

**Stage 5 - 2023**  
**MATHEMATICS**  
**M EAGLES/D GOUVOUSSIS**



**Task Number: 1**  
**Weight: 25%**

**Notification Date: Monday 13<sup>th</sup> March 2023**  
**Due Date: Wednesday 5<sup>th</sup> April 2023**  
**To class teacher by 3.20pm**

## PROBABILITY ASSIGNMENT

### OUTCOMES ASSESSED

MA5.2-2WM interprets mathematical or real-life situations, systematically applying appropriate strategies to solve problems  
 MA5.1-12SP uses statistical displays to compare sets of data, and evaluates statistical claims made in the media  
 MA5.1-13SP calculates relative frequencies to estimate probabilities of simple and compound events  
 MA5.2-16SP investigates relationships between two statistical variables, including their relationship over time  
 MA5.2-17SP describes and calculates probabilities in multi-step chance experiments

### TASK DESCRIPTION

You will design and undertake one probability experiment to complete experimental and theoretical probabilities calculations.

### TASK INSTRUCTIONS

You are to design a probability experiment with a predicted outcome. Your experiment is to include 4 – 6 outcomes. These may include but are not limited to different colours, numbers, or pictures. Some examples of possible experiments could be a spinner, rolling dice, choosing from a lucky dip, your own card game, bingo, etc.

Any assistance must be recorded on Reference/Help Log. If a teacher is unsure that it is your own work, you could be asked questions on your assessment to determine if this is your work. If you can not satisfactorily answer the questions, your work will be referred to the Stage 5 Curriculum Head Teacher and Deputy Principal for a decision regarding marking of the task.

Three class lessons will be allocated to the task, students are expected to spend some time at home working on their assignment.

Students are encouraged to attempt all questions to the best of their ability. Students will answer questions in the allocated spaces using mathematical language, symbols and graphical representations.

Teacher's signature: \_\_\_\_\_

D. Gouvoussis

Teacher's signature: \_\_\_\_\_

M. Eagles

Head Teacher's signature: \_\_\_\_\_

A. Nott

Deputy Principal's signature: \_\_\_\_\_

A Lawrence

## Reference/Help Log

This assessment task is supposed to reflect your own understanding. We understand that you may need help with some questions to give it your best shot. Please fill in the log below anytime you have help from a parent, another student, teacher/aid or website.

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## MARKING GUIDELINES

	0 marks	1 mark	2 marks	3 marks	4 marks
Describe your probability experiment and list any materials you will be using.	No description or materials are evident	Makes some attempt to describe the probability experiment, OR lists the materials required	Makes some attempt to describe the probability experiment AND lists the materials required	Accurately, describes the probability experiment and lists all materials required	
List the sample space of your experiment (4-6 outcomes).	No sample space is listed.	Incorrectly lists the sample space	Lists some outcomes correctly for the sample space <b>OR</b> correctly lists all outcomes but experiment has less than 4 or more than 6 outcomes.	Correctly lists all outcomes from your experiment which gives between 4 and 6 outcomes for the sample space	
Draw a probability tree diagram for your chosen outcomes	No attempt at drawing a tree diagram.	Attempts to draw a tree diagram but incorrectly labels or orders branches	Correctly draws a tree diagram which is appropriate to chosen outcome but does not include probabilities on branches	Correctly draws a tree diagram which is appropriate to chosen outcome and includes probabilities on branches with some inaccuracies	Correctly draws a tree diagram which is appropriate to chosen outcome and includes all correct probabilities
Calculate the theoretical probability of each outcome in your experiment.	No theoretical probability calculations evident.	Lists theoretical probabilities without showing working out OR probabilities are incorrectly calculated showing some working.	Some theoretical probabilities are calculated correctly showing some/all working.	Most theoretical probabilities are calculated correctly showing all working.	Accurately calculates all theoretical probabilities and shows all working.
Conduct your probability experiment 50 or more times, record the results in the table and calculate each outcome's experimental probability.	No attempt to fill in the table	Completes 1 of the following; records at least 50 outcomes of the experiment, tally and total columns filled out correctly, correct theoretical probabilities and correctly calculates experimental probability	Completes 2 of the following; records at least 50 outcomes of the experiment, tally and total columns filled out correctly, correct theoretical probabilities and correctly calculates experimental probability	Completes 3 of the following; records at least 50 outcomes of the experiment, tally and total columns filled out correctly, correct theoretical probabilities and correctly calculates experimental probability	Completes all of the following; records at least 50 outcomes of the experiment, tally and total columns filled out correctly, correct theoretical probabilities and correctly calculates experimental probability
Explain why you think there were differences in your experimental probabilities and the theoretical probabilities.	No attempt of an explanation	Attempted to describe differences between experimental probabilities and the theoretical probabilities with some misunderstanding.	Clearly explains the differences between experimental probabilities and the theoretical probabilities with a competent understanding		
Explain how you could make your experimental probabilities more closely match the theoretical probabilities.	No attempt of an explanation	Attempted to describe a way to make the probabilities match more closely with some misunderstanding	Clearly explain a solution to make the probabilities match more closely with good reasoning		
Summarise of the experiment discussing your chosen outcomes, the game and all probabilities	No attempt of a summary	Attempted to summarise the experiment and explained results using basic mathematical language	Summarised the experiment and explained results using appropriate mathematical language	Summarised the experiment succinctly and explained results using sophisticated mathematical language	

Task Mark	Task Rank	Cumulative Rank
/25		
Comments:		
Teacher signature _____ Date _____		

**Mathematics Stage 5: Probability Assessment Task**

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

You are to design a probability experiment with a predicted outcome. Your experiment is to include 4 – 6 outcomes. These may include but are not limited to different colours, numbers, or pictures. Some examples of possible experiments could be a spinner, rolling dice, choosing from a lucky dip, your own card game, bingo, etc.

a) Describe your probability experiment and list any materials you will be using.

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b) List the sample space of your experiment (4-6 outcomes).

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c) Draw a probability tree diagram for your chosen outcomes.

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d) Calculate the theoretical probability of each outcome in your experiment, show all working out.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

- e) Conduct your probability experiment 50 or more times, record the results in the table and calculate each outcomes experimental probability.

Outcome	Theoretical Probability	Tally	Total	Experimental Probability
Total				

- f) Explain why you think there were differences in your experimental probabilities and the theoretical probabilities.

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