

MYP-1

MYP YEAR 1 MATHEMATICS							
Unit title	Key concept	Related concept(s)	Global context	Statement of inquiry	MYP subject group objective(s)	ATL skills and LP	Content (topics, knowledge, skills)
Number-1 45sessions @ 40 min.	Form	Representation	Orientation in space and time Exploration of Evolution of Numbers / International Mindedness	Mathematics can be represented in different forms as influenced by time and place.	A: Knowing and understanding	Thinking skills Critical Research Information Literacy Learner Profile: Thinker	1-Interpret decimal notation and place value; multiply and divide by 10, 100, 1000. 2. Order decimals, including measurements, changing these to the same units. 3. Round whole numbers to the nearest 10, 100 or 1000 and decimals, including measurements, to the nearest whole number or one decimal place. 4. Use the order of operations to work out simple calculations (BODMAS) 5. Recognize negative numbers as positions on a number line; add & subtract integers. 6. Recognize multiples, factors, common factors and primes.7. Find the lowest common multiple and Greatest common divisor in simple cases.8. Recognize squares of whole numbers to at least 20x20, and the corresponding square roots. 9. Choose suitable units of measurement to estimate, measure, calculate and solve problems in everyday contexts.0. Know abbreviations for and relationships between metric units; convert between different units. 11. Read the scales on a range of analogue and digital measuring instruments.12. Draw and interpret graphs in real life contexts involving more than one stage, e.g. travel graphs.13. Know the relationships between units of time; understand and use the 12-hour and 24-hour clock systems; interpret timetables; calculate time intervals Connection- Math - Time and I&S - Latitudes and Longitudes Service as Action- Exploration of Evolution of Numbers / (International Mindedness) Learning outcome- Discuss, evaluate and plan
Algebra 45 sessions @ 40 min.	Relationship	Pattern Generalization	Scientific and technical innovation Exploration-	Establishing patterns in the natural world can help in understanding relationships.	B- Investigating Patterns C- Communicating	Thinking skills Critical Transfer Learner Profile: Thinker Communicator	1. Use letters to represent unknown numbers or variables 2. Understand like and unlike terms 3. Understand power notation 4. Construct simple algebraic expressions 5. Simplify linear expressions 6. Be able to do addition and subtraction of algebraic expression by column method 7. Simplification of algebraic expression using brackets (simple expressions) 8. Construct and solve simple equations in one variable 9. Represent simple functions using words, symbols and mappings 10. Generate coordinate pairs that satisfy a linear equation, where y is given explicitly in terms of x; plot the corresponding graphs, recognize straight line graphs parallel to the x or y axis 11. Generate sequences from spatial patterns and describe the general term in simple cases 12. Find a term-to-term rule and the nth term rule for a sequence of numbers 13. Derive and use simple formulae. 14. Substitute real numbers for letters in a formula

<p>Geometry</p> <p>Geometrical Constructions, Angle Properties and Geometric Reasoning</p> <p>50 sessions @ 40 min</p>	<p>Form</p>	<p>Pattern Space</p>	<p>Personal and Cultural Expression Exploration Observation of symmetry in their surrounding/ various countries</p>	<p>Understanding form and shape enhances creativity.</p>	<p>C- Communicating</p> <p>D- Applying mathematics in real-life contexts</p>	<p>Thinking Skills Critical Creative Learner Profile: Thinker, Communicator</p>	<p>1. Use a protractor to construct or measure an angle. 2. Construct a triangle using a ruler and protractor given the length of the base and the sizes of the base angles 3. Construct a triangle using a ruler and compasses only given the lengths of the three sides. 4. Construct squares, rectangles, regular polygons. 5. Identify and calculate the missing angles on a straight line and the angles around a point 6. Identify parallel and perpendicular lines and understand the rules that apply to these lines. 7. Recognize and use the angle properties of triangle, quadrilateral. 8. Solve simple geometrical problems by using side and angle properties to identify equal lengths or calculate unknown angles, and explain reasoning. 9-Know the abbreviations for and relationships between square meters, square centimeters and square millimeter. 10. Derive and use formulae for the area and perimeter of a rectangle; calculate the perimeter and area of compound shapes made from rectangles. 11. Derive and use the formula for the volume of a cuboids; calculate volumes of cuboids. 12. Calculate the surface area of cubes and cuboids from their nets. 13 Read and plot coordinates of points determined by geometric information in all four quadrants. 14. Identify, describe, visualize and draw 2-D shapes in different orientations. 15. Use the notation and labeling conventions for points, lines, angles and shapes 16. Name and identify side, angle and symmetry properties of special quadrilaterals and triangles, and regular polygons with 5, 6 and 8 sides. 17. Recognize and describe common solids and some of their properties. 18. Recognize line and rotation symmetry in 2-D shapes, draw lines of symmetry and complete patterns with two lines of symmetry, identify the order of rotation symmetry 19. Transform 2-D shapes by reflection in a given line, rotation about a given point, translation. Connection- Visual Arts- Geometric patterns observed in various textiles, flooring, monuments etc</p>
<p>Statistics and probability</p> <p>40 sessions @ 40 min,</p>	<p>Form</p>	<p>Representation Justification</p>	<p>Globalization and sustainability Exploration - Collecting and representing data of different sports played globally)</p>	<p>Data can be represented in different forms to interpret and justify the results globally.</p>	<p>A - Knowing and Understanding C – Communicating</p>	<p>Research Skills</p> <p>Cluster:</p> <p>Information Literacy Skills Media Literacy skills</p> <p>Learner Profile: Inquirer</p>	<p>1. Decide which data would be relevant to an enquiry and collect and organize the data. 2. Design and use a data collection sheet or questionnaire for a simple survey. 3. Construct and use frequency tables to gather discrete data, grouped where appropriate in equal class intervals 4. Draw and interpret bar-line graphs and bar charts, frequency diagrams for grouped discrete data, simple pie charts, and pictograms. 5. Calculate the mean (including from a simple frequency table), median, mode and range of a set of data. 6. Compare two simple distributions using the range and the mode, median or mean. 7. Understand and use the probability scale from 0 to 1. 8. Find probabilities based on equally likely outcomes in simple contexts. 9. Identify all the possible mutually exclusive outcomes of a single event. 10. Use experimental data to estimate probabilities. 11. Compare experimental and theoretical probabilities in simple contexts.</p>

