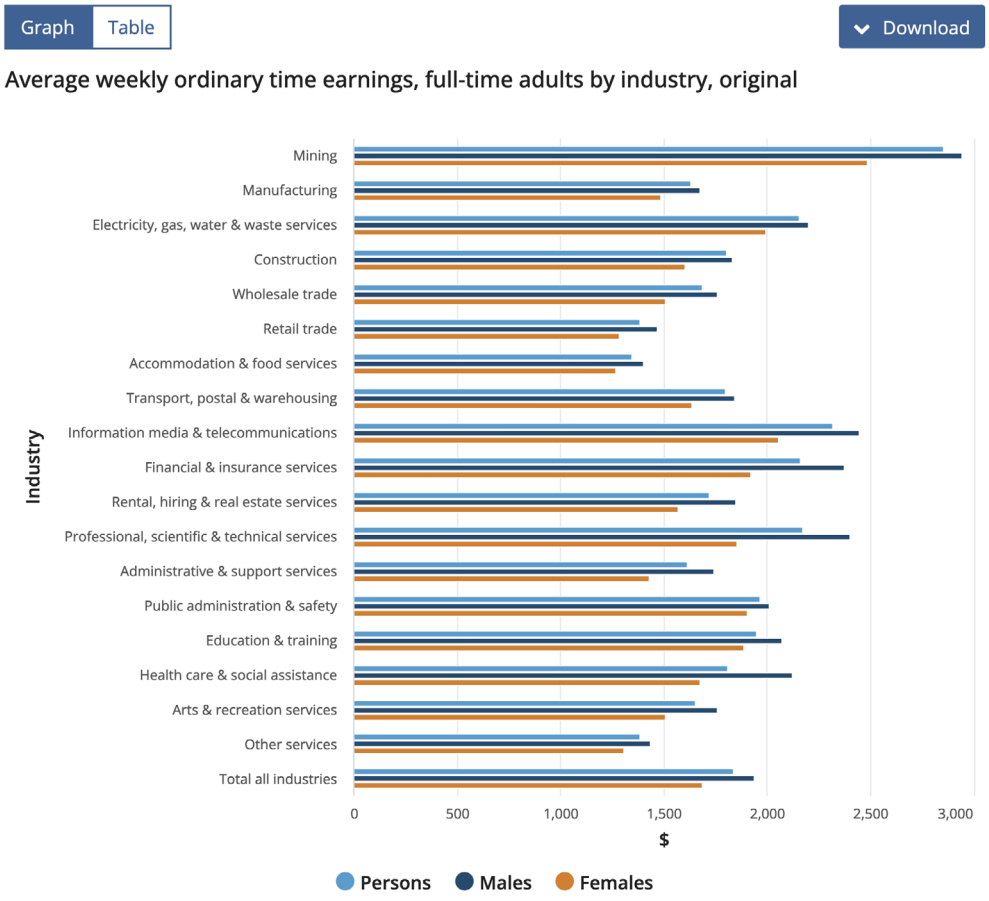
- In which industry do you think a worker might earn the most?
- Which group might earn the least?

- How much do you think they might earn? Note: the data is reported as weekly earnings, so make an estimate about how much you think they might earn per week. What are these estimates as annual salaries?
- What do you think the differences are between males and females in their average weekly earnings?
- Which industries might have the biggest and smallest gender differences?

Task 3. Average weekly earnings in Australia

The chart and the table below show the average weekly wage before tax (gross income) by industries as of November 2022.

While you can use the following data in this exercise, you can also use the latest data available through the **ABS website** (abs.gov.au/statistics/labour/earnings-and-working-conditions/average-weekly-earnings-australia/latest-release).



Source: Australian Bureau of Statistics, Average Weekly Earnings, Australia November 2022

By selecting the Table button, you will see this table for the same data:

Graph | Table

Download

Average weekly ordinary time earnings, full-time adults by industry, original

Industry	Persons ($)	Males ($)	Females ($)
Mining	2,854.00	2,941.80	2,484.50
Manufacturing	1,631.10	1,673.40	1,486.20
Electricity, gas, water & waste services	2,155.40	2,199.50	1,992.80
Construction	1,802.80	1,833.40	1,601.10
Wholesale trade	1,685.00	1,762.40	1,508.90
Retail trade	1,383.70	1,468.30	1,283.10
Accommodation & food services	1,346.80	1,402.70	1,267.40
Transport, postal & warehousing	1,799.70	1,844.70	1,634.20
Information media & telecommunications	2,317.90	2,445.20	2,055.50
Financial & insurance services	2,159.70	2,376.80	1,919.40
Rental, hiring & real estate services	1,719.70	1,851.40	1,572.10
Professional, scientific & technical services	2,170.90	2,404.20	1,857.40
Administrative & support services	1,616.40	1,741.10	1,428.30
Public administration & safety	1,964.50	2,011.70	1,906.50
Education & training	1,949.70	2,072.20	1,886.20
Health care & social assistance	1,807.70	2,124.20	1,678.50
Arts & recreation services	1,653.30	1,757.20	1,510.30
Other services	1,382.70	1,437.20	1,309.50
Total all industries	1,838.10	1,938.30	1,686.00

Source: Australian Bureau of Statistics, Average Weekly Earnings, Australia November 2022

Click on the Download button and select the option 'Download table as XLSX'. This downloads a copy of the data that you can open in software such as Excel or Google Sheets.

NOTE: As you will be using spreadsheets throughout this activity, ask your teacher for assistance if you have any queries about this format and the programs it uses.

Using the 'sort' function in spreadsheets

A useful tool in a spreadsheet program such as Microsoft Excel is the **sort** function. Here are some basic instructions on how to use this function.

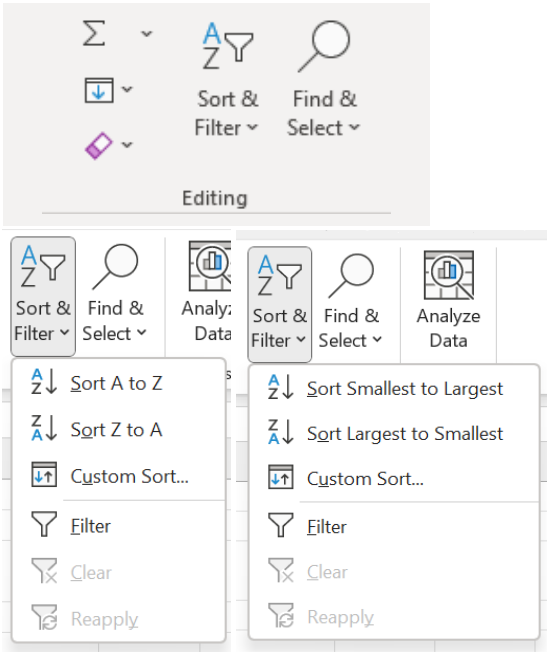
Select a cell in the column you want to sort.

If it is alphabetical data that requires sorting, in the **Editing** tab, in the **Sort & Filter** group, do one of the following:

- To quick sort in ascending order, click (**Sort A to Z**).
- To quick sort in descending order, click (**Sort Z to A**).

