

American History X “The History of American Mathematics”

MAA National Convention 2010

1. This type of magic square has constant row and column sums, and while it may lack the diagonal properties (and usually does); it possesses other magical patterns instead. For example, if you join half of one diagonal to half of the other you obtain what he called a "bent row".
 - A. Einstein Eight Square
 - B. Franklin Magic Square
 - C. Upton Upchuck Square
 - D. Wilder Wild Square
 - E. None of the Above
2. On March 6, 2008, the United States Postal Service released a 41 cent stamp honoring this mathematician on a sheet titled "American Scientists." His citation reads: 'Often called a "pioneer of the distant stars," astronomer _____ (1889-1953) played a pivotal role in deciphering the vast and complex nature of the universe. His meticulous studies of spiral nebulae proved the existence of galaxies other than our own Milky Way. Had he not died suddenly in 1953, he would have won that year's Nobel Prize in Physics.'
 - A. Linus Pauling
 - B. Gerty Cori
 - C. Albert Einstein
 - D. Edwin Hubble
 - E. None of the Above
3. This pioneer of low-dimensional topology is a current professor at Cornell University. Cornell is approximately 1300 miles from his alma mater however, New College of Florida (previously New College). New College is approximately 1000 miles from Washington D.C.; which happens to be his birthplace.
 - A. William Thurston
 - B. Benjamin Banneker
 - C. Simon Newcomb
 - D. Andrew Wiles
 - E. None of the Above
4. This was the year that the American Mathematical Society was founded. Other notable things that happened this year were: typewriter ribbon was patented, National Geographic Society was founded, a great blizzard killed more than 400 people on the East Coast, Frederick Douglass is the first African-American nominated for president, and the first successful adding machine was patented.
 - A. 1887
 - B. 1888
 - C. 1889
 - D. 1890
 - E. None of the Above
5. In Question 4, the first successful adding machine was mentioned. Who patented it? You shouldn't have to dig too hard to find this answer.
 - A. William Burroughs
 - B. Ronald Book
 - C. Frank Nelson Cole
 - D. George William Hill
 - E. None of the Above

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6. A memorable quote from the movie *Legally Blonde*:

Warner Huntington III: You got into Harvard Law?

Elle: What? Like, it's hard?

This visionary got bored with computing Differential Equations at Harvard University in 1939. To remedy his boredom, he helped develop the Harvard Mark I computer. With the help of Grace Hopper and IBM, the computer was finished in 1944. Who is this amazing American?

- A. Mark Hopper
B. Albert Einstein
C. Howard H. Aiken
D. Andrew Wiles
E. None of the Above
7. From which school did the first American female Ph.D. in Mathematics, *Winifred Edgerton Merrill*, get her Ph.D. from?
- A. Cornell
B. Bryn Mawr
C. Yale
D. Columbia
E. None of the Above
8. By the time he was 40, this American Mathematician achieved more than most achieve in a lifetime. He had written a book already considered a “classic”, published 35 papers, and been invited to speak all over the world. In 1965, he became the first and only African American named to the National Academy of Sciences. In 1979, he won the von Neumann Theory Prize. Though most of his work is in Statistics, his work exhibits a strong “theoretical” mathematics background.
- A. Scott Williams
B. Ethelbert Chukwu
C. David Blackwell
D. J. Ernest Wilkins
E. None of the Above
9. His text, *A Survey of Modern Algebra*, is a standard for many undergraduate classes at universities across this nation. Although born in Princeton, New Jersey, this abstract mathematician attended and taught at Harvard. From 1934 on he developed the concept of a lattice – a generalized algebra with two operators.
- A. George David Birkhoff
B. Benjamin Banneker
C. Garrett Birkhoff
D. Andrew Wiles
E. None of the Above

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10. Many debates have sprung about the United States Electoral College system of determining the President. Our founding fathers did not have much faith in the political awareness of its people.

"The people are uninformed, and would be misled by a few designing men." -- Delegate Gerry, July 19, ____.

What year was this quote from the Constitutional Convention?

