**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK:**2** | 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](http://syllabus.bos.nsw.edu.au/glossary/mat/probability/?ajax" \t "_blank" \o "Click for more information about 'chance') experiments, identify and describe possible outcomes, and recognise variation in results (ACMSP067)*** Keep a tally and graph the results of a chance experiment (Communicating)
* Explain any differences between expected results and actual results in a chance experiment (Communicating, Reasoning)
* Make statements that acknowledge 'randomness' in a situation, eg 'The spinner could stop on any colour' (Communicating, Reasoning)
* Repeat a chance experiment several times and discuss why the results vary (Communicating)
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| 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**?
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| WARM UP / DRILL | * **Fair Game?**

Students play games such as Snakes and Ladders, Heads Down/Thumbs Up, or outdoor games such as Statues.Students are asked if they think the game played is a fair game or not. Students are encouraged to justify their answers and to associate the idea of fairness with the idea that everyone has an equal chance to win. This activity could be extended to playing a game designed to be obviously unfair in order to stimulate discussion.* ***Variation:***Other games could be played where an aspect of the game is changed to affect the chance of various outcomes occurring.
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| 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, dice, flash cards, coins, counters, bags, simple board games, coloured blocks |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTIONMODELLED ACTIVITIES | GUIDED &INDEPENDENT ACTIVITIES |
| * **Is It Fair?**

The class is organised into four teams. Each team is allocated a colour name: red, blue, green or yellow.The teacher has a bag of counters composed of 10 red, 5 blue, 4 green and 1 yellow. The students are told that there are twenty counters and that each colour is represented in the bag.The composition of counters is not revealed to the students.The teacher draws a counter from the bag and a point is given to the team with the corresponding colour. The counter is then returned to the bag and the process is repeated for twenty draws.Individually, the students are then asked to predict the composition of coloured counters in the bag, explain their prediction and state whether the game is fair.Possible questions include:. What happens if one colour is not included?. Have you tried using a diagram to help you with your predictions?. What are some possible explanations?. How will you know if your generalisations are reasonable?Students are then told the composition of colours in the bag and are asked to name the colours most and least likely to be drawn out. | LEARNING SEQUENCERemediationS1 or Early S2 | * **Will it happen tomorrow?**

Students are shown pictures of children doing a variety of activities eg eating lunch, playing in the rain, using a calculator, and visiting the zoo. Students discuss whether the activity ‘might happen’, ‘will probably happen’, or ‘is unlikely to happen’ tomorrow. Students are encouraged to discuss any differences in opinion. |
| LEARNING SEQUENCES2 | * **Spinners**

Test a coloured spinner (dial with pointer) with three equal-sized sectors. Use a tool to build more spinners. Choose up to twelve equal-sized sectors. Choose one of three colours for each part of a spinner. For example, make a three-colour spinner with six red sectors, four yellow sectors and two orange sectors. Test the spinner over a number of spins. See which colour the pointer lands on each time. Watch the graph build after each spin. Compare the actual results with the expected results. Check whether increasing the proportion of a colour on a spinner increases the chances of the spinner landing on that colour.<http://www.tale.edu.au/tale/components/includes/trap.html?uid=aHR0cDovL3RsZi5kbHIuZGV0Lm5zdy5lZHUuYXUvbGVhcm5pbmdvYmplY3RzL0NvbnRlbnQvTDIzODAvaW1zbWFuaWZlc3QueG1sLmh0bWxAVGFMRV8yMDA1X1RMRl9WMg%3D%3D&muid=011266&taleUserId=1007624555&userType=u&username>= * **Roll totals to race**

Find two dice and two different-coloured centicubes. Players choose to be either Runner 1 or Runner 2.Take turns to roll the dice, add the numbers rolled. Runner 1 can move a space if a total of 2, 3, 4 or 5 is rolled. Runner 2 can move a space if a total of 6, 7, 8 or 9 is rolled. Players move their centicube down the track until a runner reaches the ‘Finish Line’. Score 1 point, on the scorecard, for each race you win. After one game, discuss whether one runner has more **likelihood** of winning than the other. Predict who will win the most games after six more games have been played. *What changes could you make to the game so that each player has an equal chance?* Play the game again with the changes you made.[https://portalsrvs.det.nsw.edu.au/f5w687474703a2f2f6c72722e636c692e6465742e6e73772e6564752e6175$$/LRRDownloads/7862/1/44262\_2A\_U35\_Print\_1.pdf](https://portalsrvs.det.nsw.edu.au/f5w687474703a2f2f6c72722e636c692e6465742e6e73772e6564752e6175%24%24/LRRDownloads/7862/1/44262_2A_U35_Print_1.pdf) **Assessment -TALe online assessment- Build spinners to meet certain criteria.**[**http://www.tale.edu.au/tale/components/includes/trap.html?uid=aHR0cDovL3RsZi5kbHIuZGV0Lm5zdy5lZHUuYXUvbGVhcm5pbmdvYmplY3RzL0NvbnRlbnQvTDgyNzcvaW1zbWFuaWZlc3QueG1sLmh0bWxAVGFMRV8yMDA1X1RMRl9WMg%3D%3D&muid=011266&taleUserId=1007624555&userType=u&username**](http://www.tale.edu.au/tale/components/includes/trap.html?uid=aHR0cDovL3RsZi5kbHIuZGV0Lm5zdy5lZHUuYXUvbGVhcm5pbmdvYmplY3RzL0NvbnRlbnQvTDgyNzcvaW1zbWFuaWZlc3QueG1sLmh0bWxAVGFMRV8yMDA1X1RMRl9WMg%3D%3D&muid=011266&taleUserId=1007624555&userType=u&username)**=**  |
| LEARNING SEQUENCEExtension Late S2 or Early S3 | * **Fair Game**

The teacher challenges the students to a dice game. Two dice are rolled. If the total is 7 the teacher wins. If the total is not 7 the students win. The game is played 20 times with the total recorded each time.Possible questions include:. was the game fair? Why? What are your reasons for thinking that?. what total occurred most often? Why?Students design a die so that a particular outcome is more likely to occur than another. |
| **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.

**Roll totals to race.**

Play sheet

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| **Runner 1** | **Runner 2** |
| **Start** | **Start** |
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|  |  |
|  |  |
| **Finish Line** |