Geometry and Trigonometry

1. Basic Concepts of Geometry

- 1.1 Geometry Terminology
- 1.2 Geometrical Shapes
- 1.3 Distance Formula
- 1.4 Mid-point Formula
- 1.5 Types of Angles and Measuring Angles
- 1.6 Types of Angles and Angle Pairs
- 1.7 Transversal and Angle Pairs
- 1.8 Parallel lines and Special Angle Pairs
- 1.9 Slope of a Line

2. Reasoning and Formal Proofs

- 2.1 Logical Reasoning: A foundation for geometric proofs
- 2.2 Logical Statements
- 2.3 Valid Vs. Invalid Arguments
- 2.4 Euclidean Geometry-A Mathematical System

3. Triangles

- 3.1 Terms Related to a Triangle
- 3.2 Classification of Triangles
- 3.3 Properties of Triangles
- 3.4 Inequalities in a Triangle

4. Congruence of Triangles

- 4.1 Congruence of Triangles
- 4.2 Criteria for Congruence of Triangles
- 4.3 The Mid-Point Theorem

5. Similarity

- 5.1 Concept of Similarity
- 5.2 Basic Proportionality Theorem
- 5.3 Criteria/Conditions for Similarity
- 5.4 Areas of Similar Triangles

6. Right Triangles

- 6.1 The Pythagoras Theorem
- 6.2 Right Triangles and Congruence
- 6.3 Right Angled Triangle and Similarity
- 6.4 Special Right Triangles

7. Quadrilaterals

- 7.1 Polygons
- 7.2 Quadrilateral
- 7.3 Quadrilaterals : Parallelograms and Kites
- 7.4 Rectangles, Squares and Rhombi

7.5 Trapezoids
7.6 Sum of the Measure of Interior and Exterior An...
7.7 Properties of a Parallelogram
7.8 Sufficient Conditions for a Quadrilateral to b...

8. Circles

8.1 Circles and its Related Terms
8.2 Angle Subtended by a Chord at a Point
8.3 Arcs of a Circle
8.4 Angles Subtended by an arc of a Circle
8.5 Inscribed Polygons
8.6 Segment of a Circle
8.7 Equations of Circles
8.8 Properties of Tangents
8.9 Number of Tangents to a Circle

9. Symmetry

9.1 Understanding Symmetry
9.2 Number of Lines of Symmetry
9.3 Lines of Symmetry for Regular Polygons
9.4 Reflection and Symmetry
9.5 Rotational Symmetry

10. Figures Measurements and Solids

10.1 Circumference of Circle
10.2 Area of Circle
10.3 Areas of Sector and Segment of a Circle
10.4 Areas of Basic Figures
10.5 Area of Triangle
10.6 Exploring with Solids
10.7 Surface area and Volume of a Cuboid and a Cube
10.8 Surface area and Volume of a Right Circular Cylinder
10.9 Surface Area and Volume of a Right Circular Cone
10.10 Pyramid and Regular Octahedron
10.11 Surface Area and Volume of a Sphere

11. Circular Functions of Angles

11.1 The Unit Circle, Angle and its Measurement
11.2 Arc Length of a Sector and Circular Coordinates
11.3 The Relationship between Linear and Angular Speeds
11.4 Circular Functions of Angles, Evaluation and their Signs
11.5 The Reference Angle and Exact Values of Circular Functions

12. Trigonometric Functions

12.1 The Trigonometric Functions
12.2 Applications of Trigonometric Functions

13. Graphs of Trigonometric Functions

13.1 The Graph of the Sine and Cosine Functions
13.2 The Graph of the Tangent and Cotangent Function
13.3 The Graph of the Cosecant and Secant Function

14. Trigonometric Identities

14.1 Simplifying Expressions in Trigonometric Functions
14.2 The Strategy for Proving an Identity in Trigonometric Functions
14.3 Identities for Cosine, Sine, Tangent of Sum or Difference of Angles
14.4 Double Angle Identities
14.5 Half Angle Identities

15. Inverse Trigonometric Functions

15.1 Inverse Sine Function
15.2 Inverse Cosine Function
15.3 Inverse Tangent Function

16. Trigonometric Equations

16.1 To solve Trigonometric Equation in Basic Form
16.2 To solve an Equation in Trigonometric Functions

17. Law of Sines and Cosines

17.1 The Law of Sines
17.2 The Law of Cosines