<p>Number – II 45 sessions @ 40 min.</p>	<p>Form</p>	<p>Equivalence Simplification Representatio n</p>	<p>Scientific and technical innovation Exploration- Different forms of numbers</p>	<p>In order to understand scientific concepts, quantities can be simplified and represente d in different forms.</p>	<p>B – Investigat ing Patterns C – Communi cating D - Applying Mathema tics in Real Life Context</p>	<p>Self- Managem ent Skills Organizati on Affective Thinking Skills Critical Communi cation skills Learner Profile - Knowledge able</p>	<p>1. Understand percentage as the number of parts in every 100; use fractions and percentages to describe parts of shapes, quantities and measures. 2. Recognize the equivalence of simple fractions, decimals and percentages. 3. Simplify fractions by cancelling common factors and identify equivalent fractions; change an improper fraction to a mixed number, and vice versa; convert terminating decimals to fractions. 4. Compare two fractions by using diagrams, or by using a calculator to convert the fractions to decimals 5. Add and subtract two simple fractions; find fractions of quantities (whole no. answers); multiply a fraction by an integer, 6. Multiply and divide decimals with one and/or two places by single digit numbers, 7. Calculate simple percentages of quantities (whole no. answers) and express a smaller quantity as a fraction or percentage of a larger one. 1. Use percentages to represent and compare different quantities. 2. Use ratio notation, simplify ratios and divide a quantity into two parts in a given ratio, 3. Recognize the relationship between ratio and proportion. 4. Use direct proportion in context; solve simple problems involving ratio and direct proportion 5. Know that in any division where the dividend is not a multiple of the divisor there will be a remainder which can be expressed as a fraction of the divisor. 6. Calculate simple percentages and fractions of quantities. 7. Know when to round up or down after divisions when the context requires a whole number answer.</p>
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MYP-2

MYP YEAR 2 MATHEMATICS							
Unit title	Key concept	Related concept(s)	Global context	Statement of inquiry	MYP subject group objective(s)	ATL skills and Learner Profiles	Content (topics, knowledge, skills)
Number 45 sessions @ 40 min	Logic	Simplification	Identities and relationships Exploration- Human Nature and Dignity, moral reasoning and ethical judgement.	Discovering mathematical relationships can lead to a better understanding of how environmental systems evolve.	A- Knowing and understanding B- Investigating Patterns	Thinking skills Communication skills Affective skills Perseverance LP- Knowledgeable Thinker	1) Understanding integers and be able to add, subtract, multiply and divide integers. 2) Identify and use multiples, factors, common factors, highest common factor, lowest common multiple and primes; write a number in terms of its prime factors, e.g. $500 = 2^2 \times 5^3$. 3) Calculate squares, positive and negative square roots, cubes and cube roots; use the notation 49 and 3^6 and index notation for positive integer power. 4) Convert fraction to decimal using division; know that a recurring decimal is a fraction. 5) Order fractions by writing with common denominators or dividing and converting to decimals. 6) Add, subtract, multiply and divide fractions and mixed numbers, rational numbers. 7) Calculate fractions of quantities 8) Multiply and divide an integer by a fraction 9) Find equivalent fractions, decimals and percentages by converting between them. 10) Calculate and solve problems involving percentages of quantities 11) Express one given number as a fraction or percentage of another 12) Calculate simple Interest, principal, amount, rate of interest, time from the given information. 13) Use equivalent fractions, decimals and percentages to compare different quantities. 14) Simplify ratios, including those expressed in different units; divide a quantity into more than two parts in a given ratio. 15) Use the unitary method to solve simple problems involving ratio and direct proportion. Service As Action: Presentation on Evolution of number system Learning Outcome- Develop international-mindedness through global engagement.
Algebra 60 sessions @ 40 min.	Relationship	Model Generalization	Identities and relationships Exploration- Patterns in the natural world to understand relationships.	Problem-solving can be improved by using a model to represent relationships.	A- Knowing and understanding B- Investigating Patterns C- Communicating D-	Thinking Skills Communication Skills Affective Skills	1) Know that letters play different roles in equations, formulae and functions; know the meaning of formula and function. 2) Know that algebraic operations, including brackets, follow the same order as arithmetic operations. 3) Construct linear expressions. 4) Simplify or transform linear expressions with integer coefficients; collect like terms; multiply a single term over a bracket. 5) Compare two ratios; interpret and use ratio in a range of contexts. 6) Recognize when two quantities are directly proportional; solve problems involving proportionality, e.g. converting between different currencies. 7) Know that algebraic operations, including brackets, follow the same order as arithmetic operations; use index notations for small positive integer powers. 8) Construct and solve linear equations with integer coefficients. 9) Solve

