 MS-F1 Financial Mathematics

Year 11 Mathematics Standard

This document references the [Mathematics Standard Stage 6 Syllabus](https://syllabus.nesa.nsw.edu.au/mathematics-standard-stage6/) © 2017 [Copyright Board of Studies NSW](http://syllabus.nesa.nsw.edu.au/copyright/) for and on behalf of the Crown in right of the State of New South Wales.

Assessment type: Investigation Task

Due Date:

Outcomes

A student:

* represents information in symbolic, graphical and tabular form MS11-2
* models relevant financial situations using appropriate tools MS11-5
* makes predictions about everyday situations based on simple mathematical models MS11-6
* uses appropriate technology to investigate, organise and interpret information in a range of contexts MS11-9
* justifies a response to a given problem using appropriate mathematical terminology and/or calculations MS11-10

Learning across the curriculum

Cross-curriculum priorities

Asia and Australia's engagement with Asia Asia and Australia's engagement with Asia

Sustainability Sustainability

General capabilities

Critical and creative thinking Critical and creative thinking

Ethical understanding Ethical understanding

Information and communication technology capability Information and communication technology capability

Literacy Literacy

Numeracy Numeracy

Personal and social capability Personal and socail capability

Other areas of learning

Civics and citizenship Civics and citizenship

Difference and diversity Difference and diversity

Work and enterprise Work and enterprise

Task

This assessment task is split into three parts A, B, and C. Part A will be centred on finding a job and calculating tax, Part B will be centred on purchasing a vehicle and Part C will deal with creating a personal budget. You will be required to present your research, calculations and spreadsheets in the form of a portfolio.

Part A:

1. Research and choose an occupation that you have an interest in (assume you have just finished Year 12, TAFE or University).
2. Find an online job advertisement describing the position and the rate of pay.
3. Calculate the fortnightly gross pay and the hourly rate of pay based on an average 40 hour week.
4. Using the current PAYG rate of tax from the ATO, calculate the tax payable on your gross income per fortnight and per year.
5. Calculate the net fortnightly pay after tax.
6. Research and list some of the possible deductions associated with your chosen occupation. For your final calculations, research and estimate possible values for these deductions. (E.g. union and professional fees, $676 per year).
7. Calculate the taxable income for your occupation after deductions.
8. Calculate the Medicare levy payable.
9. Calculate the total tax payable on your salary.
10. State whether you will receive a refund or a debt statement from the ATO and how much is it worth (based on your PAYG calculations in part 4 and actual tax payable in question 9)

