Mathematics Methods Unit 4

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Investigation: Sampling and Sample Proportions.**

Mark: \_\_\_\_\_\_\_ / 40

This task will be completed over an extended period of time as directed by your teacher.

Commencement date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Due date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Main Task Description.**

Your task is to collect multiple samples from a population to estimate the proportion of that population exhibiting a particular trait, characteristic or behaviour. You will examine and make judgements upon your samples, supported by statistical calculations, as to whether or not you are confident that they are an accurate representation of the population, in particular as point estimates for the population proportion of your chosen trait.

Select a particular trait, characteristic or behaviour within a population and with research determine the proportion of the population (at least an estimated proportion) that has that trait etc. Some possible examples include:

* Proportion of Australians that are left handed
* Proportion of Australians that are colour blind
* Proportion of Australians that have at least one parent born overseas
* Proportion of Australian children that consume sugar added drinks on a daily basis.
* One of your choice.

Australian Bureau of Statistics may be a good source of information to start with.

<https://www.abs.gov.au/statistics>

**Assessment Criteria.**

You will be marked against a rubric using a scale that includes limited, satisfactory or accomplished levels of demonstrating the investigation objectives. The investigation objectives will be based on your knowledge of course-related work, modelling skills and use of the mathematical thinking process.

The Mathematical Thinking Process is:

* Interpret the task and gather the key information. Up to 6 marks
* Identify the mathematics which could help to complete the task. Up to 6 marks
* Analyse information and data from a variety of sources. Up to 6 marks
* Apply existing mathematical knowledge and strategies to obtain a solution. Up to 8 marks
* Verify the reasonableness of the solution. Up to 8 marks
* Communicate findings in a systematic and concise manner. Up to 6 marks

**Interpret the task and gather the key information.**

What is the purpose of the task?

Upon completion of this task: what decisions can be made and what conclusions can be stated?

What information will you need to pursue?

**Identify the mathematics which could help to complete the task.**

What mathematical skills and concepts could you use to work on this task?

Topic 4.3 of your syllabus document is worth an examine.

**Analyse information and data from a variety of sources.**

What are the best sources to obtain the required information?

**Apply existing mathematical knowledge and strategies to obtain a solution.**

Solve the task using the mathematical concepts and skills identified previously.

Have you become aware of other processes that will assist in the solution to the task?

***You will likely need to insert your own pages of working/results and findings here.***

**Verify the reasonableness of the solution.**

With the original task in mind:

* is the solution valid?
* do your samples accurately represent the population? Why/Why not?

Comment on any limitations you encountered in completing this task. How might these limitations be overcome if given more resources?

**Communicate findings in a systematic and concise manner.**

Have you explained the solution to the task in an efficient way using appropriate language with diagrams if necessary, referring to the original task, directing the conclusion/s to the target audience and referenced your data source/s.

***You do not require to respond to the above statement, just reflect on it and make any necessary changes to your assignment.***