

MARTIAL CAPITAL WHITEPAPER: WHAT IS AN ALGORITHM?



An algorithm is a set of rules for solving a problem. There is also an expectation that an algorithm will be “computable”. Although here is a very precise definition for “computable”, it generally means that you will get the answer soon enough to do you some good.¹

Algorithms refer to the steps needed to solve a problem. They must be a clear set of instructions, rigorously applied. Well-written driving instructions to your daughter’s ballet studio is an algorithm. The autopilot of an airplane is an algorithm as is the computer program that controls a petrochemical plant.



The word algorithm is derived from the name of the brilliant mathematician who invented it. Mohammed ibn Musa Al-Khwarizmi (ca. 780 - ca. 850 CE) was an astronomer, geographer, and mathematician, born in Khwarizm, south of the Aral Sea, in what is now Iran. He worked for most of his life as a scholar in Baghdad.

He wrote a famous treatise called *Ilm al jabr wa'l muqabalah* (“The Science of Reduction and Calculation”). The word algebra comes from “al jabr”, the shortened title of his work. The word algorithm comes from a bad transliteration of his name into Latin.

Al-Khwarizmi was best known for introducing to science the Hindu system of numerals, now known as Arabic numerals, because of his, an Arab’s, introduction of the decimal system to the west. He was also a pioneer in the development of fractions, trigonometric tables, and the calculus of two errors. He explained the use of zero, perfected the geometric representation of conic sections, collaborated in the very first attempts to measure of volume and cir-

¹ Public-Key cryptography is based on the concept that although it is possible to break a public-key encrypted message, you and your children will be long retired by the time the computer cracks it, so it is de facto impenetrable.

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cumference of the earth, and in 830 CE he produced the first map of the known world. He was the inventor of the astrolabe, the primary instrument for astrological analysis and prediction until more accurate instruments were developed in the 17th century, 800 years later.

The Soviet Union honored him with a stamp in 1983. There is also a crater on the far side of the moon named after him.

Martial Capital Ltd, the portfolio manager of the Martial Funds, developed a set of algorithms which identify which stocks are more likely than not to increase in value subject to specific constraints. Like most algorithms, it has been coded as a computer program, not because it could not be done by hand, but to make the algorithm computable – fast and accurate enough to allow us to act on it.

It is *not* accurate to say that a “computer makes the buy and sell decisions.” The algorithm was designed by the team at Martial Capital and can easily be implemented by hand by people you would typically find at any distinguished investment firm. The only reason a computer has been introduced into the workflow is to make the answer more accurate and timely, to make it ‘computable’.