

Similarities between math and language



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It occurs to me that learning mathematics, especially calculus and other forms of higher mathematics, is much like learning a foreign language. Math starts out like a foreign language, having its own symbols, definitions, applications, and structures. It is difficult to use at first and requires repetition, like a new language. One needs to memorize symbols, their functions and many rules, and then one needs to practice by working many problems. Learners cannot be comfortable with new languages (mathematics) until they can use it repeatedly, consistently, and successfully. Calculus, or a new language, is already existent and the learner needs to adapt to it and work in it; the new material will not adapt to the learner.

One learns a language by listening to others and by reading, using a dictionary, learning the language rules, and what breaks any or all of those rules. Calculus is similar. After much practice, students can communicate with others in their new language and expand their abilities with more practice and use, just as in mathematics. Those with a good foundation via formal instruction are clearly better at than those that pick it up here and there, intermittently. The first can be understood and the second become lost.

Less well-trained learners are limited in the range and layering of meaning their communication can involve and do not have the tools for even higher levels of language (mathematics) learning. A strong foundation prepares the new language speaker or the new calculus student for the next step in their subject's discipline and for later innovation, research, and invention in that discipline.

Mathematics and language are the same -- They have formulas and patterns; they are communication and they are beautiful (e. g. fractal patterns and poetry). Perhaps this is the reason that the films "Close encounters of the third kind" used music (very mathematical) and "Contact" used mathematics as the forms of communication that proved successful between aliens and earth people.