

Geometry: A Complete Course (with Trigonometry)

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STRUCTURE OF GEOMETRY (Unit I)	ESSENTIAL ELEMENTS		SIMPLE CLOSED PLANE CURVES			LOCI AND CONSTRUCTIONS (Unit VII)	TRIGONOMETRIC RELATIONS (Unit VIII)
	Fundamental Terms (Unit II)	Fundamental Theorems (Unit III)	Triangles (Unit IV)	Other Polygons (Unit V)	Circles (Unit VI)		
<p>A. What is Geometry?</p> <p>1 – Origin and Structure 2 – More on Things 3 – More on Operations 4 – More on Relations 5 – More on Groupings</p> <p>B. Scope of our Geometry</p> <p>1 – Undefined Terms 2 – Simple Closed Plane Curves 3 – Polygons 4 – Solids</p> <p>C. Measurement</p> <p>1 – Rectangles 2 – Parallelograms 3 – Triangles 4 – Trapezoids 5 – Regular Polygons 6 – Circles 7 – Prisms 8 – Pyramids 9 – Spheres</p> <p>D. Inductive Reasoning</p> <p>1 – General Nature 2 – Applications in Math</p> <p>E. Deductive Reasoning</p> <p>1 – General Nature 2 – Applications in Math</p> <p>F. Logic</p> <p>1 – Simple Statements 2 – Conditionals 3 – Negating Conditionals 4 – Fallacies</p> <p style="text-align: center;"><u>UNIT TEST I</u></p> <p style="text-align: center;">Module A</p>	<p>A. Undefined Terms</p> <p>1 – In Algebra 2 – In Geometry</p> <p>B. Defined Terms</p> <p>1 – Good Definitions 2 – About Points 3 – About Lines 4 – About Rays 5 – About Line Segments 6 – About Angles as Sets of Points 7 – About Measurement of Angles 8 – About Pairs of Angles 9 – About Circles</p> <p>C. Postulates (or Axioms)</p> <p>1 – Need 2 – Post.1 – Existence of Points 3 – Post.2 – Uniqueness of Lines, Planes, and Space 4 – Post.3 – One, Two, and Three Dimensions 5 – Post.4 – Separation 6 – Post.5 – Line-Plane Intersection 7 – Post.6 – Ruler 8 – Post.7 – Protractor 9 – Post.8 – Circle 10 – Post.9 – Uniqueness of Parallel Lines 11 – Post.10 – Uniqueness of Perpendicular Lines</p> <p style="text-align: center;"><u>UNIT TEST II</u></p> <p style="text-align: center;">Module B</p>	<p>A. Deductive Proof</p> <p>1 – Direct Proof 2 – Indirect Proof</p> <p>B. About Points and Lines</p> <p>1 – Th. 1 – One Plane-Line & Point 2 – Th. 2 – Relationship between Three Points on a Line</p> <p>C. About Segments and Rays</p> <p>1 – Th. 3 – Distance from the Endpoint of a Ray 2 – Th. 4 – Midpoint of a Segment</p> <p>D. About Two Lines</p> <p>1 – Th. 5 – One Plane containing Two Intersecting Lines 2 – Th. 6 – Perpendicular through a Point on a Line</p> <p>E. About Angles (Part 1)</p> <p>1 – Th. 7 – Unique Angle formed by Two given Rays 2 – Th. 8 – Bisector of an Angle</p> <p>F. About Angles (Part 2)</p> <p>1 – Th. 9 – Adj. Ang. with Exterior Sides Perpendicular 2 – Th.10 – Supp. Angles formed by Opposite Rays 3 – Th.11 – Rt. Angles Congruent 4 – Th.12 – St. Angles Congruent</p> <p>G. About Angles (Part 3)</p> <p>1 – Th.13 – Angles Comp. to Congruent Angles 2 – Th.14 – Angles Supp. to Congruent Angles 3 – Th.15 – Vert. Angles Cong.</p> <p>H. About Parallel Lines</p> <p>1 – Post.11 – Corr. Angles Cong. 2 – Th.16 – Alt. Int. Angles Cong. 3 – Th.17 – Int. Angles Supp. 4 – Th.18 – Trans. Perp. to Parallel 5 – Th.19 – Corr. Angles – Parallel 6 – Th.20 – Alt. Int. Ang. – Parallel 7 – Th.21 – Int. Ang. Supp.-Parallel 8 – Th.22 – Perp. Trans. – Parallel 9 – Th.23 – Lines Parallel to Third 10 – Th.24 – Parallel Planes</p> <p style="text-align: center;"><u>UNIT TEST III</u></p> <p style="text-align: center;">Module C</p>	<p>A. Basic Definitions</p> <p>1 – Triangle Parts 2 – Triangle Types</p> <p>B. Basic Theorems</p> <p>1 – Th.25 – Sum of the Angles 2 – Th.26 – Exterior Angle</p> <p>C. Similarity (Part 1)</p> <p>1 – Ratio and Proportion 2 – Special Properties 3 – Th.27 – Perimeters of Similar Polygons</p> <p>D. Similarity (Part 2)</p> <p>1 – Post.12 – Triangle Similarity 2 – Th.28 – Side Splitter 3 – Th.29 – Alt. (Sim. Triangles) 4 – Th.30 – Alt. (to Hypotenuse) 5 – Th.31 – Pythagoras 6 – Application (3-Dimensions)</p> <p>E. Congruence (Part 1)</p> <p>1 – Definition 2 – Post.13 – Triangle