**CHANCE 1 – STAGE 3**

**OUTCOMES**

A student:

* MA3-1WM - describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions
* MA3-19SP - conducts chance experiments and assigns probabilities as values between 0 and 1 to describe their outcomes

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| **CONTENT** | **plan** |
| **List outcomes of chance experiments involving [equally likely](http://syllabus.bos.nsw.edu.au/glossary/mat/equally-likely-outcomes/?ajax" \t "_blank" \o "Click for more information about 'equally likely') outcomes and represent probabilities of those outcomes using [fractions](http://syllabus.bos.nsw.edu.au/glossary/mat/fraction/?ajax" \t "_blank" \o "Click for more information about 'fractions') (ACMSP116)** |  |
| use the term '[probability](http://syllabus.bos.nsw.edu.au/glossary/mat/probability/?ajax" \t "_blank" \o "Click for more information about 'probability')' to describe the numerical value that represents the likelihood of an outcome of a chance experiment http://syllabus.bos.nsw.edu.au/wsimages/cca/l.png | 3 |
| recognise that outcomes are described as 'equally likely' when any one outcome has the same chance of occurring as any other outcome http://syllabus.bos.nsw.edu.au/wsimages/cca/l.png | 2 |
| list all outcomes in chance experiments where each outcome is equally likely to occur | 2 |
| represent probabilities of outcomes of chance experiments using fractions, eg for one throw of a standard six-sided die or for one spin of an eight-sector spinner | Missing |
| determine the likelihood of winning simple games by considering the number of possible outcomes, eg in a 'rock-paper-scissors' game (Problem Solving, Reasoning) CTCT | Missing |
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| **Recognise that probabilities range from 0 to 1 (ACMSP117)** |  |
| establish that the [sum](http://syllabus.bos.nsw.edu.au/glossary/mat/sum/?ajax" \t "_blank" \o "Click for more information about 'sum') of the probabilities of the outcomes of any chance experiment is equal to 1 | 2 |
| order commonly used chance words on an [interval](http://syllabus.bos.nsw.edu.au/glossary/mat/interval/?ajax" \t "_blank" \o "Click for more information about 'interval') from zero ('impossible') to one ('certain'), eg 'equally likely' would be placed at one half or 0.5 | 1 |
| describe [events](http://syllabus.bos.nsw.edu.au/glossary/mat/event/?ajax" \t "_blank" \o "Click for more information about 'events') that are impossible and events that are certain (Communicating) http://syllabus.bos.nsw.edu.au/wsimages/cca/l.pngCT | Missing |
| describe the likelihood of a variety of events as being more or less than a half (or 0.5) and order the events on an interval (Communicating) | Missing |

**CHANCE 2 – STAGE 3**

**OUTCOMES**

A student:

* MA3-1WM - describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions
* MA3-2WM - selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations
* MA3-3WM - gives a valid reason for supporting one possible solution over another
* MA3-19SP - conducts chance experiments and assigns probabilities as values between 0 and 1 to describe their outcomes

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| **CONTENT** | **plan** |
| **Compare observed [frequencies](http://syllabus.bos.nsw.edu.au/glossary/mat/frequencies/?ajax" \t "_blank" \o "Click for more information about 'frequencies') across experiments with expected frequencies (ACMSP146)** |  |
| use the term 'frequency' to describe the number of times a particular outcome occurs in a chance experiment http://syllabus.bos.nsw.edu.au/wsimages/cca/l.png | 4 |
| distinguish between the 'frequency' of an outcome and the '[probability](http://syllabus.bos.nsw.edu.au/glossary/mat/probability/?ajax" \t "_blank" \o "Click for more information about 'probability')' of an outcome in a chance experiment (Communicating) http://syllabus.bos.nsw.edu.au/wsimages/cca/l.png | 4 |
| compare the expected frequencies of outcomes of chance experiments with observed frequencies, including where the outcomes are not [equally likely](http://syllabus.bos.nsw.edu.au/glossary/mat/equally-likely-outcomes/?ajax" \t "_blank" \o "Click for more information about 'equally likely') | 4, 5 |
| recognise that some random generators have outcomes that are not equally likely and discuss the effect on expected outcomes, eg on this spinner, green is more likely to occur than red or grey or blue (Reasoning) | 4, 5 |
| discuss the 'fairness' of simple games involving chance (Communicating, Reasoning) CTSC | 4 |
| explain why observed frequencies of outcomes in chance experiments may differ from expected frequencies (Communicating, Reasoning) http://syllabus.bos.nsw.edu.au/wsimages/cca/l.pngCT | 4 |
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| **Describe probabilities using [fractions](http://syllabus.bos.nsw.edu.au/glossary/mat/fraction/?ajax" \t "_blank" \o "Click for more information about 'fractions'), [decimals](http://syllabus.bos.nsw.edu.au/glossary/mat/decimal/?ajax" \t "_blank" \o "Click for more information about 'decimals') and [percentages](http://syllabus.bos.nsw.edu.au/glossary/mat/percentage/?ajax" \t "_blank" \o "Click for more information about 'percentages') (ACMSP144)** |  |
| list the outcomes for chance experiments where the outcomes are not equally likely to occur and assign probabilities to the outcomes using fractions | 5 |
| use knowledge of [equivalent fractions](http://syllabus.bos.nsw.edu.au/glossary/mat/equivalent-fractions/?ajax" \t "_blank" \o "Click for more information about 'equivalent fractions'), decimals and percentages to assign probabilities to the likelihood of outcomes, eg there is a 'five in ten, one half, 50%, 0.5 or 'one in two' chance of a particular [event](http://syllabus.bos.nsw.edu.au/glossary/mat/event/?ajax" \t "_blank" \o "Click for more information about 'event') occurring | 5 |
| use probabilities in real-life contexts, eg 'My football team has a 50% chance of winning the game' (Communicating, Reasoning) | 5 |
| design a spinner or label a die so that a particular outcome is more likely than another and discuss the probabilities of the outcomes (Communicating, Problem Solving) CT | 5 |
| **Conduct chance experiments with both small and large numbers of trials using appropriate digital technologies(ACMSP145)** |  |
| assign expected probabilities to outcomes in chance experiments with random generators, including digital simulators, and compare the expected probabilities with the observed probabilities after both small and large numbers of trials CT | **6** |
| determine and discuss the differences between the expected probabilities and the observed probabilities after both small and large numbers of trials (Communicating, Reasoning) http://syllabus.bos.nsw.edu.au/wsimages/cca/l.png | **6** |
| explain what happens to the observed probabilities as the number of trials increases (Communicating, Reasoning) http://syllabus.bos.nsw.edu.au/wsimages/cca/l.png | **6** |
| use [samples](http://syllabus.bos.nsw.edu.au/glossary/mat/sample/?ajax" \t "_blank" \o "Click for more information about 'samples') to make predictions about a larger '[population](http://syllabus.bos.nsw.edu.au/glossary/mat/population/?ajax" \t "_blank" \o "Click for more information about 'population')' from which the sample comes, eg take a random sample of coloured lollies from a bag, calculate the probability of obtaining each colour of lolly when drawing a lolly from the bag, and use these probabilities and the total number of lollies in the bag to predict the number of each colour of lolly in the bag CT | **6** |
| discuss whether a prediction about a larger population, from which a sample comes, would be the same if a different sample were used (Communicating, Reasoning) http://syllabus.bos.nsw.edu.au/wsimages/cca/l.pngCT | **6** |

**MISSING PLAN**