If it is numerical data that requires sorting, in the **Editing** tab, in the **Sort & Filter** group, do one of the following:

- To sort from low to high, click (**Sort Smallest to Largest**).
- To sort from high to low, click (**Sort Largest to Smallest**).



Analyse the data using a spreadsheet

Open the spreadsheet and search and sort the data to answer the following questions:

1. Based on the overall average (the figure for Total all industries):

   a) What are the average weekly earnings for everyone? How much is this as an annual salary?

b) What are the average weekly earnings for males? How much is this as an annual salary?

c) What are the average weekly earnings for females? How much is this as an annual salary?

What is the difference on average between male and female earnings per week?

What is this as a percentage difference?

Express the percentage as how much less females earn as a percentage of the average female earnings.

2. Sort the data by order of the highest to the lowest for each category (Persons, Males, Females) and answer the following questions:

a) Which industry earns the most?

Which one earns the least?

How much is the difference?

What is this difference as a percentage of the lowest earnings?

b) For males, which industry earns the most overall?

Which one earns the least?

How much is the difference?

What is difference this as a percentage?

c) For females, which industry earns the most overall?

Which one earns the least?

How much is the difference?

What is this difference as a percentage?

3. Use, sort and analyse the data to answer the following questions:

   a) Which industries have the biggest gender differences?

      What is this as a percentage?

   b) Which industries have the smallest gender differences?

      What is this as a percentage?

4. Consider your group's initial guesses about who might earn the most or least as a worker across Australia. How accurate were your answers? Are you surprised by the data?

5. Based on your group's initial guesses about gender differences, how accurate were your answers? Are you surprised by the data?

Worksheet 2B – How Australians spend their money

Aims and overview

This worksheet considers national data about what Australians (on average) spend their money on.

Background information

This worksheet looks at average expenditure, through analysis of data collected by the Australian Bureau of Statistics.

As part of their *Australian National Accounts: National Income, Expenditure and Product* analysis, the ABS provides quarterly data about what households spend (on average) on a range of different categories.

In this exercise, there are three sources of data supplied by the ABS about household expenditure. This data was current as of March 2023.

- **Monthly Household Spending Indicator** (finder.com.au/australian-household-spending-statistics)
- **Monthly Household Spending Indicator** (abs.gov.au/statistics/economy/finance/monthly-household-spending-indicator/latest-release)
- **Australian National Accounts: National Income, Expenditure and Product** (abs.gov.au/statistics/economy/national-accounts/australian-national-accounts-national-income-expenditure-and-product)

The categories of household spending that are included in the data are:

- Alcoholic beverages
- Cigarettes and tobacco
- Clothing and footwear
- Communications
- Education services
- Electricity, gas and other fuel
- Food
- Furnishings and household equipment
- Health
- Hotels, cafes and restaurants
- Insurance and other financial services
- Operation of vehicles
- Other goods and services
- Purchase of vehicles
- Recreation and culture
- Rent and other dwelling services
- Transport services.

Tasks and questions

Complete the following individual, small group and class activities.

Task 1. Household spending priorities

Based on the previous categories of expenditure, discuss these questions:

- Which category do you think might be the highest average expenditure? Why?
- Which category do you think might be the lowest average expenditure? Why?
- Estimate how much per week households spend on average on your selected highest and lowest categories.

Matching pairs activity

In this activity, each shaded card provides some of the household expenditure categories. The unshaded cards give some values of expenditure per week, but they are not matched correctly. Each shaded card matches one of the unshaded cards in terms of the dollar value indicated.

Cut out the cards and then match the cards in pairs.

Alcoholic beverages	**$445**
Cigarettes and tobacco	**$215**
Clothing and footwear	**$211**
Electricity, gas and other fuel	**$150**
Food	**$126**
Health	**$97**
Hotels, cafes and restaurants	**$73**
Operation of vehicles	**$50**
Recreation and culture	**$47**
Rent and other dwelling services	**$43**

Share how each group matched the category and the expenditure amounts.

- Was there agreement about some of the categories and their amounts?
- Which categories varied very differently in how students estimated the expenditures?
- Have a class discussion about household expenditure. What do they think your household spends on these different categories?

You will find out the answers to this activity in the next task.

Task 2. Household expenditure in Australia

The following table details the average household expenditure per week for all categories, as of March 2023.

Use this data to review the previous activity above. How close were each group in their matching of the values in the activity to the actual figures in the table?

Category	**Weekly average household spend**
Alcoholic beverages	$47
Cigarettes and tobacco	$43
Clothing and footwear	$73
Communications	$43
Education services	$109
Electricity, gas and other fuel	$50
Food	$215
Furnishings and household equipment	$106
Health	$150
Hotels, cafes and restaurants	$126
Insurance and other financial services	$176
Operation of vehicles	$97
Other goods and services	$123
Purchase of vehicles	$53
Recreation and culture	$211
Rent and other dwelling services	$445
Transport services	$17
Total weekly average household spend	**$2,083**

Analyse the data

Use the data in the table to answer the following questions:

1. Based on the total average weekly household spend:

   a) What is the proportion (as a percentage) of the spending on rent and other dwelling services, out of the total spend?

   b) What is the proportion (as a percentage) of the spending on electricity, gas and other fuel, out of the total spend?

   c) What is the proportion (as a percentage) of the spending on food, out of the total spend?

2. Are you surprised by some of the data, and which categories are high or low? Which ones? Why?

3. Compare this data with the data on average weekly wages in the table on page xx. How does the total weekly household expenditure compare with the average weekly earnings from that table? Why do you think that is the case?

4. Which categories would you see as being more discretionary expenditure (that is, not essential costs)? Which of these categories could a family target best if they need to save on costs? Why?

Worksheet 2C – Review, reflection, and reporting

Aims and overview

This worksheet requires you to review and reflect on what you have learnt about Australians earn and spend their money on and create a brief summary report.

Tasks and questions

1. Reflect on the previous sets of questions where you were required to apply a range of different calculations.

Maths skill	Did you use this skill?	
Understanding and comparing different whole numbers	YES ☐	NO ☐
Understanding and comparing different decimal numbers	YES ☐	NO ☐
Understanding positive and negative numbers	YES ☐	NO ☐
Comparing different fractions and percentage	YES ☐	NO ☐
Rounding numbers	YES ☐	NO ☐
Undertaking calculations such as +, -, ×, and ÷	YES ☐	NO ☐
Undertaking calculations with fractions and percentages including percentage increase and decrease	YES ☐	NO ☐
Working out simple proportions and ratios of one value compared to another, including to express them as a fraction or percentage.	YES ☐	NO ☐

2. Indicate how often you had to use and apply a range of different methods for calculating or using different technologies.

Method used for calculating	Did you use this skill?		
In your head	A little ☐	Quite a bit ☐	A lot ☐
Using pen-and-paper	A little ☐	Quite a bit ☐	A lot ☐
Using a calculator/technology	A little ☐	Quite a bit ☐	A lot ☐
Using a spreadsheet	A little ☐	Quite a bit ☐	A lot ☐

3. What were some of the key things you learned when undertaking this activity?

4. Did the activity and questions help you to better understand how you use mathematics, spreadsheets, and apply calculations with percentages? In what areas and ways?

