## Discrete Mathematics (Introduction)

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## Mathematics = Foundations of computer science

CS field	Math topics
Algorithms	Mathematical ideas, proofs, analysis
Data structures	Analysis, graph theory
Machine learning (ML)	Statistics, linear algebra, probability
Artificial intelligence	ML, logic
Database systems	Algorithms
Parallel computing	Algorithms
Computer graphics	Calculus, geometry
Computer vision	Calculus, linear algebra
Computational sciences	Linear algebra, calculus
Programming languages	Theory of computation
Compiler design	Theory of computation
Computational economics	Game theory
Operations research	Linear programming, optimization
Computer hardware design	Logic, optimization
Quantum algorithms	Linear algebra, complex number theory