

Summary of learning goals

- This sequence builds students' understanding of randomness. A random outcome is one for which all possibilities have an equal chance of being selected. Students recognise that games such as rock paper scissors are not truly random, as people's decisions are influenced by whether they win or lose the previous game. Students see that playing the same game with cards or using a computer simulation produces a random result.

Australian Curriculum: Mathematics (Year 6)

ACMSP144: Describe probabilities using fractions, decimals and percentages.

ACMSP145: Conduct chance experiments with both small and large numbers of trials using appropriate digital technologies.

ACMSP146: Compare observed frequencies across experiments with expected frequencies.

Summary of lessons

Who is this sequence for?

This sequence is for students who are:

- familiar with calculating the probabilities of different events
- ready to apply their understanding of fractions to express the probability of events occurring.

Lesson 1: How Random is it?

Students determine their chances of winning the game rock paper scissors (RPS), then test their chances by playing against another player and in a simulation card or dice game. Students look at the psychological aspect of the game and recognise that there is a strategy to increasing their chance of winning.

Lesson 2: Which is Better?

Students calculate the probabilities of winning the game rock paper scissors lizard Spock (RPSLS) and compare it to the chances of winning RPS. They decide which is the better game to play in different circumstances.

Reflection on this sequence

Rationale

Randomness is a central idea in statistics and probability.

Randomness in statistics must be separated from the colloquial use of the word. In statistics, a random process – such as drawing names from a hat – requires that all possibilities have an equal chance of being selected.

(AAMT, Top Drawer Teachers)

A random sample requires that each possible sample of the same size from the population has the same chance of being selected. This creates a fair, unbiased sample and is essential if we are looking for a meaningful explanation for our data. This sequence explores randomness in the games RPS and RPSLS. In these games, a player's choice of moves is generally influenced by whether they won or lost the previous round; so while the results may appear random, they are not. Students see that a game with dice, cards or against the computer produces more random results.



reSolve mathematics is purposeful

- This sequence builds students' understanding of randomness, which is a central idea in statistics and probability, through a well-known game.



reSolve tasks are inclusive and challenging

- It is anticipated that all students would be familiar with the game RPS, thus providing a common experience from which to draw upon.
- Students are challenged through an analysis of how a win or loss influences a player's choice of moves.



reSolve classrooms have a knowledge-building culture

- Students collate data from across the class to explore the probability of outcomes and to look for any regularities and patterns that might exist.