# Mathematics Stage 4 – financial mathematics



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**Reviewed by:** Mathematics Project Advisor 7 - 12, Educational Standards; Student Pathways Advisor and Student Transition Coordinator, Career Programs

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**Last updated**: September 2023

**Anticipated resource review date**: Resources are reviewed every 12 months for currency and relevancy as part of the Career Learning team’s evaluation plan.

**Alignment to School Excellence Framework (SEF):**

* Learning domain: Curriculum, Teaching and Learning Programs.
* Teaching Domain: Effective Classroom Practice, Lesson Planning.

**Alignment to** [Australian Professional Standards for Teachers](https://educationstandards.nsw.edu.au/wps/portal/nesa/teacher-accreditation/meeting-requirements/the-standards)**:**

* Standard 2
* 2.1.2 Apply knowledge of the content and teaching strategies of the teaching area to develop engaging teaching activities.
* 2.6.2 Use effective teaching strategies to integrate ICT into learning and teaching programs to make selected content relevant and meaningful.
* Standard 3
* 3.1.2 Set explicit, challenging and achievable learning goals for all students.
* 3.3.2 Select and use relevant teaching strategies to develop knowledge, skills, problem-solving, and critical and creative thinking.
* 3.4.2 Select and/or create and use a range of resources, including ICT, to engage students in their learning.

**Consultation**

Career Learning in Curriculum (CLiC) documents have been written in consultation with curriculum writers from various key learning areas; Curriculum Secondary Learners and Career and Workplace Learning

## Rationale and background information

Learning for life beyond school is supported when subjects are delivered to students in a way that they can understand how the content is relevant to career pathways and work settings. NESA syllabuses identify work and enterprise as important learning across the curriculum content for all students.

Career learning resources have been developed to enrich existing teaching and learning programs to facilitate effective career education for students, supporting students to link classroom learning to workplace applications, including developing career management skills.

Career learning activities embedded within existing curriculum have been aligned to the themes from the [K-12 Career Learning Framework.](https://education.nsw.gov.au/teaching-and-learning/curriculum/career-learning-and-vet/curriculum-support/k-12-career-learning-framework) Activities may relate to one or more of the themes:

* Identity – building and maintaining a positive self-concept, responding to change, and developing capabilities.
* Experience – discover, investigate, and consider opportunities in lifelong learning and work exploration.
* Empower – learning to self-manage, engage in career decision making and developing skills and capabilities to make informed decisions.

### Career competencies

This resource supports students to develop career management skills relating to:

|  |  |
| --- | --- |
| Career management skills | Australian Blueprint for Career Development Career management competencies |
| Theme: Experience  Link learning and motivations to personal career aspirations | Learning area: Learning and work exploration  Career Management Competency: Locate and use career information effectively.  Phase: Having the digital literacy to access career information online effectively.  Performance indicator: Students use technology to access career information related to personal skills, interests, and personal qualities. |
| Theme: Empower  Explore the qualities to complete tasks individually and collaboratively | Learning area: Personal Management  Career Management Competency: Interact positively and effectively with others.  Phase: Understanding and demonstrating interpersonal and group communication skills that enable us to help or collaborate with others and develop positive relationships.  Performance indicator: Students work collaboratively in their group to name their business. |
| Theme: Identity  Build a positive self-concept demonstrating positive social skills and behaviours | Learning area: Personal Management  Career Management Competency: Build and maintain a positive self-concept.  Phase: Knowing who we are (in terms of interests, skills, personal qualities etc).  Performance indicator: Students can identify/list their skills, interests and personal qualities. |

[Australian Blueprint for Career Development](https://www.yourcareer.gov.au/resources/australian-blueprint-for-career-development) © Commonwealth of Australia 2022