- A. 1785
B. 1787
C. 1789
D. 1790
E. None of the Above
11. In 1891 Ellen Amanda Hayes was elected a member of the New York Mathematical Society (later to become the American Mathematical Society), one of the first six women to join this organization. In 1912 she was nominated for Secretary of State in Massachusetts on the socialist ticket, the first woman to be a candidate for a state elective office in Massachusetts. At that time, of course, women were not allowed to vote for her but she still received more votes (13,991) than any other socialist candidate. Her grandfather was a trustee of the Granville Female Academy and her mother, a graduate of that academy, was a teacher. Ellen received an A.B. from Oberlin College in 1878, raising money for her tuition by teaching in the district schools. For one year after graduation she was principal of the women's department of Adrian College, Michigan. In 1879 she accepted a position as a mathematics teacher at _____, where she taught until her retirement in 1916.
- A. Mount Holyoke College
B. Vassar College
C. Wesleyan College
D. Wellesley College
E. None of the Above
12. Born in 1904, this American was a theoretical physicist and professor of physics at the University of California. He is best known for his role as the scientific director of the Manhattan Project: the World War II effort to develop the first nuclear weapons at the secret Los Alamos National Laboratory in New Mexico. He is often referred to as "*The Father of the Atomic Bomb*".
- A. Mark Hopper
B. Albert Einstein
C. J. Robert Oppenheimer
D. Enrico Fermi
E. None of the Above
13. *October Sky* was a 1999 movie about a young boy who was inspired by the first Sputnik launch to become a rocket scientist. He was successful and later became a NASA Scientist. The name of the movie was actually an anagram of the title of the book it was made from. What was the original name of the book?
- A. *Rocket Boys*
B. *September Moon*
C. *One Child's Tenacity Overcame Being Ever Resentful: Sputnik Kills You*
D. *Yksre Botco*
E. None of the Above

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14. In 1923, the National Committee on Mathematical Requirements, sponsored by the Mathematical Association of America, recommended this symbol as standard usage in the United States. Historically, Pierre Herigone, in a French work in 1634, was apparently the first person to use a symbol for this geometric concept.
- | | |
|----------------------|----------------------|
| A. \sphericalangle | D. \sphericalangle |
| B. \approx | E. None of the Above |
| C. \parallel | |
15. During the 1950's and 1960's, Americans developed an innovative mathematics curriculum for their high school students known as “New Math”. After this event, the defense of the United States was linked to better mathematics teaching in the classrooms. These new approaches to teaching algebra from a more abstract approach were highly controversial. Fill in the underlined space with the correct event that prompted such innovation.
- | | |
|---|--|
| A. Truman approves hydrogen bomb in 1950 | |
| B. Sputnik Launch in 1957 | |
| C. Dr. Salk discovers polio vaccine in 1955 | |
| D. Alaska and Hawaii become states in 1959 | |
| E. None of the Above | |
16. In 1976, Kenneth Ira Appel together with Wolfgang Haken solved one of the most famous problems in mathematics, the _____. This problem was highly controversial as well because of its heavy dependence on computers to “crunch” through various possibilities.
- | | |
|--------------------------|---------------------------------|
| A. Five Color Theorem | D. Proof of Pythagorean Theorem |
| B. Problem of Points | E. None of the Above |
| C. Bridges of Konigsberg | |
17. Which of the following were not American Cryptographers during World War I or II?
- | | |
|--------------------------|----------------------|
| A. Laurance Safford | D. George Birkhoff |
| B. Herbert Yardley | E. None of the Above |
| C. Lambros D. Callimahos | |
18. Give the man who fits this newspaper headline in California from 2004: Renowned mathematician, who revitalized the study of geometry, has died at 93 in Tianjin, China.
- | | |
|----------------------|----------------------|
| A. Ch'in Chiu-Shao | D. Elie' Cartan |
| B. Chu Shih-Chieh | E. None of the Above |
| C. Shiing-Shen Chern | |
19. This quote came from an American known for his contributions to number and group theory. Who is he?
- “Thank God that number theory is unsullied by any application.”**
- | | |
|--------------------|----------------------|
| A. Kurt Godel | |
| B. Leonard Dickson | |
| C. Paul Erdos | D. David Hilbert |
| | E. None of the Above |

