



Grade 9 Standards of Mathematics Required

TOPIC	CONTENT
Set Language and Notation	Use set language and notation, and Venn diagrams to describe sets and to represent the relationship between them. Recognize and use the following notations: $A \cup B, A \cap B, n(A), \in, \notin, A', \emptyset, \subset, \subseteq$ Apply the above notations and combinations of them in the solution of challenging problems.
Estimation and Limits of Accuracy and Standard Form	Make estimates of numbers, quantities and lengths. Give approximations to special numbers of significant figures and decimal places. Find upper and lower bounds for data given to a specified accuracy.
Sequences	Complete a given sequence. Find the n th term of sequences. Apply sequences to real-world situations. Use the standard form $A \times 10^n$ where n is a positive or negative integer, and $1 \leq A < 10$
Mensuration	Calculate the perimeter and area of a rectangle and triangle, the circumference and area of a circle, the area of a parallelogram and trapezium. Calculate the perimeter and area of a rectangle and triangle, the circumference and area of a circle, the area of a parallelogram and trapezium. Calculate the volumes of cuboids, prisms and cylinders. Calculate the surface area of a cuboid and a cylinder. Find arc length and sector area as fractions of the circumference and area of a circle.
Geometrical terms and relationships	Use and interpret the geometrical terms; point line, parallel, bearing, right angle, acute, obtuse and reflex angles, perpendicular, similarity, congruence. Use the relationship between areas of similar triangles, with corresponding results for similar figures.
Symmetry	Identify rotational and line symmetry in two dimensions and the properties of triangles, quadrilaterals and circles directly related to their symmetries. Identify the symmetry properties of the prism and the pyramid.



Angle properties	<p>Calculate unknown angles using the following geometric properties:</p> <ul style="list-style-type: none"> a) angles at a point b) angles on a straight line and intersecting straight lines c) angles formed within parallel lines. (d) angle properties of triangles and quadrilaterals. <p>Discover and then calculate unknown angles using the angle properties of regular and irregular polygons. Discover and then calculate unknown angles using the geometrical properties-angle in a semi-circle, angle at the centre of a circle is twice the angle at the circumference, angles in the same segment are equal. Angles in opposite segments are supplementary, angle between the tangent and radius of a circle is a right angle.</p>
Algebraic manipulation	<p>Expand the products of algebraic expressions. Factorize expressions of the form: $ax + bx + kay + kby, a^2x^2 - b^2y^2, a^2 + 2ab + b^2, ax^2 + bx + c$. Manipulate algebraic fractions. Factorize and simplify algebraic expressions</p>
The straight line	<p>Find the equation of a straight line in the form $y = mx + c$, the equation of a straight line parallel to a given line, the gradient of a straight line from two points on it, the length of a straight line and the coordinates of a mid-point from its end points. Transform complicated formulae and equations.</p>



Functions	Express functions in appropriate notation; find inverse functions and composite functions (simple cases only).
Graphs of functions	Construct table of values for functions of the form $f(x) = ax + b$, $f(x) = x^2 + ax + b$, $f(x) = \frac{a}{x}$ ($x \neq 0$) where a and b are integral constants. Use the table of values to draw graphs. Draw and interpret such graphs. Solve linear and quadratic equations simultaneously by graphical methods. Graph functions of the form $f(x) = ax^n$ where a is a rational constant and $n = -2, -1, 0, 1, 2, 3$ and simple sums of not more than three of these and for functions of the form a^x where a is a positive integer. Estimate gradients of curves by drawing tangents. Find solutions of associated equations approximately by graphical methods.

Examination Criteria - Grade 9 Entrance Exam

Structured Questions (demanding elaborate solutions)

Candidates should answer all questions

Weighing: 100%