

**ASSIGNMENT — MATHEMATICAL INVESTIGATION**

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| **STUDENT NAME** |  | | |
| **STUDENT ID** |  | | |
| **UNIT NAME** | Mathematical Patterns and Relationships | | |
| **UNIT NUMBER** | 700137 | | |
| **WEIGHTING** | 30% | | |
| **LECTURE/UNIT COORDINATO:** | Michael Casey | | |
| **DUE DATE:** | Week 10, Friday 15th January 2021  2359 hours (11:59 pm) | **TOTAL PAGES:** | 9 |

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| **INSTRUCTIONS TO STUDENTS** |
| * This is an individual task. All work should be your own. * Attempt all parts of the Assignment. * Assignment must be submitted using Journal in vUWS |

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# ASSESSMENT OVERVIEW: AN INVESTIGATION REPORT (30%)

##### LENGTH: The equivalent of 1500 words.

**DUE DATE: Assignment must be submitted by 11:59 pm Friday, 15th January 2021.**

In order for mathematics to be seen as being relevant to a person’s life it needs to be linked to real life. This assignment has been designed around a real life scenario that will involve the use of financial literacy skills. In completing the investigation you will have the opportunity to demonstrate your knowledge and understanding of the content and processes relevant to this Unit.

**PURPOSE - LINKS TO THE UNIT OUTCOMES**

The assignment links with outcomes 1 to of the unit outcomes. However, links with other outcomes may take place depending upon the focus of the investigation.

#### ASSIGNMENT PROCESS

This assignment involves the use of a financial literacy investigation. You are required to write a report on your investigation of alternative options for mathematical resources for your class.

The assessment topic will give you the opportunity to:

1. investigate a real life problem.
2. investigate the type of mathematics that is inherent in the solving of everyday problems.
3. demonstrate your ability to plan, research and budget.
4. demonstrate your understanding of the concepts, understandings and processes that have been introduced in this unit.
5. be creative in the way you investigate the problem.

##### ASSUMPTIONS YOU NEED TO MAKE WHEN COMPLETING THIS ASSIGNMENT

To successfully complete this assignment you need to assume that:

* you will need to show how you can budget and use mathematics in everyday life.
* The decision making process will involve at least two comparisons. For example, if you are costing a particular product you need to compare the costs from at least two different suppliers or similar options and justify your final choice.

##### ASSIGNMENT REQUIREMENTS

Prepare a report on how you would investigate the options for your class. If you have previously completed this unit you are **not allowed** to use any part of your previous assignment. Treat this assignment as a real-life experience so that your enthusiasm and creativity are evident in your investigation report.

**ASSIGNMENT TOPIC:**

### Investigating and purchasing mathematical resources for your class

You are working as a teacher in a year of your choice at a school of your choice. You need to buy new mathematics resources for your class, however have no budget to do this. You would like to buy a total of 2 class sets of resources for your class – you can choose two of the general topics of Number Systems, Measurement, and Space and Geometry. You will need to select specific topics within these general topics to concentrate on for your resources. You also need to fund raise to cover the costs of your purchases.

Your assignment needs to include the following:

1. Report on investigation and planning for two mathematical resources.
2. Fund raising options.
3. One of your resources must be a geometric resource.
4. Video resources are encouraged for the description of the different methods used. These can be shared as links within your assignment to YouTube, ShowMe, etc.
5. APA referencing must be used. [Link for information on APA Referencing](http://library.uws.edu.au/uws_library/guides/referencing-citation?arg=1&amp;p=ofs)

# REPORT

Your report must contain the following sections:

* Introduction

$ Introduction to your project

$ What mathematical subject areas do you want to address with your assignment?

$ How many of the resources do you think you will need? Are they for individual work, group work etc?

* Fundraising

$ How do you plan to raise the money required to buy your resources?

$ Create a flyer to advertise your fundraiser of choice.

* Financial Comparisons

$ Item 1 – compare in terms of cost at least 2 different mathematical resources for your first subject area.

$ Item 2 - compare in terms of cost at least 2 different mathematical resources for your second subject area.

$ Fundraising - compare in terms of cost at least 2 different fundraising options.

* Decision Making

$ Item 1 – Justify and explain your decision between the 2 different mathematical resources for your first subject area. Why did you choose that option? What aspects did you consider? You do not need to select the cheapest option.

$ Item 2 - Justify and explain your decision between the 2 different mathematical resources for your second subject area. Why did you choose that option? What aspects did you consider? You do not need to select the cheapest option.

$ Fundraising - Justify and explain your decision between the 2 different fundraising options. Why did you choose that option? What aspects did you consider? You do not need to select the cheapest option.

* Financial Budget

$ Finalised budget for your assignment including: Income, Costs and any projected profit

$ Total cost involved and a breakdown of ALL of the individual costs into fractions of the total cost.

$ Total cost involved and a breakdown of ALL of the individual costs into percentages of the total cost.

$ For each individual cost, explanation of how the fractions and percentages were calculated.

