



Math Mole

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Puzzles:

One: A plane travels at a speed of 400 miles per hour for 1200 miles, and then returns by the same route at a speed of 300 miles per hour. What is the average speed (in miles per hour) for the total trip?

Two: A word I know, six letters it contains. Subtract just one, and twelve is what remains. What is the word?

Mathematician of the Day



Jacob Bernoulli - Switzerland, 1654–1705

- He is one of the eight prominent mathematicians in the Bernoulli family.
- He became familiar with calculus through a correspondence with Gottfried Leibniz, then collaborated with his brother Johann on various applications, notably publishing papers on transcendental curves and isoperimetry.
- In 1690, he became the first person to develop the technique for solving separable differential equations.
- Jacob is best known for the work *Ars Conjectandi* (The Art of Conjecture), published eight years after his death in 1713 by his nephew, Nicholas. In this work, he described the known results in probability theory and in enumeration, often proving alternative proofs of known results.
- *Ars Conjectandi* also includes the application of probability theory to games of chance and his introduction of the theorem known as the law of large numbers. The terms Bernoulli trial and Bernoulli numbers result from this work.

Info from http://en.wikipedia.org/wiki/Jakob_Bernoulli

Reading Assignment:

Continue reading Chapter 3.

Review Chapters 1 and 2 for tomorrow's test.

Mathematics Spotlight: Golden Ratio

The golden ratio describes the line AB divided by a point C such that $AB:AC = AC:CB$. Algebraically if the length of AB is 1 and the length of AC is x , then $1 : x = x : (1-x)$ or $1/x = x/(1-x)$ or $x^2+x-1 = 0$, where $1/x$ is then the golden ratio. Its discovery is generally attributed to Pythagoras or to the Pythagoreans. In the regular pentagram, the Pythagorean's symbol, the golden ratio describes the length of a diagonal of the inner pentagon to its side length. Euclid's Elements was the first documentation of the golden ratio, which he called the "extreme and mean ratio." The golden ratio is also the limit approached by the ratios of successive terms of the Fibonacci sequence. The ratio is often represented by the Greek letter Phi, after the sculptor Phidias, who used it in his work. The golden ratio equals $\frac{1+\sqrt{5}}{2}$.