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| **Unit title** | **Key concept** | **Related concepts** | **Global context** | **Statement of inquiry** | **MYP subject group objectives** | **ATL skills** | **Content (topics, knowledge, skills)** |
| Numbers – number systems, operations with whole numbers, number properties, directed numbers  (PMYP) | Form | Communication | Scientific and technical innovation | Numbers have life; they are not just symbols on the paper  Shakuntala Devi | A – all strands | Thinking  Self management  Social  Communication | * Number systems * Operations with whole numbers and their properties, bedmas * Number lines * Rounding, estimating * Powers, factors and divisibility tests * Prime and composite numbers * Oppositesoperations with negative numbers |
| Numbers – Fractions, operations with fractions, decimals, operations with decimals  (PMYP) | Relationships | Simplification | Fairness and developement | Forms could be changed through simplification. | A – all strands | Thinking  Self management  Social  Communication | Students will know how to represent, compare, simplify fractions and decimals and how to perform operations with them. |
| Numbers –Percentage, using percentages  (PMYP) | Change | Quantity | Globalization and sustainability | Generalizing changes in quantity helps establish relationships that can model duration, frequency and variability | C – all strands  D – all strands | Thinking  Self management  Social  Communication | Students will know how to convert percentages into decimals and fractions, to calculate a percentage of quantities. |
| Numbers –measurement  (PMYP) | Time, place and space | Measurement | Scientific and technical innovation | Generalizing changes in quantity helps establish relationships that can model duration, frequency and variability | D - all strands | Thinking  Self management  Social  Communication | Students will know standard unit measurements |
| Geometry – points, lines and angles, polygons  (PMYP) | Communities | Space, system | Personal and cultural expression | There is geometry in the humming of the strings, there is music in the spacing of the spheres.  Pythagoras | A – all strands  C – all strands  B – all strands | Thinking  Self management  Social  Communication | * Points and lines * Angles: classifying, measuring, naming * Angles at a point, angles on a line * Angles of a triangle * Angles of a quadrilateral * Construction of angle bisector * Construction of some particular angles * Polygons, basic concepts * Triangles * Triangles, various constructions * Quadrilaterals * Quadrilaterals, various constructions   Euler´s rule for plane figures |
| Geometry – area, volume, capacity  (PMYP) | Logic | Models | Fairness and developement | Generalizing and applying relationships between measurements in space can help define where and when. | C – all strands | Thinking  Self management  Social  Communication | Students will know how to calculate the area of triangle and rectangle, volume and capacity of rectangular solids, prisms |
| Geometry – solids and polyhedral  (PMYP) | Perspective | Patterns | Identities and relationships | Space. The final frontier  Star Trek | B – all strands | Thinking  Self management  Social  Communication | Students will know the main types of solids, how to draw them or their nets and to find their projections |
| Geometry – location  (PMYP) | Connections | Representation | Orientation in space and time | Begin at the beginning, the King said, very gravely, and go on till you come to the end: then stop.  Lewis Carrol, Alice in Wonderland | D – all strands | Thinking  Self management  Social  Communication | Students will know how to determine location by map references, in Cartesian plane or by bearings |
| Statistics – data, collection and representation  (PMYP) | Developement | Representation | Personal and cultural expression | Generalizing and representing relationships, can help to claryfy trends among individuals. | C – all strands | Thinking  Self management  Social  Communication | Students will know the basic concepts of statistic research and representation of data |
| Algebra – algebra and patterns, equations, problem solving  (PMYP) | Connections | Patterns | Identities and relationships | Using different forms to generalize and justify patterns can help improve products, processes and solutions. | B – all strands  D – all strands | Thinking  Self management  Social  Communication | Students will know the basic concepts of algebra, how to use formulas and solve simple linear equations. |
| Algebra: Patterns and models  (MYP1) | Aestetics | Patterns | Scientific and technical innovation | Let us teach guesing  George Poyla | B – all strands | Thinking  Self management  Social  Communication | * Geometric patterns * Number crunching machines * Formulas, substituting into formulas * Constructing formulas, practical problems * Number sequences |
| Algebra:Expressions and evaluation, expansion and factorization, algebraic fractions, equations, problem solving  (MYP1) | Change, relationships | Simplification, model | Identities and relationships | Art is a fire plus algebra.  Jorge Luis Borges | A - all strands  C – all strands  D – all strands | Thinking  Self management  Social  Communication | Students will know:  How to expand and factorise expressions using distribuitve law  How to solve linear equation  How to construct an equation and interpret in mathematic way some real life situations |
| Algebra: Line graphs  (MYP1) | Connections | Representation | Globalization and sustainability | Modeling with equivalent forms of representation can improve decision making. | C – all strands | Thinking  Self management  Social  Communication | Students will know how to draw and interpret different sorts of graphs. |
| Numbers: whole numbers, properties of numbers, fractions, decimal numbers  (MYP1) | Form | Quantity | Scientific and technical innovation | Numbers have life; they are not just symbols on the paper  Shakuntala Devi | A – all strands | Thinking  Self management  Social  Communication | Students will differentiate natural, whole and rational numbers. They will know their properties and will know to perform arithmetc operations with them. |
