



Name: _____

Teacher: _____

Year 12 Mathematics Standard 1 2024-25 Assessment Task 1 – Investigative Assignment

Task number: 1	Weighting: 20%	Due Date: Term 4, Week 7 Friday 29 th November 2024
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Nature and description of the task:

This assessment task consists of a **Take Home Investigative Task**.

Students are to complete all work independently and all work submitted must be clearly handwritten or typed. Where indicated, you must include printed material, including screenshots.

This assessment task involves the use and application of Financial Mathematics to solve practical problems associated with buying an investment property and a vehicle.

The task comprises of:

PART A: The purchase of a motor vehicle (25 marks)

PART B: The purchase of an investment property (33 marks)

Students should attempt all questions. Where required, all formulae and appropriate working out should be shown.

Outcomes assessed:

MS1-12-5 makes informed decisions about financial situations likely to be encountered post-school

MS1-12-9 chooses and uses appropriate technology effectively and recognises appropriate times for such use

MS1-12-10 uses mathematical argument and reasoning to evaluate conclusions, communicating a position clearly to others

Assessment Policies:

Plagiarism, the using of the work of others without acknowledgement, will incur serious penalties and may result in a zero award. Any cheating will also incur penalties.

Zero marks will apply if the Assessment Task is submitted late, unless an Illness/Misadventure or Application for Extension Form has been submitted.

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1. You want to purchase a motor vehicle. You have a deposit of \$10,000 of which \$5,000 is your own savings and the other \$5,000 will come from a credit card loan. You have been given approval of a loan not exceeding \$30,000. This gives you a total budget of \$40,000. You are going to use an online site to make your purchase. You may purchase a brand-new vehicle or 2nd hand.

Go online and select a vehicle you are going to purchase. Print off a picture of the vehicle, showing details such as the price, place of purchase, year, make and model of the car. You will also need to provide the website where you purchased your vehicle from.

1 mark

2. The financial institution that you are going to use has given you a loan at 10.5% p.a. simple (fixed) rate interest for 5 years.

- (a) Assuming you use your \$10,000 for part of the purchase, how much have you borrowed from the financial institution? **1 mark**

- (b) How much interest will you pay on the loan over the 5 years? **1 mark**

(c) How much, in total, will you repay to the financial institution? **1 mark**

(d) You are going to pay the loan off over the 5 years. What is the cost of your monthly repayments for the loan? **1 mark**

3. You will also need to pay the \$5,000 credit card bill and intend to pay it off over 5 years.

(a) Go to <https://www.bankrate.com/credit-cards/tools/credit-card-payoff-calculator/> to determine each monthly payment. Your interest rate will be 23% p.a. Take a screenshot of your data and include it in your response. **1 mark**

(b) How much, in total, will you repay on the credit card? **1 mark**

(c) What percentage of your repayment is spent on interest? **1 mark**

(d) How many months would your loan be for if you paid back \$220 every month? **1 mark**

(e) How much interest would you have saved by paying off the credit card loan with \$220 monthly repayments rather than doing it over the 5 years? **1 mark**

4. Calculate the **total amount you have paid** for the purchase of the car. Assume there are no credit card fees or charges

1 mark

5. You set up a budget to determine your ongoing **running** costs.

Determine the following annual costs:

(a) Registration: (you will need to know your vehicle's "tare weight") **1 mark**
www.rms.nsw.gov.au/roads/registration/fees/registration-costs.html

(b) Greenslip:

2 marks

<https://www.greenslips.nsw.gov.au/price-check>

Include the following:

- The name of the company of the greenslip you have chosen
- A screenshot of your answers (attach to the back of this assignment)
- A screenshot of at least 3 different quotes/companies (paste below)

(c) Insurance – assume you have no no-claim bonus (0%). If not already, pretend you are on your P's. Include the name of your insurance company and take a screenshot of the insurance offer to include with your responses.

1 mark

(d) Fuel – assume you drive 10,000km per year. You will need to determine your fuel costs as follows:

3 marks

- Petrol Vehicle – you use 8L/100km and petrol costs \$1.85 per litre
- Diesel Vehicle – you use 11L/100km and petrol costs \$1.80 per litre
- LPG (gas) – you use 16L/100km and LPG costs \$1.15 per litre

6. You budget for \$2,000 to cover maintenance and servicing of your vehicle per year. Assuming your costs remain fixed, what is the total of **all** your running costs over the five years?

2 marks

7. What will be your total cost, including the **total amount paid for car** and **running costs**, over the five-year period?

1 mark

8. You decide to sell your vehicle at the end of five years. Unfortunately, the vehicle has depreciated each year. Use the declining balance formula to calculate the value of your vehicle at the end of the fifth year.