					Applying mathematics in real-life contexts		simple word problems of linear equation. 10) Generate terms of a linear sequence using term to term and position-to term rules. 11) Find term-to-term and position-to-term rules of sequences. 12) Use a linear expression to describe the nth term of a simple arithmetic sequence, justifying its form by referring to the activity or practical context from which it was generated. 13) Express simple functions algebraically and represent them in mappings. 14) Change the subject of formula. 15) Construct tables of values and use all four quadrants to plot the graphs of linear functions, where y is given explicitly in terms of x; recognize that equations of the form $y = mx + c$ correspond to straight-line graphs. 16) Derive and use simple formulae. 17) Substitute positive and negative integers into formulae, linear expressions and expressions involving small powers.
Geometry-1 45 sessions @ 40 min.	Logic	Measurement Justification	Orientation in space and time Exploration- Natural and Human landscapes and resources	Logic is a powerful tool for justifying what we discover through measurement and observation.	A- Knowing and understanding B- Investigating Patterns C- Communicating	Thinking skills Communication skills Affective skills	1) Solve problems involving measurements in a variety of contexts. 2) Solve problems involving average speed 3) Use compound measures to make comparisons in real life contexts e.g. travel graph and value of money. 4) Use the coordinate grid to solve problems involving translations, rotation, reflection and enlargements. 5) Recognize that translation, rotation and reflection preserve length and angle and map object on to congruent images. 6) Know what is needed to give precise description of a reflection, rotation, translation or enlargement. 7) Find the midpoint of the line segment AB, given the coordinates of the points A and B 8) Transform two-dimensional shapes by rotation, reflection and translation. 9) Interpret and make simple scale drawings. 10) Know that if two 2-D shapes are congruent, corresponding sides and angles are equal. 11) Classify quadrilaterals according to their properties, including diagonal properties. 12) Identify all symmetries of 2-D shapes. 13) Construct perpendicular bisector, angle bisector, circles, arcs and triangles given the three sides (SSS) and a right angle, hypotenuse and one side (RHS) 14) Know that the longest side of the right-angled triangle is called the hypotenuse. 15) Identify adjacent angles, vertically opposite angles, linear pairs, and supplementary and complementary angles. 16) Identify alternate angles and corresponding angles. 17) Know that the angle sum of a triangle is 180° and that of a quadrilateral is 360° 17) Know that the exterior angle of a triangle is equal to the sum of the two interior opposite angles. 18) Solve geometrical problems using properties of angles, of parallel and intersecting lines, and of triangles and special quadrilaterals, explaining reasoning with diagrams and text. 19) Derive and apply the formulae of the area of a triangle, parallelogram and trapezium. 20) Calculate areas of compound two-dimensional shapes. 21) Calculate lengths, surface areas and volumes of cubes and cuboids. 22) Know the definition of a circle and the names of its parts. Know and use formulae for the circumference and area of a circle. 23) Draw simple nets of solids, like cubes and cuboids. 24) Use simple nets of solids to work out their surface areas

Statistics and Probability 40 sessions @ 40 min.	Relationships	Pattern Representation	Fairness and development Exploration- Inequality difference and inclusion	Statistical representations make it easier to understand and analyze relationships within variables	A - Knowing and Understanding C - Communicating D - Applying Mathematics in real life context	Critical Thinking Communication Self-Management: Organisation Reflection	1) Suggest a question to explore using statistical methods; identify the sets of data needed, how to collect them, sample sizes and degree of accuracy 2) Identify primary or secondary sources of suitable data 3) Design, trial and refine data collection sheets 4) Collect and tabulate discrete and continuous data, choosing suitable equal class intervals where appropriate 5) Calculate statistics and select those most appropriate to the problem 6) Select, draw and interpret diagrams and graphs, including frequency diagrams for discrete and continuous data, line graphs for time series, scatter graphs to develop understanding of correlation and back-to-back stem-and-leaf diagrams 7) Interpret tables, graphs and diagrams and make inferences to support or cast doubt on initial conjectures; have a basic understanding of correlation. 8) Compare two or more distributions; make inferences, using the shape of the distributions and appropriate statistics. 9) Relate results and conclusions to the original question. 10) Know that if the probability of an event occurring is p , then the probability of it not occurring is $(1 - p)$ 11) Find the probabilities based on equally likely outcomes in theoretical probabilities, 12) Recognize that when experiments are repeated different outcomes may result and increasing the number of times an experiment is repeated generally leads to better estimates of probability.
GEOMETRY – II 45 sessions @ 40 min.	Logic	Measurement Justification	Orientation in space and time Exploration- Mathematical puzzles, principles and discoveries	Logic is a powerful tool for justifying what we discover through measurement and observation.	A- Knowing and understanding B- Investigating Patterns C- Communicating	Thinking skills Communication skills Affective skills	1) Know that if two 2-D shapes are congruent, corresponding sides and angles are equal 2) Classify quadrilaterals according to their properties, including diagonal properties 3) Identify all symmetries of 2-D shapes. 4) Construct perpendicular bisector, angle bisector, circles, arcs and triangles given the three sides (SSS) and a right angle, hypotenuse and one side(RHS) 5) Know that the longest side of the right-angled triangle is called the hypotenuse 6) Identify adjacent angles, vertically opposite angles, linear pairs, and supplementary and complimentary angles Also Identify alternate angles and corresponding angles 7) Know that the angle sum of a triangle is 180° and that of a quadrilateral is 360° 8) Know that the exterior angle of a triangle is equal to the sum of the two interior opposite angles. 9) Solve geometrical problems using properties of angles, of parallel and intersecting lines, and of triangles and special quadrilaterals, explaining reasoning with diagrams and text. 10) Derive and apply the formulae of the area of a triangle, parallelogram

