ESTABLISHING PURPOSE

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

Content Standards:

S-CP.B.9

Use permutations and combinations to compute probabilities of compound events and solve problems.

Standards for Mathematical Practice:

- Make sense of problems and persevere in solving them.

- Reason abstractly and quantitatively.

- Look for and make use of structure.

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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 why the rules for permutations and combinations are related to the counting principle.

Language: To explain how to compute the probabilities of compound events.

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

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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?**

After introducing the learning intentions at the beginning of class, I will introduce the guiding questions for today. As we move through today's lesson, we will refer to these questions to monitor our progress, as well as keep our focus on the goals of the lesson.

These guiding questions will serve as the exit ticket and frame the miniportfolios for homework.

The guiding questions are as follows:

What determines whether something is a permutation or a combination?

How does this determine our approach to solving a problem?

SUCCESS CRITERIA

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

I can statements:

- *I can explain the difference between a permutation and combination.*
- *I can explain how to complete a permutation and combination.*
- *I can support my calculations using visual representations of sample spaces.*

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

In addition to providing space throughout direct/deliberate instruction for questions, I will monitor the room through the jigsaw activity and engage with learners or groups that need additional support. I will also collect the jigsaw task and exit tickets for formative data.

INSTRUCTION

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

Jigsaw

1. *Divide the topic into chunks: permutations, combinations, sample spaces, and compound events.*
2. *Divide the students into expert groups. Inform each group of the chunk they are to become experts in. Embed measures of accountability to ensure that hesitant learners will become actively engaged in complex material.*
3. *Assign students to base groups. The number of students in each base group is equal to the number of expert groups, and each base group member is also a member of a different expert group.*
4. *Have students review the expert material individually.*
5. *Have students meet and collaborate in their expert groups.*
6. *Provide group support for material that may be difficult to master alone, and help students master content in greater depth.*
7. *Provide time for expert groups to complete the activity and prepare their teaching strategy.*
8. *Have experts return to their base group and teach.*
9. *Experts return to their expert groups to debrief and reflect on their teaching.*

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

1. Groups (determine who is in what expert group and home group)

2. Instructions for the jigsaw

3. Graphic organizer

4. Directions in Spanish

5. Exit ticket

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

This lesson will start with a whole-group introduction of the learning intention, success criteria, and guiding questions. Then, learners will transition to their home groups to receive their individual assignments or expert groups. After the jigsaw task is complete, we will close with a whole-class discussion, and students will complete the exit ticket for the day.