Consider these statements:

- More money spent on gambling means less money available for other things.
- Gambling could be considered an expense under 'Recreation and culture'.

Do you think this could potentially be a significant part of this spending for some people and hence have an impact on what they can spend on other expenses?

5. What things might people miss out on if they spend too much money on gambling?

Your report

Write and present a summary of what you have learnt from this activity and the previous worksheets about what Australians earn and spend. The summary may be in the form of a one-page report, presentation or poster.

You should include:

- the key information and knowledge about income and expenditure that you have learned
- a summary of what sorts of mathematics and what calculations you needed to undertake
- what technology and tools you used
- any surprising and interesting new information you discovered when completing the activity.

ACTIVITY 3. EXPENDITURE ON GAMBLING

Worksheet 3A – Comparing available data

Aims and overview

This activity looks at data and information related to how much Victorians spend on gambling each year.

Tasks and questions

In this worksheet you will use your maths skills and knowledge to analyse data from the Victorian Responsible Gambling Foundation (VRGF) website. This data covers areas related to how Victorian's gamble, and how much money can be spent and lost on different gambling activities.

Gambling data

Extensive information about expenditure on gambling across Victoria is provided on the VRGF's webpage: **responsiblegambling.vic.gov.au/resources/gambling-victoria/expenditure-on-gambling-victoria-and-australia/**

This data shows expenditure on four categories of gambling since 2019-20:

- pokies (electronic gaming machines)
- all casino (pokies and table games such as roulette)
- lotteries
- sport and race betting.

The data shows the expenditure across Victoria in millions of dollars per financial year. The different data categories available include:

- total losses
- average loss per adult.

These are both available as actual figures and figures adjusted for inflation. The latter is useful for comparing trends and changes over time.

Task 1. Comparing losses on the different gambling sectors

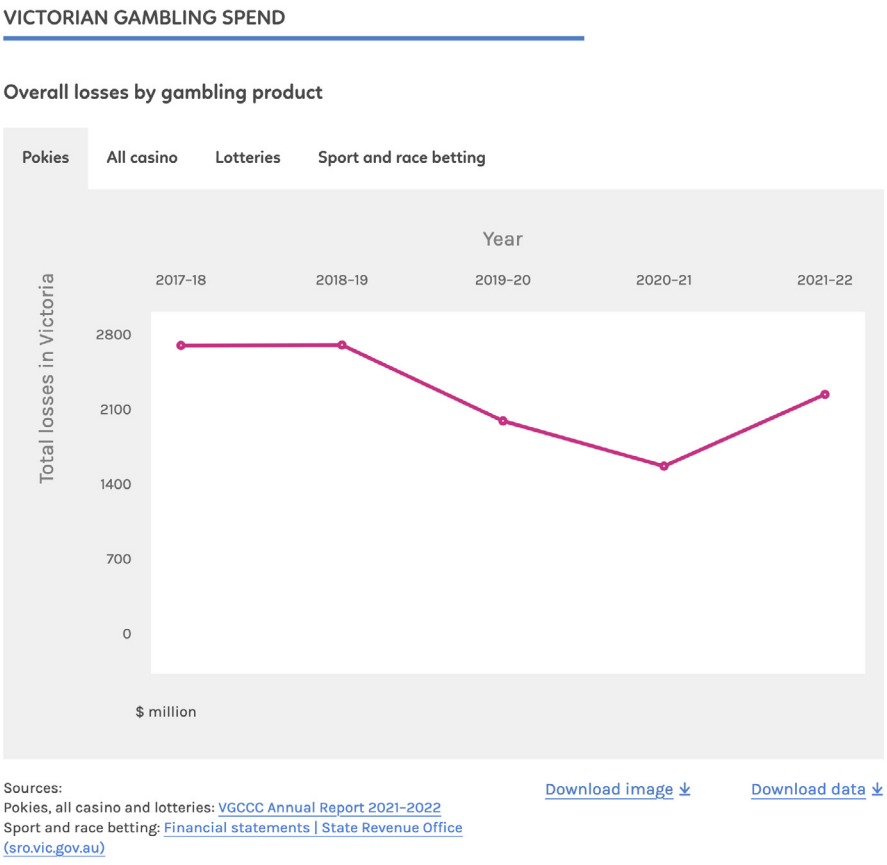
Working in pairs or small groups, discuss the four different categories of gambling.

In Worksheet 3C of Unit 1, you were asked to estimate and rank the order of money spent across Victoria for these four main areas of gambling. If you did not undertake this exercise, work in your groups to create an estimate. Number them in order from the least spent (1) across Victoria to the most spent (4).

Type of gambling:	Pokies	Sports and race betting	All casino	Lotteries

Downloading the data

This data is available to download from **responsiblegambling.vic.gov.au/resources/gambling-victoria/expenditure-on-gambling-victoria-and-australia/**. Go to that page and scroll down until you see a chart like this:



Click on the **Download data** button and select the option 'Download table as XLSX'. This downloads a copy of the data that you can open in software such as Excel or Google Sheets.

NOTE: As you will be using spreadsheets throughout this activity, ask your teacher for assistance if you have any queries about this format and the programs it uses.

The data should look something like this:

LOSSES						
Financial Year	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Gambling Product (total losses)	**($m)**	**($m)**	**($m)**	**($m)**	**($m)**	**($m)**
Pokies	2610	2695	2699	1988	1565	2237
Casino	1556	1774	1679	1235	399	645
Lotteries	502	518	643	652	723	788
Sport and race betting				1645	2331	2578
Gambling Product (average loss per adult)	**($)**	**($)**	**($)**	**($)**	**($)**	**($)**
Pokies	542	533	523	378	292	409
Casino	323	351	325	235	74	118
Lotteries	104	102	124	124	135	144
Sport and race betting				312	434	471
ADJUSTED FOR INFLATION						
Financial Year	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Gambling Product (total losses)	**($m)**	**($m)**	**($m)**	**($m)**	**($m)**	**($m)**
Pokies	2913	2942	2894	2097	1627	2237
Casino	1737	1936	1801	1303	415	645
Lotteries	560	565	689	688	752	788
Sport and race betting				1736	2423	2578
Gambling Product (average loss per adult)	**($)**	**($)**	**($)**	**($)**	**($)**	**($)**
Pokies	605	582	561	398	303	409
Casino	361	383	349	247	77	118
Lotteries	116	112	133	131	140	144
Sport and race betting				330	451	471

Source for Sport and race betting: State Revenue Office (SRO) Annual Review 2021-22

Source for Pokies, Casino and Lotteries: Victorian Gambling and Casino Control Commission (VGCCC) Annual Reports 2016-17 to 2021-22.

Task 2. Analysing and comparing the gambling data.

Answer the following questions using the downloaded data. Remember that if you download a later version of the data, it will refer to a different time period than the one featured here

1. Based on the latest data (from the top sets of data – not those adjusted for inflation) answer these questions.

2. Looking at the most recent year reported for total losses:

   a) which category of gambling had the highest monetary losses?

   b) How much was this in total and per adult per financial year?

   c) What proportion is this of the total losses across all four categories, expressed as a percentage?

   d) What is the difference between the latest financial year reported and the previous year for casinos?

   e) What is this as a percentage change?

