

# Alphabetical Probability

This investigation uses probability and statistics techniques to analyze the frequency of letters in the English language.

1. Have students decide, individually, what they think are the five most commonly used letters in the English language. They should list their predictions, starting the letter they think is the most common.
2. Ask students to share their individual predictions in their groups and to arrive at one group prediction.
3. Then have each student pick a sentence from a book and tally how many times each letter appears in the sentence. Have groups compile their individual results and put their results on a class chart. Analyze the class chart and list the letters of the alphabet in the order of frequency according to the students' findings.
4. Compare the class results with their predictions and with the actual order of frequency in the English language:

E T A O (N I) S R H L D C U (P F) M W Y (B G) V K (Q X) (J Z)  
(Those bracketed have the same frequency of occurrence.)

## Extensions

1. Would this be the same for other languages? Find out.
2. What is so strange about these three sentences? - THIS IS ODD. DO YOU KNOW WHY? TRY AND FIND OUT.
3. A language exercise: Have students write, or talk, without using one of the common letters.
4. Each letter in the cryptogram below stands for another letter in the alphabet. Can you figure out what it says?

AB CD EDDF AG FXD HIJY,  
A CAKK LMN NZM IG AWD WJDIE WZGD.

Here's another clue to help you: The most frequently used words in the English language are "the," "an," "a," "and."

5. Examine the games of Scrabble, Boggle, and so forth to see how they used the information about frequency of letters.
  6. Buy some transfer lettering from a stationery or art store. Analyze the frequency of the letters provided.
  7. When Christopher L. Sholes invented the typewriter in 1867, he purposely scrambled the letters so typists couldn't type too quickly and jam the keyboard. (Your two most agile fingers rest on rarely used 'T' and 'k,' while your left pinky is used for 'a.')
- Have students design a keyboard that makes use of this mathematical investigation.