

The Invention of the Alphabet

The first true alphabet was the ancient Greek alphabet, invented about 800 BCE. Whoever created the Greek alphabet based it on the earlier Phoenician alphabet. The Phoenician alphabet, like the ancient Hebrew alphabet, did not have letters for vowels, only consonants. The reader had to supply the vowels as he read. For example:

hmrk s mprnt

Some of the sounds in Phoenician did not exist in Greek, and the creator of the Greek alphabet used those letters to stand for vowels. Many other alphabets have been based on that Greek alphabet, including Latin, English and Russian. And many different alphabets have been invented, but following the idea of this first alphabet.

The alphabet was a very important invention in human history. Together with the invention of paper, and the later invention of the printing press, it helped spread literacy and learning throughout the world.

a) Can you recite the English alphabet in order? Can you learn another alphabet? What are some writing systems that didn't, or don't, use an alphabet?

Ideally an alphabet should be a "one-to-one correspondence" between letters and sounds. A language with this feature is called a *phonetic* language. Spanish and Polish are fairly phonetic languages, so spelling and reading are much easier in those languages. English is not very phonetic!

b) Can you give some examples of mathematical functions that are one-to-one? Can you give some examples of math functions that are not one-to-one?

c) What are some letters in the English alphabet that represent more than one sound? What are some sounds in English that can be spelled more than one way?

The alphabet was not just a collection of symbols, it was a collection of symbols in a standard order. This order was used and emphasized from ancient times, for example in the making of encyclopedias. In the Hebrew Bible one can find passages that are acrostic poems, using the letters of the alphabet in order. (In fact, the word *alphabet* reflects the order of the first two letters in the Greek alphabet, *alpha* and *beta*.) This is a powerful idea in math and computer science too, allowing for the storage, retrieval, sorting and counting of information.

d) Put these names in alphabetical order:

Julia, Eric, John, Mary, Lea, Oliver, Juliet, Olivia, Brian

e) Permutations are different ways to arrange things. For example, in how many different orders can a class of ten students line up? This can be a hard question! See how using alphabetical order can make this problem easier, help you understand it better, and make it less likely you'll have a mistake in your answer. Of course, start with a class of two students, then three...

The alphabet also gave people the experience of seeing how a small group of letters could form a limitless number of words. (The Latin word *elementa* had the meanings of our word element, but also meant letters of the alphabet.) This helped people think about how a limited number of chemical elements could be combined to create a limitless number of compounds. (And note that we use letters in chemistry. For example, H_2O spells *water*.) And, as usual, "nature got there first." When people began to understand DNA, their experience with the alphabet helped them understand how the four "letters" of DNA could be combined into three-letter "words" to spell out different amino acids. And the amino acids can be combined into an almost limitless number of "sentences" that represent proteins.

f) Learn the letter names for some elements. Learn the formulas for some compounds. (For example, what is $C_6H_{12}O_6$?)

g) Can you learn about the alphabet of DNA (the genetic code) and how it works?

Addendum: Two "Crazy" Ideas

Some scholars, such as Barry P. Powell, think the Greek alphabet was devised for the specific purpose of recording the *Iliad* and the *Odyssey* of Homer. (Professor Powell presents evidence for this in his book called *Homer and the Origin of the Greek Alphabet*.)

Some scholars, such as the writer Robert Graves, have suggested that early alphabets encoded prayers or calendars. In the early Phoenician and Hebrew alphabets, some or all of the letter names were words, rather than just sounds as in our alphabet. For example, looking at the first four letters in the Hebrew alphabet: *aleph* means *ox*, *beth* means *house*, *gimel* means *camel*, *daleth* means *door*. For readers familiar with biblical Hebrew this immediately brings to mind the parallelism that is found throughout the bible. For example from the book of Genesis: "And God called the light day, and the darkness he called night." Or from a description of wisdom in the book of Proverbs: "Her ways are ways of pleasantness, and all her paths are peace." Could the Hebrew alphabet have encoded a prayer or poem?

h) Can you learn more about either of these theories? Do you think they're likely or unlikely?

i) Have fun!

