VCE General Mathematics Unit 3

Area of Study 2: Sample modelling or problem-solving task: Investments

The modelling or problem-solving task is to be of 2–3 hours’ duration over a period of one week.

Introduction

Investing assets to increase wealth is always a challenging experience. It takes constant monitoring to ensure the chosen investments are performing as expected and redeployment of some assets across different sectors is expected at various times. This task explores some investment option strategies and investigates their development over defined time periods. It also looks at comparisons between different investment options.

Data from the various sources listed can be used to help with the investment choices.

Property – [residential](https://www.smartpropertyinvestment.com.au/data)

Property – [international](https://www.realestate.com.au/international/)

[RBA statistics](https://www.rba.gov.au/statistics/frequency/exchange-rates.html)

[Global property guide](https://www.globalpropertyguide.com/rental-yields)

Shares – [domestic](https://www.marketindex.com.au/asx200)

Shares – [international](https://tradingeconomics.com/stocks)

Loan rates – [Savings](https://www.savings.com.au/current-interest-rates-australia/), [Moneysmart](https://moneysmart.gov.au/home-loans/choosing-a-home-loan)

Part 1

Three possible investment options will be constructed using a fixed principal of $100,000 and selected time period of four years.

1. Purchase an international property that will be rented out for the entire investment period of four years. Consider the investment home loan that would be needed and repayments that would be required (including the rental money). Include calculations and a visual image showing the loan balance for each of the first 12 months. At the end of the investment period, sell the property, incorporating the property value increase, and investigate the growth of the investment.
2. Purchase a domestic property that will be rented out for the entire investment period of four years. Consider the investment home loan that would be needed and repayments that would be required (including the rental money). Include calculations and a visual image showing the loan balance for each of the first 12 months. At the end of the investment period, sell the property, incorporating the property value increase, and investigate the growth of the investment.
3. Purchase a portfolio of five shares (domestic or international or a combination). Consider the loan that would be needed and repayments that would be required. Include calculations and a visual image showing the share portfolio balance for each of the first 12 months. A representative value for the share price across the month can be used. At the end of the investment period, sell the shares, pay out the loan and investigate the growth of the investment.
4. Summarise the outcome of each investment and indicate which option is the most appealing reasons for this preference.

Part 2

Explore some investment goals using the scenarios that were developed in Part 1.

1. Calculate the time period that would result in an increase of 50% in the original investment if the domestic property purchase was used in equal proportion with the shares portfolio. Include any assumptions or constraints that would be needed for this scenario.
2. Calculate the time period that would result in an increase of 50% in the original investment if the international property was the sole investment. Include any assumptions or constraints that would be needed for this scenario.
3. Consider one other strategy that would result in an increase of 50% in the original investment. Include any assumptions or constraints that would be needed for this scenario.
4. Summarise the outcome of each investment and indicate which option is the most appealing and reasons for this preference.

Areas of study

The following content from the areas of study is addressed through this task.

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| --- | --- | --- |
| **Unit 3** | | |
| **Area of study** | **Topics** | **Content dot points** |
| Discrete mathematics | Compound interest investments and loans  Reducing balance loans | 1, 2, 4  1, 2, |

Outcomes

The following outcomes, key knowledge and key skills are addressed through this task.

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| **Unit 3** | | |
| **Outcome** | **Key knowledge dot point** | **Key skills dot point** |
| 1 | 1, 2, 3, 4 | 1, 2, 3, 4, 5 |
| 2 | 1, 2, 3, 4 | 2, 4 |
| 3 | 1, 2, 3, 4, 5, 7 | 1, 3, 4, 5, 6, 9, 10, 11, 12 |