3. Based on the data for average loss per adult that is adjusted for inflation, answer these questions.

4. Looking at the patterns and trends across the different years:

   a) which category reduced by about a third from 2016-17 through to 2021-22?

b) which category or categories have decreased since 2019-20? Which ones increased?

c) Were there external factors that may have impacted on this? What were they, and why?

5. Consider the data for average loss per adult that is the original data not adjusted for inflation.

Financial Year	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Average loss per adult	**($)**	**($)**	**($)**	**($)**	**($)**	**($)**
Pokies	542	533	523	378	292	409

Looking at the changes across the different years, and starting with the initial value of $542 per adult for the first financial year of 2016-17:

a) which consequent years would have a positive percentage change compared to the previous year? Explain why they are positive values.

b) Which consequent years would have a negative percentage change compared to the previous year? Explain why they are negative values.

6. What is one piece of the Victorian gambling data above that surprised you? Why?

Worksheet 3B – The spread of gambling

Aims and overview

This activity continues looking into data and information collected by the Victorian Responsible Gambling Foundation (VRGF) related to gambling across the Victorian community. You will need to use spreadsheet software to complete this activity.

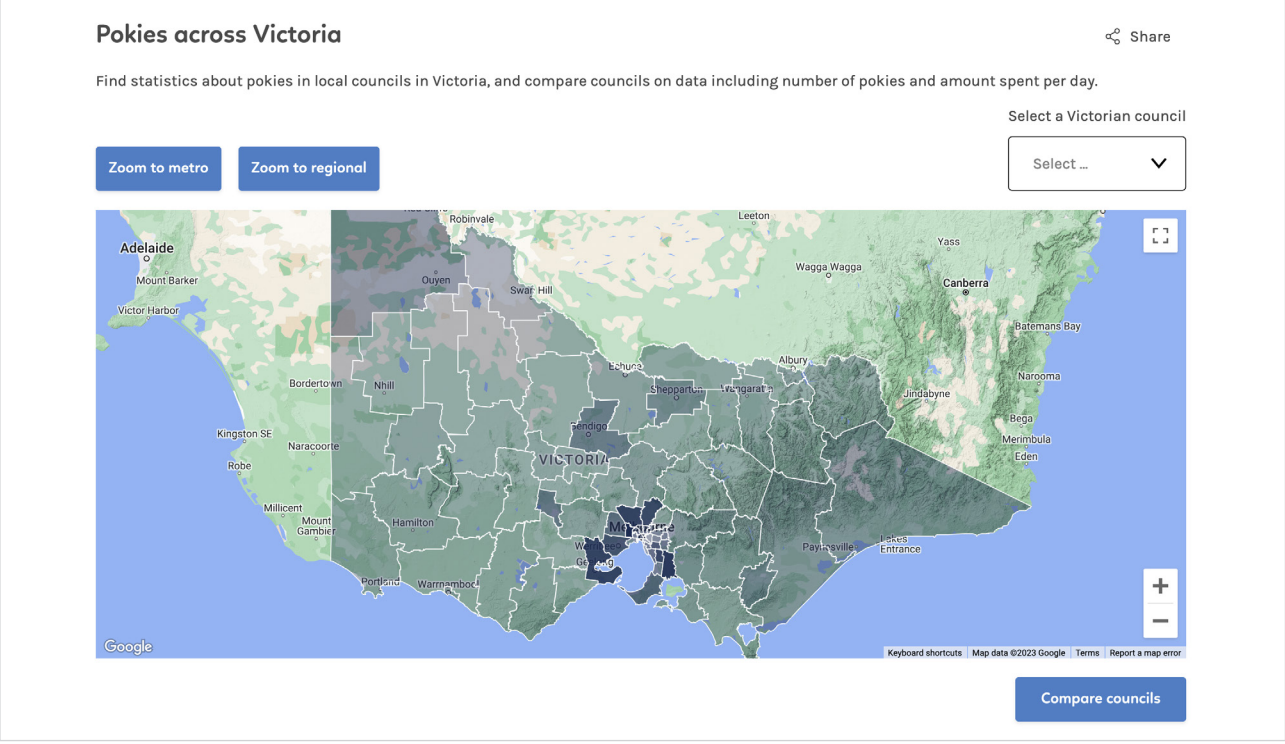
Tasks and questions

The VRGF collects detailed data about pokies in local council areas in Victoria. These statistics include the number of pokies machines, and the amount spent on pokies per day in different council areas.

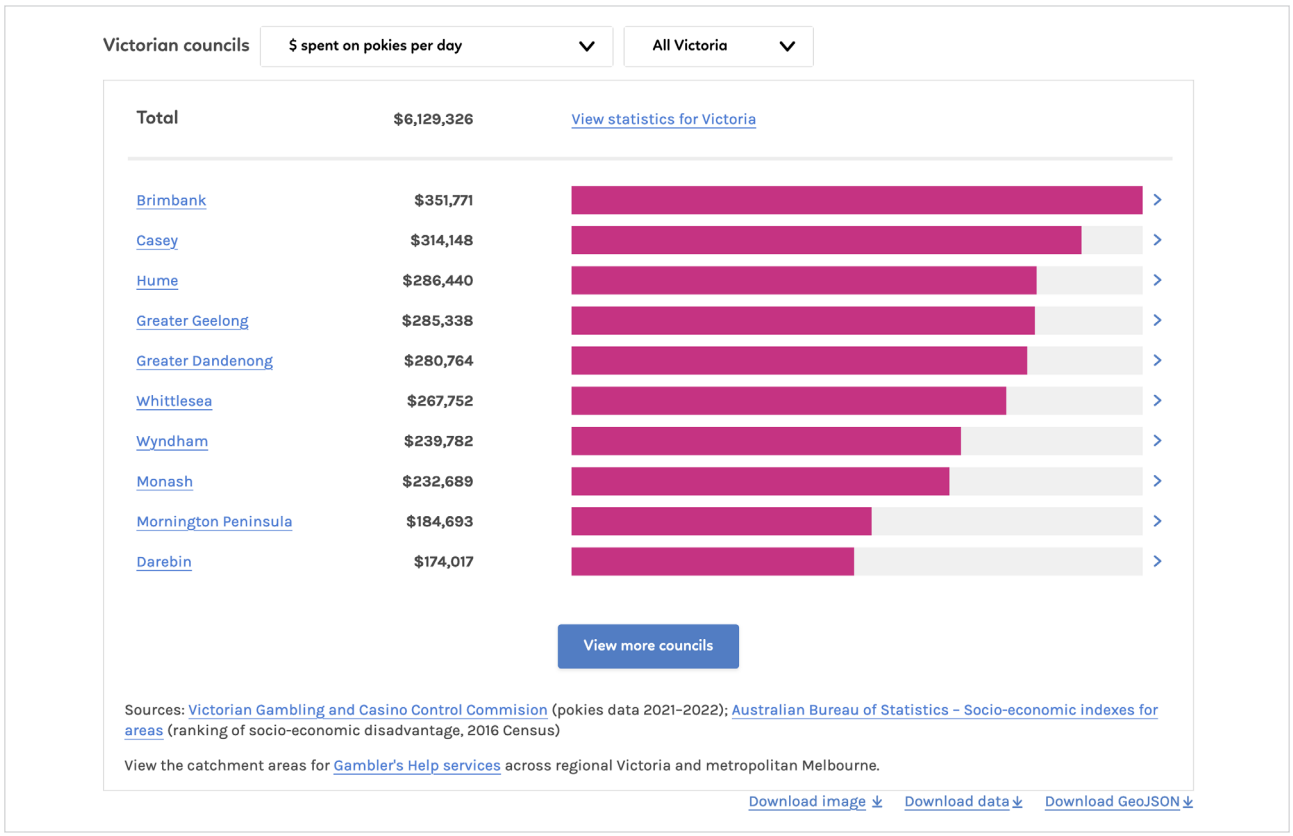
Data on Pokies in Victoria

Go to this page of the VRGF website: **responsiblegambling.vic.gov.au/resources/gambling-victoria/pokies-across-victoria** and view the map shown below.

