PI: History & Trivia & Fascination

The first time the symbol π was used to denote pi was when a Welsh mathematician proposed its use in 1706.

The first reference to pi may have come around 1650 BC, when an Egyptian scribe named Ahmes implied that pi had a value of 3.16049, which was within one percent of the true value. In the late 400s, Chinese astronomer Tsu Ch'ung-chih and his son Tsu Keng-chih calculated pi to be between 3.1415926 and 3.1415927, which put their result within eight millionths of one percent of the now-accepted value for pi. Also around 500 BC, in India, a mathematician named Aryabhata approximated pi to be 3.1416, which is a less accurate value than what the aforementioned Chinese father and son team had produced.

As time went by, many attempts were made at computing accurate values of pi, with varying degrees of success. Over time, the approaches and formulas improved, and mathematicians got better at computing the value of pi. By 1699, an Englishman named Abraham Sharp had found the first 72 decimals of pi. By 1873, another Englishman, William Shanks, had calculated pi to 707 digits, although it was discovered 72 years later that he had made a mistake after the 527th place, rendering all subsequent digits wrong.

In 1947, English mathematician D.F. Ferguson was believed to be the first to use a mechanical calculator to compute pi, finding 808 digits. In 1948, Levi Smith and John Wrench found the 1000th digit of pi using crude calculators of the era that could compute only one or two additional digits per day. Also in 1948, in Aberdeen, Maryland, George Reitwiesner, John von Neumann, and N.C. Metropolis used one of the earliest computers, the just-completed ENIAC, to compute pi to 2,037 digits. The ENIAC had 19,000 vacuum tubes and hundreds of thousands of transistors and capacitors. It could compute an additional pi digit every two minutes.

In 1958, an IBM 704 computer calculated the first 707 digits of pi in 40 seconds, a feat that had taken a year on the ENIAC computer a decade earlier, and had taken mathematician William Shanks a major portion of his adult life to do by hand. In 1973, Jean Guilloud and M. Bouyer found the one millionth digit of pi. In 1982, in Japan, pi was calculated past the eight millionth digit, and by 1995, David and Gregory Chudnovsky had computed pi to the one billionth digit. In 2002, mathematicians at the University of Tokyo used a supercomputer to compute pi to 1.24 trillion decimal places.

In addition to computing the values of pi, over the years many individuals have attempted to impress their peers and set records by reciting, in order and from memory, as many digits of pi as possible.

In February of 1995, Hiroyuki Goto of Japan earned a place in the *Guinness Book of Records by* reciting 42,195 pi decimal places from memory. Also in 1995, Akira Haraguchi, a 60-year-old Japanese mental health counselor living near Tokyo, apparently recited pi to 83,431 digits. On October 4, 2006, Haraguchi broke his own record by reciting pi to 100,000 decimal places from memory. It took him over 16 hours.

In April of 1995, a twelve-year-old Chinese boy named Zhang Zhuo supposedly recited the value of pi to 4,000 decimal places from memory. It took him twenty-five minutes. The North American record is probably held by Gaurav Raja who, in 2006, recited 10,980 digits of pi. At the time he was a junior in high school in Roanoke, Virginia and, among other recognition, appeared on the *Today Show*.

Celebrations of pi frequently occur annually on March 14, which is considered to be "Pi Day". It is on that day that high school and college students participate in both pi-recitation contents and pie-eating ceremonies.