

Ashoka Mathematics Challenge – List of topics

Topic	What it covers
Algebra and Number Theory	• Sets • Relations and Functions • Complex Numbers • Quadratic Equations • Principle of Mathematical Induction • Permutations and Combinations • Binomial Theorem • Sequence and Series • Prime numbers • Factorization of integers • Divisibility • Rational and irrational numbers • Polynomials • Remainder Theorem • Theory of quadratic equations and expressions • Relations between roots and coefficients
Calculus	• Limits and Derivatives • Continuity and Differentiability • Application of Derivatives • Integrals • Application of Integrals • Differential Equations • Graphing (Using calculus to sketch graphs of functions)
Geometry and Trigonometry	• Trigonometric Functions • Introduction to 3-d Geometry • Inverse Trigonometric Functions • Vector Algebra • Three-Dimensional Geometry • Heights and Distances
Linear Algebra and Analytical Geometry	• Linear Inequalities • Straight Lines • Circles • Conic Sections • Matrices • Determinants
Probability, Statistics	• Statistics • Probability
Logical reasoning	• Visual Reasoning • Reading comprehension • Identifying logical fallacies • Identifying accurate conclusions / assumptions of the given text • Identifying accurate examples / definitions from a given definition/example • Situation analysis / problem solving • Argument analysis