You should find a page like this:



In addition to the map, view the following graph below the map.



Click on the Download button and select the option 'Download table as XLSX'. This downloads a copy of the data that you can open in software such as *Excel* or *Google Sheets*.

NOTE: As you will be using spreadsheets throughout this activity, ask your teacher for assistance if you have any queries about this format and the programs it uses.

The file should look something like this:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	**Gambling in Victoria: Pokies across Victoria**													
2														
3			A	B	C	D		D+		D+	E	F	G	
4	Council	Regional or metro	Spent on pokies per day 2021-22 (365 days)	Spent on pokies a year 2021-22	Number of venues with pokies at 30 June 2022	Number of pokies as at 30 June 2022	Municipal limit	% of municipal limit used	Regional cap	% of regional cap used	Pokies per 1000 adults 2021-22	Ranking by pokies expenditure 2021-22	Ranking by socio-economic disadvantage 2016	Expenditure per adult 2021-22
5	Alpine Shire	Regional	$6,524	$2,381,439	2	58	100	58			5.5	63	39	$228
6	Ararat Rural City	Regional	$11,477	$4,188,924	2	88	95	93			8.8	58	8	$425
7	Ballarat City	Regional	$140,212	$51,177,398	14	647			663	96	7.2	17	29	$572
8	Banyule City	Metro	$109,406	$39,933,307	9	635	396	66	392	100	6.1	24	70	$381
9	Bass Coast Shire	Regional	$40,179	$14,665,495	5	213			214	99	6.9	40	22	$475
10	Baw Baw Shire	Regional	$42,887	$15,653,602	4	237	374	63			5.4	37	46	$359
11	Bayside City	Metro	$27,838	$10,161,036	5	208	758	27			2.4	42	79	$118
12	Benalla Rural City	Regional	$15,779	$5,759,311	3	105	112	94			9.1	56	16	$496
13	Boroondara City	Metro	$35,971	$13,129,435	4	162	1331	12			1.1	41	78	$88
14	Brimbank City	Metro	$351,771	$128,396,442	15	953			953	100	5.7	1	3	$763
15	Buloke Shire	Regional	$0	$0	0	0	50	0			0.0	N/A	24	$0
16	Campaspe Shire	Regional	$25,478	$9,299,310	4	209	293	71			7.0	44	23	$310
17	Cardinia Shire	Metro	$66,612	$24,313,334	5	345	573	60			3.7	30	59	$263
18	Casey City	Metro	$314,148	$114,664,060	13	912	458	10	867	100	3.2	2	49	$403
19	Central Goldfields	Regional	$18,964	$6,921,802	2	99			99	100	9.0	51	1	$630
20	Colac-Otway Shire	Regional	$18,278	$6,671,348	5	110	166	66			6.4	53	20	$388
21	Corangamite Shire	Regional	$6,566	$2,396,577	2	57	125	46			4.6	62	28	$192
22	Darebin City	Metro	$174,017	$63,516,201	12	742			769	97	5.3	10	50	$454
23	East Gippsland	Regional	$64,777	$23,643,780	10	332			332	100	8.5	31	19	$601
24	Frankston City	Metro	$136,181	$49,706,086	9	519	279	22	457	100	4.5	19	48	$434
25	Gannawarra Shire	Regional	$4,632	$1,690,859	1	45	85	53			5.4	66	18	$202
26	Glen Eira City	Metro	$140,799	$51,391,551	11	739	1119	66			5.9	16	74	$408
27	Glenelg Shire	Regional	$18,914	$6,903,659	4	120	157	76			7.6	52	12	$436
28	Golden Plains Shire	Regional	$0	$0	0	0	159	0			0.0	N/A	61	$0
29	Greater Bendigo City	Regional	$125,960	$45,975,301	11	662	870	76			6.9	21	31	$482
30	Greater Dandenong	Metro	$280,764	$102,478,691	14	924			989	93	6.6	5	2	$737
31	Greater Geelong City*	Regional	$285,338	$104,148,198	26	1,337			1421	94	6.2	4	41	$479
32	Greater Shepparton	Regional	$89,938	$32,827,396	8	329			329	100	6.3	28	14	$627
33	Hepburn Shire	Regional	$7,394	$2,698,681	2	57	127	45			4.3	61	44	$202
34	Hindmarsh Shire	Regional	$0	$0	0	0	47	0			0.0	N/A	10	$0

The data provided is for each council or local government area (LGA) for the latest available financial year. It includes 13 different pieces of information:

1. Whether the Council is regional or metropolitan
2. The amount spent on pokies per day
3. The amount spent on pokies a year
4. Number of venues with pokies
5. Number of pokies
6. Municipal limit (the maximum number of pokies allowed in a municipal area)
7. Percentage of Municipal limit used
8. Regional cap (the maximum number of pokies allowed in a regional area)
9. Percentage of Regional cap used
10. Pokies per 1000 adults
11. Ranking by pokies expenditure
12. Ranking socio-economic disadvantage (2016 census)
13. Expenditure per adult.

Note regarding the ranking socio-economic disadvantage (2016 census)

This ranking is based on the ABS Census and focuses on a different aspect of socio-economic advantage and disadvantage. It is a general socio-economic index that summarises a range of information about the economic and social conditions of people and households within an area. This index only measures relative disadvantage.

A low score indicates greater disadvantage in general. For example, an area could have a low score if there are:

- many households with low income,
- many people with no qualifications, or
- many people in low skill occupations.

A high score indicates a relative lack of disadvantage in general. For example, an area may have a high score if there are:

- few households with low incomes,
- few people with no qualifications, or
- few people in low skilled occupations.

Discussion

In groups or as a class, discuss each of the 13 pieces of information listed. Consider why such data would be collected by the VRGF.

a) Which categories of data would be most useful if you were wishing to compare the amount of gambling across different LGAs?

b) What factors might impact on whether one LGA has a higher total amount spent on pokies per day or year than another LGA?

c) Why do you think there are categories such as 'Number of venues with pokies', 'Number of pokies' or 'Percentage of Municipal limit used'?

Tasks and questions

Answer the following questions using the downloaded data. Remember that if you download a later version of the data, it will refer to a different time period than the one featured here. As you will be using spreadsheets throughout this activity, ask your teacher for assistance if you have any queries about this format and the programs it uses.