							and trapezium 11) Calculate areas of compound two-dimensional shapes 12) Calculate lengths, surface areas and volumes of cubes and cuboids. 13) Know the definition of a circle and the names of its parts 14) Know and use formulae for the circumference and area of a circle 15) Draw simple nets of solids, like cuboids, regular tetrahedron, square-based pyramid, and triangular prism. 16) Use simple nets of solids to work out their surface areas .Connection with Visual Arts
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MYP-3

MYP YEAR 3 MATHEMATICS							
Unit title	Key concept	Related concept(s)	Global context	Statement of inquiry	MYP subject group objective(s)	ATL skills and Learner Profiles	Content (topics, knowledge, skills)
NUMBER 60 sessions @ 40 min.	Form	Simplification Representation	Scientific and technical innovation Exploration - Number System used in computer	Numbers can be simplified and represented in different forms to have an understanding of scientific principles.	A: Knowing and understanding	Thinking skills - Cluster: Transfer Skills Communication skills Learner Profile: Communicator	Place value, ordering and rounding 1. Multiplying and Dividing the decimals and powers of 10 2. Rounding 3. Order of operations Integers, Powers and Roots 1. Directed numbers 2. Square Roots and Cube Roots. 3. Indices Fractions 1. Fractions in its simplest form 2. Operations in fractions - addition, subtractions, multiplications and division Ratio, proportion and percentages 1. Comparing different quantities 2. Percentages changes 3. Solving Practical problems connections- Business Studies - analysis of financial statement
ALGEBRA 60 sessions @ 40 min.	Relationship	Model Generalization Patterns	Scientific and technical innovation Exploration - Fibonacci sequences and Golden Ratio appearing in nature and its applications	Patterns in the natural world can be generalized to understand relationships	For Algebra: A: Knowledge and Understanding For Sequences - B: Investigating Patterns C: Communicating	Thinking skills Cluster: Creative Thinking Skills Communication skills Research skills Learner Profile:	Sequences 1. Generating sequences 2. Finding nth term Functions 1. Function Notations 2. Inverse functions Expressions and formulae 1. Simplification and constructions of expression 2. Substituting into expressions. 3. Deriving and Using formulae 4. Expanding of two linear expression 5. Factorising 6. Adding and subtracting algebraic fractions Equations and inequalities 1. Solving Linear Equations 2. Solving Problems 3. Solving Simultaneous Equations 4. Inequalities

						Communicator	
<p>GEOMETRY</p> <p>Geometrical Constructions, Angle Properties and Geometric Reasoning 60 sessions @ 40 min.</p>	Form	Measurement Space Quantity	Personal and Cultural Expression Exploration - Explore various monuments and identify and analyse the geometrical patterns and its intricacies.	Architects and engineers must use finite resources responsibly when they design new structures.	<p>B : Investigating Patterns</p> <p>C: Communicating</p> <p>D: Applying mathematics in real-life contexts</p>	<p>Thinking Skills : Critical Thinking</p> <p>Learner Profile: Thinker, Communicator</p>	<p>Length, Mass, capacity and Time</p> <p>1. Solve problems involving measurements in a variety of contexts. 2. Solve problems involving Speed 3. Use compound measures to make comparisons in real life contexts e.g. travel graph and value of money</p> <p>Shapes</p> <p>1. Calculate the interior or exterior angle of any regular polygon. 2. Solve problems using properties of angles, of parallel and intersecting lines, and of triangles, other polygons and circles.</p> <p>Symmetry</p> <p>1. Identify reflection symmetry in three dimensional shapes. 2- Construction, Loci, Bearing And Scale Drawings</p> <p>3. Use a straight edge and compasses to carry out various geometrical constructions. 4-. Use bearings (angles measured clockwise from north) to solve problems involving distance and directions 3. Make and use scale drawings and interpret maps. 5-. Find by reasoning the locus of a point that moves at a given distance from a fixed point, or at a given distance from a fixed straight line.</p> <p>Pythagoras Theorem</p> <p>1. Know and use Pythagoras theorem to solve two- dimensional problems involving right-angled triangles</p> <p>Area Perimeter And Volume</p> <p>1. Convert between metric units of area, volume and capacity. 2. Solve problems involving the circumference and area of circles. 3. Calculate lengths, surface areas and volumes in right-angled prisms and cylinders. Tessellations - Tessellate triangles and quadrilaterals and relate to angle sums and half turn rotations; know which regular polygons, tessellate, and explain why others will not</p> <p>Transformations</p> <p>1. Use the coordinate grid to solve problems involving translations, rotation, reflection and enlargements 2. Transform two-dimensional shapes by combinations of rotation, reflection and translations; describe the transformation that maps an object onto its image. 3. Enlarge two-dimensional shapes, given a center and positive integer scale factor; identify the scale factor of an enlargement as the ratio of the lengths of any two corresponding line segments. 4. Recognize that translation, rotation and reflection preserve length and angle and map object on to congruent images, and that enlargements preserve angle but not length. 5. Know what is needed to give precise description of a reflection,</p>

