## 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.
ТЕСН.К-12.Р.4	Demonstrate creativity and innovation.
TECH.K-12.P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
ТЕСН.К-12.Р.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)**

- <u>IXL</u>
- 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.