

GEOMETRY SYLLABUS

1. Segments

Points, lines, planes, rays. Midpoint properties and theorems.

2. Angles

Definition, elements, classification by position and measure.

3. Parallel Lines

Angles formed by parallel lines and transversals. Angles with parallel/perpendicular sides.

4. Triangles I

Classification (isosceles, right, equilateral). Angle sum theorem. Triangle inequality.

5. Triangles II

Notable lines (medians, altitudes). Angle bisector theorems.

6. Triangle Congruence

Congruence postulates (ASA, SAS, SSS). Applications.

7. Auxiliary Constructions

Construction techniques. Special theorems.

8. Polygons

Sum of interior/exterior angles. Diagonals in convex polygons.

9. Quadrilaterals

Properties of parallelograms, trapezoids.

10. Circles I

Tangent theorems. Relative positions.

11. Circles II

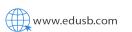
Inscribed/circumscribed quadrilaterals. Central/inscribed angles.

12. Similarity I

Thales' theorem. Angle bisector theorem.











13. Similarity II

Ceva's/Menelaus' theorems. Harmonic division.

14. Notable Points

Centroid, orthocenter. Euler's line.

15. Metric Relations I

Pythagorean theorem. Power of a point.

16. Metric Relations II

Euclid's theorems. Heron's formula.

17. Regular Polygons

Central angles. Apothem formulas.

18. Triangular Areas

Area formulas (Heron's, inradius).

19. Quadrilateral Areas

Trapezoid, kite areas.

20. Circular Areas

Sector, segment, annulus areas.

21. Lines & Planes I

Spatial relationships. Thales' theorem in 3D.

22. Lines & Planes II

Perpendicularity. Distance theorems.

23. Dihedral Angles

Definitions. Projection theorems.

24. Regular Polyhedrons

Platonic solids. Euler's formula.

25. **Prisms**

Right/oblique prisms. Parallelepipeds.

26. Pyramids

Volume. Frustums.











27. Cylinders

Right/oblique cylinders.

28. **Cones**

Right circular cones.

29. Spheres

Spherical segments. Archimedes' theorems.

30. Pappus-Guldin Theorem

Solids of revolution.





