 Finding the best deal

Driving question – How can mathematics help me find the best deal?

Your investigation

You are to investigate and compare the costs associated with buying an item on terms and taking out a small loan. This will be completed by using various forms of simple and compound interest.

Task 1 – Buying an expensive item on terms

* Go to [www.harveynorman.com.au](http://www.harveynorman.com.au) or use a shopping catalogue to choose an item you would like to buy. The item should be valued between $500 and $700. You could buy a camera, gaming console, television, tablet, iPad, fridge, etc.
* Record the details of the item including the brand, item, model and its price. Include a picture of the full advertisement of the item from the catalogue, brochure or website. The ad must have a picture of the item and its cost.
* Investigate the cost of purchasing your item on the following terms:
	+ Option 1: No deposit. $10 per week for 2 years.
	+ Option 2: 10% deposit. $40 per month for 2 year
	+ Option 3: 15% deposit. $18 per fortnight for 2 years.
* Which option would you choose? You must give a reason for your answer.

Task 2 – Collecting the data

* Investigate the cost of taking out a personal loan for something worth between $5 000 and $10 000. *e.g.* A small car, a holiday, musical or sporting equipment.
* Record the details of the item including the brand, item, model and its price. Include a picture of the full advertisement of the item from the catalogue, brochure or website. The ad must have a picture of the item and its cost.
* Investigate the cost of purchasing your item on the following terms:
	+ Option 1: Borrowed over 5 years at 6% p.a. simple interest
	+ Option 2: Borrowed over 4 years at 4.5% p.a. interest compounded annually
	+ Option 3: Borrowed over 5 years at 4% p.a. interest compounded annually
* Which option would you choose? You must give a reason for your answer.

Task 3 – Investigating personal loans

* Three different bank accounts offer very similar deals on their personal loans. Consider the following options and determine which one provides the best value for money.
	+ Option 1: Borrowed over 5 years at 4% p.a. interest compounded annually
	+ Option 2: Borrowed over 5 years at 3.8% p.a. interest compounded monthly
	+ Option 3: Borrowed over 5 years at 3.7% p.a. interest compounded daily
	(Assume 365 days per year)
* Which option would you choose? You must give a reason for your answer.

Task 4 – Critical reflection

Consider the decisions you made in each task and the reasons for those decisions. Is the option you chose for each task always the best option? What circumstances might mean somebody makes a different choice? Can you show that your chosen option in each case is mathematically the best no matter what the cost? Write a reflection that considers the driving question, “How can mathematics help me find the best deal?”

Outcomes

Stage 5.1

* uses appropriate terminology, diagrams and symbols in mathematical contexts MA5.1‑1WM
* selects and uses appropriate strategies to solve problems MA5.1‑2WM
* provides reasoning to support conclusions that are appropriate to the context MA5.1‑3WM
* solves financial problems involving earning, spending and investing money MA5.1‑4NA

Stage 5.2

* selects appropriate notations and conventions to communicate mathematical ideas and solutions MA5.2‑1WM
* interprets mathematical or real-life situations, systematically applying appropriate strategies to solve problems MA5.2‑2WM
* solves financial problems involving compound interest MA5.2‑4NA

Stage 5.3

* generalises mathematical ideas and techniques to analyse and solve problems efficiently MA5.3‑2WM
* uses deductive reasoning in presenting arguments and formal proofs MA5.3‑3WM

All outcomes referred to in this unit come from [Mathematics K-10 Syllabus](https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/learning-areas/mathematics/mathematics-k-10) © NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales, 2012