Booragul Public School NSW Syllabus for the Australian Curriculum – Statistics and Probability

Stage 2 – Chance 2

Outcome	Teaching and Learning Activities	Notes/ Future Directions/Evaluation	Date

Stage 2

A student:

- uses appropriate terminology to describe, and symbols to represent, mathematical ideas MA2-1WM
- checks the accuracy of a statement and explains the reasoning used MA2-3WM
- describes and compares chance events in social and experimental contexts MA2-19SP

Language

chance, **event**, possible, impossible, likely, unlikely, **less likely**, **more likely**, **most likely**, **least likely**, **equally likely**, experiment, outcome.

Ignition Activities

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, certain.
Extension: Students devise their own rating scale using the language of chance.

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.

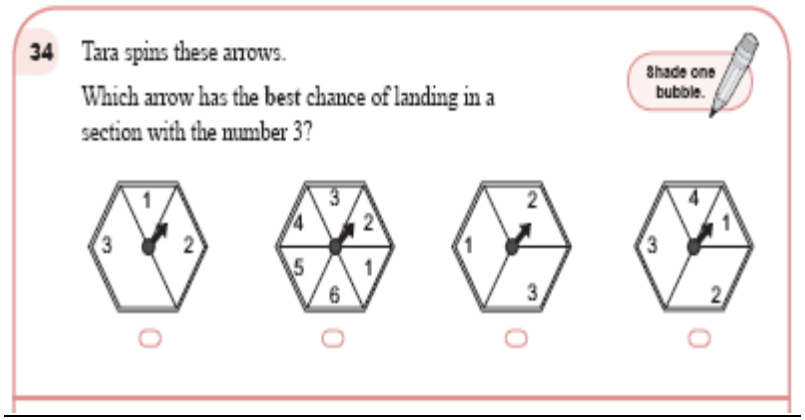
Explicit Mathematical Teaching

Describe possible everyday events and order their chances of occurring
• use the terms 'equally likely', 'likely' and 'unlikely' to describe the chance of everyday events occurring, eg 'It is equally likely that you will get an odd or an even number when you roll a die'
• compare the chance of familiar events occurring and describe the events as being 'more likely' or 'less

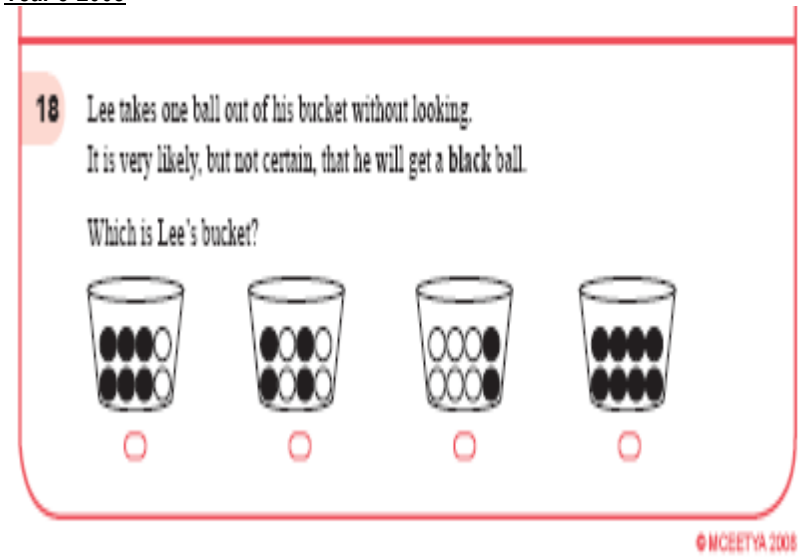
likely' to occur than each other • order events from least likely to most likely to occur, eg 'Having 10 children away sick on the same day is less likely than having one or two away' • compare the likelihood of obtaining particular outcomes in a simple chance experiment, eg for a collection of 7 red, 13 blue and 10 yellow marbles, name blue as being the colour most likely to be drawn out and recognise that it is impossible to draw out a green marble		
Identify everyday events where one occurring cannot happen if the other happens • identify and discuss everyday events occurring that cannot occur at the same time, eg the sun rising and the sun setting		
Identify events where the chance of one occurring will not be affected by the occurrence of the other • identify and discuss events where the chance of one event occurring will not be affected by the occurrence of the other, eg obtaining a 'head' when tossing a coin does not affect the chance of obtaining a 'head' on the next toss ▯ explain why the chance of each of the outcomes of a second toss of a coin occurring does not depend on the result of the first toss, whereas drawing a card from a pack of playing cards and not returning it to the pack changes the chance of obtaining a particular card or cards in future draws (Communicating) • compare events where the chance of one event occurring is not affected by the occurrence of the other, with events where the chance of one event occurring is affected by the occurrence of the other, eg decide whether taking five red lollies out of a packet containing 10 red and 10 green lollies affects the chance of the next lolly taken out being red, and compare this to what happens if the first five lollies taken out are put back in the jar before the sixth lolly is selected		
Whole Class Teaching 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.		
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.		

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? • Zwhat 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.		
Tossed Fruit Salad The teacher labels a large die with three faces displaying an apple, two faces displaying a banana and one face displaying an orange, and shows the die to the class. Students are asked to order the fruits from least likely to most likely to be rolled. After a number of rolls, the students compare the results with their predictions. Students discuss whether their predictions were supported by their experiment and explain the differences between expected results and actual results in this simple chance experiment. Possible questions include: Z how can we change the labels on the die so that the orange is most likely to be rolled? The labels are then changed accordingly, and the die rolled a number of times to compare the results with the students' predictions. Students are encouraged to make other suggestions about altering the labels to change the outcomes and these suggestions are tested.		
Combination Dressing Students are told that they will be given three t-shirts and two pairs of trousers and are asked to predict how many different combinations of clothes they could make from them. They work out a strategy and follow it to calculate the number of combinations and compare the results to their predictions.		
Guided Group/Independent Activities **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? Students could trial their predictions by drawing a block out of the bag a number of times, recording the colour and replacing the block each time. Students discuss their findings. The colours are then swapped to three white blocks and one blue block. The teacher discusses with the students the chance of drawing out a blue block from this new group. 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? Students complete a number of trials and discuss the results. Students are encouraged to make summary statements eg 'If there are lots of blue blocks you have a good chance of getting a blue block.'		
Take-away Dice In pairs, students play the following game to investigate the concept of fairness. In turns, they throw two dice and subtract the smaller number from thrown, they calculate 6 – 4 = 2. Player A scores a point if the answer is 0, 1, or 2. Player B scores a point if the answer is 3, 4, or 5. Students play the game and are asked to comment on whether the game is fair and why. Students are asked how the rules of the game could be changed to make the game fairer and how they could be changed so it is impossible for one student to lose.		
Removing Counters Students make a game board containing the numbers 1 to 12. In pairs, each student is given 12 counters to place on any of the numbers on their game board. Students can choose to place more than one counter on particular numbers and no counters on others. Students take turns to roll and add two dice. If they have placed counters on the total obtained, they remove them. The first player to remove all their counters from their game board wins. Students discuss the likelihood of rolling certain totals. *Variation:* Students create game boards on the computer.		
Previous NAPLAN Questions **Year 3-2008**		



Year 5-2008



Planned Assessment

Pre Assessment

BST Yr 3 Number 2007 q 34, Yr 5 Number 2007 q 48

Board of Studies-Assessment Resource Centre(ARC) – Stage 2 Maths "Is it fair?" AssessmentActivity