In the beginning…

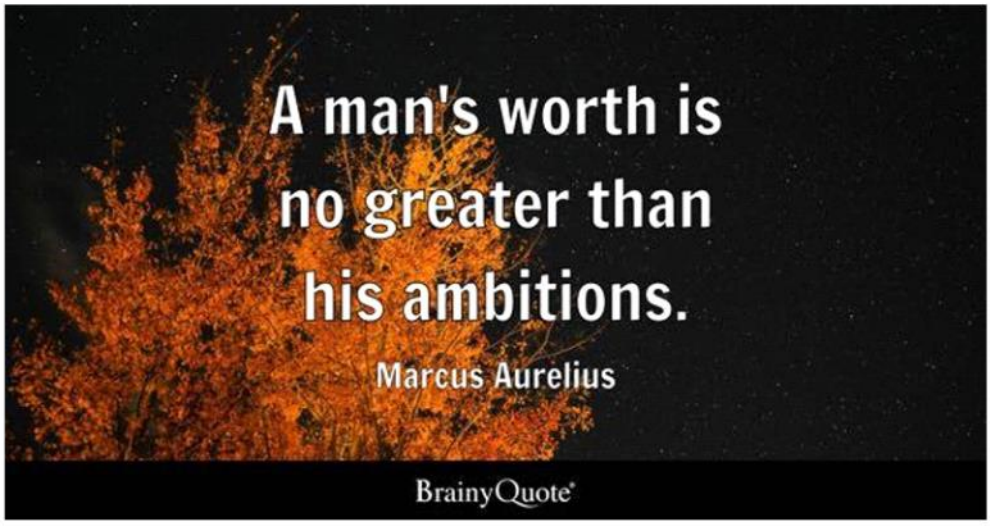
Sunday, 5 October 2025 2:27 pm

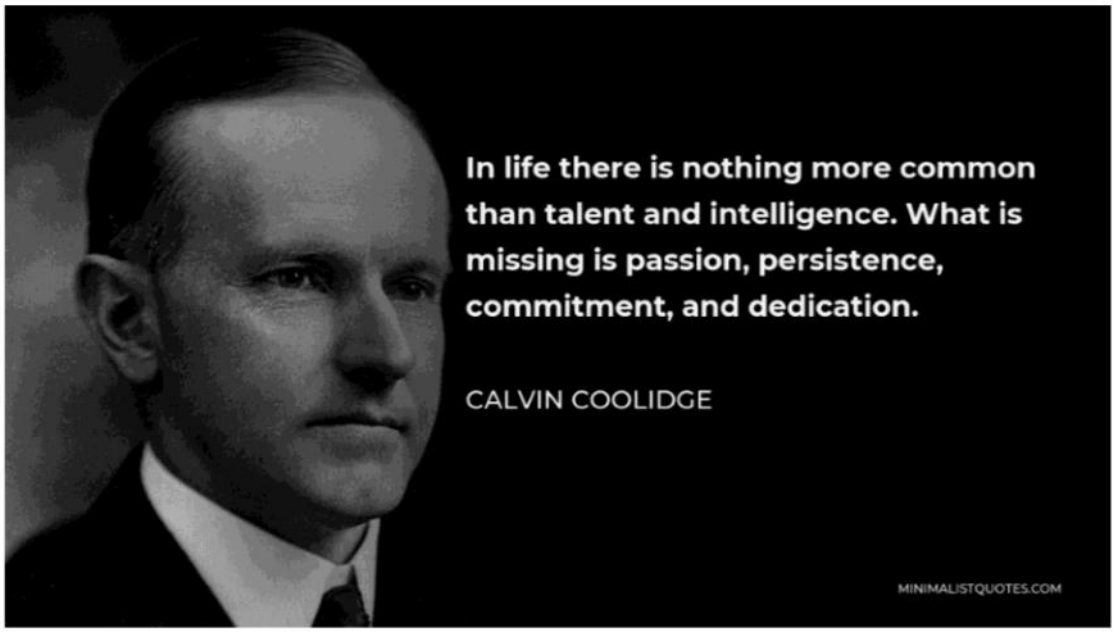
In the beginning

Friday, 2 August 2024 9:44 am

- **Introduce yourself**

- **Your Ambitions**


A man's worth is
no greater than
his ambitions.
Marcus Aurelius
BrainyQuote

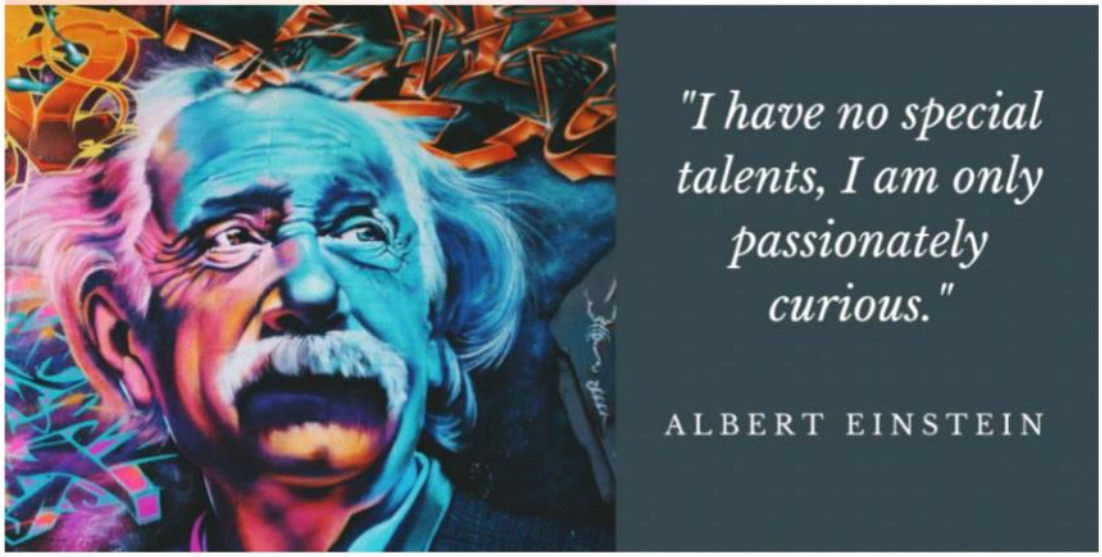

In life there is nothing more common
than talent and intelligence. What is
missing is passion, persistence,
