

Open

History of Math

Test #141

Directions:

1. Fill out the top left section of the scantron. Do not abbreviate your school name.
2. In the Student ID Number grid, write your 9-digit ID# and bubble.
3. In the Test Code grid, write the 3-digit test# on this test cover and bubble.
4. Scoring for this test is 5 times the number correct plus the number omitted.
5. TURN OFF ALL CELL PHONES.
6. No calculators may be used on this test.
7. Any inappropriate behavior or any form of cheating will lead to a ban of the student and/or school from future National Conventions, disqualification of the student and/or school from this Convention, at the discretion of the Mu Alpha Theta Governing Council.
8. If a student believes a test item is defective, select “E) NOTA” and file a dispute explaining why.
9. If an answer choice is incomplete, it is considered incorrect. For example, if an equation has three solutions, an answer choice containing only two of those solutions is incorrect.
10. If a problem has wording like “which of the following could be” or “what is one solution of”, an answer choice providing one of the possibilities is considered to be correct. Do not select “E) NOTA” in that instance.
11. If a problem has multiple equivalent answers, any of those answers will be counted as correct, even if one answer choice is in a simpler format than another. Do not select “E) NOTA” in that instance.
12. Unless a question asks for an approximation or a rounded answer, give the exact answer.

For each question, the answer choice E. NOTA means None of the Above

1. The *Dresden Codex*, an 11th century manuscript detailing astronomical observations, is an artifact from what ancient culture? Numeration in this culture was primarily conducted through a vigesimal system.
A. Maya B. Yoruba C. Greek D. Chinese E. NOTA
2. The Rhind Papyrus included several fraction problems in addition to an approximation for π . It was transcribed by the scribe named
A. Apophis B. Khamudi C. Ahmes D. Akhet E. NOTA
3. What author of the third century B. C. E. book, *The Sand Reckoner*, is credited with the invention of many war machines and is depicted on the Fields Medal?
A. Fields B. Hippias C. Euclid D. Archimedes E. NOTA
4. Famously restricting fava beans from his followers' diet, what Greek mathematician identified music intervals as harmonic means and is known for worshipping numbers?
A. Plato B. Ptolemy C. Penelope D. Pythagoras E. NOTA
5. Known for his work in Platonic Reform, what mathematician provided the foundations of a proof known as the method of exhaustion?
A. Essedat B. Eumenides C. Eudoxus D. Euclid E. NOTA
6. What Alexandrian mathematician published *Collection* (320)? His namesake "centroid theorem" describes the volume of a solid obtained by rotating a plane about a line.
A. Ptolemy B. Apollonius C. Pappus D. Nichomachus E. NOTA

7. What 12th century Indian mathematician wrote the *Lilavati* and *Vijaganita*? The latter work provided foundational concepts of algebra and posited that infinity was the result of dividing a number by zero.
- A. Bhaskara I B. Bhaskara II C. Bhaskara III D. Bhaskara IV E. NOTA
8. What Chinese mathematician gave a famous approximation of 3.14159 as pi in his 3rd century commentary of the *Nine Chapters*?
- A. Hu Wang B. Liu Hui C. Xiao Ye D. Zhi Chen E. NOTA
9. What author of the *Jade Mirror of the Four Origins* (1303) introduced his book with a triangular arrangement of numbers that went on to become known in the West as “Pascal’s Triangle?”
- A. Yang Hui B. Zhu Shijie C. Tse Tsung D. Jia Xian E. NOTA
10. The House of Wisdom, home to mathematicians such as Al-Khwarizmi, was located in what city? It became the capital of the Abbasid Empire in 762 C.E.
- A. Damascus B. Alexandria C. Jerusalem D. Persepolis E. NOTA
11. Which of the following books was NOT written by Fibonacci Leonardo de Pisa?
- A. Liber Abaci B. Liber Quadratorum C. Liber Tris D. Flos E. NOTA

