



ALL INDIA COUNCIL FOR TECHNICAL SKILL DEVELOPMENT

अखिल भारतीय तांत्रिक कौशल्य विकास परिषद

Syllabus

Aryabhata National Maths Competition

Group 3 & Group 4 & Group 5

- Rational Numbers
 - Introduction
 - Properties Of Rational Numbers
 - Representation Of Rational Numbers On The Number Line
 - Rational Numbers Between Two Rational Numbers

 - Linear Equations In One Variable
 - Introduction
 - Solving Equations Which Have Linear Expressions On One Side And Numbers On The Other Side
 - Some Applications
 - Solving Equations Having The Variable On Both Sides
 - Some More Applications
 - Reducing Equations To Simpler Form
 - Equations Reducible To The Linear Form

 - Understanding Quadrilaterals
 - Introduction
 - Polygons
 - Sum Of The Measures Of The Exterior Angles Of A Polygon
 - Kinds Of Quadrilaterals
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-
- Some Special Parallelograms
-
- **Practical Geometry**
 - Introduction
 - Constructing A Quadrilateral
 - Some Special Cases
-
- **Data Handling**
 - Looking For Information
 - Organising Data
 - Grouping Data
 - Circle Graph Or Pie Chart
 - Chance And Probability
-
- **Squares And Square Roots**
 - Introduction
 - Properties Of Square Numbers
 - Some More Interesting Patterns
 - Finding The Square Of A Number
 - Square Roots
 - Square Roots Of Decimals
 - Estimating Square Root
-
- **Cubes And Cube Roots**
 - Introduction
 - Cubes
 - Cube Roots
-
- **Comparing Quantities**
 - Recalling Ratios And Percentages
 - Finding The Increase Or Decrease Per Cent
-



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-
- Finding Discounts
 - Prices Related To Buying And Selling (Profit And Loss)
 - Sales Tax/Value Added Tax
 - Compound Interest
 - Deducing A Formula For Compound Interest
 - Rate Compounded Annually Or Half Yearly (Semi Annually)
 - Applications Of Compound Interest Formula
-
- Algebraic Expressions And Identities
 - What Are Expressions?
 - Terms, Factors And Coefficients
 - Monomials, Binomials And Polynomials
 - Like And Unlike Terms
 - Addition And Subtraction Of Algebraic Expressions
 - Multiplication Of Algebraic Expressions: Introduction
 - Multiplying A Monomial By A Monomial
 - Multiplying A Monomial By A Polynomial
 - Multiplying A Polynomial By A Polynomial
 - What Is An Identity?
 - 1 Standard Identities
 - 2 Applying Identities
-
- Visualising Solid Shapes
 - Introduction
 - Views Of 3D-Shapes
 - Mapping Space Around Us
 - Faces, Edges And Vertices
-
- Mensuration



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-
- Introduction
 - Let Us Recall
 - Area Of Trapezium
 - Area Of A General Quadrilateral
 - Area Of A Polygon
 - Solid Shapes
 - Surface Area Of Cube, Cuboid And Cylinder
 - Volume Of Cube, Cuboid And Cylinder
 - Volume And Capacity
-
- Exponents And Powers
 - Introduction
 - Powers With Negative Exponents
 - Laws Of Exponents
 - Use Of Exponents To Express Small Numbers In Standard Form
-
- Direct And Inverse Proportions
 - Introduction
 - Direct Proportion
 - Inverse Proportion
-
- Factorisation
 - Introduction
 - What Is Factorisation?
 - Division Of Algebraic Expressions
 - Division Of Algebraic Expressions Continued (Polynomial ÷ Polynomial)
 - Can You Find The Error?
-



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○ Introduction To Graphs

- Introduction
- Linear Graphs
- Some Applications

○ Playing With Numbers

- Introduction
- Numbers In General Form
- Games With Numbers
- Letters For Digits
- Tests Of Divisibility

○ Number System

- Introduction
- Irrational Numbers
- Real Numbers And Their Decimal Expansions
- Representing Real Numbers On The Number Line
- Operations On Real Number
- Law Of Exponents For Real Numbers

○ Polynomials

- Introduction
- Polynomials In One Variable
- Zeroes Of Polynomials
- Remainder Theorem
- Factorisation Of Polynomials
- Algebraic Identities

○ Co-Ordinate Geometry

- Introduction
-



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-
- Cartesian System
 - Plotting A Point In The Plane If Its Coordinates Are Given
-
- Linear Equations In Two Variables
 - Introduction
 - Linear Equations
 - Solutions Of A Linear Equations
 - Graph Of A Linear Equation In Two Variables
 - Equation Of Lines Parallel To X- Axis And Y - Axis
-
- Introduction To Euclid's Geometry
 - Introduction
 - Euclid's Definitions, Axioms And Postulates
 - Equivalent Versions Of Euclid's Fifth Postulate
-
- Lines And Angles
 - Introduction
 - Basic Terms And Definition
 - Intersecting Lines And Non-Intersecting Lines
 - Pairs Of Angles
 - Parallel Lines And Transversal
 - Lines Parallel To The Same Line
 - Angle Sum Property Of Triangle
-
- Triangles
 - Introduction
 - Congruence Of Triangles
 - Criteria For Congruence Of Triangles
 - Properties Of A Triangle
 - Some More Criteria For Congruence Of Triangles
-



