

Aboriginal Hand Games and Probability

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Objective

The purpose of this lesson is to integrate the tradition and culture of Aboriginal hand games with the probability outcomes of Alberta's Math 8 curriculum. This is meant as a wrap-up project to summarize all understanding in this topic.

Specific Learner Outcome

The following outcome from Alberta's Math 8 program of studies is covered:

- Statistics and Probability: Solve problems involving the probability of independent events.

Time Required

- Approximately 80 minutes

Materials

- Two blankets
- Pebbles/stones for each student
- Sticks
- Aboriginal drumming

Lesson

Introduce this topic by providing students with information about the tradition and culture of Aboriginal hand games. It would be beneficial to bring in an Aboriginal elder from the community in which you reside to help you address the historical, cultural and community aspects of this cross-curricular activity. The knowledge and guidance of Aboriginal elders are vital to the success of any Aboriginal traditional teaching. In many communities, elders (or knowledge keepers) are identified by the community population in which they reside. Resources such as the First Nations, Métis and Inuit liaison worker in your school; a Native Friendship Centre; Aboriginal interagencies; and Child and Family Services offices can help locate an Aboriginal elder. If an Aboriginal elder is not available, the rules and play for Aboriginal hand games, as well as demonstrations, are available from the following online resources:

- Dene Games (<http://denegames.ca/introduction/index.html>)
- "Hand Games Prove Popular for Everyone" (www.ammsa.com/publications/alberta-sweetgrass/hand-games-prove-popular-everyone)
- "Dene Hand Games Tournament Takes Off in Whati, N.W.T" (www.cbc.ca/news/aboriginal/dene-hand-games-tournament-takes-off-in-whatin-w-t-1.2547769)
- "Aboriginal Hand Games All About Mind Trickery" (www2.canada.com/edmontonjournal/news/story.html?id=39c4ea22-8a80-405f-8b82-1bdd86b37052)

An Aboriginal hand game is a community game played with traditional hand drums, sticks, stones and blankets. It is based on the simple concept of hiding objects and using elaborate hand signals and gestures to both hide the object and find the object. Two opposing teams attempt to deceive each other through chanting, body movements and hand movements. A long time ago Aboriginal peoples would gather several times during the year to celebrate seasonal changes and special events (such as births, passings and joinings). Aboriginal hand games were played at these events in celebration and as friendly competition between communities. This math lesson explores this traditional game's relevance to mathematical probability.

Give students an opportunity to play one round of the game so that they are familiar with strategy and game play. This could take a whole class period or more, and could include a short written reflection about game strategy or whatever students noticed about succeeding in the game.

Then, have a class discussion based on the following questions:

- What is the probability that you can choose the correct hand for one person? [Answer: 0.5, 1/2, 50%]

- What is the probability that you can choose the correct hand for two people? [Answer: $0.5 \times 0.5 = 0.25$, 1/4, 25%]
- What is the probability that you can get everyone out the first time (that is, choose the correct hand for all people)? [Answer: 0.5^n , where n is the number of people]
- Are these theoretical or experimental probabilities? How do you know? What is the difference? [Answer: These are theoretical probabilities. They are based on what should happen as opposed to what actually will happen.]
- How might the experimental probability differ from the theoretical probability? [Answer: Experimental probability is what actually happens. It will vary from game to game and will not be consistent.]
- What could you do to improve or reduce the probability of choosing the correct hand? How does this relate to the strategy of the game? [Answer: You could distract the members of the other team to reduce their likelihood of choosing correctly.]

Once students have discussed how probability is related to the hand game, as well as how they can affect the probability of the game by making

conscious decisions, allow them to play the game once more to test their strategies.

Extending the Lesson

This lesson can be extended by exploring the difference between theoretical probability and experimental probability. Have students generate a list of various conditions under which the game could be played (for example, all the distractions possible, drumming but no taunting with words, drumming but no taunting of any kind, or no drumming but taunting). Keep track of the experimental probabilities under all these conditions.

Additional Note

If students enjoy this game, they may be interested in participating in an Aboriginal hand games tournament in your area.

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