Rock, paper, scissors

NEW June 2025

Year level: 2

Approximate number of lessons: 1

Learning goals

- Engage in chance-based investigations about games and everyday situations to:
  - identify possible outcomes
  - collect and record data
  - create visualisations for frequencies of outcomes (e.g., lists, picture graphs)
  - describe what these data visualisations show
  - answer chance-based investigative questions
  - notice variations in outcomes

Resources

- How to play rock, paper, scissors **video** to show your class
- If you wish to play the alternative version 'toka, pepa, kuti' using whole body movements of hands up for 'pepa', hands on hips for toka and hands out in front of you for kuti then you need to make sure the class is familiar with this version of the game.
- This Scratch Garden Mini Maths Movie **video** shows how to record using a tally chart

Activity

Introduction

This chance based game is based on the idea of the game of **rock, paper, scissors** having two outcomes, either a match or no match. The game can be played using Te Reo Māori 'toka, pepa, kuti' if you prefer. Establish the rules before you play. For example, will you show the hand action as you say the final word, or will you say 'rock, paper, scissors, shoot', and show the hand action when 'shoot' is said. Make sure you have a couple of 'test' games before you begin recording so that you work out any problems and can say everyone is playing to the agreed rules. By playing these test games it means you do not have any disagreement or unnecessary distractions when beginning to collect the data.

?PROBLEM:

Explain to ākonga that they are going to play several games of **rock, paper, scissors** and at the end of this lesson they will be able to answer the investigative question **'What is the chance of getting a match when you are playing rock, paper, scissors?'**

Elicit ideas from ākonga prompting them as needed to respond using the language of possible, impossible, certain when they are predicting the answer to the investigative question. The kaiako can record these thoughts or statements for the class to return to later in the lesson and discuss whether their predictions were correct.

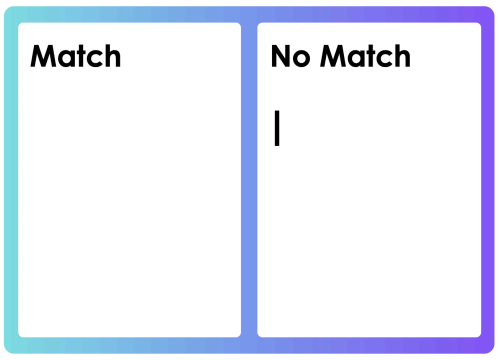
Kaiako can also ask ākonga which outcome they think will be more likely, a match or no match. Record how many think match and how many think no match.

PLAN:

The kaiako now helps ākonga to plan how they will collect and organise the data. If ākonga need a reminder of how to record using tally marks then watch **this** Scratch Garden Mini Maths Movie before going any further. Tally marks are a useful way to keep track of the results so that ākonga do not have to remember how many games were a match and how many games were no match. Remind ākonga that they are to play a game and record whether it was a match or no match before moving onto a new game.

Each pair of ākonga will play 10 games so that they have some data to see whether their predictions about match or no match chances were correct. Remind ākonga they can count their tally marks to see if they have played 10 games or not.

DATA:



Ten games are played by each pair of ākonga. As each game is played the pair of ākonga record their results on a table using tally marks.

After playing, ask the two questions again:

- Is it possible, or impossible that we might get the same outcome next time we play?
- Is it more likely that we get a match or that we do not get a match when we play this game.

- What does your data show?
- Is there anything that shows you that you can be certain that you will get a match?

Repeat for another 20 games and see if the data keeps the same pattern as when you played 10 games.

📊ANALYSIS:

Bring all ākonga back together so that the class data can be collated.

Get each pair of ākonga to write the number of matches and the number of no matches so they can share their results with the class.

To collate the class data the kaiako can use a large copy of the ‘match, no match’ recording sheet. The kaiako supports each pair of ākonga to come and add their collected data to the class recording sheet.

Total the number of matches and the number of no matches for the class data.

Ask ākonga to write two statements about what they notice. One statement about what they noticed about their results and one statement about what they noticed about the class results.

Explain to ākonga that we are going to list the possible outcomes for playing the game and see if they are a match or not a match.

Guide ākonga to identify and list possible outcomes using the symbols of

● for rock

⬛for paper

⋘ for scissors

Alternatively, kaiako could provide coloured counters and have one colour for rock, one for paper and one for scissors, ākonga can use the counters to see the possible combinations.