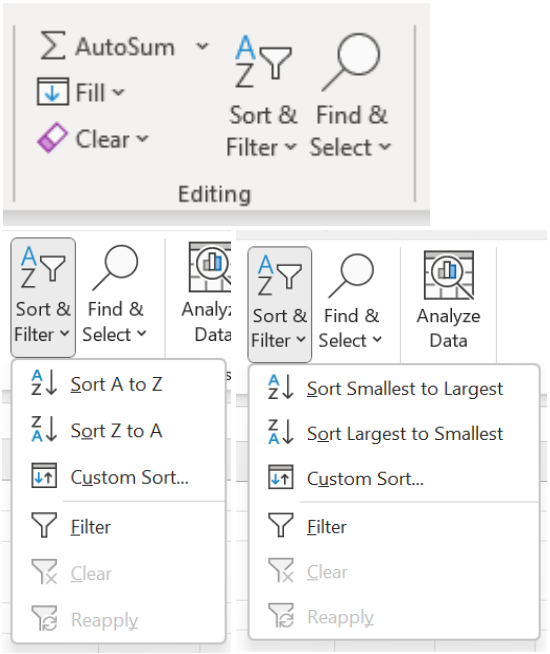
Two spreadsheet tools that will be useful for this activity are the sort and filter functions.

The sort function

Select a cell in the column you want to sort or highlight all the rows and columns (including the headings).

If it is alphabetical data that requires sorting, in the Editing tab, in the Sort & Filter group, do one of the following:

- To quick sort in ascending order, click (Sort A to Z).
- To quick sort in descending order, click (Sort Z to A).



If it is numerical data that requires sorting, in the Editing tab, in the Sort & Filter group, do one of the following:

- To sort from low to high, click (Sort Smallest to Largest).
- To sort from high to low, click (Sort Largest to Smallest).

The filter function

Although the filter function is another function you could use, the Sort function is the critical one for this task. Ask your teacher about how to use the Filter function if you are interested or need to use it.

Questions about the data

1. Do any LGAs have no pokies losses at all? How many?
   What do you think could be a reason for this?

2. Which of the LGAs had the highest amount spent on pokies a year in total?

   What was the amount?

   Name at least one factor that might contribute to this finding.

   What percentage is this of the total losses on pokies a year for all of Victoria?

   What is this as an approximate fraction?

3. Which of the LGAs had the greatest expenditure per adult?

   Is this the same LGA that had the greatest total amount spent? Why or why not?

4. Find the column 'Expenditure per adult' and sort the data in order so you can scan the data more easily. Answer the following questions:

   a) What are the ten highest spending LGAs in relation to expenditure per adult? Where are they located?

   b) Are they also high on the total amount spent on pokies per year?

   c) Are they also high on the number of pokies?

   d) What do you find when you compare the total expenditure per year with the number of pokies per LGA?

   e) Compare the expenditures for the highest spending LGAs (both the total expenditure per year and also per adult) and their rankings on the socio-economic disadvantage ranking. Remember that the LGA ranked '1' is the most disadvantaged, while '79' is the least disadvantaged.

   f) Any other comments regarding the data and the socio-economic disadvantage ranking?

5. Are there more pokies in metropolitan areas than in country areas? Give examples to support your answer.

6. Which council area or LGA has the most pokies for the population size? Give your evidence to argue why.

7. Analyse the data in your spreadsheet to identify another feature or pattern of gambling and show evidence to support this.

NOTE: If you are interested in digging deeper into this data, especially in relation to the latter question or questions , there is some other data that could be useful. This relates to the Population Density of the LGAs. There is a spreadsheet available to download on the Victorian Gambling and Casino Control Commission website:

www.vgccc.vic.gov.au/resources/information-and-data/expenditure-data

It is used as the source for much of the pokies data and analysis you have been investigating in the activity.

Worksheet 3C – Your reflections on gambling

Aims and overview

In this last worksheet on gambling expenditure in Victoria, you will reflect on the data and information collected by the Victorian Responsible Gambling Foundation (VRGF).

Reflecting on pokies data

1. What were some of the things you learned while undertaking this activity about Victorians spending on gambling?

2. Consider this statement: 'More money spent on gambling means less money available for other things.'

   What other things might people miss out on if they spend too much money on gambling?

3. Look back at some of the data you reviewed and analysed about what Australians earn and spend their money on. Considering what people need to pay for on a regular basis, what advice would you give to someone who was spending too much time and money on gambling?

4. Reflect on and review what you have learnt about gambling in Victoria, especially related to pokies. What were you surprised to find?

   What new information did you learn?

   What do you think some of the key issues and challenges are in relation to gambling, especially in relation to pokies?

5. Reflect on the earlier sets of questions where you had to apply a range of different calculations. Indicate if you had to use the following skills or not.

Maths skill	**Did you use this skill?**	
Understanding and comparing different whole numbers	YES ☐	NO ☐
Understanding and comparing different decimal numbers	YES ☐	NO ☐
Understanding positive and negative numbers	YES ☐	NO ☐
Comparing different fractions and percentage	YES ☐	NO ☐
Rounding numbers	YES ☐	NO ☐
Undertaking calculations such as +, -, ×, and ÷	YES ☐	NO ☐
Undertaking calculations with fractions and percentages including percentage increase and decrease	YES ☐	NO ☐
Working out simple proportions and ratios of one value compared to another, including to express them as a fraction or percentage.	YES ☐	NO ☐

6. Indicate how often you had to use and apply a range of different methods for calculating or using different technologies.

Method used for calculating	Did you use this skill?		
In your head	A little ☐	Quite a bit ☐	A lot ☐
Using pen-and-paper	A little ☐	Quite a bit ☐	A lot ☐
Using a calculator/technology	A little ☐	Quite a bit ☐	A lot ☐
Using a spreadsheet	A little ☐	Quite a bit ☐	A lot ☐

7. Did the activity and the questions help you to better understand how you use mathematics and spreadsheets? In what areas and ways?

Your report

Write and present a summary of what you have learnt from this activity and the previous worksheets about gambling and poker machine use across Victoria. The summary may be in the form of a one-page report, presentation or poster.

You should include:

- the key information and knowledge about gambling and poker machine use across Victoria that you have learned
- a summary of what sorts of mathematics and what calculations you needed to undertake
- what technology and tools you used
- any surprising and interesting new information you discovered when completing the activity.