### Syllabus outcomes

* **MA4-4NA** – Compares, orders, and calculates with integers, applying a range of strategies to aid computation
* **MA4-5NA** – Operates with fractions, decimals and percentages
* **MA4-6NA** – Solve problems involving profit and loss, with and without the use of digital technologies
* **MA4-6NA** – Solves financial problems involving purchasing goods
* **MA4-1WM** – Communicates and connects mathematical ideas using appropriate terminology, diagrams and symbols
* **MA4-2WM** – Applies appropriate mathematical techniques to solve problems
* **MA4-3WM** – Recognises and explains mathematical relationships using reasoning

|  |  |  |
| --- | --- | --- |
| Unit | Substrand | Content |
| Financial mathematics | Stage 4 Computation with Integers,  Stage 4 Fractions, decimals and percentages,  Stage 4 Financial mathematics | Carry out the four operations with rational numbers and integers, using efficient mental and written strategies and appropriate digital technologies (ACMNA183)  Find percentages of quantities and express one quantity as a percentage of another, with and without the use of digital technologies (ACMNA158)  Solve problems involving profit and loss, with and without the use of digital technologies (ACMNA189) |

[Mathematics K – 10 Syllabus](https://curriculum.nsw.edu.au/syllabuses/mathematics-k-10-2022) © NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales, 20XX

## Learning experiences

This activity fits in the unit of work, “Data Collection, Representation and Simple Analysis" **Students will**:

Students will gauge the authentic use of mathematics and begin to explore careers that utilise mathematics. This is an ideal capstone activity for the final unit of Year 7

**Suggested duration**: 5 x 60 minutes

**Audience**: To participate in this activity, it is assumed that students have a basic understanding of the following Stage 4 content:

* prerequisite knowledge of using efficient mental and written strategies to perform calculations with rational numbers and integers
* Stage 3 review of data collection and display.

When delivering content and illustrating concepts using Career Learning in Curriculum lessons, we strongly recommend that educators:

• Incorporate locally relevant elements using images, film, local perspectives, sites, communities, and landmarks that are relevant to and inclusive of the local Aboriginal and Torres Strait Islander histories and cultures.

• Familiarise yourself with the Aboriginal and Torres Strait Islander histories and cultures and the involvement of local Aboriginal communities' [Principles and Protocols](https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/diversity-in-learning/aboriginal-education).

By following these recommendations, educators can create a learning environment that respects local Aboriginal and Torres Strait Islander histories and cultures and fosters a deeper connection with the students and the broader community.

[Learning Across the Curriculum](https://educationstandards.nsw.edu.au/wps/portal/nesa/11-12/stage-6-learning-areas/stage-6-english/english-advanced-2017/learning-across-the-curriculum) © NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales, 2022.

### Resources required.

To complete these activities students, need:

* access to a computer
* internet (note: delivering teacher to check weblinks provided to external websites, prior to the lesson)
* paper and pens or word document
* student workbooks.

### Activity 1 – Interests and occupations

Students are to complete a reflection task which explores their interests. This information will generate groups for occupation streams for the next activity. Students use activity sheet 1 to reflect on their interests.

**Teacher note**: One way in which young people can begin searching their career interests is by considering what they are good at doing, what skills they can demonstrate and what matters to them. There are a range of tools that can support students to explore their strengths and interests. These can be accessed on websites such as [myfuture](https://myfuture.edu.au/docs/default-source/teacher-resources/activity-sheets/activity_5_learning_how_your_interests_and_skills_can_lead_to_a_jobc95a6f04a8fe67e6b7acff0000376a3b.pdf?sfvrsn=2) and [joboutlook](https://joboutlook.gov.au/career-tools/career-quiz/#/). Students can access myfuture using their education login details. Teachers are supported to use the myfuture website for career and transition planning by watching the [recording](https://myfuture.edu.au/assist-others#introducing-myfuture). Creating opportunities to discuss with students their strengths and interests throughout all stages of schooling can support them in future career decisions.

### Activity 2 – Selling a product

Students form teams based on their common interest from the matrix completed in Activity Sheet 1. Each team brainstorms a product/service to sell at a lunchtime stall based on their area of interest. Product examples could include food items, drinks, hair products, stationary, guessing games.

Profits will go to a Christmas appeal or other charity as determined by the teacher or Student Representative Council (SRC).