commitment, and dedication.
CALVIN COOLIDGE
MINIMALISTQUOTES.COM

Curiosity vs Intelligence

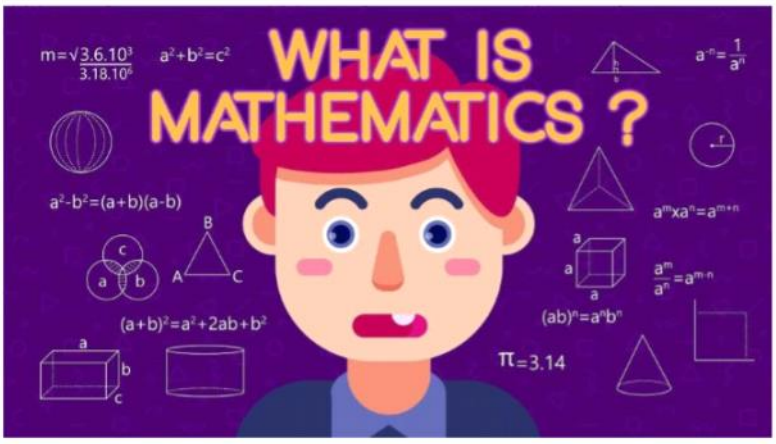
CQ + PQ > IQ

Curiosity Quotient + Passion Quotient > Intelligence Quotient

#learnedtoday



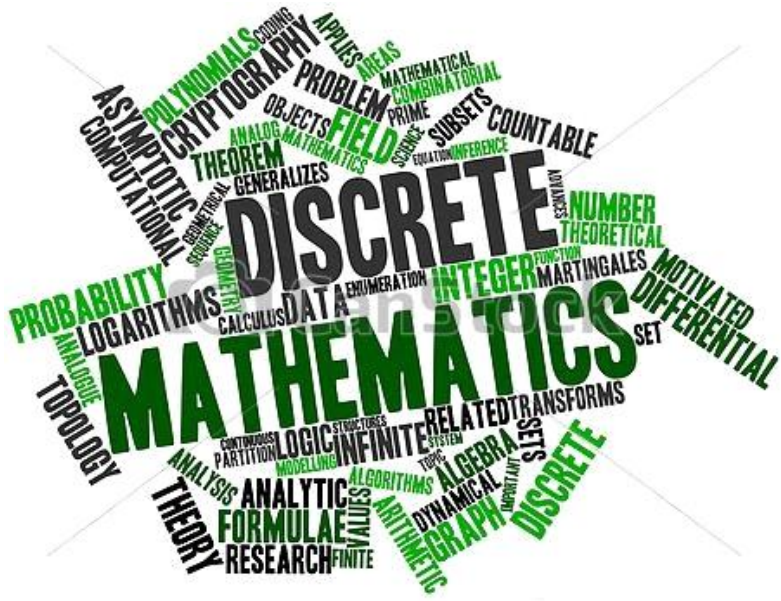
- **Mathematics**



The word *mathematics* comes from Ancient Greek *máthēma* (*μάθημα*), meaning "**that which is learnt**", "**what one gets to know**", hence also "study" and "science".