							<p>rotation, translation or enlargement.</p> <p>Graphs</p> <p>1. Construct tables of the values and plot the graphs of linear functions, where y is given implicitly in terms of x 2. Rearranging the equations into the form $y = mx + c$ 3. Know the significance of m and find the gradient of a straight line graph 4. Find the appropriate solutions of a simple pair of simultaneous linear equations by finding the point of intersections of their graphs 5. Use systematic trial and improvement methods to find approximate solutions of equations such as $x^2 + 2x = 20$. 6. Construct functions arising from real life problems 7. Draw and interpret their graphs 8. Use algebraic methods to solve problems involving direct proportion, relating solutions to graphs of the equations.</p> <p>Possible connection is with Visual Arts...eg. Geometrical patterns observed in various textiles, flooring, monuments..</p>
<p>STATISTICS 30 sessions @ 40 min.</p>	<p>Relationships</p>	<p>Pattern Representation Justification</p>	<p>Globalisation and Sustainability - Exploration - Research demographic data of Indian states and its literacy level</p>	<p>Statistical representations make it easier to understand and analyze relationships within variables</p>	<p>C: Communicating D: Applying Mathematics in real life context</p>	<p>Thinking skills - Cluster: Critical Thinking skills Communication Self-Management: Organisation Reflection Learner Profile: Thinker</p>	<p>STATISTICS</p> <p>1) Suggest a question to explore using statistical methods; identify the sets of data needed, how to collect them, sample sizes and degree of accuracy. 2) Identify primary or secondary sources of suitable data . 3) Design, trial and refine data collection sheets 4) Collect and tabulate discrete and continuous data, choosing suitable equal class intervals where appropriate 5) Calculate statistics and select those most appropriate to the problem . 6) Select, draw and interpret diagrams and graphs, including. frequency diagrams for discrete and continuous data, line graphs for time series, scatter graphs to develop understanding of correlation and back-to-back stem-and-leaf diagrams 7) Interpret tables, graphs and diagrams and make inferences to support or cast doubt on initial conjectures; have a basic understanding of correlation. 8) Compare two or more distributions; make inferences, using the shape of the distributions and appropriate statistics. 9) Relate results and conclusions to the original question.</p>
<p>PROBABILITY 30 sessions @ 40 min.</p>	<p>Logic</p>	<p>Justification</p>	<p>Fairness and Development - Exploration - How is gambling associated with probability and its impact on society</p>	<p>Decisions are often made on the basis of the predictability seen in patterns. Predictions can be calculated.</p>	<p>A: Knowledge and Understanding</p>	<p>Thinking skills Cluster: Critical Thinking Skills Learner Profile: Thinker</p>	<p>PROBABILITY</p> <p>1) Know that the sum of probabilities of all mutually exclusive outcomes is 1 and use this when solving problems 2) Find and record all outcomes for two successive events in a sample space diagram. 3) Understand relative frequency as an estimate of probability and use this to compare outcomes of experiments in a range of contexts.</p>

MYP-4

MYP YEAR 4 MATHEMATICS

Unit title	Key concept	Related concept(s)	Global context	Statement of inquiry	MYP subject group objective(s)	ATL skills and Learner Profiles	Content (topics, knowledge, skills)
Number 40 sessions @ 40 min	Form	Representation simplification	Scientific and Technical Innovations Exploration -rational and irrational Numbers through mathematical puzzles	Numbers can be represented in different forms	A: Knowing and understanding D: Applying mathematics in real-life context	Thinking skills Cluster: Critical Thinking Skills Learner Profiles: Thinker	Number concept 1- Different types of numbers 2-Multiples and factors 3- Prime numbers 4- Powers and roots 5- Working with directed numbers 6- Order of operations 7- Rounding numbers Fraction 1- Equivalent fractions 2- Operations of fractions 3- Percentages 4- Standard form 5- Your calculator and standard form 6- Estimation Sequences and sets 1- Sequences 2- Rational and irrational numbers 3- Sets Measurements 1- Understanding units 2- Time 3-Upper and lower bound 4- Conversion graphs 5- More money Managing money 1- Earning money 2-Borrowing and investing money 3- Buying and selling Ratio, Rate and Proportion 1- Working with ratio 2- Ratio and scale 3-Rates 4- Kinematic graphs 5- Proportion 6- Direct and inverse proportion in algebraic terms 7-Increasing and decreasing amounts in a given ratio
Algebra 40 sessions @ 40 min	Relationship	Simplification Model	Scientific and technical innovation Area of Exploration - How humans use their understanding of scientific and mathematical principles	Relationships in our natural world can be represented using models and understand the use of scientific and mathematical principles.	B: Investigating Patterns C: Communicating	Thinking skills Cluster: Critical Thinking Skills Transfer Skills Learner Profile: Thinker	Basic Algebra 1-Using letters to represent unknown values 2- Substitution 3- Simplifying expressions 4- Working with brackets 5-Indices Equations and Transforming formula 1- Further expansion of brackets 2-Solving linear equations 3-Factorizing algebraic expressions 4- Transformation of the formula 5-Setting up equations to solve problems Quadratic equations 1- Expansion 2-Factorize Quadratic expressions Further solving of equation and inequalities 1- Simultaneous linear equations 2-Linear Inequalities 3-completing Squares 4- Quadratic formula 5-Factorize quadratics with coefficient of x2 is not 1 6- Algebraic fractions Connection with Sciences – Physics

