

**PAPER**

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***Subjects and  
Topics Covered***



## MATHEMATICS

- Basic Arithmetic
- Basic Geometry
- Basic Algebra

### Advanced Arithmetic

- Complex Numbers
- Prime Numbers
- Number Theory
- Irrational Numbers
- Quotient and Remainder

### Advanced Geometry

- Geometric Proofs
- Projection
- Parametric Equations
- Polar Coordinates
- Modeling
- Planes
- Congruence/Similarity
- Conic Sections
- Geometric Transformations
- Vectors (Geometric)

### Calculus

- Rate of Change
- Partial Derivatives
- Limits
- Related Rates
- Differential Equations
- Implicit Differentiation
- Integrals
- Slope of a Tangent Line
- Derivatives
- Continuity
- Optimization
- Fundamental Theorem of Calculus
- Vector (Calculus)
- Series

### Linear Algebra

- Gauss Elimination
- Dot Product/Cross Product
- Vectors (Algebraic)
- Orthogonality
- Matrices
- Eigen Decomposition
- Determinant
- Norm of a Vector
- Vectorial Space

### Functions

- Discrete Functions/Sequences
- Quadratic Functions
- Piecewise Functions
- Rational Functions
- Even/Odd Functions
- Exponential/Logarithmic Functions
- Polynomial Functions
- Function Combination/Composition



## MATHEMATICS

### Equations

- Quadratic Equations
- Polynomial Equations
- System of Linear Equations
- Exponential Equations
- Rational Equations

### Money/Financial Mathematics

- Annuities and Perpetuities
- Profit and Loss
- Compound Interest Loans and Investments
- Reducing Balance Loans

### Scientific Application

- Phase Shift
- Exponential Growth/Decay
- Scientific Notation

### Probability

- Expectation and Variance
- Discrete Random Variable
- Continuous Random Variable
- Pascal's Triangle
- Conditional Probability
- Two-Way Tables and Venn Diagrams
- Bayes' Rule
- Counting
- Sets and Events
- Permutations and Combinations

### Statistics

- Data Management
- Time Series
- Data Display
- Hypothesis Testing
- Data Types
- Measures of Variability
- Measures of Central Tendency
- Sampling Estimation
- Line of Best Fit/Regression
- Frequency Distribution

### Trigonometry

- Trigonometric Ratios
- Trigonometric Functions
- Trigonometric Equations
- Unit Circle
- Trigonometry Identities/Proofs



## BIOLOGY

- Evolution (Species)
- Animal Biology
- Biochemistry
- Biology Labs
- Cellular Biology
- Ecology
- Genetics
- Human Biology
- Metabolic Processes
- Microbiology
- Molecular Biology
- Plant Biology
- Population Dynamics
- Taxonomy/Classification



## HEALTH SCIENCES

- Biotechnology
- Kinesiology
- Medical Technologies
- Nutritional Science
- Pathogens/Diseases
- Physiology
- Science/Public Health Issues



## PHYSICS

- Electric Circuits
- Electromagnetism and Electrostatics
- Energy/Work/Power
- Fluid Mechanics
- Forces and Newton's Laws/Dynamics
- Geometrical Optics
- Gravitation
- Kinematics
- Nuclear Fission and Fusion
- Physics Labs
- Thermodynamics
- Quantum Mechanics/Special Relativity
- Waves/Sound/Light



## ENGLISH

- English as a Second Language
- Essay Writing
- Literature Studies
- Reading Comprehension



## CHEMISTRY

- Acids/Bases
- Atomic Theory
- Chemical Equilibrium
- Chemical Reactions
- Chemistry Labs
- Chemistry of Solutions
- Energy Changes/  
Thermochemistry
- Gases/Atmospheric Chemistry
- Moles and Matter
- Nomenclature/Periodic  
Classificatio
- Organic Chemistry
- Oxidation/Reduction



## HISTORY

- American History
- Canadian History
- European History
- World History



## GEOGRAPHY

- Basic Geography
- Cartography
- Population/Demography
- Resource Management
- Travel/Tourism



## POLITICS

- American Politics
- Canadian Politics
- International Development/  
World Issues
- Political Principles/Foundations



## LAW

- American Law
- Canadian Law
- International Law



## ECONOMICS/FINANCE

- American Economy
- Canadian Economy
- Global Interdependence/ Inequalities
- Employment
- Finance
- Macroeconomics
- Microeconomics
- Personal Finance Economics
- Principles of Economics



## FRENCH

- French Written Comprehension
- French as a Second Language
- French Literature
- French Essay Writing



## MANDARIN

- Mandarin as a Second Language
- Mandarin Essay Writing



## SPANISH

- Spanish as a Second Language
- Spanish Essay Writing
- Spanish Literature
- Spanish Written Comprehension



## ARABIC

- Arabic as a Second Language
- Arabic Written Comprehension



## COMPUTER SCIENCE

- Algorithms
- c++ / c / c# / objective c
- Hardware
- Java
- Javascript
- Operating Systems
- PHP
- Programming Basics
- Python
- Web Development, HTML/ CSS



## PHYSICAL SCIENCES

- Astronomy/Space Exploration
- Environmental Science
- Geology/Earth History
- Oceanography
- Planetary Science



## SOCIOLOGY/ANTHROPOLOGY

- Sociology
- Anthropology



## RELIGION/THEOLOGY

- Religion
- Theology



## PSYCHOLOGY

- Psychology



## PHILOSOPHY

- Philosophy



## ACCOUNTING

- Accounting



## MARKETING

- Marketing



## ART HISTORY

- Art History



## MUSIC THEORY

- Music Theory