Relevant websites

[Jobseeker](https://www.jobseeker.org.au): https://www.jobseeker.org.au

[Seek](https://www.seek.com.au/): https://www.seek.com.au/

[Australian Tax Office](https://www.ato.gov.au/): https://www.ato.gov.au/

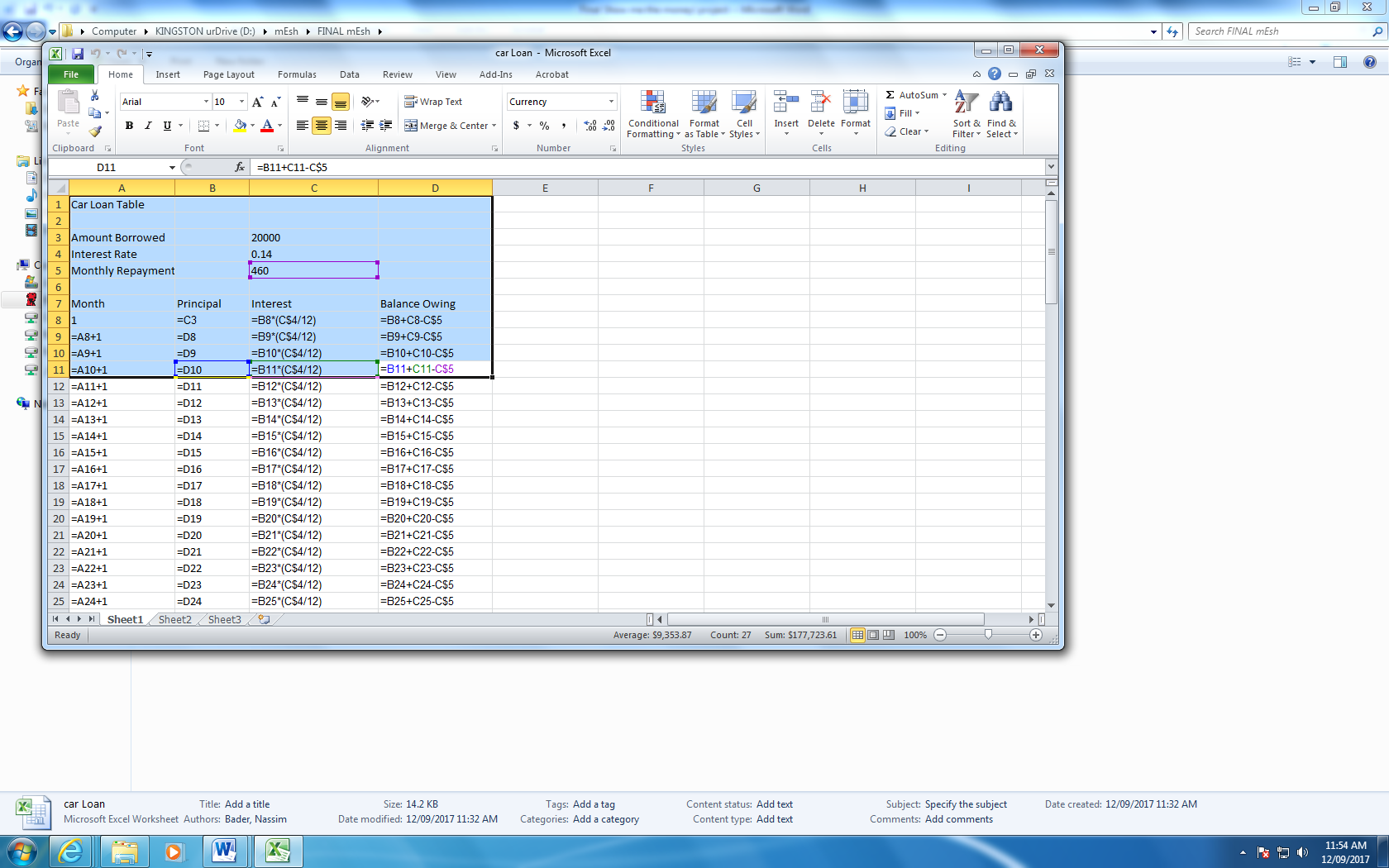
Marking Rubric for Part A

| Question | Marks | Description |
| --- | --- | --- |
| 1 | 0  1 | * Occupation is not realistic for a new graduate (e.g. CEO of Australia post) * Occupation is realistic and at an appropriate level of entry |
| 2 | 0  1  2 | * Occupation stated with no evidence of research * Occupation stated with evidence and without a salary * Occupation and salary stated with evidence presented |
| 3 | 0  1  2 | * Not attempted * Only one of the calculations is correct * Both fortnightly and hourly rates are correct |
| 4 | 0  1  2 | * P.A.Y.G. not calculated * P.A.Y.G. stated with no evidence of research * P.A.Y.G. calculated correctly and evidence is attached |
| 5 | 0  1  2 | * Incorrect response * Partially correct working out and answer * Correct working out and answer |
| 6 | 0  1  2 | * No deductions listed * Possible deductions listed with no research proof * Possible deductions listed with evidence of research |
| 7 | 0  1  2 | * Incorrect or none attempt * Partially correct working out and answer * All working out and answer are correct |
| 8 | 0  1  2  3 | * Incorrect or none attempt * Partially correct working out and answer * All working out and answer are correct * All working out and answer are correct with evidence of Medicare Levi rates attached |
| 9 | 0  1  2  3 | * Incorrect or none attempt * Partially correct working out and answer * All working out and answer are correct * All working out and answer are correct with evidence of Tax rates attached |
| 10 | 0  1  2 | * Incorrect response * Correct response with no explanation * Correct response with an explanation |

Part B:

You are now planning on purchasing a car, keeping in mind your financial situation from Part A, find an advertisement for your dream car and calculate the following:

1. The cost of the car as advertised (provide advertisement/brochure/photo as evidence).
2. Research and calculate on road costs including Registration, CTP Green slip, Comprehensive insurance and stamp duty at current rates (provide quotes/ printouts of rates and charges).
3. Research the fuel consumption of your chosen car and calculate the cost of fuel per year given a car travels on average of 13500 km/year based on the current price of fuel (evidence of fuel price can be in the form of a photo).
4. Other costs involve servicing, maintenance and tyres. Research and estimate a yearly budget that covers service (2-3 times a year) and increase this by 15% to allow for any unexpected emergency maintenance for the car.
5. Calculate the initial cost of the car (price plus on road costs).
6. Investigate different options of financing the car such as hire purchase, personal loan, car loan from a bank or a financial provider, fully maintained novated lease etc. and state which institution you have chosen to finance your vehicle, the interest rate and terms (5 year loan).
7. Using complete a repayment schedule for financing your car based on monthly repayments over a 5 year term using the declining balance method using Resource 9 – MS-F1 – Money Matters – Assessment Task or as per image below.



