

International School of Port-of-Spain

Geometry Course Outline, 2007-08

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My background:

Bachelor of Science, University of Pune, India.
Bachelor of Education, University of Pune, India.
Master of Computer Management, University of Pune, India.
Tertiary Teaching Certificate, University of Wollongong, Australia.
13 years of classroom teaching at higher secondary and University levels.

Text:

Geometry – Integrated Mathematics; The University of Chicago School of Mathematics Project.
Students are encouraged to make frequent use of library resources and the internet.

Course Description and Purpose:

Geometry is a branch of the Mathematics program. Students will learn construction techniques and will be introduced to deductive reasoning through proofs. They will examine and apply the properties of geometric shapes.

Geometry is designed as an integrated curriculum with extensions to algebra and trigonometry and introduces students to logical structures as it applies to problem solving. Various methods of approach, both algebraic and geometric will be used.

Supplies:

Students will need the following material.
3-ring binder, ruled 3 holed papers, graph papers, pen, pencils, Compass set – compass, divider, ruler, protractor and set-squares, erasers, Graphing or scientific calculator

Expectations:

- Attendance: Regular attendance and punctuality is essential. Each class will build up the student's knowledge base progressively towards the final objective. Missed classes may affect understanding of future lessons....postulates, theorems and proofs. In the event of missed classes, students are strongly urged to recover ground at the earliest through additional reading and home work.
- Homework: Regular home-work is an essential feature of this course, solving problems on the basis of concepts learnt in the classroom. Individual practice and application of learnt concepts is intended to build confidence and speed at problem solving. Students should set apart regular hours at home in their weekly schedule in order to accomplish this and use any additional time in hand to revise completed portions or solve additional problems.
- Homework must be neat, structured and complete. In construction of figures, all construction lines and arcs should be shown in light pencil and the finished figure alone in dark pencil. Late work up to a week may be accepted, but will generally attract a penalty of up to 50%. Late work beyond one week of the specified date will not be accepted.
- Students are encouraged to actively participate in the class, in an orderly manner and without disruption of ongoing classroom activity.

Assessment:

Grades will be determined as below, with weightage as indicated:

Tests and Projects	40 %
Homework	30 %
Quizzes	10 %
Classwork and participation	15 %
Attendance	5 %

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I have read the course features and outline of Geometry 2007-08 and I understand these:

Student name:	Student signature:
Parent/ Guardian:	Date:

International School of Port-of-Spain

Geometry 2007-08

Course Outline

Geometric Figures:

Point, line, ray and segment
Distance and plane
Congruent segments and constructions
Adjacent angles and angle bisectors.
Supplementary and complementary angles.

Proof:

Drawing conclusions
Introduction to proof
Writing proofs in geometry
Proofs and more complex figures
Conditional statements
Deductive and inductive reasoning
Proofing theorems and angles
Vertical angles
Postulates and theorems: Points, lines and planes.

Parallelism:

Parallel and skew lines
Transversals and special angle relationship proving lines parallel.
Introduction to indirect proof
Converses and the parallel postulate
The angles of a triangle
Exterior and interior angles of a triangle
Negation, contra-positive, inverse, bi-conditional.
Parallel lines and planes.

Congruence:

Isosceles triangles
Overlapping triangles
Congruence and overlapping triangles
Congruence and right triangles
Altitudes and medians of triangles
Perpendicular bisectors
Inequalities in a triangle
The triangle inequality theorem
Inequalities for two triangles

Polygons:

Interior angles of polygons
Exterior angles of polygons
Quadrilaterals and parallelogram
Mid-segment theorem
Lines parallel to many lines.

Special Quadrilaterals:

Proving quadrilaterals congruent
Necessary conditions: rectangles, squares and rhombus
Sufficient conditions: rectangles, squares and rhombus.

Similarity:

Ratio and proportion
Similar polygons
Similar triangles
Triangle proportionality theorem
SAS and SSS similarity theorem
Segments in similar triangles

Right Triangles:

Right triangle similarity properties
Pythagorean theorem
Converse of the Pythagorean theorem
Two special types of right triangles
The sine ratio
Other trigonometric ratios