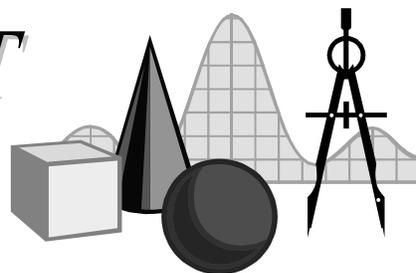


# TAKE IT TO THE MAT

A NEWSLETTER ADDRESSING THE FINER POINTS OF MATHEMATICS INSTRUCTION

Math Audit Team  
Regional Professional Development Program  
January 2, 2001 — Special K–12 Edition



Welcome to the 21<sup>st</sup> Century and the 3<sup>rd</sup> Millennium from *Take It to the MAT!* Maybe....

The celebration of the beginning of the 21<sup>st</sup> Century and 3<sup>rd</sup> Millennium has been mired in controversy for several years. Well, maybe controversy is a strong word to use, but discussion certainly has taken place. So when did these periods actually begin? Was it on January 1, 2000 or on January 1, 2001? Or (gasp!) was it neither of the two? A little history will help us decide.

The first calendars were lunar—based on the moon's cycle. The Sumerians and Chinese used lunar calendars. The Egyptians and the Babylonians used lunar calendars but later switched to solar. They found that the lunar year of twelve months of 29 to 30 days was too short, and that it only took a few years for the calendar to be out of synch with the seasons. The Maya had the most accurate of solar calendars, more accurate (and complicated) than our own.

Elements of our present calendar dates back to Rome, which based its early calendar on the Greek lunar calendar. After a number of revisions and corrections to keep it in line with the seasons—46 BC was 445 days long!—a calendar of 12 months of 365 days, with a leap day every four years, was adopted in 45 BC by Julius Caesar. This created what is known as the Julian calendar.

The Julian calendar had an inaccuracy that added one too many days about every 130 or so years. The result of this was that by the 16<sup>th</sup> century, the calendar was more than ten days ahead. Pope Gregory XIII adopted a proposal that omitted ten days from the calendar in 1582. The leap year rule was changed to omit all years divisible by 100, but include those divisible by 400, e.g. 1700, 1800, and 1900 were *not* leap years, but 1600 and 2000 were.

The Gregorian calendar was adopted slowly throughout the world. Most countries began using it by the end of the 16<sup>th</sup> century. The U.S., then British colonies, adopted it in 1752. Among the last countries to accept the calendar was Turkey in 1927.

When our present system of numbering years as BC or AD was created in 527 AD, it was decided that 1 AD would be preceded by 1 BC. There was no year 0. Hence, the first century AD began January 1, 1 AD and ended December 31, 100 AD. The first millennium thus ended on December 31, 1000. Extending this, the second millennium ended December 31, 2000 and the third began on January 1, 2001.

Astronomers find the BC/AD system cumbersome. How much time passed between January 1, 5 BC and January 1, 5 AD? It's not ten years; it's only *nine!* Astronomers have solved this mathematical anomaly by naming 1 AD as the year 1, and 1 BC as the year 0. Thus, 5 AD is the year 5, 5 BC is the year  $-4$  (negative 4), and the time between can easily be seen as 9 years.

For astronomers, the first millennium runs from January 1, 0 to December 31, 999. Using the astronomical numbering system, the third millennium began on January 1, 2000. If one were into using the Julian calendar, the new millennium would begin January 11, 2001 as given by our present Gregorian calendar. Whatever system one prefers, *Happy New Millennium!*