**Study Outline: 02 Logic**

I. Reasoning:

A. Inductive:

1. Arithmetic Patterns:

2. Geometric Patterns:

B. Deductive:

II. Statements:

A. Conditional Statements:

1. Hypothesis:

2. Conclusion:

B. Converse Statement:

C. Inverse Statement:

D. Contrapositive Statement:

Logically equivalent:

**Study Outline: 03 Geometry Fundamentals**

I. Basics: Definitions, Symbols, Labels, & Diagrams

A. Point:

B. Line:

1. Collinear:

2. Noncollinear:

C. Line Segment:

D. Ray:

Endpoint:

E. Angle:

1. Vertex:

2. Sides:

F. Plane:

1. Coplanar:

2. Non-coplanar:

II. Angle Pairs:

A. Vertical angles:

1. Diagram:

2. Calculation:

B. Adjacent angles:

1. Diagram:

2. Calculation:

C. Complementary angles:

1. Diagram:

2. Calculation:

D. Supplementary angles:

1. Diagram:

2. Calculation:

III. Angle Relationships with Parallel lines:

A. Lines:

1. Parallel lines:

2. Transversal:

B. Corresponding Angles:

1. Diagram:

2. Calculation:

C. Alternate Interior Angles:

1. Diagram:

2. Calculation:

D. Alternate Exterior Angles:

1. Diagram:

2. Calculation:

E. Same-side Interior Angles:

1. Diagram:

2. Calculation:

F. Same-side Exterior angles:

1. Diagram:

2. Calculation:

IV. Proofs:

**Study Outline: 04 Triangles**

I. Identify:

A. Sides:

1.

2.

3.

B. Angles:

1.

2.

3.

II. Special Parts of Triangles:

A. Medians:

Centroid:

B. Altitudes:

Orthocenter:

C. Perpendicular Bisectors:

Circumcenter:

D. Angle Bisectors:

Incenter :

III. Triangle Inequality Theorem:

A. Theorem:

B. Purpose of theorem:

IV. Calculations:

A. Pythagorean Theorem:

1. Theorem:

2. Converse:

3. Triples:

B. Angle Sum Theorem:

1. Interior angles:

2. Exterior angles:

3. Remote interior angles:

C. Isosceles Triangle Theorem:

1. Theorem:

2. Converse:

D. Congruent Triangles:

1. Congruency Statements:

2. Theorems:

a. SSS:

b. SAS:

c. ASA:

d. AAS:

e. HL:

f. CPCTC:

3. Proofs:

**Study Outline: 05 Quadrilaterals**

I. Classification & Properties

A. Quadrilateral:

1. Definition:

2. Sides:

3. Angles:

4. Diagonals:

B. Parallelogram:

1. Definition:

2. Sides:

3. Angles:

4. Diagonals:

C. Rectangle:

1. Definition:

2. Sides:

3. Angles:

4. Diagonals:

D. Rhombus:

1. Definition:

2. Sides:

3. Angles:

4. Diagonals:

E. Square:

1. Definition:

2. Sides:

3. Angles:

4. Diagonals:

F. Kite:

1. Definition:

2. Sides:

3. Angles:

4. Diagonals:

G. Trapezoid:

1. Definition:

2. Sides:

3. Angles:

4. Diagonals:

H. Isosceles trapezoid:

1. Definition:

2. Sides:

3. Angles:

4. Diagonals:

II. Angle Sum Theorem:

A. Interior angles:

B. Exterior angles:

III. Proofs

**Study Outline: 06 Polygons**

I. Polygons

A. Regular:

B. Irregular:

II. Identify

3 –

4 –

5 –

6 –

7 –

8 –

9 –

10 –

12 –

20 –

III. Angle Sum Theorem

A. Interior angles:

1. Regular polygons:

2. Irregular polygons:

B. Exterior angles:

1. Regular polygons:

2. Irregular polygons:

**Study Outline: 07 Circles**

I. Parts of Circles

A. Line Segments

1. Radius:

2. Chord:

3. Diameter:

4. Secant:

5. Tangent:

B. Angles

1. Central angle:

2. Inscribed angle:

3. Interior intersection angles:

4. Exterior intersection angles:

II. Angle Calculations

A. Central angle:

B. Inscribed angle:

C. Interior intersection angles:

D. Exterior intersection angles:

III. Segment Calculations

A. Two chords:

B. Two secants:

C. Secant & Tangent:

D. Two tangents:

IV. Circles and Polygons

A. Inscribed polygons

B. Circumscribed polygons

**Study Outline: 08 Area & Perimeter**

I. Perimeter

A. Formulas (see sheet)

B. Irregular figures

II. Area

A. Formulas (see sheet)

B. Irregular figures

III. Increasing dimensions

A. dimensions doubled

B. dimensions tripled

C. relationship (pattern)

IV. Geometric Probability

V. Circles

A. Circumference

B. Area

VI. Sectors

A. Arc length

B. Area

**Study Outline: 09 Solids, Area & Volume**

I. Solids

A. Prisms

1. Rectangular

2. Triangular

3. Hexagonal

B. Pyramids

C. Cylinders

D. Cones

E. Spheres

II. Cross Sections

A. Prisms

1. Rectangular

2. Triangular

3. Hexagonal

B. Pyramids

C. Cylinders

D. Cones

E. Spheres

III. Surface Area

A. Total Surface Area vs. Lateral Area

B. Formulas (see sheet)

IV. Volume

A. Formulas (see sheet)

V. Increasing dimensions

A. dimensions doubled

B. dimensions tripled

C. relationship (pattern)

**Study Outline: 10 Coordinate plane**

I. Formulas

A. Midpoint

1. Calculation

2. Application

B. Distance

1. Calculation

2. Application

C. Slope

1. Calculation

2. Application

II. Geometric Figures

A. Parallelograms

1. Parallelogram

a. Side lengths

b. Angles

2. Rectangle

a. Side lengths

b. Angles

3. Rhombus

a. Side lengths

b. Angles

4. Square

a. Side lengths

b. Angles

B. Circles

1. Center

2. Radius

III. Transformations

A. Translation

1. Horizontal

2. Vertical

B. Reflection

1. across x-axis

2. across y-axis

C. Rotation

1. 90°

2. 180°

3. 270°

D. Dilation

1. Scale Factor

1. larger

2. smaller

**Study Outline: 11 Similar Figures**

I. Symmetry

A. Points of symmetry

B. Lines of symmetry

C. Properties of symmetry

II. Congruent Figures

A. Congruence

B. Corresponding parts of congruent figures

III. Similar Figures

A. Ratios

B. Proportions

C. Scale Factor

IV. Transformations

V. Dimensions, Area, & Volume

A. Scale factors,

**Study Outline: 12 Trigonometry**

I. Trig Ratios

A. Sine

B. Cosine

C. Tangent

II. Calculations

A. Find Numerator

B. Find Denominator

C. Find Angle Measure

III. Special Right Triangles

A. 45°-45°-90°

B. 30°-60°-90°