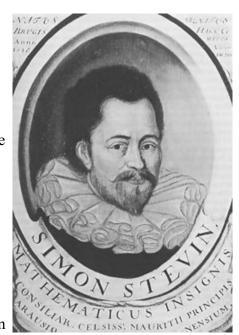# Simon Stevin

Decimal fractions were the most important development in
arithmetic since the introduction of the Hindu-Arabic number
symbols. They made it possible to add, subtract, multiply and divide
parts of a whole in a manner similar to how these operations are
performed with whole numbers; thus avoiding the complicated
methods involved in handling common fractions. One of the most
successful early advocates of their use was a mathematician named
Simon Stevin (1548 – 1620), also known as Stevinus, who has been
called "The Dutch Archimedes." In 1585 he published a pamphlet, *De Thiende* ("Art of Tens"), not
exceeding seven pages, in which he presented an account of decimal fractions. Though he did not
invent decimal fractions, Stevin established the use of decimals in everyday mathematics,
demonstrating the simplicity and advantage of the system. Although the Arabs and the Chinese knew of
decimal fractions much earlier, they were not widely used. Common fractions and sexagesimal
fractions were employed when necessary but were difficult to use.

Stevin's means of writing decimal fractions was different from the method now used. For instance, the
decimal fraction 0.2486 might be written as 2 ⑴ 4 (2) 8 ⑶ 6 (4), where the parenthetical numbers
(or his use of circled numbers) represent the power of ten assumed as a divisor, corresponding to the
words "tenth," "hundredth," thousandth," and "ten-thousandth." Stevin wished to erase the Greek
distinction between number and magnitude. For example to him the square root of 8 was just a number,
not the side of a square with area 8. In his introduction to *De Thiende*, he asserts that using decimal
fractions in coinage, weights and measures, etc. would be one day universally accepted. The English

translation of Stevin's work by Robert Norton, *Disme, The Arts of Tenths or Decimal Arithmetike* in 1608, is said to have inspired Thomas Jefferson to propose a decimal monetary unit for the new United States of America. The tenth of a dollar is still referred to as a "dime."

Born at Bruges in Flanders (Belgium), Stevin was the illegitimate son of Antheunis Stevin and was raised in poverty by his mother Catelyne van der Poot. Little is known of his youth, except that he studied Latin and Greek and had a strong aptitude for mathematics and the sciences. He worked in Antwerp as a bookkeeper for one of the trading firms, and then found employment in the tax office at Brugge. After traveling extensively in Prussia, Poland, Sweden and Norway, he moved to Leiden, now in the Netherlands, and at the age of 35, he entered the city's newly founded university. There he met young Prince Maurits of Orange, resulting in a lifelong friendship. When the prince was elected as stadtholder (viceroy) of Holland and Zeeland, he made Stevin director of finance, inspector of dykes of the Low Countries, and later installed his friend as Quartermaster General of the State Army. Stevin published two books of practical use for the defense of the country and the extension of the fleet. In *The Construction of Fortifications* (1594), he modified the new Italian system of fortification to accommodate the geographical conditions of the Low Countries. Maurits encouraged Stevin to establish an engineering school at the University of Leiden. Stevin wanted the courses to be taught in the Dutch language, but this was not to be as Latin was the international language, and it was argued that the vernacular would not do for international trade.

Stevin pleaded for the use of the mother tongue in scientific publications. He argued that to make science useful it was not only necessary that all publications be written in the vernacular, but that it should also be simplified as much as possible. His goal was to bring science and technology to non-academic individuals who had no knowledge of Latin. He employed existing Dutch expressions for mathematical concepts, and created neologisms when there were no Dutch equivalents. Stevin married

Catharine Cray in 1610 and they had four children. He died in The Hague sometime between February 20 and early April 1620 at his home on the Raamstraat.

Stevin is credited with establishing the science of hydrostatics while assessing the stability of floating platforms to be used in military assaults. He showed that the pressure exerted by a liquid on an immersed body increases with depth and lessens with. In addition, he proved the law of the equilibrium on an inclined plane and demonstrated the resolution of forces. In *Statics and Hydrostatics* (1586) he introduced vectorial decomposition of forces. He found the force that must be exerted along the line of greatest slope to support a given weight on an inclined plane. Living in a country where canals and waterways played so important a role, Stevin invented mechanical devices for dredging, a mill to pump water, and a device to pull ships over obstacles. He developed and promoted the use of sluices, which were used in battles to flood approaching enemies. Among his inventions was a carriage propelled by sails as it ran on the seashore. Even when carrying a maximum load of 28 people, it easily kept up with horses galloping at its side.

Quotation of the Day: "Disme is a kind of Arithmeticke, invented by the tenth progression, consisting in Characters of Cyphers; whereby a certain number is described, and by which also all accounts which happen to humane affayres, are dispatched by whole numbers, without fractions or broken numbers." – Simon Stevin