$ Visual representation of the budget breakdown – i.e. pie chart etc.

### Introduction

This brief introduction will introduce the different mathematical subject area that you would like to address with your assignment.

How many resources do you think you will need? Are they for individual work, group work etc?

### Fundraising

This brief statement needs to discuss the factors that were taken into account when determining the fundraising initiatives to raise the money for your assignment. You need to compare two different ideas for fundraising.

You should estimate the number of students involved in your class. The estimated level of participation should be clearly defined and used to estimate the total income for your fundraising.

### Fundraising Flyer

In this section provide a sample fundraising flyer with all necessary information included.

### Financial Comparisons

In this section you are required to include:

* At least 2 comparisons of the different options and costs for **each** financial consideration. For example, you need to compare the costs of at least two different resources that can be used for your class and justify your final choice. You may choose to compare
  + different resources to teach your students about adding and subtracting fractions.
  + different resources to teach your class about surface area.
* Detailed step-by-step descriptions of different methods that you have used for your calculation of costs. These can be completed using any of the following:
  + Video of you explaining and writing your calculations using iPad, phone, video camera
  + App such as ShowMe where you can write on the ‘whiteboard’ in the app and explain your steps
  + Written / typed calculations with descriptions for each step

You are required to demonstrate 2 different methods of each of the following: addition, subtraction, multiplication and division. For example you may decide to demonstrate:

* + the scratch and standard methods of addition to find the total cost of the resources.
  + the extended and lattice methods of subtraction to compare the costs of the different resources.
  + the lattice and short method for multiplication relating to the total cost of the resources.
  + The long and short division methods for division relating to the cost per student.

### Decision Making

* Justification and explanation of the number of mathematical resources required.
* Explanation of the benefits of each option for items 1 and 2 and the fundraising options. And detailing of the total cost for each item.
* A justification of the decision making process for all decisions including item 1, item 2 and fundraising selected. Aspects to consider include:
  + Compare costs and the benefits that you perceive for each item – you do not need to select the cheapest item, rather the better value for money item.
* Overview of financial budget for the project, detailing income, expenses and any profit.
* It is also appropriate to use visual aids such as graphs to illustrate the budget breakdown.

### Financial Budget

This section of the report addresses the original and final budget for the event. In particular it focuses on:

* a breakdown of the individual costs for each item into both fractions and percentages of the total budget
* Detailed step-by-step descriptions showing how the fractions and percentages were calculated. These can be completed using any of the following:
  + Video of you explaining and writing your calculations using iPad, phone, video camera
  + App such as ShowMe where you can write on the ‘whiteboard’ in the app and explain your steps
  + Written / typed calculations with descriptions for each step

### References

* Appropriate APA referencing has been included within the text.
* Appropriate APA referencing in References section.

**Some Decisions to consider**

* How was the budget determined and how much did it influence your decisions
* What steps did you take to stay within budget or how will you raise the additional money needed if you have not stayed ‘within budget’?
* How do you expect to raise the money required to buy the resources?
* Do you need to limit the number of resources bought to stay ‘within budget’?
* Where will you buy the resources?
* Why did you choose those resources?
* What costs are involved maintaining these resources?
* Will you be running additional fundraising events?
* What costs are involved in running these fundraising events?
* Number of flyers required?
* Will flyers be professionally printed, sent via Facebook, printed at school etc ?

## Submission Details

1. **IT IS SUGGESTED THAT YOU SUBMIT A DRAFT OF YOUR ASSIGNMENT – THE INVESTIGATION REPORT USING JOURNAL BY WEEK 7 SO YOU HAVE TIME TO REVIEW YOUR ORIGINAL REPORT AND EDIT YOUR WORK.**
2. **Submit using Journal** the complete report including a signed copy of the cover sheet **by 11:59 pm Friday 15th January 2020.**

##### It is essential that you:

* 1. keep a “backup” copy of your assignment on your computer
  2. keep a hard copy of your assignment including all the attachments.
  3. attach a signed copy of the Assignment Cover Sheet
  4. present your work professionally demonstrating appropriate academic literacy including APA referencing.

**Journal**

All Hand in assignments in this unit must be submitted using the Journal in vUWS. Include a copy of the cover sheet in your Journal submission and make sure that you include your reference list. After the due date Journal will generate an Originality report (usually within 24-48 hours after the due date and time).