Glossary

Term	Meaning
Allowances	Extra payments made to employees to reimburse them for expenses that they pay for while doing their job. This may include motor vehicle expenses, tools, accommodation, meal and travel costs.
Allowance (Austudy or Youth Allowance)	Youth Allowance is financial help paid by the government for full-time students and apprentices aged 16 to 24 years old. Austudy is financial help for people 25 years or older and studying or completing an apprenticeship.
Apprenticeship	A paid job where you learn and gain work experience at the same time. Alongside on-the-job training, apprentices spend some of their working hours studying with a training provider to secure a qualification.
ATO	Australian Taxation Office
Award/Award rate/ Industry Award	Legal documents that outline the minimum pay rates and conditions of employment. Also referred to as 'industry awards'.
Casual employee	A worker on a higher hourly wage, but without guaranteed hours of work, access to sick leave or long service leave.
Commission	An amount paid to a worker based on how much they sell. A commission payment is usually calculated as a percentage of the worker's total sales.
Deductions (Payroll)	Wages withheld from an employee's total earnings for the purpose of paying taxes and benefits such as health insurance.
Earnings	Money obtained in return for working or offering services. This term can also refer to income derived from an investment or financial product.
Employee	Someone who gets paid to work for a person or company.
Expenses (work-related)	Costs that need to be paid for by an individual worker during their employment.
Gross pay/income	What employees earn before taxes, benefits and other payroll deductions are withheld from their wages. See also **Taxable income**.
Industry Award	See **Award**.
Net income	The money you have available after taxes and deductions are taken out of your pay.
Payroll	A list of a company's employees and how much they are paid.
Salary	A fixed regular payment for a worker that is not related to the number of hours it takes to do the work. A salary is usually quoted as an annual amount paid fortnightly or monthly, with the pay amount agreed to through an employment contract or award. See also **Wages**.
Superannuation/Super	Money put aside by an employer over your working life for you to live on when you retire from work. Also called 'super'.
Take-home pay	Amount of money you receive for your work after all taxes and deductions have been made. See also **Net income**.

Term	Meaning
Tax rates	The percentage at which a worker or business pays tax to the government.
Taxable income	What employees earn before taxes, benefits and other payroll deductions are withheld from their wages. See also **Gross pay/income**.
Taxation	The way the government collects money from individuals and businesses.
Tax-free threshold	The amount of income below which there is no tax payable.
Traineeship	Combines paid on-the-job training and formal study with a training organisation. A traineeship is offered in a broader range of occupations and typically takes over one or two years, as opposed to an **Apprenticeship**. The main difference between a traineeship and an apprenticeship is that an apprenticeship covers skilled trades and takes a lot longer – usually three to four years, either full or part-time.
Wage	Money calculated and paid to an employee based on how many hours a week they work. See also **Salary**.

Answers

Activity 1. Earnings, taxes and superannuation

Q#	Worksheet 1A. Income and earnings – what's what?
1	a) $129 b) $223 c) $785 d) $2,343
2	a) $56.17 b) $128.86 c) $221.46 d) $7.21
3	a) 33.3% and 1/3 b) 21% and 1/5 c) 12.5% and 1/8 d) 5% and 1/20
4	a) 1:3 b) 3:2 c) 14:5 d) 4:15
5	a) $5,880 b) $89,880
6	a) $117 b) $663
7	$2,720
8	a) $96.00 b) $8,096.00
9	a) 240/699 b) 34.3% discount
10	$5.99
11	$21.60
12	$76.46

13	a) $1,509.62: Divided by 52 and rounded off to nearest cent. b) $3,250: Multiplied by 26. c) $4,176.92: Divided by 26 and rounded off to nearest cent. d) $2,945.40: Multiplied by 12. e) $11,700: Multiplied by 52.
14	$387.50
15	a) $1,130.77 b) $4,900.00
16	$10,500.00: Worked out 3% of $350,000 using the x and % button on calculator – or 0.03 x $350,000.
17	$2,023.54: first divided her annual salary of $50,000 by 52 to get $961.54, rounding off to the nearest cent. Then worked out the commission of 25% x $4,248 = $961.53. Then added the two values together to get $2,023.54
18	$492.00: first worked out the commission of 10% x $1420 = $142.00. Then added the two values together ($350.00 +$142.00) to get $492.00
Q#	**Worksheet 1B. Taxation and superannuation**
1	a) $0 b) $14,680 c) $4,066 d) $19,574 e) $31,609
2	a) $0 b) $11,592 c) $28,999 d) $11,300
3	a) 0% b) 10% c) 20% d) 22% e) 25% f) Sample answer only: The proportion of tax paid increases as you get paid more – in these cases it goes from 0% up to 25% on an annual salary of $125,790. This is because as your salary goes up, you progressively move up to the higher taxation rates - from 0 cents in the dollar, to 19c, to 32.5c, to 37.5c then up the highest rate of 45c in each dollar. This is set out in the tax table. The Australian tax system is called a progressive tax system.
4	Note: The following answers are based on the 2023-24 superannuation rate of 11%. You will need to adjust these answers depending on which financial year you are analysing for this exercise. $145.97
5	$255.86
6	$389.77
7	$7,631.25
8	a) $48.07 b) $196.02

<table>
<tr><td>9</td><td>No single correct answer(s). Check with your teacher.</td></tr>
<tr><td>10</td><td>Sample answer: In each of these years, the percentage return was negative, which means that the values in people's superannuation funds went down on average, and not up.
2015 had the highest returns (17.2%), while 2008 had the lowest returns, where the value of superannuation funds decreased by 21.5% on average.</td></tr>
<tr><td>11</td><td>At the end of 2022, the value in the fund would have been $ 329,774.
The amount in the funds would have been worth $ 391,995 at the end of 2021.
The difference is $62,221</td></tr>
<tr><td>Q#</td><td>Worksheet 1C. Awards and allowances</td></tr>
<tr><td>1</td><td>Discussion questions only. Check with your teacher.</td></tr>
<tr><td>2</td><td>a) $41.22
b) $105.44
c) $181.25
d) $62.39
e) $288.40</td></tr>
<tr><td>3</td><td>a) The rate of pay for a 16-year-old worker is 83.4% of the 17-year-old worker's rate of pay. The percentage increase is 19.9%, almost a 20% increase.
b) 16.6%
c) 55.6%</td></tr>
<tr><td>4</td><td>See table below.
<table>
<tr><th>Level 1 award rates</th><th>Ordinary hours</th><th>Saturday</th><th>Sunday</th><th>Public holiday</th></tr>
<tr><td>16 years of age and under</td><td>11.44</td><td>14.30</td><td>17.17</td><td>25.74</td></tr>
<tr><td>17 years of age</td><td>13.72</td><td>17.16</td><td>20.58</td><td>30.88</td></tr>
<tr><td>18 years of age</td><td>16.01</td><td>20.02</td><td>24.02</td><td>36.03</td></tr>
</table></td></tr>
<tr><td>5</td><td>a) $14.49
b) $18.19
c) $24.46
d) $26.51</td></tr>
<tr><td>6</td><td>The annual amounts for each category would be:
• $8,655.40
• $14,632.80
• $10,124.40
• $14,632.80
• $18,730.40
• $14,632.80
• $15,927.60</td></tr>
<tr><td>7</td><td>a) $56.50
b) 69% more.
c) 44.5% more</td></tr>
<tr><td>8</td><td>About 15 hours work.</td></tr>
<tr><td>9</td><td>No single correct answer(s). Check with your teacher.</td></tr>
</table>

Q#	Worksheet 1D. Review, reflection and reporting
1	No single correct answer(s). Check with your teacher.
2	No single correct answer(s). Check with your teacher.
3	No single correct answer(s). Check with your teacher.
4	No single correct answer(s). Check with your teacher.

Activity 2. What do Australians earn and spend?

