Mathematics Curriculum for IDAT Concise

STAGE 3	SKILL	IDAT OUTCOMES
3	Geometry - 3D Space M3.1.1	Recognise, describe and build simple 3-D shapes, including making nets identify 3-D shapes, including cubes and other cuboids, from 2-D representations
	Geometry – 2D Space M3.1.2	Distinguish among polygons, regular polygons, and other two-dimensional shapes. Identify triangles (i.e., acute, right, obtuse, scalene, isosceles, equilateral), and classify them according to angle and side properties;
	Geometry – Angles M3.1.3	Estimate, measure and compare angles using degrees.
	Measurement M3.1.4	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
	Numbers Number and place value M3.1.5	Identify and describe properties of prime, composite, square and triangular numbers Recognize that the place value system can be extended beyond hundredths
	Addition and Subtraction M3.1.6	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
	Multiplication and Division M3.1.7	Multiply two-digit whole numbers by two-digit whole numbers, using estimation, student-generated algorithms, and standard algorithms; Divide three-digit whole numbers by one-digit whole numbers, using concrete materials, estimation, student-generated algorithms, and standard algorithms;
	Fractions M3.1.8	Compare and order fractions whose denominators are all multiples of the same number. Add and subtract fractions with the same denominator, and denominators that are multiples of the same number
	Decimals M3.1.9	Compare, order and represent decimals. Multiply and divide decimals by powers of 10. Make connections between equivalent fractions, decimals and percentages. Add and subtract decimals, with and without digital technologies, and use estimation and rounding to check the reasonableness of answers.

STAGE 4	SKILL	IDAT OUTCOMES
4	Addition M4.1.1	Demonstrate an understanding of addition and subtraction of fractions and integers, and apply a variety of computational strategies to solve problems involving whole numbers and decimal numbers
	Division M4.1.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
	Algebra M4.1.3	Translate phrases describing simple mathematical relationships into algebraic expressions. Extend and apply the laws and properties of arithmetic to algebraic terms and expressions

	Integers- Ordering M4.1.4	Represent, compare, and order numbers, including integers
	Decimals & Fractions M4.1.5	Use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative
	Fractions M4.1.6	Connect fractions, decimals and percentages and carry out simple conversions Solve problems involving addition and subtraction of fractions, including those with unrelated denominators
	Subtractions M4.1.7	Demonstrate an understanding of addition and subtraction of fractions and integers, and apply a variety of computational strategies to solve problems involving whole numbers and decimal numbers
	Multiplications M4.1.8	Multiply and divide fractions and decimals using efficient written strategies and digital technologies
	Problem-solving M4.1.9	Solve real-world and mathematical problems involving the four operations with rational numbers
	Measurement & Geometry M4.1.10	Derive and apply formulae to calculate and solve problems involving: perimeter and area and angle sum of triangles and quadrilaterals, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms
STAGE 5	**SKILL**	**IDAT OUTCOMES**
5	Equations M5.1.1	Use the form y = mx + c to identify parallel {and perpendicular} lines; find the equation of the line through two given points, or through one point with a given gradient
	Patterns and Algebra M5.1.2	Apply the distributive law to the expansion of algebraic expressions, including binomials, and collect like terms where appropriate
	Lines and Polygons M5.1.3	Apply the concepts of congruence and similarity, including the relationships between lengths, {areas and volumes} in similar figures
	Transformation M5.1.4	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity the transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides
	Chance, Rates, Ratios M5.1.5	Solve problems using ratio and scale factors in similar figures. Calculate and interpret conditional probabilities through representation using expected frequencies with two-way tables, tree diagrams and Venn diagrams
	Fractions and Decimals M5.1.6	Apply the four operations to simple algebraic fractions with numerical denominators
	Patterns and Algebra M5.1.7	Apply the four operations to simple algebraic fractions with numerical denominators. Simplify and manipulate algebraic expressions (using those involving surds {and algebraic functions}).
	Whole Numbers M5.1.8	Substitute values into formulas to determine an unknown.
	Areas & Volume M5.1.9	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems . Calculate surface areas and volumes of spheres, pyramids, cones and composite solids
	Scale & Time M5.1.10	Solve problems using ratio and scale factors in similar figures. Investigate and describe bivariate numerical data where the independent variable is time
	Mean, graphs and tables M5.1.11	Interpret, analyse and compare the distributions of data sets through appropriate measures of central tendency (including modal class) and spread {including quartiles and inter-quartile range}

STAGE 6	SKILL	IDAT OUTCOMES
6	Trigonometry: Pythagoras' Theorem & Right-angled Triangles M6.1.1	Use trigonometric ratios and the Pythagorean Theorem to solve right traingles in applied problems.
	Trigonometry: Sine & Cosine Rules M6.1.2	Apply the law of Sines and law of cosines to find unknown measurements in right and non-right triangles.
	Area of a Triangle M6.1.2	Determine the area of a triangle given two sides and an included angle by using the rule Area = 1/2absinC, or given three sides by using Heron's rule, and solve related practical problems
	Arithmetic Sequence M6.1.3	Use the formula for the nth term and for the sum of the first n terms to solve problems involving arithmetic or geometric progressions
	Geometric Sequence M6.1.4	Use the formula for the nth term and for the sum of the first n terms to solve problems involving arithmetic or geometric progressions
	Trigonometric Functions M6.1.5	Understand the definition of a radian and use the relationship between radians and degrees. recognize the radian as an alternative unit to the degree for angle measurement, define the radian measure of an angle as the length of the arc that subtends this angle at the centre of a unit circle, and develop and apply the relationship between radian and degree measure
	Binominal Theorem M6.1.6	Know and apply the Binomial Theorem for the expansion of $(x+y)^n$ in powers of x and y for a positive integer n, where x and y are any numbers, with coefficients determined for example by Pascal's Triangle
	Real & Complex Numbers: Imaginary Number M6.1.7	Prove and apply the factor theorem and the remainder theorem for polynomials.
	Conjugate of Complex Numbers M6.1.8	Determine and use complex conjugates.
	Operations of Complex Numbers M6.1.9	Carry out operations of addition, subtraction, multiplication and division of two complex numbers expressed in Cartesian form x + iy. Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation.
	Matrices M6.1.10	Use the general solution and deter mines linear factors of real quadratic polynomials. Work with 2 x 2 matrices as a transformations of the plane, and interpret the absolute value of the determinant in terms of area.
	Probability M6.1.11	12.A.1.6 determine whether two events are independent or dependent and whether one event is conditional or another event, and solve related probability problems [e.g., calculate P(A and B), P(A or B), P(A given B)] using a variety of strategies (e.g., tree diagrams, lists, formulas). Apply the general Multiplication Rule in a uniform probability model, P(A and B) = P(A)P(B|A) = P(B)P(A|B), and interpret the answer in terms of the model .