Marietta City Schools

2024–2025 District Unit Planner

Grade 7 Honors Mathematics

Unit title	Unit 5: Investigating Probability	**MYP year**	2	**Unit duration (hrs)**	*Enter Hours* *MSGA- (5 hours per week)* *MMS- (4.5 hours per week)* *MHS- (7.5 hours per 2 weeks)*

Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): ***What will students learn?***

GA DoE Standards

Standards

7.PR.6 Using mathematical reasoning, investigate chance processes and develop, evaluate, and use probability models to find probabilities of simple events presented in authentic situations.
7.MP: Display perseverance and patience in problem-solving. Demonstrate skills and strategies needed to succeed in mathematics, including critical thinking, reasoning, and effective collaboration and expression. Seek help and apply feedback. Set and monitor goals.

Gifted Standards
Strand 2: Creative Thinking Skills
Students will develop and utilize creative thinking through a variety of products
and problem solving.
Strand 3: Higher Order Thinking and Problem Solving Skills
Students will develop and utilize critical thinking, higher order thinking, logical thinking and problem solving skills in various situations.
Strand 4: Advanced Communication and Collaboration Skills
Students will develop advanced communication and collaboration skills in
working toward a common goal with shared
accountability for the final outcome.

Expectations		Evidence of Student Learning (not all inclusive; see Grade Level Overview for more details)	
7.PR.6.1	Represent the probability of a chance event as a number between 0 and 1 that expresses the likelihood of the event occurring. Describe that a probability near 0 indicates an unlikely event, a probability around $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	***Strategies and Methods*** • Students should be able to represent the probability as a fraction, decimal numbers, or percentage.	***Terminology*** • Descriptions may include impossible, unlikely, equally likely, likely, and certain.
7.PR.6.2	Approximate the probability of a chance event by collecting data on an event and observing its long-run relative frequency will approach the theoretical probability.	***Strategies and Methods*** • Students should be able to predict the approximate, relative frequency given the theoretical probability.	***Example*** • When rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.
7.PR.6.3	Develop a probability model and use it to find probabilities of simple events. Compare experimental and theoretical probabilities of events. If the probabilities are not close, explain possible sources of the discrepancy.	***Strategies and Methods*** • Probability models may include various random generation devices including, but not limited to, bag pulls, spinners, number cubes, coin toss, and colored chips. • Students should have multiple opportunities to collect data using physical objects, graphing calculators, or web-based simulations.	***Example*** • Kim calculates the probability of landing on heads when tossing a coin to be 50%. She uses this to predict that when Tiffany tosses a coin 20 times, the coin will land on heads 10 times. When Tiffany performed the experiment, the coin landed on heads 7 times. Explain possible reasons why Kim's prediction and Tiffany's results do not match.
7.PR.6.4	Develop a uniform probability model by assigning equal probability to all outcomes and use the model to determine probabilities of events.	***Example*** • If a student is selected at random from a class, find the probability a student with long hair will be selected.	
7.PR.6.5	Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.	***Terminology*** • Uniform probability models are those where the likelihood of each outcome is equal.	***Examples*** • Find the approximate probability of each outcome in a spinner with unequal sections. • Find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?
7.PR.6.6	Use appropriate graphical displays and numerical summaries from data distributions with categorical or quantitative (numerical) variables as probability models to draw	***Strategies and Methods*** • Students should use side by side bar graphs or segmented bar graphs to compare categorical data distributions	***Age/Developmentally Appropriate*** • Limit category counts to be less than or equal to ten. ***Example*** • Compare the heights of the basketball and the tennis teams.

	informal inferences about two samples or populations.	of samples from two populations. • Students should compare data of two samples or populations displayed in box plots and dot plots to make inferences using probabilistic reasoning. • Students should be able to draw inferences using measures of central tendency (mean, median, mode) and/or variability (range, mean absolute deviation and interquartile range) from random samples. • Conclusions should be made related to a population, using a random sample, by describing a distribution using measures of central tendency (mean, median, mode) and/or variability (range, mean absolute deviation, and interquartile range). • Students should be given multiple opportunities to compare quantitative data distributions of samples from two populations.	• Limit quantitative variables to less than or equal to 20.	Basketball team's heights (in inches): 72, 75, 76, 76, 79, 79, 80, 80, 81, 81, 81 Tennis team's height (in inches): 67, 67, 68, 70, 70, 71, 72, 75, 76, 76, 77 1) How much taller is the basketball team than the tennis team? 2) Two students are trying out for the basketball team. What is the probability their height will be greater than 79 inches?