Marking Guide

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|  | **High Distinction** | **Distinction** | **Credit** | **Pass** | **Unsatisfactory (Weak)** |
| **Presentation  Presentation and planning**  **(2 marks)** | Report is excellently planned with excellent presentation and all sections. | Assignment is well thought through with very good presentation and all sections. | Assignment is well thought through with good presentation and all sections. | Assignment has a good presentation and all sections. | Assignment is not well defined. |
| **Context**  **(3 marks)** | Context section shows that assignment has been carefully considered and all factors have been taken into account when looking at fundraising, excursion location and transportation options. | Context section shows that assignment has been considered and most factors have been taken into account when looking at fundraising, excursion location and transportation options. | Context section shows that assignment has been considered and some factors have been taken into account when looking at fundraising, excursion location and transportation options. | Context section shows that assignment has been considered and a few factors have been taken into account when looking at fundraising, excursion location and transportation options. | Context section shows that assignment has not been carefully considered. |
| **Financial Financial comparisons**  **(3 marks)** | Report is comprehensive and includes financial comparisons for a minimum of 2 options for all of the following:  • Item 1.  • Item 2.  • Fundraising options | Report includes financial comparisons for a minimum of 2  options for most of the following:  • Item 1.  • Item 2.  • Fundraising options | Report includes financial comparisons for a minimum of 2  options for some of the following:  • Item 1.  • Item 2.  • Fundraising options. | Report includes some financial comparisons for a minimum of 2 options some of the following:  • Item 1.  • Item 2.  • Fundraising options. | Report does not include financial comparisons. |
| **Methods Mathematical methods and processes.**  **(12 marks)** | Mathematical methods and processes are comprehensively explained through either video or written explanations and includes thorough descriptions for a minimum of 2 different methods of calculation for all of the following:  • Addition.  • Subtraction.  • Multiplication.  • Division.  • Finding Percentages of an amount.  • Finding Fractions of an amount**.** | Mathematical methods and processes are explained through  either video or written explanations and includes thorough descriptions for a minimum of 2 different methods of calculation for most of the following:  • Addition.  • Subtraction.  • Multiplication.  • Division.  • Finding Percentages of an amount.  • Finding Fractions of an amount. | Mathematical methods and processes are explained through  either video or written explanations and includes thorough descriptions for a minimum of 2 different methods of calculation for some of the following:  • Addition.  • Subtraction.  • Multiplication.  • Division.  • Finding Percentages of an amount.  • Finding Fractions of an amount. | Mathematical methods and processes are explained through  either video or written explanations and includes descriptions for a minimum of 2 different methods of calculation for a few of the following:  • Addition.  • Subtraction.  • Multiplication.  • Division.  • Finding Percentages of an amount.  • Finding Fractions of an amount | Mathematical methods and not shown. |
|  | **High Distinction** | **Distinction** | **Credit** | **Pass** | **Unsatisfactory (Weak)** |
| **Decision Decision Making**  **(3 marks)** | Decision making processes are clearly demonstrated and includes all of the following:  • Justification and explanation of decisions for fundraiser.  • Justification and explanation of decisions for excursion location.  • Justification and explanation of decisions for transport. | Decision making processes are demonstrated and includes most of the following:  • Justification and explanation of decisions for fundraiser.  • Justification and explanation of decisions for excursion location.  • Justification and explanation of decisions for transport. | Decision making processes are demonstrated and includes some of the following:  • Justification and explanation of decisions for fundraiser.  • Justification and explanation of decisions for excursion location.  • Justification and explanation of decisions for transport. | Decision making processes are demonstrated and includes a few of the following:  • Justification and explanation of decisions for fundraiser.  • Justification and explanation of decisions for excursion location.  • Justification and explanation of decisions for transport. | Decision making processes are not clearly demonstrated. |
| **Budget Financial budget**  **(5 marks)** | Financial budget is clearly shown and includes all of the following:  • Overview of financial budget detailing income, costs and any profit.  • Visual aids such as graphs to display information from the budget.  • Cost breakdown of fundraiser as both a fraction and percentage of total cost.  • Cost breakdown of excursion location as both a fraction and a percentage of total cost.  • Cost breakdown of transport as both a fraction and a percentage of total cost. | Financial budget is clearly shown and includes most of the following:  • Overview of financial budget detailing income, costs and any profit.  • Visual aids such as graphs to display information from the budget.  • Cost breakdown of fundraiser as both a fraction and percentage of total cost.  • Cost breakdown of excursion location as both a fraction and a percentage of total cost.  • Cost breakdown of transport as both a fraction and a percentage of total cost. | Financial budget is shown and includes some of the following:  • Overview of financial budget detailing income, costs and any profit.  • Visual aids such as graphs to display information from the budget.  • Cost breakdown of fundraiser as both a fraction and percentage of total cost.  • Cost breakdown of excursion location as both a fraction and a percentage of total cost.  • Cost breakdown of transport as both a fraction and a percentage of total cost. | Financial budget is shown and includes a few of the following:  • Overview of financial budget detailing income, costs and any profit.  • Visual aids such as graphs to display information from the budget.  • Cost breakdown of fundraiser as both a fraction and percentage of total cost.  • Cost breakdown of excursion location as both a fraction and a percentage of total cost.  • Cost breakdown of transport as both a fraction and a percentage of total cost. | The financial budget is not clearly shown. |
| **Referencing**  **(2 marks)** | Appropriate APA referencing has been included within the text and in the References section. | Appropriate APA referencing has been mostly included within the text and in the References section. | Appropriate APA referencing has been included either within the text or in the References section. | Appropriate APA referencing has been mostly included either within the text or in the References section. | Assignment has very little referencing. |

**Mark: /30**