**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 1 | STRAND: **Statistics and Probability** | **SUB-STRAND:**  **Chance 2** | **WORKING MATHEMATICALLY: MA2-1WM; MA2-3WM** |
| **OUTCOMES: MA2-19SP** | | **Describes and compares chance events in social and experimental contexts** | | |
| **CONTENT:** | | **Conduct chance experiments, identify and describe possible outcomes, and recognise variations in results (ACMSP067)**  \* Use the term 'outcome' to describe any possible result of a chance experiment  \* Predict and list all possible outcomes in a chance experiment, eg list the outcomes when three pegs are randomly selected from a bag containing an equal number of pegs of two colours  \* Predict and record all possible combinations in a chance situation, eg list all possible outfits when choosing from three different T-shirts and two different pairs of shorts  \* Predict the number of times each outcome should occur in a chance experiment involving a set number of trials, carry out the experiment, and compare the predicted and actual result | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | * Try to find out what the students know about ‘chance’. Ask them: “What does the word ‘chance’ mean? When have you heard this word before?” * Can the students communicate using any of the following language: **chance**, **certain**, **uncertain**, **possible**, **impossible**, **likely**, **unlikely**? | | |
| WARM UP / DRILL | | * **Musical Chairs**   Students play the game Musical Chairs removing one chair each time. The chance of each student getting a chair is discussed. The game is repeated with three or more chairs removed at a time and students are asked to comment on whether there is more or less chance of getting ‘out’ compared to the original game.  *Variation:* Other games could be played where an aspect of the game is changed to affect the chance of various outcomes occurring. | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | |  | | |
| QUALITY TEACHING ELEMENTS | | **INTELLECTUALQUALITY** | **QUALITY LEARNINGENVIRONMENT** | **SIGNIFICANCE** |
| * Deep knowledge * Deep understanding * Problematic knowledge * Higher-order thinking * Metalanguage * Substantive communication | * Explicit quality criteria * Engagement * High expectations * Social support * Students’ self-regulation * Student direction | * Background knowledge * Cultural knowledge * Knowledge integration * Inclusivity * Connectedness * Narrative |
| RESOURCES | | bucket of pegs, coins, counters, bags, coloured blocks | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTIONMODELLED ACTIVITIES | GUIDED &INDEPENDENT ACTIVITIES | |
| * **Expected Result**   Students are asked to predict the result of 10 tosses of a coin.  Possible questions include:  . What outcomes can occur when the coin is tossed once?  . What is the likelihood of tossing ‘tails’ on any one toss?  . How many ‘heads’ and ‘tails’ do you expect there to be?  . Did the expected result and the actual result match?  . Did tossing ‘tails’ on the previous toss increase the likelihood of tossing ‘tails’ on the next toss? Why?  . Which outcome, ‘heads’ or ‘tails’, is more likely?  Students are encouraged to suggest how the experiment could be improved and implement their plan. This activity could be extended to tossing two coins.   * **Certain, Uncertain**   The teacher writes headings ‘Certain’ and ‘Uncertain’ on a sheet of paper.  In pairs, students are asked to list under the headings things that they think are sure to happen (‘certain’) at school on the day and then things that they think are not sure to happen (‘uncertain’) at school on the same day. Students discuss their findings.  *Variation:* Extend the activity to include other categories using the language of chance eg impossible, uncertain, and certain. | LEARNING SEQUENCES1 or Early S2 | * **Likely or not?**   The teacher prepares cards with ‘always’, ‘likely’, ‘unlikely’ and ‘never’ on them and orders them on the floor. They pose the question:  ‘How likely is it that someone in another class has a vegemite sandwich today?’  Students stand behind the chance card that they think is the best answer to the question and explain their reasons.  Students survey one or more classes and find out whether their prediction was accurate. |
| LEARNING SEQUENCES2 | * **Pegs**   In groups, students are given a bucket of pegs. The bucket could have 10 blue and 10 yellow pegs. Students are asked to sort and count the pegs and then return them to the bucket.  Students are asked to predict all possible combinations of pegs if two pegs are randomly taken from the bucket. They select one possible combination and, without looking, take two pegs out of the bucket. They see if the actual result matches their predicted result and discuss.  Students repeat the selection several times returning the pegs to the bucket after recording their selection. They write a description of the activity explaining their observations.   * **Sample Bags**   Students place four counters or blocks (eg three blue and one white) into a bag. The teacher discusses with the students the chance of drawing out a blue block.  Possible questions include:   * would you have a good chance or a poor chance of drawing out a blue block? Why? * what colour block is most likely to be drawn out? Why? * **Assessment** Certain, Uncertain.   Teacher gives students a worksheet with the headings ‘certain’ and ‘uncertain’. Students are to draw or list a variety of events that are certain or uncertain to occur. |
| LEARNING SEQUENCEExtensionLate S2 or Early S3 | * **Sampling**   The teacher places one hundred counters into a paper bag, 70 red, 20 white and 10 green. A student takes out 10 counters without looking. Students predict the proportion of counters of each colour in the bag using this sample.  Possible questions include:   * how many of each colour do you think are in the bag? Why? * do you think your prediction is very accurate?   Students return the counters to the bag and select another sample of 10. They make another prediction and compare this with that of other student.  Students discuss the predictions and compare with the actual sample. They are encouraged to make up their own sample experiments using this as a model. Students discuss where sampling could be a useful tool. |
| **EVALUATION &REFLECTION** | Student Engagement: Resources:  Achievement of Outcomes: Follow-up: |

* All assessment tasks should be written in **red** and planning should be based around developing the skills to complete that task.
* Assessment rubrics or marking scale should be considered.