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20. John Forbes Nash, Jr. was the subject of a Hollywood Blockbuster, *A Beautiful Mind*. John married a physics student from M.I.T. while he was on the faculty in 1957. His wife, Alicia López-Harrison de Lardé, had to admit him to a mental hospital just two years later for schizophrenia. The couple divorced in 1963, but united again under one roof in 1970. The two love birds actually renewed their relationship in 1994 after this important event.
- A. Nash won the Nobel Prize in Economics
 - B. The Birth of their son (John Charles Martin Nash)
 - C. Nash being arrested in Santa Monica on a morals charge
 - D. The movie *A Beautiful Mind* was released
 - E. None of the Above
21. Considered by many as the “Father of American Mathematics”, he proved that there is no odd perfect number with fewer than four prime factors. During his tenure at Harvard, he completed numerous mathematics texts, was instrumental in founding the Observatory in 1839 and helped to establish the effects of the orbit of Neptune in relation to Uranus. Who is he?
- A. J. Robert Oppenheimer
 - B. Albert Einstein
 - C. Benjamin Peirce
 - D. Garrett Birkhoff
 - E. None of the Above
22. Who delivered this interesting quote: **“Don't worry about people stealing your ideas. If your ideas are any good, you'll have to ram them down people's throats.”**
- A. J. Robert Oppenheimer
 - B. Benjamin Franklin
 - C. Benjamin Peirce
 - D. Howard Aiken
 - E. None of the Above
23. St. Andrews has the largest compilation of Math History on the World Wide Web. Many of you probably used this source to study for this test. Who is the only mathematician on their website that died on his birthday? His work focused on invariant theory, the geometry of curves and surfaces, algebraic curves and twisted curves.
- A. William Thurston 1946-2009
 - B. Henry Seely White 1861-1943
 - C. Benjamin Peirce 1809-1880
 - D. Anna Wheeler 1883-1966
 - E. None of the Above
24. His father was an ironworker. He was born into a modern Orthodox Jewish family at a time when there was considerable anti-Semitism in the United States. The family home in Brooklyn was burned as part of anti-Semitic protests, and in 1918 his father decided to move with his family of four children to Toronto where some relatives already lived. They moved to Euclid Avenue, a particularly appropriate place for the future mathematician! As a high school student, he quickly understood his own mathematical abilities and his exceptional memory when he realized he knew far more mathematics than his teacher.
- A. Herman Goldstine
 - B. Lyman Spitzer
 - C. Andrew Gleason
 - D. Nathan Mendelsohn
 - E. None of the Above

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25. Horace Mochizuki was brought up on a farm in the Great Central Valley, in California. He was only four years old when over 180 Japanese aircraft attacked Pearl Harbor on December 7. The United States then entered World War II and the immediate consequence for the Mochizuki family was that, as United States citizens of Japanese ancestry, they were interned. When the war ended Horace was eight years old and they soon returned to the farm near Madera, California. Horace worked on ring and group theory while teaching in Santa Barbara. In what year did the Japanese bomb Pearl Harbor?
- A. 1940
B. 1943
C. 1945
D. 1954
E. None of the Above
26. What popular magazine published the article, *How Fractals Can Explain What's Wrong with Wall Street* by Benoit Mandelbrot, not only in 1999, but again in 2008?
- A. American Mathematical Monthly
B. Science Magazine
C. American Scientist
D. Scientific American
E. None of the Above
27. Many Americans claim to be Benjamin Franklin's first cousin four times removed, but this person actually is! She was also the first women admitted into the American Academy of Arts and Sciences and the American Association for the Advancement of Science.
- A. Marie Curie
B. Maria Cunitz
C. Maria Mitchell
D. Mary Fairfax Somerville
E. None of the Above
28. Which of the following quotations was from John von Neumann?
- A. “There's no sense in being precise when you don't even know what you're talking about.”
B. “It becomes the urgent duty of mathematicians, therefore, to meditate about the essence of mathematics, its motivations and goals and the ideas that must bind divergent interests together.”
C. “A Mathematician is a machine for turning coffee into theorems.”
D. “Mathematics is the art of giving the same name to different things.”
E. None of the Above
29. Who was not a part of the Manhattan Project?
- A. Niels Bohr
B. Richard Hamming
C. J. Robert Oppenheimer
D. General Leslie Groves
E. None of the Above
30. Albert Einstein although not American, made a deep impact on mathematics in this country. He is famous for many things, including his marriage to a family member. His second wife was which of these relations to him?
- A. Mother
B. Sister
C. First Cousin
D. Sister-In-Law
E. None of the Above