Find a Probability

MATERIALS • paper bag

MATHEMATICAL PRACTICES

Construct viable arguments and critique the reasoning of others.

QUESTION What is the chance that you would select the initials of a student in your class from a bag of letters?

You can perform an experiment and record the results to approximate the likelihood of selecting the initials of a student in your class.

EXPLORE Perform an experiment

STEP 1 Select letters

Write each of the 26 letters of the alphabet on separate pieces of paper. Put all of the letters into a bag. Select a letter at random (without looking into the bag). Replace the letter and select a second letter at random.

STEP 2 Record the results

Record the results of the selections in a table like the one shown.

- If the first letter is the first initial of any student in your class, put a tally mark in the "first initial" column.
- If the second letter is the last initial of any student in your class, put a tally mark in the "last initial" column.
- If the two letters are the first and last initials of any student in your class, put a tally mark in the "both initials" column, but do not put a tally mark in the other columns.

Perform this experiment 30 times.

	First initial	Last initial	Both initials
Tally	𝍸	𝍸 ‖	|
Frequency	?	?	?

STEP 3 Record the frequencies

Record the *frequency*, the total number of tally marks, of each possible result.

DRAW CONCLUSIONS Use your observations to complete these excercises

1. For what fraction of the times that you performed the experiment did you select the first initial of a student in your class? the last initial? both?
2. Which of these results do you think is least likely to happen if you repeat the experiment 30 more times? *Explain* your choice.
3. **REASONING** You perform the experiment 90 times. How many times do you expect to select both the first and last initials of a student in your class? *Explain* how you made your prediction.