ESTABLISHING PURPOSE

1 **What are the key content standards I will focus on in this lesson?**

Content Standards:

S-CP.A.5 Recognize and explain the concepts of independent and conditional probability in everyday language and everyday situations. For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.

Standards for Mathematical Practice:

- Construct viable arguments and critique the reasoning of others.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

2 **What are the learning intentions (the goal and *why* of learning, stated in student-friendly language) I will focus on in this lesson?**

Content: To understand the specific conditions associated with independent and conditional probability.

Language: To justify my inferences by interpreting and explaining data.

Social: To ask probing questions that help my peers and me advance our thinking about probability.

3 **When will I introduce and reinforce the learning intention(s) so that students understand it, see the relevance, connect it to previous learning, and can clearly communicate it themselves?**

To guide and scaffold learners' thinking, I will open the class with two guiding or probing questions.

How is the probability of an event dependent upon whether the event is independent or conditional?

How are independent and conditional probability different?

SUCCESS CRITERIA

4 **What evidence shows that students have mastered the learning intention(s)? What criteria will I use?**

I can statements:

- *I can describe what is meant by independent and conditional probability.*
- *I can give examples of independent and conditional probability.*
- *I can compare and contrast these two concepts using specific conditions or scenarios.*

5 **How will I check students' understanding (assess learning) during instruction and make accommodations?**

During all aspects of this lesson, student conversation and the discussion of ideas will be used to monitor student learning. In addition, I will use a sorting task and concept map to check for student understanding. I can formatively assess their conversations and responses. This will also give me the chance to note who will need additional guided practice when we transition to collaborative work time. Finally, today's sorting task and exit ticket (Frayer model) comprehensively address and assess each success criterion. I will collect these at the end of the day and use the data to create tomorrow's lesson.

INSTRUCTION

6 **What activities and tasks will move students forward in their learning?**

As students enter the room, I will distribute grouping cards to each individual. The grouping cards will have a mathematical symbol related to statistics on one side (e.g., union, factorial, different frequency distributions, etc.) and a mathematical formula on the other side of the card (e.g., standard deviation, variance, mean, etc.). Once everyone is in the classroom, I will instruct the learners to find their "symbol partners."

Once learners are seated with their symbol partners, I will share the learning intention and success criteria for the day, then distribute envelopes containing various situations that represent independent or conditional probability.

1. *There is a 75% chance of measurable snow tonight if the cold front crosses the region before the moisture from the Gulf of Mexico arrives.*

2. Joseph has 12 bow ties in his closet. Only four of the bow ties will match the outfit he has selected for today. What is the probability of him select a bow tie that matches?

3. The new F-150 pickup truck comes with several optional features. For example, buyers can select a "back-up" camera, a trailer hitch, or keyless entry. What is the probability of finding an F-150 with all three features?

4. Suppose you are on a game show and given the choice of three doors. Behind one door is a new car, but behind the others, cans of soup. You pick a door—say, Number 1—and the host, who knows what is behind the doors, opens another door—say, Number 3, which has cans of soup. He says to you, "Do you want to pick door Number 2?"

5. The official tosses the coin to determine who will kick and who will receive the football at the Super Bowl.

6. What is the probability of choosing a "face card" from a deck of cards, replacing the card, and then choosing an even-numbered card?

Following the sorting task, I will return to the guiding questions and guide a whole-group discussion and then close with the Frayer model task. This is an independent task.

7 What resources (materials and sentence frames) are needed?

1. Grouping cards
2. Concept maps and graphic organizers
3. Sorting task cards
4. Frayer model template

8 How will I organize and facilitate the learning? What questions will I ask? How will I initiate closure?

Closure

For independent practice, learners will complete a Frayer model for either independent or conditional probability. The squares of the Frayer model include the labels Definition in Your Own Words, Mathematical Equations Necessary for Calculating Probability, Visual Representations, and Applications.