As the discussion continues the kaiako helps make the statistical talk visible by having the pairs draw the possible outcomes using the agreed symbols. This helps ākonga to be able to see how many possible outcomes there are and visually be able to count out of all possible outcomes how many can be a match. Encourage ākonga to be systematic about exploring the possible outcomes.

In this situation we have two ākonga, each of whom can choose from the three paper, rock, scissors.

A table might be a good structure to help ākonga think about the possible outcomes. They can then shade all the matches. They can consider how many possible outcomes there are all together and then describe how many of the possible outcomes are matches and how many are not a match.

For example, there are nine possible outcomes, three of the nine are matches, six of the nine are not a match.

		Player 2		
		●	⬛	⋘
Player 1	●	●●	●⬛	●⋘
	⬛	⬛●	⬛⬛	⬛⋘
	⋘	⋘●	⋘⬛	⋘⋘

Ask the questions again:

- Is it possible, or impossible that we might get the same outcome next time we play?
- Is it more likely that we get a match or that we do not get a match when we play this game.
- Each ākonga has three things to choose from, how are outcomes affected by this?
- Is it possible to be certain when predicting whether each ākonga will choose rock, paper or scissors for their action?

CONCLUSION:

The kaiako supports ākonga to complete these statements:

- We played rock, paper, scissors _____ times.
- We got _____ matches and _____ no match.
- The outcome _____ happened more often than the outcome _____ because _____ .
- We think based on our results that _____ is more likely when this game is played because _____ .
- This is/is not (choose one) supported by what we found when we listed the possible outcomes.

Bring the completed statements to a class discussion to ensure ākonga hear the ideas of their peers and have many opportunities to sense make.

Reflecting on our outcomes

Now the kaiako supports ākonga to identify whether their predictions for what they expected the results to be is actually correct. What have they noticed about their results? Expected or unexpected? How do they explain this? Explore the question - Is it more likely that we get a match or get no match when we play this game. The kaiako then says 'I wonder if we would get the same outcome if we played this again tomorrow?' This question prompts ākonga to think about the idea of chance.

Notes for teachers

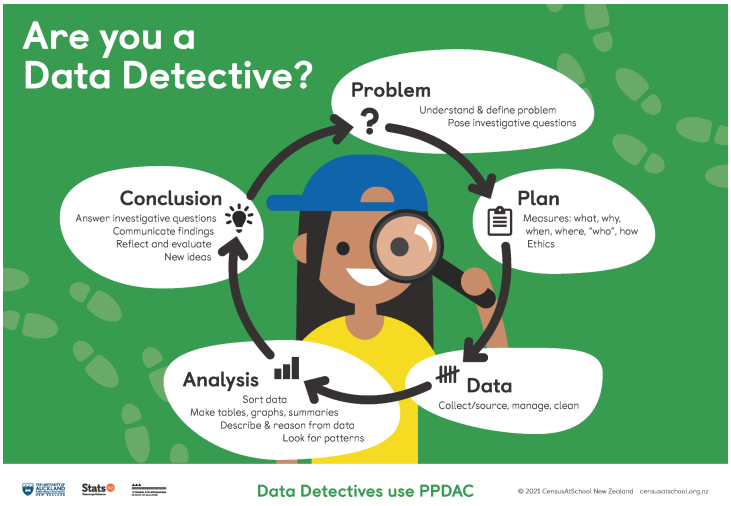
When planning to support ākonga with diverse needs you may choose to have premade and precut symbols or even realistic pictorial representations of each action (rock, paper, scissors) so the recording can be more literal.

Ākonga could glue on to symbols to show a match eg ● ● ⬛ ⬛ ⋘ ⋘ and no match ● ⬛ , ⬛● , ● ⋘ , ⋘● , ⋘ ⬛ , ⬛⋘. Be mindful that this is a lot of pieces of paper to manage to provide multiple copies of each symbol and this in itself could be problematic.

There is the option to record 'match' and 'no match' using a digital device if this is more appropriate for your ākonga. If you are using **Seesaw** or **Canva** you can easily make these.

You could have a large piece of paper with 'match' and 'no match' on it for ākonga to keep adding data to as they play rock, paper, scissors throughout the coming days (in their own time). This would give some much bigger number of data to discuss. This demonstrates that maths does not only take place in 'maths time' and promotes the idea that maths is part of our everyday life.

You could have a class shared data recording sheet (eg a google doc) that you share with whānau for them to play rock, paper, scissors at home and add their whānau data to the class set of data.



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