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-
- Inequalities In A Triangle
-
- **Quadrilaterals**
 - Introduction
 - Angle Sum Property Of A Quadrilateral
 - Types Of Quadrilaterals
 - Properties Of A Parallelogram
 - Another Condition For A Quadrilateral To Be A Parallelogram
 - The Mid-Point Theorem
-
- **Areas Of Parallelograms And Triangles**
 - Introduction
 - Figures On The Same Base And Between The Same Parallels
 - Parallelograms On The Same Base And Between The Same Parallels
 - Triangles On The Same Base And Between The Same Parallels
-
- **Circles**
 - Introduction
 - Circles And Its Related Terms: A Review
 - Angle Subtended By A Chord At A Point
 - Perpendicular From The Centre To A Chord
 - Circle Through Three Points
 - Equal Chords And Their Distances From The Center
 - Angle Subtended By An Arc Of A Circle
 - Cyclic Quadrilaterals
-
- **Constructions**
 - Introduction
-



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अखिल भारतीय तांत्रिक कौशल्य विकास परिषद

-
- Basic Constructions
 - Some Contructions Of Triangles
-
- Heron's Formula
 - Introduction
 - Area Of Triangle-By Herons Formula
 - Applications Of Heron's Formula In Finding Areas Of Quadrilaterals
-
- Surface Area And Volumes
 - Introduction
 - Surface Area Of Cuboid And A Cube
 - Surface Area Of A Right Circular Cylinder
 - Surface Area Of A Right Circular Cone
 - Surface Area Of A Sphere
 - Volume Of A Cuboid
 - Volume Of A Cylinder
 - Volume Of A Right Circular Cone
 - Volume Of A Sphere
-
- Statistics
 - Introduction
 - Collection Of Data
 - Presentation Of Data
 - Graphical Representation Of Data
 - Measures Of Central Tendency
-
- Probability
 - Introduction
 - Probability- An Experimental Approach
-



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अखिल भारतीय तांत्रिक कौशल्य विकास परिषद

○ Real Numbers

- Introduction
- Euclid's Division Lemma
- The Fundamental Theorem Of Arithmetic
- Revisiting Irrational Numbers
- Revisiting Rational Numbers And Their Decimal Expansions

○ Polynomials

- Introduction
- Geometrical Meaning Of The Zero's Of Polynomials
- Relationship Between Zeros Coefficients Of A Polynomials
- Division Algorithms For Polynomials

○ Linear Equations

- Introduction
- Pair Of Linear Equations In Two Variables
- Graphical Method Of Solution Of A Pair Of Linear Equations
- Algebraic Methods Of Solving A Pair Of Linear Equations
- Equations Reducible To Pair Of Linear Equation In Two Variables

○ Quadratic Equations

- Introduction
- Quadratic Equations
- Solution Of A Quadratic Equations By Factorization Method
- Solution Of A Quadratic Equations By Completing The Square
- Nature Of Roots

○ Arithmetic Progression



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-
- Introduction
 - Arithmetic Progression
 - Nth Term Of An Ap
 - Some Of 1St Nth Term Of An Arithmetic Progression
-
- **Triangles**
 - Introduction
 - Similar Figures
 - Similarity Of Triangles
 - Criteria For Similarity Of Triangles
-
- **Coordinate Geometry**
 - Introduction
 - Distance Formula
 - Section Formula To Find The Distance N Coordinate Geometry
 - Areas Of A Triangle
-
- **Trigonometry**
 - Introduction
 - Trigonometric Ratios
 - Trigonometric Ratios Of Some Specific Angles
 - Trigonometric Ratio Complementary Angles
 - Trigonometric Identities
-
- **Applications Of Trigonometry**
 - Introduction
 - Heights And Distances
-
- **Circle**
 - Introduction
-



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-
- Tangent Of A Circle
 - Number Of Tangents From A Point On A Circle
-
- **Constructions**
 - Introduction
 - Division Of A Line Segment
 - Construction Of Tangents To A Circle
-
- **Areas Related Circles**
 - Introduction
 - Perimeter Of Area Of Circle
 - Area Of Sector And Segment Of A Circle
 - Areas Of Combinations Of Plane Figures
-
- **Surface Areas And Volumes**
 - Introduction
 - Surface Area Of A Combination Of Solids
 - Volumes Of A Combination Of Solids
 - Conversion Of Solid From One Shape To Another
 - Frustum Of A Cone
-
- **Statistics**
 - Introduction
 - Mean Of Grouped Data
 - Mode Of Grouped Data
 - Median Of Grouped Data
-
- **Probability**
 - Introduction
 - Probability A Theoretical Approach
-



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