Its adjective is *mathēmatikós* (μαθηματικός), meaning **"related to learning" or "studious"**, which likewise further came to mean "mathematical".

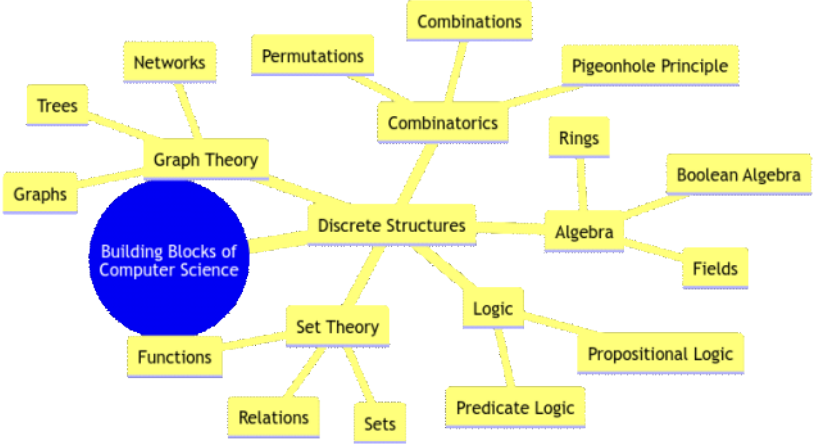
Similarly, one of the two main schools of thought in Pythagoreanism was known as the *mathēmatikoi* (μαθηματικοί)—which at the time meant "**learners**" rather than "mathematicians" in the modern sense.



Discrete mathematics is the study of mathematical structures that can be considered "discrete" (in a way analogous to discrete variables, having a bijection with the set of natural numbers) rather than "continuous" (analogously to continuous functions). Objects studied in discrete mathematics include integers, graphs, and statements in logic.[1][2][3][4] By contrast, discrete mathematics excludes topics in "continuous mathematics" such as real numbers, calculus or Euclidean geometry. Discrete objects can often be enumerated by integers; more formally, discrete mathematics has been characterized as the branch of mathematics dealing with countable sets[5] (finite sets or sets with the same cardinality as the natural numbers). However, there is no exact definition of the term "discrete mathematics".[6]

Topics in discrete mathematics

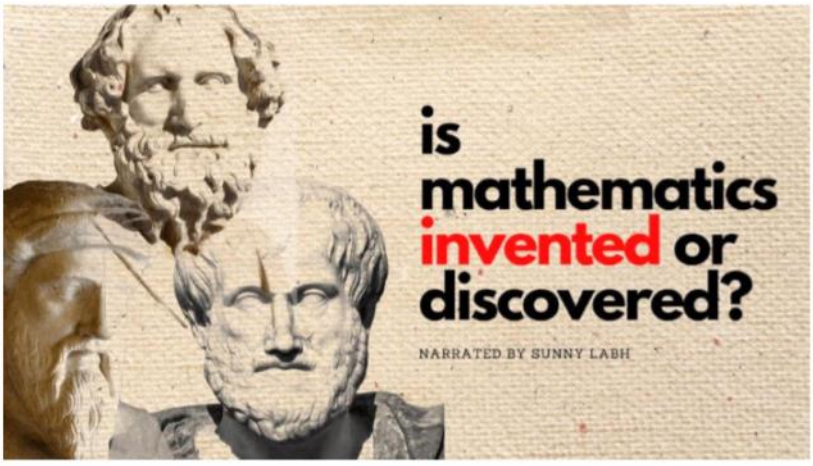
- Theoretical computer science.
- Information theory.
- Logic.
- Set theory.
- Combinatorics.
- Graph theory.
- Number theory.
- Algebraic structures.

