

Combinatorics

Let's assume that the set of possible sounds in the world's languages can be exhaustively listed as this: [a, e, i, o, u, p, t, k, b, d, g, m, n, r, l, y, w].

1. How many possible two-vowel vowel systems are there?
2. How many possible three-vowel vowel systems are there?
3. How many possible inventories are there generally?

Assume that our language has this inventory: [a, i, u, p, t, k, m].

1. How many possible three-segment words are there?
2. How many possible three-segment monosyllabic words are there?
3. How many possible four-segment words?
4. How many possible four-segment bisyllabic words are there?

Assume that our language has this inventory: [a, i, u, p, t, k, m], and that vowels cannot be adjacent.

1. How many possible two-segment words are there?
2. How many possible three-segment words are there?

Analogous questions from syntax etc.: assume that the set of possible words for *any* language are the following eight: *hat*, *chair*, *book*, *green*, *big*, *run*, *jump*, *quickly*.

1. How many possible three-word lexicons are there?
2. If we assume that those eight words comprise the lexicon of some language we are interested in, how many possible 6-word sentences are there?
3. If verbs *must* follow a noun, how many possible 6-word sentences are there?

Probability

1. What are the chances that some language will have [a] in its inventory?
2. What are the chances that some language will have both [a] and [u] in its inventory?
3. What are the chances that a language with all the sounds above will have a word *tka*?
4. What are the chances that a language with all the sounds above will have a word *kan*?
5. Given the inventory above, what are the probabilities of the following words? [ptkbg] vs. [patuki]?

Let's convert those to syntax...