re(Solve) MATHS BY INQUIRY Forensic Investigations

Y10

Summary of learning goals

- Students examine real-world case studies of probability being applied in misleading ways. They assess and explain the flaws in the mathematical methodology used.

Australian Curriculum: Mathematics (Year 10)

ACMSP246: Describe the results of two- and three-step chance experiments, both with and without replacements, assign probabilities to outcomes and determine probabilities of events. Investigate the concept of independence.

ACMSP247: Use the language of 'if...then, 'given', 'of', 'knowing that' to investigate conditional statements and identify common mistakes in interpreting such language.

ACMSP253: Evaluate statistical reports in the media and other places by linking claims to displays, statistics and representative data.

Summary of lessons

Who is this sequence for?

- This sequence is for students who are familiar with a suite of tools for working with probability, especially students who have an understanding of independent and dependent events and are able to identify mistakes in language used to communicate ideas around probability.

Lesson 1: Forensic Investigations

Students examine real-world case studies of probability being applied in misleading ways. They assess and explain the flaws in the mathematical methodology used.

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Reflection on this sequence

Rationale

In this sequence students investigate real-world applications of probability. Students are encouraged to turn a critical eye to the use of mathematics in the media to sway opinion and to test their own understanding of independent and dependent events. There is also an emphasis on accurate and inaccurate ways of communicating mathematical concepts to the general public.

reSolve mathematics is purposeful

- Students explore real-world examples of probability in the courtroom and investigate how mathematics swayed popular opinion on each case.
- The task supports a rich interpretation of the Australian Curriculum: Mathematics through the manipulation, representation and interpretation of probability to tell a story.

reSolve tasks are inclusive and challenging

- Students in groups are assigned one of three different case studies of varying complexity, allowing the teacher to determine the most appropriate case study for each group.

reSolve classrooms have a knowledge-building culture

- Students investigate their case studies in groups, discussing and collaborating throughout their exploration.
- Students present findings to their class, illustrating the flaws in their case by presenting their own comparative examples.

Acknowledgements

Colmez S & Schneps L, 2013, *Math on trial: how numbers get used and abused in the courtroom*. Basic Books: New York