05_Probability

Content Area: **Math**
Course(s):
Time Period: **Full Year**
Length: **2 Weeks**
Status: **Published**

General Overview, Course Description or Course Philosophy

The middle school Guided Study Program is a two-pronged program. It parallels the grade-level math curriculum to reinforce and/or preview concepts taught in the grade-level math class and prepares students for success on state-mandated assessments by targeting individual student mathematical deficiencies. Guided Study marking period grades are based upon participation/preparation, classwork, and summative assessments and are reported as: O (Outstanding), S (Satisfactory), or U (Unsatisfactory).

OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

Objectives:

- Develop a conceptual understanding of probability and its fundamental concepts.
  Explore the principles of experimental and theoretical probability.
  Apply probability concepts to real-world situations, including events and outcomes.
  Understand the relationship between probability and statistics.
  Enhance critical thinking and decision-making skills through probabilistic reasoning.

Essential Questions:

- What is probability, and how is it used to quantify uncertainty and likelihood in various situations?
- How can we differentiate between experimental and theoretical probability, and how are they calculated and interpreted?
- In what ways can we apply probability to analyze and predict outcomes in real-world scenarios?
- What is the connection between probability and statistics, and how does probability contribute to data analysis?
- How can probabilistic reasoning help us make informed decisions and evaluate risks and benefits?

Enduring Understandings:

- Probability is a mathematical concept that helps us understand the likelihood of different outcomes in uncertain situations.
- Experimental probability is based on observations and data, while theoretical probability is determined by mathematical calculations.
- Probability concepts can be used to analyze and predict outcomes in real-world events, games, and scenarios.
- Probability plays a role in statistical analysis by providing a framework for understanding and interpreting data distributions.
- Probabilistic reasoning supports informed decision-making by considering the likelihood of different outcomes and potential consequences.

CONTENT AREA STANDARDS

MA.7.SP.C.5	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. 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.
MA.7.SP.C.6	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.
MA.7.SP.C.7	Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.
MA.7.SP.C.8	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)

LA.K-12.NJSLSA.R7	Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
LA.RST.6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
CS.K-12.2.d	Evaluate and select technological tools that can be used to collaborate on a project.
TECH.K-12.P.4	Demonstrate creativity and innovation.
TECH.K-12.P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
TECH.K-12.P.8	Use technology to enhance productivity increase collaboration and communicate effectively.

STUDENT LEARNING TARGETS

Refer to the 'Declarative Knowledge' and 'Procedural Knowledge sections.

Declarative Knowledge

Students will understand that:

- Probabilities are useful for predictions.
- Probabilities are useful for decisions over a long period of time.

Procedural Knowledge

Students will be able to:

- Determine the probability of independent events.
- Determine the probability of dependent events.

EVIDENCE OF LEARNING

Refer to the 'Formative Assessments' and 'Summative Assessments' sections.

Formative Assessments

- Do Now before each lesson
- Exit tickets at the end of each lesson and/or series of chunks of learning

Summative Assessments

This course allows students flexibility in the demonstration of their understanding at the conclusion of the unit:

- traditional/standardized assessment

- performance task

- project

RESOURCES (Instructional, Supplemental, Intervention Materials)

- IXL
- CMP3: Samples and Populations, What Do You Expect?

INTERDISCIPLINARY CONNECTIONS

- Computations
- Statistics
- Data collection/analysis

ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

See link to Accommodations & Modifications document in course folder.