#### Extension

Research suitable charities to be supported for donation of funds raised. Put your case forward to your teacher explaining suitability of the charity of your choice. [ChangePath](https://www.changepath.com.au/) is a reputable website to help you decide.

### Activity 3 – Establishing your business

Students work collaboratively in their group to name their business. Points to consider when naming their business include:

* Is it catchy?
* Does it communicate the business idea?
* Is the name too vague?
* Has this name been used by other businesses?
* Have the key words been used or highlighted in a creative way?
* Has the business name been kept simple?

**Teacher note:** Today’s start-ups could potentially be tomorrow’s industry leaders**.** To support students in naming their business, provide a reading task. Examples could include; [Things to consider before you pick a name for your business](https://www.webalive.com.au/things-to-consider-before-you-pick-a-name-for-your-business/), or [12 Tips for naming your start up business](https://www.forbes.com/sites/allbusiness/2016/10/23/12-tips-for-naming-your-startup-business/?sh=37fd7842904e). Discuss with students, who from the community they think could help them to choose a saleable product and name their business. A common place to start is the local [Chamber of Commerce](https://www.businessnsw.com/regions/NSW-regions).

### Activity 4 – Calculating cost

Students use Google Sheets or Microsoft Excel to record the ingredients/ materials needed to produce their product/ service. Students will use formulae to calculate costs using addition, multiplication and percentages.

Students research the cost of each ingredient/ material and then perform calculation to make a 20% profit. Calculations will need to be completed for the cost of each product and for the overall cost of the product or service that is being sold. All data and calculations are to be provided in the spreadsheet. There is opportunity here for students to draw graphs to demonstrate the income vs expenses for their product.

In their teams, students decide, what material each person will bring to produce their product/ service. This is recorded on the spreadsheet.

**Teacher note**: Students can test our their costing skills by completing the car costs calculator on the Department of Education, [Financial Literacy Challenge](https://education.nsw.gov.au/teaching-and-learning/curriculum/treasurer-s-financial-literacy-challenge) web page. Students who need support on using spreadsheets can be provided with [weblinks](https://www.youtube.com/watch?v=rwbho0CgEAE&t=16s) which demonstrate how to fill in an excel template, blank workbook. Students are supported to make their estimates on product costs by accessing websites that provide the ingredients or materials for their product. This could include searches from websites such as [Coles](https://shop.coles.com.au/a/national/home), [Bunnings](https://www.bunnings.com.au/help-support/shop-online), [Woolworths](https://www.woolworths.com.au/shop/catalogue). You may like to invite a local accountant to add real world context on running a small business.

### Activity 5 – Event organisation

Use a collaborative platform from the [Digital Learning Selector](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Browser?clearCache=a6a15a42-117-1e96-79d3-ff4b2379ae6) to allow students to collaborate and organise the sale of their product through a virtual or real stall.

* Location of the stall in the school
* Resources required i.e., display tables, pricelists, floats.
* Teacher support and supervision
* Advertisement of event
* Signage for the event

**Teacher Note:** When implementing the business/fundraising event ensure that students have communicated with the Principal, executive and SRC. Communication skills are an essential employability skill that can be developed through participating in this activity. There are a range of careers that relate to community and corporate event management. Use the bullseye charts available on [myfuture](https://myfuture.edu.au/bullseyes) to explore careers associated with mathematics and retail industries.

Consider the option for shoppers to exchange real money for simulated money or tickets, which would allow each stall holder to carry a float of simulated money. An extension activity could then be to reconcile the float before and after the stall activity.

### Activity 6 – Calculating profit

Debrief of event. Students discuss what they enjoyed and what they found challenging in organising the event and the planning required to make a profit. What did students enjoy about running their stall? Have students take the quiz to see which students might be a [future entrepreneur](https://careerswithstem.com.au/entrepreneurship-quiz-for-students/).

Students calculate the profit from each stall. As the final figures come in for each stall students respond to the following statements and report back to the class:

* Were the items priced appropriately to make a profit? Explain your answer.
* Calculate the difference a 5% increase on sale price would make to the overall profit margin.
* Would customers still have bought the product if listed at a higher price? Explain your answer.