Q#	Worksheet 2A. Average wages
1	Note: The following answers are based on the November 2022 ABS data as published in this resource. $1,807.70 per week, which is $94,000.40 annually a) $1,907.10 per week, which is $99,169.20 annually b) $1,653.60 per week, which is $85,987.20 annually c) $13,182.00 difference, which is 15% less than the male earnings.
2	a) Overall, mining workers earns the most on average at $ 2,811.70 per fortnight, and Accommodation and food services earns the least at $1,293.80. The difference is $1,517.90, and the percentage difference is 117% of the lowest earnings. This means that in the mining industry the earnings are, on average, more than double the amount earned in the accommodation and food services industry. b) For males, the mining industry also earns the most on average at $2,896.10 per fortnight, and accommodation and food services earns the least at $1,341.10. The difference is $1,555.00, and the percentage difference is 116% of the lowest earnings. That is, in the Mining industry male earnings are, on average, more than double the amount earned in the accommodation and food services industry. c) For females, the mining industry also earns the most on average at $ 2,429.70, and similarly, accommodation and food services earns the least at $1,227.00. The difference is $1,202.70, and the percentage difference is 98% of the lowest earnings.
3	a) Professional, scientific and technical services have the biggest gender pay difference ($498.20 per fortnight). This is a 27% difference when compared with the female earnings. The next biggest gender pay gap is in mining, with $466.40 difference. b) Other services have the lowest gender difference ($49.50 per fortnight), which is a 4% difference. The next closest is accommodation and food services, where the difference is $114.10.
4	No single correct answer(s). Check with your teacher.
5	No single correct answer(s). Check with your teacher.

Q#	Worksheet 2B. How Australians spend their money
Task 1	**Matching pairs activity** Alcoholic beverages $445 Cigarettes and tobacco $215 Clothing and footwear $211 Electricity, gas and other fuel $150 Food $126 Health $97 Hotels, cafes and restaurants $73 Operation of vehicles $50 Recreation and culture $47 Rent and other dwelling services $43
1	a) 21% b) 2% c) 10%
2	No single correct answer(s). Check with your teacher.
3	No single correct answer(s). Check with your teacher.
4	No single correct answer(s). Check with your teacher.
Q#	**Worksheet 2C. Review, reflection and reporting**
1	No single correct answer(s). Check with your teacher.
2	No single correct answer(s). Check with your teacher.
3	No single correct answer(s). Check with your teacher.
4	No single correct answer(s). Check with your teacher.
5	No single correct answer(s). Check with your teacher.

Activity 3. Expenditure on gambling

Q#	Worksheet 3A. Comparing available data
1	Note: The following answers are based on the gambling data from 2016-17 to 2021-22, as published in this resource. Sports and race betting: $2,578 million in total, which was equal to $471 per adult. This is 41% of the total losses across all categories of gambling. a) $245 million increase, which is an increase of 61%
2	a) Casino gambling b) Pokies and casino gambling losses decreased. Lotteries and sports and race betting both increased. c) The COVID pandemic occurred during this period. Because people were unable to attend venues featuring gambling, then it would be expected that the losses would reduce. On the other hand, both lotteries, sports and race betting can be accessed online and through apps, therefore it is possible that people might have moved their gambling habits from the venue-based gambling to online.

3	a) When values increase, the percentage change is a positive value. The only period when the amounts of losses increased was from 2020-21 to 2021-22, so the percentage change would be positive. b) Similarly, when values go down or decrease, the percentage change is a negative value. Therefore, 2017-18 would have been negative compared with 2016-17 because the amounts spent decreased, and similarly they decreased each consequent year up to 2020-21, so the percentage change is negative across all those years.
4	No single correct answer(s). Check with your teacher.
Q#	**Worksheet 3B. The spread of gambling**
1	a) No single correct answer(s). Check with your teacher. Some responses would be: • The population of the LGA • The number of available gambling options in the community/LGA b) No single correct answer(s). Check with your teacher. Some responses would be: • As with question a) these add to some of the data and factors about the number of available gambling options in the community/LGA that will have an impact on how much people might second on pokies. c) No single correct answer(s). Check with your teacher.
2	Note: The following answers are based on the gambling data from 2021-22 as published in this resource. There were nine LGAs that had zero expenditure due to pokies. They were all country or regional LGAs: Buloke Shire, Golden Plains Shire, Hindmarsh Shire, Indigo Shire, Loddon Shire, Moyne Shire, Pyrenees Shire, West Wimmera Shire and Yarriambiack Shire.
3	The LGA with the highest total expenditure on pokies in 2021-22 was Brimbank City, with a total expenditure of $128,396,442. This is 5.7% of the total pokies' expenditure for the whole of Victoria, which is slightly more than 1/20th as a fraction. Some reasons could include the size of the population of Brimbank, compared to other LGAs, as well as its higher number of machines.
4	The LGA with the highest total expenditure on pokies per adult in 2021-22 was Brimbank City, which had an annual expenditure of $763 per adult.
5	a) The 10 LGAs with the highest expenditure per adult, in increasing amounts, were: Wellington; Maribyrnong; East Gippsland; Greater Shepparton; Central Goldfields; Latrobe City; Warrnambool; Mildura Rural City; Greater Dandenong; and Brimbank City. Three of these were Metropolitan LGAs (Maribyrnong, Greater Dandenong and Brimbank City), while the other seven were regional or country LGAs. b) No. While there are some common LGAs in terms of their total expenditure and their expenditure per adult, most are quite different. The common ones are two LGAs: Brimbank City and Greater Dandenong. The most noticeable difference is that for the total expenditure, all but one of the LGAs are metropolitan, and only one, Greater Geelong City, is regional, although it may be considered a metropolitan area. c) No. The regional LGAs with high expenditure per adult do not have a high number of pokies, whereas the metropolitan LGAs do. d) However, when the total expenditure on pokies a year is compared with the number of pokies, then the highest LGAs also have much higher numbers of pokies. e) While five of the LGAs in relation to having high expenditure per adult are also the lowest rankings on the socio-economic disadvantage ranking, the others LGAs have higher rankings more towards the middle of the spread (14 through to 43). There is therefore some indication that the more disadvantaged LGAs spend more on pokies per adult, but a more detailed analysis would need to be undertaken to investigate this more fully.

6	Yes. It is clear that there are more pokies in metropolitan LGAs compared with regional LGAs. For example, of the lowest half of the LGAs (the lowest 40 LGAs in terms of the number of pokies), only three are metropolitan LGAs. This will be related to the populations in the regional versus metropolitan LGAs.
7	Queenscliff LGA has the most pokies for its population size. This can be calculated by sorting the data by the category of pokies per 1,000 adults. Queenscliff has the highest value of 11.6 pokies per adult.
8	No single correct answer(s). Check with your teacher.
Q#	**Worksheet 3C. Your reflections on gambling**
1	No single correct answer(s). Check with your teacher.
2	No single correct answer(s). Check with your teacher.
3	No single correct answer(s). Check with your teacher.
4	No single correct answer(s). Check with your teacher.
5	No single correct answer(s). Check with your teacher.
6	No single correct answer(s). Check with your teacher.
7	No single correct answer(s). Check with your teacher.

VCE VOCATIONAL MAJOR –

NUMERACY

UNIT 3

EARNINGS, EXPENDITURE AND GAMBLING

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