Probability 30 sessions @ 40 min	Logic	Representation Justification	Identities and relationships Exploration -developing the healthier choices for better lifestyle	Making healthier choices can result from logical representations	A: Knowing and Understanding C: Communicating D:Applying mathematics in real-life context	Communication skills Learner Profile: Inquirer	Probability 1- Basic probability 2-Theoretical probability 3- Probability of an event not happening 4-Possibility Diagrams 5- Combining independent and mutually exclusive events 6-Using tree diagram to show outcomes 7-Calculating probability from tree diagrams Connection with Sciences-biology
Statistics 30 sessions @ 40 min	Relationship	Representation	Globalization and Sustainability Exploration -global issues and its impact on environment	Quantities can be represented to establish relationship between them globally	A: Knowing and Understanding C: Communicating	Communication skills Research skills Cluster-Information literacy skills Learner Profile: Communicator	Statistics 1- Collecting and classifying data 2- Organizing data 3- Using charts to display data Averages and measure of spread 1- Different types of averages 2- Making comparisons using averages and ranges 3-Calculating averages and ranges for frequency data 4- Calculating averages and ranges for group continuous data 5-Percentiles and quartiles Histogram and frequency Distribution 1- Histograms 2- Cumulative frequency Scatter diagram and correlation
Geometry 60 sessions @ 40 min	Form	Measurement Relationships	Personal and cultural Expressions Students will Exploration -creating 3D shapes with maximum volume and minimal Surface Area	Different form and measurement enables to create new structures	A: Knowing and understanding B: Investigating Patterns C: Communicating D: Applying mathematics in real-life contexts	Thinking skills Cluster Creative Thinking skills Learner Profile: Thinker	Lines, angles and shape 1- Lines and angles 2-Triangles, Quadrilaterals and Polygons 3- Circles 4- Constructions Mensuration 1- carry out calculations involving the perimeter and area of a rectangle , triangle, parallelogram, rhombus and trapezium. 2-Surface area and Volume of a Cube, Cuboids, Prism, Cone, Cylinder, Sphere, Hemisphere and Pyramids 3-Circumference and area of a circle. 4- Solve problems involving the arc length and sector area as fractions of the circumference and area of a circle.

MYP-5

MYP YEAR 5 MATHEMATICS							
Unit title	Key concept	Related concept(s)	Global context	Statement of inquiry	MYP subject group objective(s)	ATL skills and Learner Profiles	Content (topics, knowledge, skills)
Trigonometry 40 sessions @ 40 min.	Relationship	Measurement Model	Scientific and Technical Innovations Exploration- Systems and models, use various methods to find solutions	Generalizing relationship between measurements can lead to better model and methods	A- Knowing and understanding C- Communicating D- Applying mathematics in real-life contexts	Thinking skills cluster - transfer Thinking skills Critical Thinking Skills Learner Profile- Thinker	Pythagoras Theorem, Scale Drawing Bearings and Trigonometric Ratios 1- Scale Drawing 2- Interpret and use three figure 3- bearings measured clockwise from north 4- Apply Pythagoras' theorem and the sine, cosine and tangent ratios for acute angles to the calculation of a side or an angle of a right angled triangle 5-Solve trigonometrically problems in two dimensions involving angles of elevation and depression. Applications of trigonometry and sine and cosine rules 1- Solving problems using trigonometry 2- Extend sine and cosine functions to angles between 90° and 360° 3- solve problems using the sine and cosine rules for any triangle 4- formula for area of triangle 5- solve simple trigonometrically problems in three dimensions including angle between a line and a plane
Symmetry, Construction and Loci 40 sessions @ 40 min	Form	Measurement Space	Identities and relationships Exploration- the evolution of the construction algorithms for various conditions	Analyzing the relation between the points in space can help in the construction of the required form	C- Communicating D- Applying mathematics in real-life contexts	Thinking skills Cluster- Transfer skills Learner Profile- Thinker	1-Recognize rotational and line symmetry in two dimensions 2- Know properties of triangles, quadrilaterals and circles directly related to their symmetries. 3- Recognize symmetry properties of the prism and pyramid 4- Use the symmetry 5- properties of circles 6- Constructions of triangle, quadrilateral, perpendicular bisector and angle bisector. 7- Use loci and the method of intersecting loci for sets of points in two dimensions Possible connection is with Visual Arts...eg. Geometrical patterns observed in various textiles, flooring, monuments, etc.
Graphs 40 sessions @ 40 min	Relationship	Model Pattern	Orientation in space and time Exploration- Scale, duration, frequency and variability	Relationships Model patterns of change that can help clarify and predict duration, frequency and variability	C- Communicating D- Applying mathematics in real-life contexts	Communications skills Self-management skills Learner Profile- Communicator	Travel graphs 1- Cartesian coordinates in two dimensions 2- How to interpret and use graphs in practical situations including travel graphs and conversion graphs 3- How to draw graphs from given data 4-How to find distance travelled from a speed-time graph . Functions 1- Functions Notations 2- Composite functions 3- Inverse function Straight Lines 1- Drawing and recognizing straight line graphs 2-Finding the gradient of a straight line