Use the following rates:

- Brand New Car – 15% each year
- Used Car – 10% each year

1 mark

9. If you sell the vehicle for its value at the end of 5 years, what has been the annual cost of owning the vehicle. You need to consider the purchase price, all costs (including loans and running costs) and the selling price.

3 marks

END OF PART A

Part B: BUYING AN INVESTMENT PROPERTY

33 MARKS

1. You want to purchase an investment property in Orange. You have saved up \$50,000 to help with the deposit and additional fees, and have been given approval for a loan for a maximum of \$600,000. This gives you a total purchase budget of \$650,000.
 - (a) Research two properties you intend to purchase: one house and one apartment/unit. Include a picture of the properties, the features, location and purchase price. **2 marks**

(b) Select one of the properties to purchase, assuming you pay the purchase price as advertised. State why you selected this particular property over the other.

2 marks

2. You are going to purchase the property. We need to calculate any additional costs associated with your purchase (exclude the purchase price). For the purpose of this assignment, we are ignoring any possible grants/schemes for first-home buyers etc.

(a) Using the table below, calculate the costs of the stamp duty, additional bank charges and solicitor's fees.

3 marks

Stamp Duty	For houses valued: <ul style="list-style-type: none">• \$93,000 to \$351,000 Stamp Duty = \$1,500 plus \$3.50 for every \$100 over \$93,000• \$351,000 to \$1,168,000 Stamp Duty = \$10,530 plus \$4.50 for every \$100 over \$351,000
Bank Charges	0.13% of the purchase price
Solicitor's Fees	0.25% of the purchase price

- (b) These additional fees in part (a) need to be paid up front. If you use your savings for this, how much will you need to borrow from the bank?

2 marks

3. Time to get a loan.

- (a) Choose one bank and one financial institution from the table below. Justify as to why you made your choice and provide their website.

2 marks

Bank	Financial Institution
ANZ	AFG Home Loans
Commonwealth Bank	Orange Credit Union
National Australia Bank (NAB)	Mortgage Choice
Westpac	Newcastle Permanent Building Society

- (b) From your selection in (a), choose the lender from which you intend to use. Identify the name of the loan you are choosing from this lender, the annual interest rate and the length of the loan.

2 marks

4. Visit the mortgage calculator <https://www.yourmortgage.com.au/calculators/home-loan-repayment>

Enter your loan amount and the interest rate.

- (a) Take a screenshot of the “**Summary**” section for a 30-year loan with monthly repayments for the amount that you are borrowing. Make sure to include all details down to “estimated repayments” (you do not need to include the amortisation schedule)

1 mark

- (b) Take a screenshot of the same information but with the addition of an extra payment of \$50 per month.

1 mark

(c) How much would you save on the loan if you paid an extra \$50 every month?

1 mark

(d) If you were to pay the loan off in 20 years as opposed to 30 years, how much would you save? (don't include the extra payment of \$50). Provide a screenshot of the details for the 20-year loan.

2 marks

5. Let's make this property work for us. We will now calculate the rental return if you were to rent it out.

We are going to assume the following information:

- \$350 per week, for 1-bedroom units
- \$440 per week, for 2-bedroom units
- \$490 per week, for 3+ bedroom units
- \$460 per week, for 2-bedroom houses
- \$510 per week, for 3-bedroom houses
- \$650 per week, for 4+ bedroom houses

(a) What is your monthly rental income (remember 1 year = 52 weeks)?

2 marks

(b) Calculate your total monthly expenses for your property. You need to include:

3 marks

- The monthly mortgage amount from question 4(a)
- Real Estate agency fees at 10% per month of rental income
- \$1500 p.a. for Landlord's Insurance
- \$1500 p.a. for property/house insurance
- \$1000 p.a. for water
- \$2500 p.a. for maintenance and bills
- 0.2% p.a. of the purchase price for council rates

- (c) Based on your rental return and expenses above, calculate the profit or loss you would receive after owning the rental property for one year. **1 mark**

6. In the last 25 years, the national average increase in house prices has been 6.8% p.a. If this increase was to be maintained for future years, what would the future value of your property be at the end of your 30-year mortgage?

2 marks

7. Unfortunately, 5 years into the investment you are forced to sell the property.

- (a) Calculate the selling price of your property after 5 years, given the property has appreciated in value at 6.8% p.a. **1 mark**

(b) Assuming the profit or loss identified in question 5(c) has remained the same over the life of the investment, determine whether you have made a profit or loss on your property. Make sure to include/consider:

4 marks

- All purchase costs/expenses
- The initial price and future value of the property
- Balance still owing on the loan (see the amortisation schedule from question 4)
- Profit or losses from renting the property
- Selling costs of:
 - Real estate agency fees/commission at 2% of the selling price
 - \$1800 in solicitor's fees.

8. By referring to your calculations above, justify whether your decision to purchase the investment property was a good idea or not.

2 marks

END OF PART B
END OF ASSESSMENT TASK