#### Extension

Would you have made the same profit if you had to account for labour costs? Explain your answer by exploring the [minimum wage](https://mywage.org/australia/salary/minimum-wage) for your age bracket.

### Conclusion

The teacher reviews the lesson’s concepts to ensure student’s understanding through questioning, discussion or exit slips.

### Differentiation

The resource provides links that will support a diverse range of students. This includes a link to the Financial Literacy Challenge where students can complete a range of self-paced, online activities that immerse them in relatable scenarios and get them thinking critically about money and their future. There is an emphasis on literacy, and students have the chance to develop their persuasive writing skills by making decisions and creating arguments.

For support with differentiation of this lesson, visit [Career Learning and Vocational Education](https://education.nsw.gov.au/teaching-and-learning/curriculum/career-learning-and-vet/curriculum-support/k-12-career-learning-framework).

### Extension

Extension activities are embedded within this learning sequence. Further adjustments can be made using the [Differentiation Adjustment Tool](https://education.nsw.gov.au/teaching-and-learning/high-potential-and-gifted-education/supporting-educators/implement/differentiation-adjustment-strategies) contains 9 deliberate adjustments to support teachers to meet the specific learning needs of high potential and gifted students.

## Evidence base

Evidence-based refers to researching practices to apply proof, reliability, and ethical standards to ensure quality. Evidence-based provides credible knowledge that has been created and tested through rigorous methods.

In addition to being designed in response to the outcomes and achievement standards of the NSW syllabus, a wide range of literature and resources highlighting the importance of career learning from an early age were considered from both a local and international sources. These include research papers from the OECD (Career Ready, Mann et. al), UK (What Works, Hughes et. al) and Career Education: every teacher has a role (myfuture, Education Services Australia).

For the complete list of academic research that informed the development of Career Learning in Curriculum resources, visit the [K-12 Career Learning Framework](https://edit.education.nsw.gov.au/editor.html/content/main-education/en/home/teaching-and-learning/curriculum/career-learning-and-vet/curriculum-support/k-12-career-learning-framework.html) website.

## Activity sheets

The following pages contain activity sheets that support this lesson plan,

They can be printed independently from the rest of this activity.

The remainder of this page is intentionally blank.

### Activity sheet 1 – Career matrix

Read the list and select the one that appeals greatest to you.

|  |  |
| --- | --- |
| Personal attribute | Tick to select one only |
| I like learning about our country and the world.  I enjoy watching TV shows like The Amazing Race and Travel Guides.  I might be a tour guide or travel blogger |  |
| I like food – eating and cooking.  I enjoy watching TV shows like Master Chef and My Kitchen Rules.  I might be a chef or own a restaurant |  |
| I like Lego.  I enjoy watching TV shows like Lego Masters and playing Minecraft.  I might be an engineer or carpenter |  |
| I like playing performing and role playing  I enjoy watching TV shows like The Voice and Making it Australia  I might be an actor or in the creative industries |  |
| I like looking after people around me  I enjoy watching shows like RPA and Bondi Rescue  I might be a paramedic or in the health sector |  |
| I like entering maths and science competitions  I enjoy watching shows like The Apprentice and Aussie Inventions  I might be in finance or research |  |

Based on your response in the table select a careers bullseye on [myfuture](https://myfuture.edu.au/bullseyes) and explore the range of industries that are related to this or another area of interest. Use your student log in to access myfuture.

Select one job that is of most interest and answer the following:

* List the main tasks that are expected in this role.
* What skill level or qualifications are required to fulfil this role?
* What learning areas could support you while you are at school for this role?
* Provide an overview of the employment prospects for this occupation.

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## Feedback

To provide feedback or for further information, access the feedback form via [CliC Feedback](https://forms.office.com/Pages/ResponsePage.aspx?id=muagBYpBwUecJZOHJhv5kdR9XgNzBt1AheGePVM3QdNUNzE1OEYwRzhEOVZJNkNHTFVTWDdGMVhQNyQlQCN0PWcu) or with the following QR code.

QR code on a white background



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