



# Math Mole

June 11, 2009

What??? It's Thursday!?

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- Quote
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- Today's Editors: Kenny & Dr. C (puzzles)

**Quotes:** *The moving power of mathematical invention is not reasoning but imagination.* – Augustus de Morgan

**A Logician Puzzle:** Three astute logicians are gathered in a room. There are 4 orange stamps and 4 white stamps on a table. The logicians are blindfolded and an assistant puts 2 stamps on each of their foreheads. The blindfolds are removed and the assistant asks each if he knows the colors of his two stamps. They each answer 'No'. Then the assistant asks the 1st logician again, if he knows the colors. He again says 'No'. Then he asks the 2nd one, again, if he knows and he says 'Yes'. What are the colors of the two stamps on the 2nd Logician?

**A Train Puzzle:** We were going by train from Anglechester to Clinkerton, and an hour after starting an accident happened to the engine.

We had to continue the journey at three-fifths of the former speed. It made us two hours late at Clinkerton, and the driver said that if only the accident had happened fifty miles farther on the train would have arrived forty minutes sooner. How far it is from Anglechester to Clinkerton?

**(One on the back)**

## Mathematician of the Day



Niels H. Abel - Norway 1802-1829

- Abel was born in 1802 in Norway and died in 1829. Though he died young, he accomplished many incredible mathematical proofs and remains one of Norway's most prominent mathematicians.
- Norway has released five postage stamps in his honor, and there are several statues of him in that country.
- Abel was not married when he died, although he was engaged. On his deathbed, Abel asked his friend Baltazar Keilhau to care for his fiancée, perhaps by marrying her. After Abel's death, Keilhau did indeed marry Abel's fiancée.
- He faced difficulty when beginning his studies of mathematics: when he was eighteen, his father passed away, and he was left to support his family of six siblings and his mother.
- Abel never had the opportunity to teach at a university, although he was offered a job; unfortunately, the notice came a few days after his death.
- Abel made numerous contributions to modern mathematics: his abelian groups are foundational in the study of modern algebra, and he is well known for a powerful theorem regarding the convergence of infinite power series.

Info From: Gilbert, Jimmie, and Linda Gilbert. *Elements of Modern Algebra*. 3rd ed. Boston: PWS-KENT Publishing Company, 1992. Print.

Photo From: [http://nov.wikipedia.org/wiki/Niels\\_Abel](http://nov.wikipedia.org/wiki/Niels_Abel) accessed 6/10/2009

## Career Spotlight: Cryptologist

**Education:** Ph.D. in Mathematics, Computer Science, or a combination thereof

**Work Situation:** Typically would work for the government (National Security Agency, Central Intelligence Agency) or a private contractor company (RSA Security).

**Pay:** According to [www.nsa.gov](http://www.nsa.gov), a starting level mathematician should expect to earn around \$47,000 per year. Entry level, according to NSA, however, simply entails a Bachelor's Degree. Earning a Ph.D. may entail a higher starting salary.

**Outlook:** The future of mathematics in cryptography is only beginning to be realized. As our culture enters the Information Age, the need to secure our personal information, be it credit card numbers or SSNs, is imperative. Recent trends in cryptography have transformed it from a linguist's job (as it was several hundred years ago) to a mathematician's job, as messages are often encrypted using mathematical algorithms. Also, take note: if a career in cryptology interests you, visit [www.nsa.gov](http://www.nsa.gov), as there are summer internships available to high school and college age students!

**Einstein's Logic Puzzle:** (although authorship is in doubt, this is attributed to Einstein and his claim that only 2% of the population could complete it)

There are five houses in five different colors. In each house lives a person of a different nationality. These five owners drink a certain beverage, smoke a certain brand of cigarettes, and keep a certain pet. No owners have the same pet, smoke the same brand of smoke, or drink the same drink.

The Brit lives in the red house.

The Swede keeps dogs as pets.

The Dane drinks tea.

The green house is on the left of the white house.

The green house owner drinks coffee.

The person who smokes Pall Mall rears birds.

The owner of the yellow house smokes Dunhill.

The man living in the house right in the center drinks milk.

The Norwegian lives in the first house.

The man who smokes Blend lives next to the one who keeps cats.

The man who keeps horses lives next to the man who smokes Dunhill.

The owner who smokes Blue Master drinks beer.

The German smokes Prince.

The Norwegian lives next to the blue house.

The man who smokes Blend has a neighbor who drinks water.

Who owns the fish?