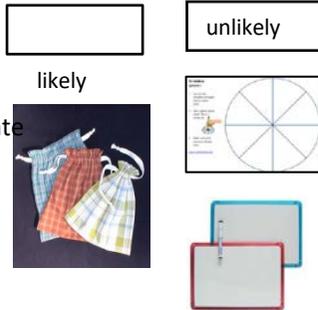## Introduction

Students will compare and order events by whether they are likely or unlikely, more likely or less likely to happen, by using the language of chance and justifying their opinions.

Resources

- Likely or unlikely / least likely or most likely voting cards
- Full set of Likelihood cards
- Paper and pens, sticky notes
- Coloured cubes

unlikely

likely

- Cloth bag
- Spin and Weigh template
- Whiteboards

Time / Classroom Organisation

This activity may be introduced in a whole class situation and then as small groups, 20 minute focused teaching and learning events.

Australian Curriculum Year Two

Identify practical activities and everyday events that involve chance. Describe outcomes as 'likely' or 'unlikely' and identify some events as 'certain' or 'impossible' (ACMSP047)

Catholic Education Diocese of Cairns
Learning with Faith and Vision

Proficiency Strand:

Fluency – listing possible outcomes of chance events

Activity Process---Likely or unlikely?

1. Ask students which of two unrelated events is more likely to happen. Choose an event that is obviously more or less likely, for example:
Is it more likely that we will read a book at school tomorrow or that the principal will come to school in her pyjamas? Why? Discuss possible reasons.

My teacher will come to school with green hair.

2. Repeat the previous activity for two more unrelated events, for
example: *Are you more likely to go straight home after school today or to drive to Sydney? How do you know you won't go to Sydney? Is it more likely that we will do some mathematics in school tomorrow or that I will come to school tomorrow with*
bright green hair? Discuss the reasoning behind their answers.
Source: First Steps. 2005. *First Steps in Mathematics: Chance and Data* Rigby: Port Melbourne p33.

unlikely   likely

3. Give out least likely/ most likely voting cards to each child. On two separate sticky notes write up two possible events.
Have the students indicate which scenario is likely/ unlikely by holding up their voting card. Then discuss reasons for the students choices, for example: *Jason why do you think it is unlikely that you will fly to Disneyland tomorrow?* Repeat using more likely / unlikely events.

most likely   least likely
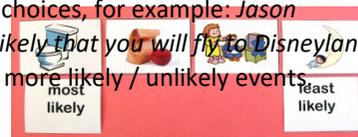
Activity Process – What will happen?

1. In groups of four, give each group a full set of likelihood cards. First have them work in pairs, each pair taking two of the cards and deciding whether one is more likely than the other, and why. They then join with the other pair in their group and try to order the four cards from most likely to least likely. Finally, each group orders all ten cards from most likely to least.
Source: First Steps. 2005. *First Steps in Mathematics: Chance and*

Data Rigby Port Melbourne p40

Activity Process – Cube Draw

1. Ask the students to watch you as you put 4 green cubes and 1 red cube into the bag.
Without looking, take out one of the cubes, what colour do you think you will get? Could you get green? Are you certain to get green? Are you l

to get green? Are you likely to get red? Are you more likely to get green or red? Why Could you get yellow? Why not?
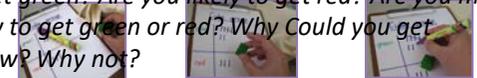
2. Collecting the data. Begin a tally chart with the headings red
and green. Students take turns to: take a cube from the bag without looking; make a tally mark to show the colour and replace the cube in the bag.

3. After each student has had a turn discuss the results. Ask:
How many people got a red cube?...a green cube? ….a yellow cube? Did more people get red or green cubes? Was it more likely/ unlikely to get a red or green?
Why do you think that happened?

4. Have students repeat the activity several times (as a whole class or working in pairs). Each time, use a different colour combination of cubes, pattern blocks or links, such as 2 green and 3 blue or 1 yellow,
 2 purple and 3 green.

Variations & Extensions
Spin and Weigh
  Resources: Spin and Weigh Master, paper
  plate, pencils, coloured cubes, balance scales
Colour three parts of the spinner red and the rest blue. Construct the spinner following the instructions on the template.

