



Leaving It up to Chance

While people often make decisions by weighing costs and benefits, leaving things up to chance can also be appealing, whether it is to make a decision or reach a desired outcome. This may be one of the reasons why chance-based games such as the lottery are so popular. This lesson plan is designed to engage students in a dialogue about chance-based games and encourage them to think critically about gambling.

Instructional strategies

1. Have the students watch the following segment of the [Seinfeld Episode Odds and Even](#), and facilitate a discussion about the idea of leaving things up to chance with questions such as those below.
 - a. What are your thoughts about the methods they used to decide who would get the apartment?
 - b. Have you ever made a decision by flipping a coin? Is flipping a coin a good way to make decisions? Why or why not?
 - c. What were the odds of Seinfeld winning the coin toss?
 - d. What role does chance play in the ultimate scenario?
 - e. What might be appealing about leaving something up to chance?
 - f. What would you risk to chance? What would you not risk to chance? Why?
2. Apparently many people hope to win the lottery as a way to fund their retirement. Encourage students to consider the following scenarios and use their mathematical skills to help assess the different strategies used to get money for retirement.

Bill, like 25% of Canadians according to Statistics Canada, spends \$265 annually on buying lottery tickets. He knows the odds of any ticket winning the \$2 million jackpot are roughly 1 in 14 million. The chance of any ticket winning the smaller \$75,000 prize are 1 in 2 million. He figures that since he buys 265 tickets each year and has been doing so for 25 years he is due for a big win and hopes to retire in style.

Mwangi talked to an investment counsellor and decided not to buy lottery tickets and instead add \$265 per year for the next 25 years to his retirement investment portfolio. This portfolio is likely to provide an approximate 10% annual return but involves some degree of risk. There is a small chance that Mwangi might lose money but also a chance that he might get a higher return.

Lee does not like to take risks so she too does not want to buy lottery tickets. Instead she has chosen to invest the additional \$265 per year for the next 25 years in GICs (Guaranteed Investment Certificates) with a guaranteed annual interest rate of 2%.

Have students discuss their assessments of these scenarios in small groups and then facilitate a class discussion. Ask them, what is the best way to spend \$265 per year for 25 years? Challenge students to explain their reasoning using mathematical concepts. But also probe them to think about the limits of mathematics in guiding human behaviour related to chance and risk. What is the smart choice? What is the safe choice? Are these always the same? Why might various people chose the different options presented in the scenarios?



Gambling competencies

Big idea

- As humans, both individually and as communities, we need to learn how to manage gambling in our midst
- We can learn how to control gambling by examining the different ways people have thought about it, engaging in critical self-reflection and listening to each other

Competencies

- Explore and appreciate the diverse cognitive, social, emotional and physical factors that impact gambling behaviour
- Develop personal and social skills to reflect on and manage personal behaviour and choices related to gambling

For a complete look at the gambling literacy competencies, as defined by the Centre for Addictions Research of BC, see: www.uvic.ca/research/centres/carbc/assets/docs/iminds/hs-gambling-curriculum.pdf

Links to Curriculum

First Peoples' principles of learning

- Learning ultimately supports the well-being of the self, the family, the community, the land, the spirits, and the ancestors
- Learning involves recognizing the consequences of one's actions

Mathematics 8

Big idea

- Analyzing data by determining averages is one way to make sense of large data sets and enables us to compare and interpret

Competencies

- Use reasoning and logic to explore, analyze and apply mathematical ideas
- Estimate reasonably
- Demonstrate and apply mental math strategies
- Visualize to explore mathematic concepts
- Reflect on mathematical thinking
- Use mathematical arguments to support personal choices