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HomeSchool
and
Independent Study
Sampler

Print Materials
for
"Geometry: A Complete Course"

Course Schematic

(1 page)

Geometry: A Complete Course (with Trigonometry)

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)		

Structure of Geometry (Unit I)

A. What is Geometry?

1 – Origin and Structure
2 – More on Things
3 – More on Operations
4 – More on Relations
5 – More on Groupings

B. Scope of our Geometry

1 – Undefined Terms
2 – Simple Closed Plane Curves
3 – Polygons
4 – Solids

C. Measurement

1 – Rectangles
2 – Parallelograms
3 – Triangles
4 – Trapezoids
5 – Regular Polygons
6 – Circles
7 – Prisms
8 – Pyramids
9 – Spheres

D. Inductive Reasoning

1 – General Nature
2 – Applications in Math

E. Deductive Reasoning

1 – General Nature
2 – Applications in Math

F. Logic

1 – Simple Statements
2 – Conditionals
3 – Negating Conditionals
4 – Fallacies

UNIT TEST I

Fundamental Terms (Unit II)

A. Undefined Terms

1 – In Algebra
2 – In Geometry

B. Defined Terms

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

C. Postulates (or Axioms)

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

UNIT TEST II

Fundamental Theorems (Unit III)

A. Deductive Proof

1 – Direct Proof
2 – Indirect Proof

B. About Points and Lines

1 – Th. 1 – One Plane-Line & Point
2 – Th. 2 – Relationship between Three Points on a Line

C. About Segments and Rays

1 – Th. 3 – Distance from the Endpoint of a Ray
2 – Th. 4 – Midpoint of a Segment

D. About Two Lines

1 – Th. 5 – One Plane containing Two Intersecting Lines
2 – Th. 6 – Perpendicular through a Point on a Line

E. About Angles (Part 1)

1 – Th. 7 – Unique Angle formed by Two given Rays
2 – Th. 8 – Bisector of an Angle

F. About Angles (Part 2)

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

G. About Angles (Part 3)

1 – Th.13 – Angles Comp. to Congruent Angles
2 – Th.14 – Angles Supp. to Congruent Angles
3 – Th.15 – Vert. Angles Cong.

H. About Parallel Lines

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

UNIT TEST III

Triangles (Unit IV)

A. Basic Definitions

1 – Triangle Parts
2 – Triangle Types

B. Basic Theorems

1 – Th.25 – Sum of the Angles
2 – Th.26 – Exterior Angle

C. Similarity (Part 1)

1 – Ratio and Proportion
2 – Special Properties
3 – Th.27 – Side Splitter
4 – Th.28 – Perimeters of Similar Polygons

D. Similarity (Part 2)

1 – Post.12 – AAA Similarity
2 – Th.29 – Ray Bisecting Angle
3 – Th.30 – Alt. (Sim. Triangles)
4 – Th.31 – Alt. (to Hypotenuse)
5 – Th.32 – Pythagoras
6 – Application (Right Triangles)
7 – Application (3-Dimensions)

E. Congruence (Part 1)

1 – Definition
2 – Post.13 – SSS
3 – Post.14 – SAS
4 – Post.15 – ASA

F. Congruence (Part 2)

1 – Th.33 – Two Cong. to Third
2 – Overlapping Triangles
3 – CPCTC and CPCTE
4 – Th.34 – Cong. Sides give Cong. Opp. Angles
5 – Th.35 – Cong. Angles give Cong. Opp. Sides

G. Congruence (Part 3)

1 – Th.36 – Ext. Ang. Greater than Remote Int.
2 – Th.37 – Sides not Congruent Opp. Ang. not Cong.
3 – Th.38 – Ang. not Congruent Opp. Sides not Con.
4 – Th.39 – Sum of Two Sides Greater than Third

UNIT TEST IV

Other Polygons (Unit V)

A. Properties of Polygons

1 – Basic Terms
2 – Parallelograms
3 – Special Parallelograms
4 – Trapezoids
5 – Quadrilateral Hierarchy
6 – Regular Polygons

B. Areas of Polygons

1 – Definition
2 – Rectangles
3 – Parallelograms
4 – Triangles
5 – Trapezoids
6 – Regular Polygons
7 – Limit Case of a Polygon

C. Applications

1 – Proofs with Areas
2 – Areas of Similar Polygons
3 – Schedules

UNIT TEST V

Circles (Unit VI)

A. Basic Terms

1 – One Circle
2 – Relationships (Part 1)
3 – Relationships (Part 2)

B. Central Angles and Arcs

1 – Definitions
2 – Relationships

C. Inscribed Angles and Arcs

1 – Definitions
2 – Relationships

D. Limit of an Inscribed Angle

1 – Definition
2 – Th.62

E. Other Angles

1 – Th.63
2 – Th.64
3 – Th.65

F. Lines and Segments

1 – Definitions
2 – Th.66

G. Proportions

1 – Th.67
2 – Th.68
3 – Th.69

UNIT TEST VI

Loci and Constructions (Unit VII)

A. Locus

1 – Definition
2 – More than One Condition
3 – Constructions

B. Basic Rules

1 – Definitions
2 – Const. Postulates 1,2,3,4,5

C. Basic Constructions

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

D. Combinations of Constructions

1 – General Triangles
2 – Special Triangles
3 – Other Polygons

UNIT TEST VII

Trigonometric Relations (Unit VIII)

A. Basic Concepts

1 – Measuring Angles
2 – Applications of Similarity

B. Functions of Acute Angles

1 – Sine
2 – Cosine
3 – Tangent
4 – Cosecant
5 – Secant
6 – Cotangent

C. Functions of General Angles

1 – The Unit Circle
2 – Values of Trig. Functions

D. Applications

1 – Solving Right Triangles
2 – Law of Cosines
3 – Law of Sines
4 – Solving General Triangles
5 – Areas of Triangles

E. Circular Functions

1 – Radian Measure
2 – Definition of Circular Functions
3 – Periodicity and Symmetry
4 – Graphs of the Sine and Cosine
5 – Graphs of other Functions

F. Trigonometric Identities

1 – Fundamental Identities
2 – Addition Formulas
3 – Double-Ang. and Half-Ang.
4 – Tangent Formulas

G. Vectors

1 – Operations
2 – In the Plane
3 – Polar Coordinates
4 – Complex Numbers
5 – DeMoivre's Theorem
6 – Inverse Functions
7 – Trigonometric Equations

UNIT TEST VIII

Module A	Module B	Module C	Module D	Module E	Module F