



Course: Math 8
Teacher: Martin
Unit: Statistics and Probability
Date: Start on May 4
Duration: Approximately 4-5 weeks

Description: We will review how to calculate measures of central tendency (mean, median, mode) and learn which one(s) are best for different types of data sets. We will also review probability vocabulary and notation, and use tree diagrams and tables to express sample spaces for two independent events. We will also explore how to use fraction multiplication to calculate probability, and compare the difference between experimental and theoretical probability results.

	Big Ideas	Essential Questions
Understand	<p><i>Which Big Ideas will be the focus of this unit?</i></p> <ul style="list-style-type: none"> Analyzing data by determining averages is one way to make sense of large data sets and enables us to compare and interpret. Number represents and describes percents, fractions and decimals which can be used to express probability. 	<p><i>What questions will be guiding your students' inquiry?</i></p> <ul style="list-style-type: none"> How does determining averages help us understand large data sets? What do central tendencies represent? How are central tendencies best used to describe a quality of a large data set? How can we visually represent the probability of two independent events as part of the same sample space? Can we generalize the probability results from visual diagrams (tree and tables) to determine probability using multiplication of fractions? How do the results of a probability experiment compare to the theoretical probability for the same event? After solving a problem, can we extend or generalize it? How can we take a real-life problem and turn it into a math problem that we can solve? How can we tell if a math solution is reasonable? Where are we most likely to make errors? How can we avoid these? How can we identify and correct our errors?

	Core Competencies	Curricular Competencies
Do	<p>Communication</p> <p>Creative Thinking</p> <p>Critical Thinking</p> <p>Personal Awareness and Responsibility</p>	<p>Reasoning and logic</p> <p>Estimate reasonably</p> <p>Apply</p> <p>Multiple Strategies and Models</p> <p>Connected</p>

		Explain and justify Communicate Reflect
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Curricular Content		
Know	<i>Which Curricular Content will students learn and be assessed on this unit?</i> <ul style="list-style-type: none"> • Review how to calculate measures of central tendency: mean (average), median and mode • Develop understanding of difference between mean, median and mode • Choose the best measure of central tendency for different data sets (mean, median or mode) • Justify why one measure of central tendency is the best to represent different types of data sets • Solve real-life problems involving mean, median and mode • Learn correct notation for representing probability: $P(A)$ means the probability that event A will happen • Express probability as a fraction, decimal and percent • Use tree diagrams and tables to show the sample space for probability involving two independent events • Determine experimental probability based on the results of a simulation or experiment • Calculate the theoretical probability of two independent events by multiplying fractions: $P(A, B) = P(A) \times P(B)$ 	<i>Which activities, projects, exercises or discussions will teach this Curricular Content?</i> <ul style="list-style-type: none"> • Explore and compare the results of all three measures of central tendency (mean, median, mode) for different types of data sets • Generalize and describe which measure(s) of central tendency best represent which types of data. • Develop fluency with determining measures of central tendency through practice • Explore probability experiments to determine the sample space • Represent sample space of two independent events using visual tools: tree diagrams and tables • Use tree diagrams and tables to determine probability outcomes • Generalize the results of probability outcomes from tree diagrams and tables to determine probability using multiplication of fractions • Perform probability experiments and use the results of these to determine probability outcomes • Compare experimental probability and theoretical probability results for the same event and discuss why they may be different. • Develop fluency with solving probability problems through practice • Relate real-life problems to personal experiences to help interpret problems • Engage in regular discussions with the teacher, to ask questions to support learning, and to demonstrate understanding

First Peoples Principles of Learning

Through discussions, independent work and self-reflection, students will have the opportunity to reinforce the following 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 is holistic, reflexive, reflective, experimental, 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.

Unit Assessment

For Learning: Formative Assessment

- Check of specific questions from homework
- Check-in quizzes through Google Forms, completed after each new lesson
- Participation in video conferences

As Learning: Reflection/Self-Assessment

- Self-assessments through Google Forms

Of Learning: Summative Assessment

- Two Short Test (one for statistics, one for probability)

Required Resources

- Computer for online lessons, activities and video-conferencing
- Notebook, graph paper, pencil, eraser, ruler, calculator
- The Centre for Education in Mathematics and Computing Courseware – Grades 7 & 8 Mathematics: <https://courseware.cemc.uwaterloo.ca/27>
Unit: Data Analysis, Lessons: #1, 2, 3
Unit: Probability, Lessons #1, 2, 3, 5, 8
- Explore Learning, Gizmos: <https://www.explorellearning.com/> Class Code: Will be given directly to students
 - Mean, Median and Mode
 - Probability Simulations
 - Theoretical and Experimental Probability
 - Independent and Dependent Events
 - Lucky Duck (Expected Value)
- Math Links 8 Pathways to Success textbook (McGraw-Hill Ryerson), Chapter 9