12. Known as “The Tentmaker,” what Persian polymath wrote the 11th century poem *Rubaiyat* and worked on cubic polynomials?
- A. Al-Kashi B. Omar Khayyam C. Al-Karaji D. Avicenna E. NOTA
13. What Italian mathematician wrote *Ars Magna* (1545) which detailed the solutions of the cubic and quartic equations? His understanding of probability made him a fantastic gambler.
- A. Gerolamo Cardano B. Niccolo Tartaglia C. Francois Viete D. Giuseppe Peano E. NOTA
14. What Italian mathematician bolstered himself to fame by solving Van Roomen’s problem? He also worked as a codebreaker for King Henry IV.
- A. Gerolamo Cardano B. Niccolo Tartaglia C. Francois Viete D. Giuseppe Peano E. NOTA
15. Known mostly for his work in engravings, what artist famously included the first magic square seen in Europe in his *Melancholia* (1514)?
- A. Albrecht Durer B. Raphael C. Leonardo da Vinci D. Michelangelo E. NOTA
16. What Dutch mathematician is known for his contributions to financial mathematics by applying probability to questions of state finance? His major mathematical work is *Elementa Curvarum Linearum* (1683).
- A. Simon Stevin B. Maurice Orange C. Jan de Witt D. Hans Holbein E. NOTA
17. In addition to inventing the continued fraction, what English mathematician introduced ∞ as the infinity sign?
- A. James Gregory B. Thomas Harriot C. Robert Recorde D. John Wallis E. NOTA

18. Isaac Barrow, known for his work on infinitesimal calculus, held the first Lucasian Chair of Mathematics at
- A. Oxford B. Cambridge C. St. Andrews D. Manchester E. NOTA
19. Known for introducing the function symbol, e for the natural constant, i for the square root of negative, and many other mathematical symbols, what mathematician is famous for a namesake identity involving the aforementioned symbols?
- A. Euclid B. Leonhard Euler C. Pierre de Fermat D. Johann Bernoulli E. NOTA
20. Accompanying Napoleon Bonaparte on his expedition to Egypt, what French mathematician published *The Analytical Theory of Heat* in 1822?
- A. Joseph Fourier B. Pierre de Fermat C. Joseph-Louis Lagrange D. Pierre-Simon Laplace E. NOTA
21. What mathematician wrote *Disquisitiones Arithmeticae* (1804), which contained his famous proof of the Law of Quadratic Reciprocity? His work extended to electromagnetism and astronomy as well.
- A. Daniel Bernoulli B. Johann Pfaff C. Leonhard Euler D. Carl Friedrich Gauss E. NOTA
22. What mathematician used the pen name Monsieur Leblanc? Along with Legendre, this number theorist proved Fermat's Last Theorem for $n = 5$.
- A. Andrei Markov B. Ada Lovelace C. Simeon Poisson D. Janos Bolyai E. NOTA

23. With William Hamilton, what British algebraist formulated the theorem that every square matrix is a root of its own characteristic polynomial? He was one of the founders of the modern school of British pure mathematics.
- A. James Sylvester B. Arthur Cayley C. William Clifford D. Heinrich Weber E. NOTA
24. What German topologist methodized the Erlanger Programme to classify geometries? He is also the namesake of a one-sided closed surface.
- A. August Mobius B. David Hilbert C. Felix Klein D. Emmy Noether E. NOTA
25. Regularly meeting at the Cafe Capoulade, Andre Weil, Henri Cartan, and Claude Chevelley, among others, made up what fictional mathematician? Their most famous publication is *Elements* (1939).
- A. Euclid Group B. Nicolas Bourbaki C. Fermat Squad D. Pascal Posse E. NOTA
26. Working alongside Shiing-Shen Chern, what American mathematician and billionaire hedge fund manager, developed a namesake form to describe the underlying math behind string theory?
- A. Ken Griffin B. James Simons C. John Overdeck D. Ray Dalio E. NOTA
27. What Hungarian mathematician proved his minimax theorem in 1928? He is known for laying the foundations for game theory.
- A. John von Neumann B. Paul Erdos C. John Nash D. Stanislaw Ulam E. NOTA

28. What mathematician made the initial breakthrough on the Taniyama-Shimura conjecture, six years before its full proof? It led to the eventual proof of Fermat's Last Theorem?
- A. Brian Conrad B. Richard Taylor C. Benjamin Pierce D. Paul Cohen E. NOTA
29. As an extension of Szemerédi's Theorem, Ben Green and what other mathematician proved that the sequence of prime numbers contains arbitrarily long arithmetic progressions?
- A. Stephen Hawking B. Terence Tao C. Max Zorn D. Martin Gardner E. NOTA
30. Born in Hope, Arkansas, what mathematician became one of the first African-American women hired at Langley Research Labs? One of her greatest achievements was the development of the thin swept-back tapered wing. She was also mentioned in the book *Hidden Figures* (2016).
- A. Marjorie Brown B. Dorothy Hoover C. Katherine Johnson D. Euphemia Hayes E. NOTA