Making prediction: In a whole class situation, ask volunteers to make several spins. Then ask questions such as, *If you spin the spinner, what colour do you think you will get? Are you more likely to get red or blue? Why? If everyone in the class makes one spin, do you think more spins will be red or blue? Why? How many spins do you think will be red?*

Collecting data: Break the class into small groups. To make a balance 'graph', students take turns to spin the spinner (once each), then place a red or blue cube in the appropriate pan of the balance to show the outcome.

Discussing the results: After each student has had one spin, ask; *Did more people spin red or blue in your group? How do you know? How many red cubes do you think there are in your pans?* Ask students to count the cubes and have each group record their results using a tally chart on a white board.
Then ask questions such as*, If we made 50 spins, how many do you think would be red? Suppose Amy scored a point for every red spin
 and Jack scored a point for every blue spin. Who do you think would have the most points? Why? Do you think this would be a fair game? Why, or why not? How could we make it fair?*

Further investigation:
- Repeat the activity using spinners coloured in different portions of red and blue. Discuss what you find. Record data using digital resources.
- Four students can write their names on a spinner divided into quarters and see whose name comes up most often in 20 spins.

Source: Graphs and Glyphs.2004. Mimosa Publications Pty Ltd p66

Digital Resources
http://www.ideal-resources.com.au/index.php

Probability Spinner
Create/colour up to nine different spinners and discuss the possible outcomes with the class. The yellow pointer can be set to spin randomly or dragged to the required outcome.

Tally Chart
Create a Tally Chart or discuss one of the ready-made examples.

Pictogram
A flexible program to support the teaching of pictograms. Use the ready-made examples or drag the yellow triangles to display your own data.

Contexts for Learning
Play:
Use the language of chance as students play a variety of board games.
Are you likely to win if you throw more sixes? Are you likely to win if you throw a 1 each time?

Investigation:
Two Steps Forward / Two steps Back. Have students toss an uneven object, for example: drawing pin, bottle top, drink umbrella. When it lands face up the thrower takes two steps forwards and when it lands face down, they take two steps backwards.
Have students play with a partner and see who can be first to a given line. Ask: Is the drawing pin likely to face up or face down? Which side is more likely? Would it be better to take two steps forward when it lands face down?

Source: First Steps. 2005. *First Steps in Mathematics: Chance and Data* Rigby Port Melbourne p33

Real life experience:
The teacher rewards appropriate behaviour by having students write their name on a raffle and put it in the draw for a lucky dip at the end of the week. Ask*: Are you likely to get a lucky dip if your   name is not in the draw? How can you increase your chances of getting a lucky dip?*

Routines and Transitions:
When reading a story to students, stop periodically and ask them to predict what might happen next. Write suggestions on a card and have students order the cards to say which is most likely and least likely to happen next. Ask: *What is in the story that helps you decided which is most likely / least likely?*
Source: First Steps. 2005. *First Steps in Mathematics: Chance and Data*
Rigby Port Melbourne p33

Assessment
Using four likely events ask students to rank events from most likely to least likely. Observe students as they express their reasoning about the likelihood of the events occurring and why one event is more likely than the other.

Achievement Standard: describe outcomes for everyday events

Background Reading
Just as we compare and order objects and spaces according to size, or events by how long they take, we can compare and order events by how likely they are to happen.
Students should be assisted to draw on their experience to describe familiar things as more or less likely. Having compared two events in this way, they should be assisted to put several events in order from those they think least likely to those they think most likely. For example, they could use

expressions such as 'very likely', 'quite likely', 'equally likely as not', 'quite unlikely', 'very unlikely' to describe and order events such as:
•we will do some mathematics in school today
•the egg will crack if I drop it
•it will rain today.
They could also order related everyday events such as the likelihood of four possible destinations after school (home, the shops, the pool, auntie's place), explaining their reasoning. Just as we would help students first develop the idea of area by comparing regions of obvious different areas, so too the idea of 'how likely' will be best developed if initially the events being ordered are obviously different in likelihood.

Source: First Steps. 2005. *First Steps in Mathematics: Space.* Rigby: Port Melbourne p29

Year three NAPLAN Numeracy test links
Chance

Links to Related MAGs
1.2.9   Outcomes of events
2.4.10 Chance
3.2.9   Chance 1