1. Calculate the total repayments on the car and the amount of interest charged over the term of the contract.
2. Based on your research and calculations in Parts A and B, discuss and evaluate the affordability of your chosen car.

Relevant websites

[Car sales](https://www.carsales.com.au): https://www.carsales.com.au

[Cars guide](https://www.carsguide.com.au/): https://www.carsguide.com.au/

[Road & Maritime Services:](http://www.rms.nsw.gov.au/roads/registration/fees/registration-costs.html) http://www.rms.nsw.gov.au/roads/registration/fees/registration-costs.html

[Green slips](https://www.greenslips.com.au/calculator.html): https://www.greenslips.com.au/calculator.html

[Compare the market:](https://www.comparethemarket.com.au/car-insurance/) https://www.comparethemarket.com.au/car-insurance/

Marking Rubric for Part B

| Question | Marks | Description |
| --- | --- | --- |
| 1 | 0  1 | * Cost of car provided with no evidence * Cost of car and evidence provided |
| 2 | 0  1  2  3  4 | * No research evidence is provided * One component of on road costs is calculated * Two components are calculated * All components of on road costs calculated * All on road costs calculated and quotes/ printouts attached |
| 3 | 0  1  2  3 | * Not attempted * Fuel consumption rate stated with evidence * Cost of yearly fuel consumption is partially correct * Cost of yearly fuel consumption is correct and evidence is provided |
| 4 | 0  1  2 | * Not attempted * Reasonable estimates given without proof * Reasonable estimates given with proof of research |
| 5 | 0  1  2 | * Incorrect response * Partially correct working out and answer * Correct working out and answer |
| 6 | 0  1  2 | * Not attempted * Rates and finance option listed with no evidence * Financial institution, terms, rates given and research is attached |
| 7 | 0  1-3  4 | * Not attempted * Partially completed Excel sheet * Correct cell formulae used and Excel sheet is correctly completed |
| 8 | 0  2  3 | * Not attempted * Total repayments calculated only * Total repayments and interest is calculated |
| 9 | 0  1  2 | * Incorrect response and reasoning * Affordability discussed without justification * Affordability and justification is discussed |

Part C:

Running an effective household involves careful planning and financing. To do this effectively, many people adopt a personal budget to help in this. Your task is to prepare a personal budget which includes all income and expenses. Your budget should be based on your salary from Part A, and calculated over a fortnightly period. All expenses should be based on realistic estimates using your own research.

1. State all income per fortnight.
2. Research a rental property for an area you want to live in and use the rent in your budget.
3. State all expenses per fortnight (include all typical household expenses such as utilities, phone, internet, car repayments, petrol, rent, etc.).
4. How much money is left over for savings?
5. Present your budget on an Excel worksheet.

Relevant websites:

[Money smart](https://www.moneysmart.gov.au/tools-and-resources/publications/factsheet-household-budgets): https://www.moneysmart.gov.au/tools-and-resources/publications/factsheet-household-budgets

[Domain](https://www.domain.com.au/rent/sydney-nsw-2000/): https://www.domain.com.au/rent/sydney-nsw-2000/

[Real estate](https://www.realestate.com.au/rent/in-sydney,+nsw+2000/list-1): https://www.realestate.com.au/rent/in-sydney,+nsw+2000/list-1

[All homes](https://www.allhomes.com.au/browse-rent/sydney-nsw/): https://www.allhomes.com.au/browse-rent/sydney-nsw/

[Moving guide](https://www.sydneymovingguide.com/cost-of-living-sydney/): https://www.sydneymovingguide.com/cost-of-living-sydney/

[Numbeo:](https://www.numbeo.com/cost-of-living/in/Sydney) https://www.numbeo.com/cost-of-living/in/Sydney

Marking Rubric for Part C

| Question | Marks | Description |
| --- | --- | --- |
| 1 | 0  1 | * Not stated * Stated in income column |
| 2 | 0  1 | * No evidence * With evidence (rental advertisement) |
| 3 | 0  1  2  3 | * Not attempted * Partially attempted * Completed without balancing * Completed and balanced budget with all amounts converted to fortnightly values |
| 4 | 0  1 | * Not attempted * Calculated value to balance the budget. |
| 5 | 0  1-3  4 | * Not attempted * Partially completed Excel sheet * Correct cell formulae used and Excel sheet is correctly completed |