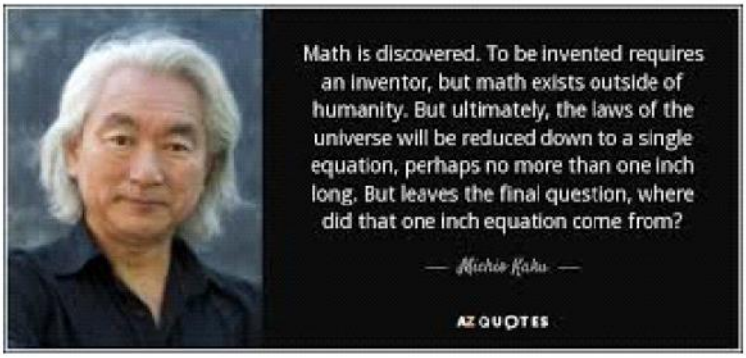


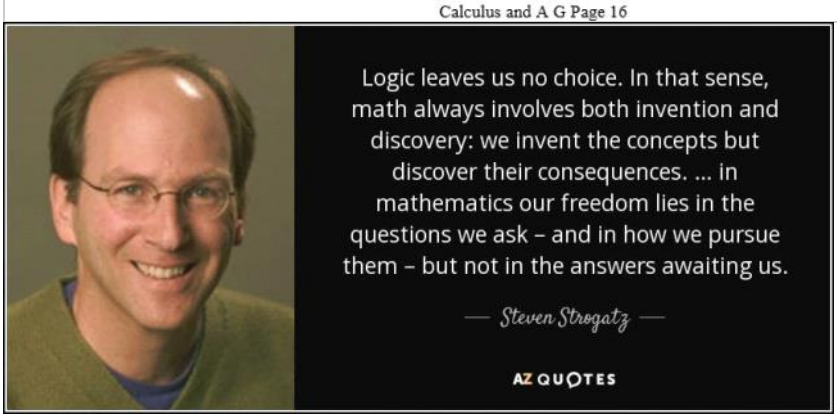
1. Computer Science:
    - Algorithms and data structures
    - Cryptography
    - Computer networking
    - Artificial intelligence and machine learning
    - Database theory
2. Operations Research:
    - Optimization problems
    - Decision-making
    - Project management
    - Scheduling and resource allocation
3. Electrical Engineering:
    - Digital circuit design
    - Signal processing
    - Communication systems
    - Coding theory
4. Bioinformatics:
    - Sequence analysis
    - Phylogenetic tree construction
    - Protein structure prediction

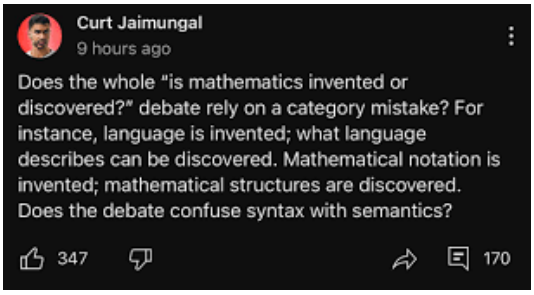
5. Economics and Finance:
    - Game theory
    - Auction design
    - Portfolio optimization
    - Risk management
6. Social Sciences:
    - Network analysis
    - Voting systems
    - Social network modeling
    - Behavioral economics
7. Logistics and Transportation:
    - Routing and scheduling problems
    - Network design
    - Traffic flow analysis
8. Cybersecurity:
    - Cryptography and cryptanalysis
    - Access control and authentication
    - Network security protocols

1. Algorithms and Data Structures:
    - Discrete mathematics provides the foundational concepts for designing and analyzing efficient algorithms, such as graph theory, combinatorics, and recurrence relations.
    - Understanding discrete structures like sets, graphs, trees, and graphs is essential for implementing data structures in computer programs.
2. Cryptography:
    - Discrete mathematics, particularly number theory and abstract algebra, forms the mathematical basis for modern cryptographic systems, such as public-key cryptography and elliptic curve cryptography.
3. Computer Networks:
    - Graph theory is used to model and analyze the topological structure of computer networks, enabling the design of efficient routing algorithms and communication protocols.
    - Combinatorics and probability theory are used to study network traffic patterns and optimize network performance.
4. Artificial Intelligence and Machine Learning:
    - Discrete structures like graphs and trees are used to represent knowledge and solve complex problems in areas like natural language processing, computer vision, and decision-making.
    - Combinatorial optimization techniques, such as constraint programming and integer programming, are used in AI systems for planning, scheduling, and resource allocation.
5. Database Theory:
    - Relational database theory is built on the foundations of discrete mathematics, including sets, relations, and formal logic.
    - Concepts from graph theory and combinatorics are used in the design and optimization of database systems, such as indexing and query processing.
6. Computational Complexity:
    - Discrete mathematics, particularly the theory of computation and computational complexity, provides the tools to analyze the inherent difficulty of computational problems and the limitations of algorithms.


is
mathematics
invented or
discovered?
NARRATED BY SUNNY LABH


Math is discovered. To be invented requires an inventor, but math exists outside of humanity. But ultimately, the laws of the universe will be reduced down to a single equation, perhaps no more than one inch long. But leaves the final question, where did that one inch equation come from?
— Michio Kaku —
AZ QUOTES


Logic leaves us no choice. In that sense, math always involves both invention and discovery: we invent the concepts but discover their consequences. ... in mathematics our freedom lies in the questions we ask – and in how we pursue them – but not in the answers awaiting us.
— Steven Strogatz —
AZ QUOTES


Curt Jaimungal
9 hours ago
Does the whole “is mathematics invented or discovered?” debate rely on a category mistake? For instance, language is invented; what language describes can be discovered. Mathematical notation is invented; mathematical structures are discovered. Does the debate confuse syntax with semantics?
347
170