

**GRADE LEVEL:** 7/8

**STRAND:** Data and Statistics

**GLCES:** 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> Grades

**LESSON TITLE:** Makin' PB&Js

**LEARNING OBJECTIVES:**

- Students will conduct an experiment to calculate the probability of two independent events.
- Students will express a probability as a fraction, decimal, and percent.
- Students will create a tree diagram to represent possible outcomes.
- Students will calculate relative frequencies.
- Students will compare the relationship between theoretical probability and experimental probability.
- Students will use the Basic Counting Principle.
- Students will analyze how changing one variable affects subsequent events.

**MATERIALS:** Paper clip or bobby pin  
Pencil  
Handouts -- Makin' PBJ Activity Sheet  
Makin' PBJ Lab Sheet  
Makin' PBJ Spinners

**BACKGROUND:** Students should have experience with theoretical and experimental probability, be able to construct a tree diagram, and know how to express a probability as a fraction, decimal, and percent.

**INSTRUCTIONAL PLAN:** (See ACTIVITY SHEET)

**ASSESSMENT OPTIONS:** (See ACTIVITY SHEET)

**EXTENSIONS:** (See ACTIVITY SHEET)

**MICHIGAN GLCEs:**

**D.PR.06.01** Express probabilities as fractions, decimals or percentages between 0 and 1; know that 0 probability means an event will not occur, and that probability 1 means an event will occur.

**D.PR.06.02** Compute probabilities of events from simple experiments with equally likely outcomes (e.g., tossing dice, flipping coins, spinning spinners) by listing all possibilities and finding the fraction that meets given conditions.

**D.AN.07.03** Calculate and interpret relative frequencies and cumulative frequencies for given data sets.

**D.PR.08.03** Compute relative frequencies from a table of experimental results for a repeated event, and interpret the results using the relationship of probability to relative frequency.

**D.PR.08.04** Apply the Basic Counting Principle to find total number of outcomes possible for independent and dependent events, and calculate the probabilities using organized lists or tree diagrams.

**D.PR.08.05** Find and/or compare the theoretical probability, the experimental probability, and/or the relative frequency of a given event.

**D.PR.08.06** Understand the difference between independent and dependent events, and recognize common misconceptions involving probability (e.g., Alice rolls a 6 on a die three times in a row. She is just as likely to roll a 6 on the fourth roll as she was on any previous roll.).

**RESOURCES:** Activity adapted from Connected Mathematics’ “What Do You Expect.”