							<p>3- Interpreting the equation $y=mx + c$ 4-Finding the length of a line segment</p> <p>Curved Graphs</p> <p>1- Plotting quadratic, cubic and exponential graphs 2- Plotting reciprocal graphs 3- Using graphs to solve quadratic equations graphically 4- Using graphs to solve simultaneous linear and non-linear graphs • Drawing a tangent to a curve 5- Calculating the gradient of the tangent 6-Inequalities and Linear programming</p> <p>6- Inequalities and regions in a plane 7- Representing simultaneous inequalities 8- Linear programming and its practical applications</p> <p>Possible connections with Physics eg Travel Graphs and projectile motion</p>
Vectors 40 sessions @ 40 min	Form	Equivalent Representation	Scientific and Technical Innovations Exploration- the application of vectors in real life situations	Using appropriate mathematical forms of representation can help to make more successful innovations	B- Investigating Patterns C- Communicating	Thinking skills Cluster-Thinking creative skills Learner Profile- Thinker	<p>1- Describe a translation by using a vector 2- Add and subtract vectors and multiply a vector by a scalar 3- Calculate the magnitude of a vector 4- Represent vectors by directed line segments 5- Use the sum and difference of two vectors to express given vectors in terms of two coplanar vectors 6- Use of position vectors</p> <p>Possible connections with Physics eg magnitude and direction of displacement, velocity, acceleration.</p>
Matrices and Transformations 40 sessions @ 40 min	Relationships	System Representation	Scientific and technical innovation Exploration- Application of mathematical systems(matrices) to organize the information in an easily understandable form.	Representing a system of relationships can help us understand how to make better use of resources	A- Knowing and understanding	Thinking skills Cluster: Transfer Skills Learner Profile: Knowledgeable	<p>1-Display information in the form of a matrix of any order 2- Addition and Subtraction of Matrices 3- Multiplication of scalar quantity and multiplication of two matrix. 4- Use the algebra of 2x2 matrices including the zero and identity 2x2 matrices 5- Calculate the determinant and inverse of non-singular matrix A.6- Reflect simple plane figures in horizontal or vertical lines 7- Rotate simple plane figures about the origin, vertices or mid-points of edges of the figures, through multiples of 90 8- Construct given translations and enlargements of simple plane figures 9- Recognize and describe reflections, rotations, translations and enlargements 10- Use reflection, rotation, translation, enlargement, and their combinations 11- Identify and give precise descriptions of transformations connecting given figure. 12- Describe transformations using coordinates and matrices.</p>

EXTENDED MATH MYP 4

MYP YEAR 4 EXTENDED MATHEMATICS							
Unit title	Key concept	Related concept(s)	Global context	Statement of inquiry	MYP subject group objective(s)	ATL skills and Learner Profiles	Content (topics, knowledge, skills)
Indices and surds 20 sessions @ 40 min.	Form	Equivalence	Scientific and Technical innovation Exploration- the development of number systems and its evolution leading to the Scientific innovation	Appreciating the innovations made through the extension of the number systems that may help in understanding the complete form of real numbers and equivalence to its representation.	A- Knowing and understanding	Thinking skills Critical thinking Transfer Learner Profile: Knowledgeable	1- simple operations with indices and with surds, including rationalizing the denominator Connection - Chemistry - molar calculations and chemical reactions Physics - calculations with physical quantities
Functions 50 sessions @ 40 min	Relationships	Model	Scientific and Technical innovation Exploration- Extending the understanding of Mathematical Functions to the surrounding	Real life situation can be modeled by identifying the relation between the variables defined.	B - Investigating Patterns D - Applying Mathematics to Real life context	Thinking skills Critical thinking Research skills Information Literacy Learner Profile: Knowledgeable Thinker	1-Concept of function, domain, range, one-one function, inverse function and composition of functions 2- relationship between $y = f(x)$ and $y = \text{mod}(f(x))$, where $f(x)$ may be linear, quadratic or trigonometric 3-use of sketch graphs to show the relationship between a function and its inverse 4- finding the maximum or minimum value of the quadratic function by any method 5- using the maximum or minimum value of $f(x)$ to sketch the graph or determine the range for a given domain 6- know the conditions for $f(x) = 0$ to have: (i) two real roots, (ii) two equal roots, (iii) no real roots and the related conditions, for a given line to (i) intersect a given curve, (ii) be a tangent to a given curve, (iii) not intersect a given curve 7- solve quadratic equations for real roots and find the solution set for quadratic inequalities 8- simple properties and graphs of the logarithmic and exponential functions including $\ln x$ and e^x 9- the laws of logarithms (including change of base of logarithms) 10 solve equations of the form $ax = b$ Connection- Physics - Physical quantities seen as a function with some variables; Projectile motion and the predictions Economics - relationship between cost function, production function, etc.

