



# Math Mole

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Friday?

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- Today's Editors: Evan & Tim
- Monday: Kristin & Aileen

### Quotes:

*When the power of love overcomes the love of power, the world will know peace.*  
–Jimi Hendrix

*If A is success in life, then A equals x plus y plus z. Work is x; y is play; and z is keeping your mouth shut.* –Albert Einstein

### Puzzles:

One: Convert  $1101101010001_2$  to its equivalent in base 6.

Two: While we're converting... Determine the first 10 bits (binary digits) in the base 2 representation of  $\pi$ .

## Mathematician of the Day



Al-Khwarizmi

- Al-Khwarizmi was born around September 14, 786. About that time, Harun al-Rashid became the fifth Caliph of the Abbasid dynasty. Al-Khwarizmi was born in the Islamic Empire, but exactly where is not known.
- Al-Khwarizmi and the Banu Musa were scholars in the House of Wisdom in Baghdad. Their job was to translate Greek scientific manuscripts. Also, they studied and wrote on algebra, geometry, and astronomy.
- He wrote an algebra treatise, *Hisab al-jabr w'al-muqabala*, his most famous and influential work. From its title the word "algebra" is derived. (also the word "algorithm") It is considered the first book on algebra. It deals mainly with linear and quadratic functions. He made rules, variations of addition and multiplication, allowing for any function to be solved.
- It is guessed that Al-Khwarizmi died around 850.

## Career Spotlight: Astronomer

**Education and Training:** There are a few openings as assistants or technicians in astronomy for those who have a bachelor's degree in physics or astronomy. There are more opportunities for those who have a master's degree in astronomy or a related field, such as physics or mathematics. To be an astronomer, a doctoral degree in astronomy or a closely related field, such as astrophysics, is usually required. It takes about four years to get a bachelor's degree and about another four years of full-time study to earn a doctoral degree. Astronomers also spend time studying throughout their careers to keep up with new discoveries in their field.

**Salary:** Median: \$97,320 per year

**Employment Outlook:** Fair

**Job Description:** Astronomers are sometimes called astrophysicists. They use the laws of physics and mathematics to learn about the nature of matter and energy throughout the universe, which includes the sun, moon, planets, stars, and galaxies. In addition, astronomers apply their knowledge to solve problems in navigation, space flight, and satellite communications. They also develop the instruments and techniques needed to observe and collect astronomical data.

**Work Sector:** Many astronomers work in colleges and universities where they do research and teach astronomy. Some work in observatories, planetariums, and museums where they help to explain what is known about the universe to the public. Others are employed by government agencies, such as the U.S. Naval Observatory or NASA. A few work for companies in the aerospace industry.

**Working Conditions:** Many astronomers work in well-equipped offices, laboratories, classrooms, and observatories with fellow scientists and students who share the same interests and goals. Others work with the general public to whom they try to convey their own interest in and enthusiasm for astronomy. Astronomers sometimes need to travel to remote observation sites and must often work at night. Most astronomers find their work exciting and personally rewarding because of the challenges it offers them. They usually devote long hours to their research and to the study needed to keep up with new developments in their field. They need to be patient and careful workers who can work for months or even years on the details of a research problem. They must also be able to communicate their findings to others.

Source: Taking directly (almost) from:

<http://careers.stateuniversity.com/pages/386/Astronomer.html>