Concepts/Skills to support mastery of standards

- *Represent the probability of a chance event between 0 and 1. (PR. 6.1)*
- *Approximate the probability by observing its long-run relative frequency. (PR.6.2)*
- *Compare experimental and theoretical probabilities of events.(PR.6.3)*
- *Develop a uniform probability and determine probabilities of events(PR.6.4)*
- *Develop a probability model by observing frequencies.(PR.6.5)*
- *Draw inferences about two samples or populations from different graphical displays.(PR.6.6)*

Vocabulary

Probability	Theoretical probability	Simple Event	Relative Frequency	Experimental Probability
Sample	Population	Uniform Probability		

Notation

Key concept	Related concept(s)	Global context
Logic	Justification, Model, Generalization	Fairness and Development

Statement of inquiry

Decisions reached through logic may not always reflect beliefs about fairness.

Inquiry questions

Factual— What is probability? What is a sample space?

Conceptual—How do we calculate the probability of an event? What are the different ways to show possible outcomes? Why must the sample space always have a sum of 1?

Debatable—Should experimental and theoretical have the same outcome?

MYP Objectives	Assessment Tasks	
*What specific MYP **objectives** will be addressed during this unit?*	***Relationship** between summative assessment task(s) and statement of inquiry:*	*List of common formative and summative assessments.*
Criteria A :Knowing and Understanding Criteria B: Investigating Patterns Criteria D :Applying Math to real-world context	Students will investigate chance processes and develop, use, and evaluate probability models.	**Formative Assessment(s):** Unit 5 CFA **Summative Assessment(s):** MYP - Topic 7 Performance Task Form B Unit 5 Summative

Approaches to learning (ATL)

Category: Social **Cluster:** Collaboration Skills **Skill Indicator:** Give and receive meaningful feedback.		

Category: Self Management **Cluster:** Organization, Affective, & Reflection Skills **Skill Indicator:** Keep an organized and logical system of information files/notebooks		

Learning Experiences Add additional rows below as needed.		
Objective or Content	**Learning Experiences**	**Personalized Learning and Differentiation**
7.PR.6.1: Represent the probability of a chance event as a number between 0 and 1 that expresses the likelihood of the event occurring. Describe that a probability near 0 indicates an unlikely event, a probability around 1 2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. • **7.PR.6.2** Approximate the probability of a chance event by collecting data on an event and observing its long-run relative frequency will approach the theoretical probability. • **7.PR.6.3:** Develop a probability model and use it to find probabilities of simple events. Compare experimental and theoretical probabilities of events. If the probabilities are not close, explain possible sources of the discrepancy. **7.PR.6.5**: Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.	CLE - Theoretical vs Experimental Probability In this learning plan students will explore the probability of outcomes of various events to make conjectures about theoretical and experimental probability and how each are used to make predictions about outcomes.	Make instructions and expectations clear for the activities. Use the teacher guidance to support discussions about the tasks' expectations. As students share whether each result is surprising or not, write down the words and phrases students use to explain their reasoning. Listen for students who state that the actual results from repeating an experiment should be close to the expected probability
7.PR.6.6 Use appropriate graphical displays and numerical summaries from data distributions with categorical or quantitative	CLE - **Making Inferences** In this learning plan, students learn how to use "variability" to compare and describe sets of data. Students will create those sets of data themselves by completing estimation tasks as a	Chunk this task into more manageable parts (e.g., presenting one question at a time), which will aid students who benefit from

(numerical) variables as probability models to draw informal inferences about two samples or populations.	class.	support with organizational skills in problem solving. Consider having students record how to find the mean absolute deviation in their notebooks for future reference.

Content Resources

[6-11 Savvas Correlation to 2021 standards]

Intervention Tasks

-Investigate simple situations that involve elements of chance by comparing experimental and theoretical probabilities.

Card Game (7.PR.6.2 and 7.PR.6.5))

Other Resources

- **Savvas**
- **Desmos**
- **Hands-On Math**
- **GaDOE Unit 5 Curriculum**