Goldbach's Conjecture Encyclopedia Article

Goldbach's Conjecture

The following sections of this BookRags Literature Study Guide is offprint from Gale's For Students Series: Presenting Analysis, Context, and Criticism on Commonly Studied Works: Introduction, Author Biography, Plot Summary, Characters, Themes, Style, Historical Context, Critical Overview, Criticism and Critical Essays, Media Adaptations, Topics for Further Study, Compare & Contrast, What Do I Read Next?, For Further Study, and Sources.

(c)1998-2002; (c)2002 by Gale. Gale is an imprint of The Gale Group, Inc., a division of Thomson Learning, Inc. Gale and Design and Thomson Learning are trademarks used herein under license.

The following sections, if they exist, are offprint from Beacham's Encyclopedia of Popular Fiction: "Social Concerns", "Thematic Overview", "Techniques", "Literary Precedents", "Key Questions", "Related Titles", "Adaptations", "Related Web Sites". (c)1994-2005, by Walton Beacham.

The following sections, if they exist, are offprint from Beacham's Guide to Literature for Young Adults: "About the Author", "Overview", "Setting", "Literary Qualities", "Social Sensitivity", "Topics for Discussion", "Ideas for Reports and Papers". (c)1994-2005, by Walton Beacham.

All other sections in this Literature Study Guide are owned and copyrighted by BookRags, Inc.



BOOKRAGS

Contents

Goldbach's Conjecture Encyclopedia Article.....1

Contents.....2

Goldbach's Conjecture.....3

Goldbach's Conjecture

Goldbach's conjecture was formulated by **Christian Goldbach** in 1742 in a letter to the great Swiss mathematician **Leonhard Euler**. It is the assertion that every even number bigger than two is a sum of two **prime numbers**. For example, 4=2+2, 6=3+3, 10=3+7, 54=7+47=11+43 and so on.

While this has been verified for all even numbers up to 10^14, by J.-M. Deshouillers, H. J. J. te Riele and Y. Saouter, in 1998, it has never been proved that it holds for all even numbers. The Russian mathematician A. I. Vinogradov proved in 1937 that every large odd number was a sum of three primes and the chinese mathematician J. R. Chen proved in 1966 that every large even number is a sum of a prime and a number with at most two prime factors. As close as these results seem to the conjecture, a new breakthrough would be needed to prove it.

The Goldbach conjecture is mentioned in the text of D. Hilbert's eighth problem as a possible consequence of a thorough understanding of the distribution of prime numbers. Indeed, if a strong form of the **prime number theorem** could be proved that predicted the distribution of primes in short intervals, one would be able to prove that every large even number is a sum of two primes in many different ways. This is consistent with the available numerical evidence.