

LESSON PLAN

Grade level:	12
Subject:	Statistics

Your name:	Jasmine, Sahl, Manveen
Title of Lesson:	Binomial Probability

Theme:	Probability
Lesson duration:	20 minutes

Big Ideas:
- Statistical analysis allows us to explore, describe, model, and explain variation. - We can develop statistical thinking to help make inferences intuitive.

First Peoples Principles of Learning
- Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place). - Learning is embedded in memory, history, and story. - Learning involves patience and time.

Curricular Competencies: What students will DO
Students will be able to use the following creative processes to create and respond to art: - Reasoning and Modelling - Understanding and Solving - Communicating and Representing - Connecting and Reflecting

Objectives [teacher's rationale for this lesson – key questions]
- initiate students' ability to think about combinations and permutations given a set of objects - extend students' knowledge on basic combinations and permutations to general formulae - introduce probability values in two outcome scenarios (success/failures) - outline basic binomial probabilities, its conditions and calculation methods - give students the knowledge to identify binomial probabilities, and calculate them for different conditions

Content: What students will KNOW
Students are expected to know the following: - differences between combinations and permutations (importance of order) - conditions of binomial probability (BINS) - two outcome probabilities and their rationale - calculating binomial probabilities - interpreting scenarios and connecting them to binomial probabilities - making sense of results, communicating them accurately

Materials & Technologies
<i>Students will use the following materials, tools, equipment</i>
Handouts, white board and markers

Pre-Class Preparation
<i>The teacher will need to make the following preparations prior to the class(es)</i>
Prepare and print out questions for thinking task

Resources & References			
Lesson (Teacher Action/Student Action)			
Resources	Time	Teacher	Student
	5 minutes	- Begin class with a thinking task - Provide handouts to students to work on in pairs - Handout will have 3 questions of easy, medium and hard difficulty levels.	Students will work on the whiteboard in pairs/groups on thinking task questions provided.
	10 minutes	- Describe Binomial Distribution - What makes a distribution binomial? - Derive right side (p, q), then “choose” - Coin example - Heads or Tails: What is the probability we will get 2 heads out of 3 trials? - Assist students who were unable to complete the ‘hard’ question on the handout - Answer students’ questions	- Students will be introduced to Binomial Distribution and its conditions. - Students will return to the “hard” question if they were unable to complete it before. - Students will ask any questions that arise and get their doubt cleared up.
	3 minutes	- Introduce the final challenge question and connect it to students’ personal lives. - Proactively check students’ understanding by listening in/having a conversation.	Students will attempt the final exercise
	2 minutes	Questions and Reflection	Ask any questions on the new material learned. Reflect on their learning and share any new discoveries made along the way.

Assessment/evaluation
● Formative: Assess student understanding via the thinking task and challenge problem at the end of the lesson.

Adaptations/Modifications
● If students don't understand, go over the derivation part more slowly. ● Prepare challenge problems in case students have good understanding of binomial distribution and don't need more time ● Students use calculators as they need

Extensions/Possible Cross-curricular Connections