Congruence 3 – Cong. Post. Corollaries</p> <p>F. Congruence (Part 2)</p> <p>1 – Overlapping Triangles 2 – Using CPCTC 3 – Th.32 – Two Cong. to Third 4 – Th.33 – Cong. Sides give Cong. Opp. Angles 5 – Th.34 – Cong. Angles give Cong. Opp. Sides 6 – Th.35 – Ray Bisecting Angle 7 – Th.36 – Pythagoras Converse</p> <p>G. Congruence (Part 3)</p> <p>1 – Th.37 – Ext. Ang. Greater than Remote Int. 2 – Th.38 – Sides not Congruent Opp. Ang. not Cong. 3 – Th.39 – Ang. not Congruent Opp. Sides not Con. 4 – Th.40 – Sum of Two Sides Greater than Third</p> <p style="text-align: center;"><u>UNIT TEST IV</u></p> <p style="text-align: center;">Module D</p>	<p>A. Properties of Polygons</p> <p>1 – Basic Terms 2 – Parallelograms 3 – Special Parallelograms 4 – Trapezoids 5 – Kites 6 – Midsegments 7 – General Polygons</p> <p>B. Areas of Polygons</p> <p>1 – Post. 14 - Area 2 – Parallelograms 3 – Triangles 4 – Trapezoids 5 – Regular Polygons</p> <p>C. Applications</p> <p>1 – Using Areas in Proofs 2 – Schedules</p> <p style="text-align: center;"><u>UNIT TEST V</u></p> <p style="text-align: center;">Module E</p>	<p>A. Fundamental Terms</p> <p>1 – Lines and Segments 2 – Arcs and Angles 3 – Circle Relationships</p> <p>B. Angle and Arc Relationships</p> <p>1 – Th.65-66 – Central Angles and Intercepted Arcs 2 – Th.67 – Measure of an Inscribed Angle 3 – Th.68 – Angle Formed Inside by a Secant and a Tangent 4 – Th.69-70 – Angle Formed by two Secants 5 – Th.71-72 – Angle Formed Outside by Secant and Tangent or 2 Tangents</p> <p>C. Line and Segment Relationships</p> <p>1 – Th.73–Diameter Perpendicular to a Chord 2 – Th.74-75 – Chord as a Perpendicular Bisector of Another Chord 3 – Th.76 – Measures of Two Intersecting Chords 4 – Th.77-78 – Measures of Two Secant Segments or 1 Secant Segment and 1 Tangent Segment 5 – Th.79 –Tangent Perpendicular to Diameter 6 – Th.80 – Congruent Tangent Segments 7 – Th.81-82 – Congruent Chords and Congruent Arcs</p> <p>D. Concurrency</p> <p>1 – Th.83 – A Triangle is Cyclic 2 – Th.84 – If Opposite Angles of a Quadrilateral are Supplementary, then Quadrilateral is cyclic</p> <p style="text-align: center;"><u>UNIT TEST VI</u></p> <p style="text-align: center;">Module E</p>	<p>A. Locus</p> <p>1 – Definition 2 – More than One Condition 3 – Constructions</p> <p>B. Basic Rules</p> <p>1 – Definitions 2 – Const. Postulates 1,2,3,4,5</p> <p>C. Basic Constructions</p> <p>1 – Equal Angles 2 – Angle Bisector 3 – Perpendicular Bisector 4 – Perpendicular to Pt. on a Line 5 – Perpendicular from Pt off a Line 6 – Parallel Lines 7 – Arc Bisector 8 – Tangent to a Pt. on a Circle 9 – Tangent from a Pt. off a Circle 10 – Circumscribe a Circle 11 – Inscribe a Circle 12 – Divide a Segment 13 – Fourth Proportional 14 – Mean Proportional</p> <p>D. Combinations of Constructions</p> <p>1 – General Triangles 2 – Special Triangles 3 – Other Polygons</p> <p style="text-align: center;"><u>UNIT TEST VII</u></p> <p style="text-align: center;">Module F</p>	<p>A. Basic Concepts</p> <p>1 – Measuring Angles 2 – Applications of Similarity</p> <p>B. Functions of Acute Angles</p> <p>1 – Sine 2 – Cosine 3 – Tangent 4 – Cosecant 5 – Secant 6 – Cotangent</p> <p>C. Functions of General Angles</p> <p>1 – The Unit Circle 2 – Values of Trig. Functions</p> <p>D. Applications</p> <p>1 – Solving Right Triangles 2 – Law of Cosines 3 – Law of Sines 4 – Solving General Triangles 5 – Areas of Triangles</p> <p>E. Circular Functions</p> <p>1 – Radian Measure 2 – Definition of Circular Functions 3 – Periodicity and Symmetry 4 – Graphs of the Sine and Cosine 5 – Graphs of other Functions</p> <p>F. Trigonometric Identities</p> <p>1 – Fundamental Identities 2 – Addition Formulas 3 – Double-Ang. and Half-Ang. 4 – Tangent Formulas</p> <p>G. Vectors</p> <p>1 – Operations 2 – In the Plane 3 – Polar Coordinates 4 – Complex Numbers 5 – DeMoivre's Theorem 6 – Inverse Functions 7 – Trigonometric Equations</p> <p style="text-align: center;"><u>UNIT TEST VIII</u></p>