



Math Mole

June 26, 2008

TGIF

Volume 3, No. 5

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- Today's Editor: Dakota
- Monday: Michael

Quotes:

There are things which seem incredible to most men who have not studied Mathematics. -Archimedes of Syracuse

Puzzles:

Drawing a Blank: The number below is intended to be a 28-digit number, but ten of the digits have been left blank. These blanks are to be filled with the digits 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 which, for the record can be done in $10! = 3,556,800$ different ways. What is the probability that the resulting 28-digit number will be divisible by 396?

5 _383_8_2_936_5_8_203_9_3_76

Liar Puzzle: Four friends, Joe, Bill, Tom, and Jane, are thinking of the same number. This is what they have to say about it:

Joe: "The number has two digits."

Bill: "The number goes evenly into 150."

Tom: "The number is not 150."

Jane: "The number is divisible by 25."

Exactly one friend is lying. Who is it? Provide an example of the number they are thinking of.

Mathematician of the Day



René Descartes, March 31, 1596 - February 11, 1650.

- Born: 31 March 1596 in La Haye (now Descartes), Touraine, France. Died: 11 Feb 1650 in Stockholm, Sweden
- René Descartes was a philosopher whose work, *La géométrie*, includes his application of algebra to geometry from which we now have Cartesian geometry.
- School had made Descartes understand how little he knew, the only subject which was satisfactory in his eyes was mathematics. This idea became the foundation for his way of thinking, and was to form the basis for all his works.
- Descartes was pressed by his friends to publish his ideas and, although he was adamant in not publishing *Le Monde*, he wrote a treatise on science under the title *Discours de la méthode pour bien conduire sa raison et chercher la vérité dans les sciences*. Three appendices to this work were *La Dioptrique*, *Les Météores*, and *La Géométrie*. The treatise was published at Leiden in 1637.
- In 1649 Queen Christina of Sweden persuaded Descartes to go to Stockholm. However the Queen wanted to draw tangents at 5 a.m. and Descartes broke the habit of his lifetime of getting up at 11 o'clock. After only a few months in the cold northern climate, walking to the palace for 5 o'clock every morning, he died of pneumonia.

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>