Mathematics and Mathematicians

Mathematics, or math (sometimes also shortened as "maths"), is the study of numbers, shapes and patterns. Mathematicians are people whose job is to learn and discover such things in mathematics. The biggest part of mathematics is useful for solving problems that occur in the real world, so many people besides mathematicians study and use these parts of mathematics. Today in many kinds of jobs—in business, science, engineering, and construction, for example—knowledge about certain aspects of mathematics is needed.

Mathematicians solve problems by using logic. Mathematicians often use deduction. Deduction is a special way of thinking to discover and prove new truths using old truths. To a mathematician, the reasons you know something is true are just as important as the fact that it is true. Using deduction is what makes mathematical thinking different from normal thinking.

Mathematics uses logic to study these things and to create general rules, which are an important part of mathematics. These rules leave out information that isn't important so that a single rule can cover many situations. By finding general rules, mathematics solves many problems at the same time.

A *proof* gives a reason why a rule in mathematics is correct. This is done by using certain other rules that everyone agrees are correct, which are called *axioms*. A rule that has a proof is sometimes called a *theorem*. Experts in mathematics perform research to create new theorems. Sometimes experts find an idea that they think is a theorem but can not find a proof for it. That idea is called a *conjecture* until they find a proof.

Sometimes, mathematics finds and studies rules or ideas that have not yet been found in the real world. Often in mathematics, ideas and rules are chosen because they are considered simple or beautiful. Sometimes these ideas and rules are found in the real world after they are studied in mathematics. This has happened many times in the past. This means that studying the rules and ideas of mathematics can help us know the world better.

The evolution of mathematics might be seen as an ever-increasing series of abstractions, or alternatively an expansion of subject matter. The first abstraction, which is shared by many animals, was probably that of numbers: the realization that two apples and two oranges (for example) have something in common.

In addition to recognizing how to count *physical* objects, prehistoric peoples also recognized how to count *abstract* quantities, like time – days, seasons, years. Elementary arithmetic (addition, subtraction, multiplication and division) naturally followed.

Further steps needed writing or some other system for recording numbers such as tallies or the knotted strings called quipu used by the Inca to store numerical data. Numeral systems have been many and diverse, with the first known written numerals created by Egyptians in Middle Kingdom texts such as the Rhind Mathematical Papyrus. The Indus Valley civilization developed the modern decimal system, including the concept of zero.

The word "mathematics" comes from the Greek word "μάθημα" (máthema). The Greek word "μάθημα" means "science, knowledge, or learning". Often, the word "mathematics" is made shorter into *maths* (in British English) or *math* (in American English). The short words *math* or *maths* are often used for arithmetic, geometry or simple algebra by young students and their schools.