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Exploring the Myths

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A number of myths seem to have emerged in relation to graphics calculators. Like most myths, they appear at first to have elements of truth associated with them, and appear to become even more plausible with repetition, either explicitly or implicitly through educational practice. However, myths they remain, as I shall attempt to demonstrate.

Perhaps the most obvious myth is that graphics calculators are mainly useful for drawing **graphs** of functions and hence are not relevant to most mathematics curricula. An hour or two with a modern graphics calculator will quickly dispel this myth. For example, my book, *More mathematics with a graphics calculator: Casio cfx-9850G*, contains sixteen chapters, only four of which are primarily concerned with graphing. Many other aspects of mathematics, including solving equations, data analysis, random simulation, sequences and series, iteration, matrices, complex numbers, differentiation and integration, are affected by the availability of graphics calculators.

The myth that graphics calculators are mainly used to answer **exam** questions is an understandable one, especially in those states in which the graphics calculator has been introduced in association with public examinations at the end of secondary schooling. In WA, for example, the local daily newspaper even ran an article describing the calculators as 'exam aids'. In fact, there seems little doubt that the most important uses of graphics calculators occur long before examinations, since they provide students with a chance to explore mathematical ideas and relationships for themselves, in ways that were previously inaccessible to most. They are much more important as tools for learning mathematics than they are tools for answering examination questions.

An associated, and equally understandable, myth is that graphics calculators are mainly for **senior students**. In contrast, it is my view that there are no longer defensible reasons for students entering high school to be asked to purchase a scientific calculator. By the time students need access to the 'scientific' capabilities, they need access to the opportunities provided by a graphics calculator to explore the associated mathematics. Their first secondary school calculator should be a graphics calculator; for most secondary school students, it may be the only calculator they will need for all the secondary school years. We should regard the period 1976-1996 as the brief slice in time for which scientific calculators were important; but that time has now passed.

Perhaps the most understandable myth is that graphics calculators are **expensive** luxury items of equipment. Of course, 'expensive' is a relative comparator. Compared with what? The most obvious comparison is with scientific calculators. By my reckoning, the Casio fx-7400G costs around half as much as bottom-of-the-range scientific calculators that appeared in schools late in the 1970's, if the equivalent dollar values are used. It is a great deal less expensive than my (cheap) slide rule in the 1960's. Another obvious comparison is with microcomputers. Roughly speaking, you can purchase about thirty graphics calculators for around the same price as a modern microcomputer (provided you don't buy any educational or mathematical computer software!). Compare the cost of equipping students with graphics calculators with the cost of science laboratories, computer laboratories, libraries, workshops, gymnasiums and sporting ovals. All of these play important roles in educating our students; so too does the appropriate personal technology of the graphics calculator.

Finally, the least defensible myth is that the graphics calculator is a **new invention**. Casio invented the first graphics calculators and sold them to the public in 1985. Hundreds of thousands of students began school in Australia in 1985 and had still not seen or heard of a graphics calculator by the time they left school- hardly the mark of a 'clever country'. Compared with the scientific calculator in school, I concede that the graphics calculator is a new form of technology. But compared with the compact disk player and the video recorder in the home, it is an old technology. But it is one whose time has come.