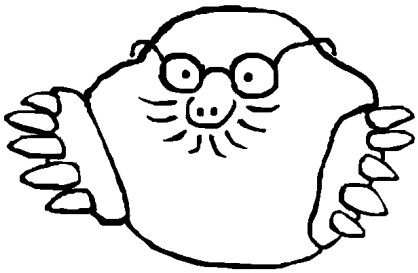


Math Mole

June 30, 2008 *One Month Down, Two Weeks To Go* Volume 4, No. 1

This issue

Quotes:

I never did very well in math - I could never seem to persuade the teacher that I hadn't meant my answers literally. –Calvin Trillin

Sometimes it is useful to know how large your zero is. –Author Unknown

As far as the laws of mathematics refer to reality, they are not certain; and as far as they are certain, they do not refer to reality. –Albert Einstein

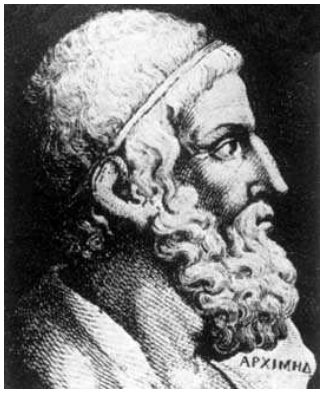
Puzzles:

Tweedledum and Tweedledee look alike, but Tweedledum lies on Monday, Tuesday, and Wednesday, whereas Tweedledee lies on Thursday, Friday, and Saturday. They both tell the truth on Sunday. You come upon the two of them, and they make the following statements. In each case, determine who is who, and what day it is.

1. A: Today is not Sunday. B: Today is not Monday.

2. A: Tweedledum will tell the truth tomorrow. B: Today is not Tuesday.

Mathematician of the Day



Archimedes (287 BC – 212 BC)

- Archimedes was born in Syracuse, Sicily. Although he died there as well, some have reported that he traveled to Egypt during his lifetime, where he invented Archimedes' Screw, a pump still used in many parts of the world.
- In the preface to his book *On spirals*, Archimedes tells us about his habit of sending statements of his theorems to his companions, without giving proofs. Apparently, some of those mathematicians began claiming that work as their own, so the next time he included two false theorems, "so that those who claim to discover everything, but produce no proofs of the same, may be confuted as having pretended to discover the impossible."
- Considered by most historians of mathematics to be the greatest mathematician of his time, he applied the early form of integration, the method of exhaustion, to obtain many important results. Archimedes' methods anticipated integral calculus 2,000 years before Newton or Leibniz.
- Archimedes gave an accurate approximation for π and showed that he could do the same for square roots. He also invented a system for expressing large numbers.
- His most famous theorem, the Archimedean principle, gives us the displacing method for measuring the volume of a solid by submerging it in a previously measured liquid.

Info From: `http://www-history.mcs.st-andrews.ac.uk/Mathematicians/Archimedes.html`

Mathematics Spotlight: e

The constant e is base of the natural logarithm. e is sometimes known as Napier's constant, although its symbol (e) honors Euler. e is the unique number with the property that the area of the region bounded by the hyperbola $y = 1/x$, the x-axis, and the vertical lines $x = 1$ and $x = e$ is 1. The numerical value of e is

$$e = 2.71828182845904523536028747135266249775 7...$$

e can be defined by the limit

$$\lim_{x\to\infty} \left(1 + \frac{1}{x}\right)^x,$$

or by the infinite series as first published by Newton:

$$\sum_{k=0}^{\infty} \frac{1}{k!}.$$

Information from: `http://mathworld.wolfram.com/e.html`