System of Linear equations 20 sessions @ 40 min	Form	Equivalence	Scientific and technical innovation Exploration- Observing and generalising linear relations in the surroundings	Analysing equivalent graphical form may help in making predictions for the system under study	B- Investigating Patterns C - Communication	Thinking: Critical thinking Communication LP: Inquirer Communicator	1- interpreting the equation of a straight line graph in the form $y = mx + c$ 2- transforming given relationships, including $y = ax^n$ and $y = Abx$ to straight line form and hence determining unknown constants by calculating the gradient or intercept of the transformed graph 3- mid-point and length of a line. 4- the condition for two lines to be parallel or perpendicular . 5- simultaneous equations in two unknowns with at least one linear equation 6- the remainder and factor theorems. 7- finding factors of polynomials 8- solving cubic equations. 9- Solving equation established for different physical quantities Connections- Economics - Optimization of the production Physics - Distance time graphs . Biology - predicting linear relation between biological aspects Service as Action- Collecting data for poverty line and literacy of various states in India and establishing connection between the two. Suggestions for improving the generalised observation. Learning outcome- Discuss, evaluate and plan student initiated activities.
Circular measure & Trigonometry 50 sessions @ 40 min	Logic	Measurement	Scientific and technical innovation Exploration- the application of trigonometry to real life situations	Measured practical parameters can be extended logically for the developments in the society	B- Investigating patterns C- Communication	Thinking skills Transfer Self-management skills Reflection Lerner Profile: Inquirer Communicator	1- the arc length and sector area of a circle, including knowledge and use of radian measure 2- the six trigonometric functions of angles of any magnitude (sine, cosine, tangent, secant, cosecant, cotangent) 3- amplitude and periodicity and the relationship between graphs of e.g. $\sin x$ and $\sin 2x$ 4- the graphs of : $y = a \sin (bx) + c$, $y = a \cos (bx) + c$ $y = a \tan (bx) + c$,where a and b are positive integers and c is an integer. 5- using the relationships and solving simple trigonometric equations involving the six trigonometric functions and the above relationships (not including general solution of trigonometric equations) 6- proving simple trigonometric identities Connection- Physics - Wave functions and periodic functions
Permutations and combinations 20 sessions @ 40 min	Relationships	Patterns	Personal and cultural expression Exploration- Appreciating the complex arrangements in surroundings simplified by mathematics	Developed patterns based on generalized relations can lead to better expressions	A- Knowing and understanding D- Applying Mathematics to Real Life context	Research skills Information Literacy Social skills Collaboration Lerner Profile: Knowledgeable Thinker	1- distinguishing between a permutation case and a combination case 2- the notation $n!$ (with $0! = 1$), and the expressions for permutations and combinations of n items taken r at a time 3- simple problems on arrangement and selection

EXTENDED MATH MYP 5

MYP YEAR 5 EXTENDED MATHEMATICS							
Unit title	Key concept	Related concept(s)	Global context	Statement of inquiry	MYP subject group objective(s)	ATL skills and Learner Profiles	Content (topics, knowledge, skills)
Binomial expansions 20 sessions @ 40 min.	Logic	Patterns, Generalization	Orientation in space and time Exploration- the fact that properties of Pascal's triangle were known in a number of different cultures long before Pascal	Mathematical patterns observed over a period of time can be generalized logically	A- Knowing and understanding C- Communicating	Research Skills Information Literacy Learner Profile: Inquirer Communicator	1- Use the Binomial Theorem for Expansion of $(ax+b)^n$ for positive integral n 2- use of the general term (n,r,a,b)
Vectors in 2 dimensions 40 sessions @ 40 min	Form	Representation	Scientific and technical innovation Exploration- Application of the mathematical concepts to real life situations like interception	Using different forms of representation can help to make more successful journeys	A- Knowing and understanding D- Applying mathematics in real-life contexts	Thinking skills Critical Transfer Learner Profile: Thinker Communicator	1- Different forms of vectors, use of position vectors and unit vectors. • finding the magnitude of a vector; adding and subtracting vectors and multiplying vectors by scalars 2- composing and resolving velocities 3- use of relative velocity, including solving problems on interception connection- with science (physics) Vector and Scalar quantities
Matrices 20 sessions @ 40 min	Relationships	System Representation	Scientific and technical innovation Exploration- Application of mathematical systems (matrices) to organize the information in an easily understandable form.	Representing a system of relationships can help us understand how to make better use of resources	A- Knowing and understanding B- Investigating Patterns	Thinking skills Cluster: Transfer Skills Learner Profile: Knowledgeable	1-displaying information in the form of a matrix of any order and Interpreting the data in a given matrix 2- solving problems involving the calculation of the sum and product (where appropriate) of two matrices and interpreting the results 3- calculating the product of a scalar quantity and a matrix 4- using the algebra of 2×2 matrices (including the zero and identity matrix) 5- calculating the determinant and inverse of a non-singular 2×2 matrix and solving simultaneous linear equations
Calculus 80 sessions @ 40 min	Relationships	Model Representation	Scientific and technical innovation Exploration- Application of mathematical	Using a model to represent a relationship can improve	A- Knowing and understanding B- Investigating Patterns C- Communicating	Thinking skills Critical Thinking Skills Transfer	1- Understand the idea of derived function 2- use of notations 3- Use of derivatives of the standard functions and composite functions 4- Differentiate products and quotients of functions

			<p>concepts to real life situations like optimization problems, connected rates of change, kinematics etc</p>	<p>decision making</p>	<p>D- Applying mathematics in real-life contexts</p>	<p>Skills Learner Profile: Thinker</p> <p>Knowledgeable</p>	<p>5- Apply the Differentiation to gradients, tangents and normals, stationary points, connected rates of change, small increments and approximations and practical maxima and minima problems</p> <p>6- discriminate between maxima and minima by any method</p> <p>7- Understand integration as the reverse process of differentiation</p> <p>8- Integrate sums of terms in powers of x excluding $1/x$</p> <p>9- Integrate functions of the form $(ax+ b)^n \sin(ax+b)$, $\cos(ax+b)$, $e^{(ax+b)}$</p> <p>10- Evaluate definite integrals and apply integration to the evaluations of plane areas</p> <p>11- Apply differentiation and integration to Kinematics problems that involve displacement, velocity and acceleration of a particle moving in a straight line with variable or constant acceleration and the use of X-t and V - t Graphs</p> <p>connection- Physics- Kinematics</p> <p>Economics - Optimisation problems</p>
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