Ne‘epapa Ka Hana 2.0
Seventh-Grade Mathematics Resources
STEMD² Book Series

STUDENT ACTIVITIES

LET'S TAKE CARE OF THE LO‘I

STEMD² Research & Development Group
University of Hawai‘i at Manoa

Unit 6: Probability

In this unit, we'll learn how to use probability to make predictions and study random events through exploration of the traditional Hawaiian drink, ʻawa, cultivating kalo, and making a plate lunch. There are four activities in this unit. *Module 12* involves experimental probability by tossing a slipper. *Module 13* evaluates true kava from false kava with the use of theoretical probability and simulations. There are two cumulative activities in this unit. Each of the cumulative activities incorporate concepts from each of the previous activities in this unit.

For some of the activities in this unit, students will need a slipper or a flip-flop.

Unit 6: *Cumulative Activity 2*

In this activity, you will need a six-sided die and a coin.

We are at a lūʻau and making ourselves a plate lunch. Let's grab a protein, a plant starch, and a drink.

Proteins	Starches	Drinks
Iʻa (fish)	Poi (taro)	Coconut water
Moa (chicken)	ʻUala (sweet potato)	Māmaki tea
Puaʻa (pork)	ʻUlu (breadfruit)	

Plate lunch

Let's look at the different kinds of plate lunches that can be made with this menu.

1. Part 1: On the next page, complete the first part of the table by writing all of the possible menu combinations that are missing.
2. Part 2: Let's do an experiment to see what happens when we have to choose our menu randomly.
   (a) Roll a die two times and flip a coin to see which menu combination you would get.

First roll	Protein
1 or 2	Iʻa
3 or 4	Moa
5 or 6	Puaʻa

Second roll	Starch
1 or 2	Poi
3 or 4	ʻUala
5 or 6	ʻUlu

Coin flip	Drink
Heads	Coconut water
Tails	Māmaki tea

   For example, if you roll and flipped a 3, 6, and tails, then you get a moa-ʻulu-māmaki tea combination.

   (b) On the next page, complete the second part of the table by adding a tally for each meal combination that you got in your experiment.

   (c) Repeat until you've gotten 36 meals.

Part 1: Menu combinations			Part 2: Random choices
Proteins	Starches	Drinks	Frequency
Iʻa	Poi	Coconut water	
Iʻa	Poi	Māmaki tea	
Iʻa		Coconut water	
Iʻa	ʻUala		
Iʻa	ʻUlu	Coconut water	
Iʻa		Māmaki tea	
Moa	Poi	Coconut water	
Moa			
Moa	ʻUala	Coconut water	
Moa	ʻUala	Māmaki tea	
		Coconut water	
Moa	ʻUlu	Māmaki tea	
Puaʻa	Poi	Coconut water	
Puaʻa	Poi	Māmaki tea	
Puaʻa	ʻUala	Coconut water	
Puaʻa	ʻUlu	Coconut water	
Puaʻa	ʻUlu	Māmaki tea	

Key for Part 2:

First roll	Protein
1 or 2	Iʻa
3 or 4	Moa
5 or 6	Puaʻa

Second roll	Starch
1 or 2	Poi
3 or 4	ʻUala
5 or 6	ʻUlu

Coin flip	Drink
Heads	Coconut water
Tails	Māmaki tea

Use the table to answer the questions on the following page.

3. How many menu combinations are possible?

4. Let's look at the pua'a-'uala-coconut water combination.
   (a) Out of 36 tries, what is the **theoretical** probability that someone would get this menu combination?

   (b) Based on your results, what is the **experimental** probability that someone would get this menu combination?

5. Let's look at the menu combinations that have pua'a as the protein.
   (a) Out of 36 tries, what is the **theoretical** probability that someone would get this menu combination?

   (b) Based on your results, what is the **experimental** probability that someone would get this menu combination?

6. Let's look at the menu combinations that have māmaki tea as the drink.
   (a) Out of 36 tries, what is the **theoretical** probability that someone would get māmaki tea as their drink?

   (b) How many times did these combinations actually appear in your experiment?

7. How well does the results from your experiment match with the **theoretical** probabilities? Explain why your results did or did not match.

8. Which of the menu combinations would you prefer? Share with a partner or in the online comment section.