| Numbers: Percentage, ratio and proportion, rates  (MYP1) | Change | Justification | Identities and relationships | If it takes musicians one hour to play Beethoven´s Third symphony, how long will it take musicians to play the same symphony?  Anonymous | D – all strands | Thinking  Self management  Social  Communication | Stiudents will solve problems from real life. |
| Geometry and trigonometry: angle, lines, parallelism, polygons, circles, length and area  (MYP1) | Logic | Generalization | Personal and cultural expression | There is geometry in the humming of the strings, there is music in the spacing of the spheres.  Pythagoras | A – all strands  B – all strands | Thinking  Self management  Social  Communication | Students will know how to construct perpendicular line bisector, angle pairs |
| Geometry and trigonometry: the geometry of solids, further measurement  (MYP1) | Creativity | Measurement | Orientation in space and time | Space. The final frontier  Star Trek | C – all strands  B – all strands | Thinking  Self management  Social  Communication | Students will be aware of 3rd dimension, will know how to draw rectangular solids and their nets, how to calculate the volume and capacity of some solids. |
| Statistics and probability: Chance, statistics  (MYP1) | Global interaction | System | Fairness and develompement | Generalizing and representing relationships, can help to claryfy trends among individuals. | A all strands  D – all strands | Thinking  Self management  Social  Communication | Students will know the difference between numerical and categorical data and will know how and when to calculate and use different averages (mean, median, mode) |
| Algebra: Equations and Simultaneous Equations  (MYP2) | Relationships | Quantity | Personal and cultural expression | Chemists should use proper mixtures in their research. | A – i, ii  D – i, ii, iii, iv, v | Thinking  Self management  Communication  Research | Stiudents will solve problems from real life – mixture problems |
| Number: Irrational numbers – square roots  (MYP2) | Logic | Equivalence | Scientific and technical innovation | Where does the square root of two lie on the number line? | A – all strands  B – all strands | Thinking  Self management  Social  Communication | Students will perform all four basic operations with square roots. |
| Geometry and trigonometry: The Pythagorean theorem.  (MYP2) | Form | Measurement | Orientation in space and time | Right angles are all around us. | A – all strands  C – all strands  D – all strands | Thinking  Self management  Social  Communication | Students will invent their own problems taken from the world around them. |
| Statistics and probability: Sets  (MYP2) | Logic | System | Fairness and develompement | Amounts can divided into sets. | A - all strands  B – all strands  C – all strands | Thinking  Self management  Communication | Students will solve various problems with the help of Venn diagrams. |
| Algebra – quadratic function  (MYP3) | Relationships | Model | Scientific innovations – specific exploration: relation between coefficients under certain conditions | Bridge builders use parabolas. | A – all strands  B – all strands  C – all strands  D – all strands | Thinking  Self management  Social  Communication  Research | Students will be able to use various expressions of quadratic function (general form, x-intercept form, vertex form).  Students will use their knowledge swhen dealing with real-life situation (finding an equation that describes the arc of a parabola – bridge) |
| Algebra – notation, expansion and simplification, linear equations and linear simultaneous equations  (MYP3) | Change, relationships | Simplification, model | Identities and relationships | Art is a fire plus algebra.  Jorge Luis Borges | B – all strands  C – all strands  D – all strands | Thinking  Self management  Social  Communication | * Algebraic notation and substitution * Collecting like terms, product notation * The distributive law and application on the products * Difference of two squares * Perfect square expansion * The binomial expansion * Linear equations and inequations * Linear simultaneous equations   Problem solving |
| Algebra – Algebraic fractions  (MYP3) | Form | Patterns | Identities and relationships | Using different forms to generalize and justify patterns can help improve products, processes and solutions. | A – all strands | Thinking  Self management  Social  Communication | Students will apply their fraction knowledge and factorising skills to operate with algebraic fractions |
| Algebra – Quadratic equations and functions  (MYP3) | Connections | Models | Scientific and technical innovation | Representing change and equivalence in a variety of forms has helped humans apply our understanding of scientific principles. | D – all strands  C – all strands | Thinking  Self management  Social  Communication | Students will know how to solve quadratic equation and plot the graph of a quadratic function. |
| Geometry and trigonometry – Coordinate geometry  (MYP3) | Communication | Justification | Personal and cultural expression | Begin at the beginning, the King said, very gravely, and go on till you come to the end: then stop.  Lewis Carrol, Alice in Wonderland | A – all strands | Thinking  Self management  Social  Communication | Students will know how to express distance, coorinates of midpoint, calculate and interpret gradient and how to write equation of a line. |
| Geometry and trigonometry –Right angled and non right angled trigonometry  (MYP3) | Systems | Generalization | Orientation in space and time | Generalizing and applying relationships between measurements in space can help define where and when. | B – all strands  D – all strands | Thinking  Self management  Social  Communication | Students will know how to calculate trigonometric functions of angles and how to apply trigonometry in real life situations by using sine and cosine rules. |
| Geometry and trigonometry – Deductive Geometry  (MYP3) | Creativity | Justification | Personal and cultural expression | Logic can justify generalizations that increase our approach to aestetic. | B – all strands | Thinking  Self management  Social  Communication | Students will learn circle theorems, midpoint theorem and investigate congruence and similarity, |
| Geometry and trigonometry – vectors  (MYP3) | Time, place and space | Change | Orientation in space and time | The radius vector describes equal areas in different times.  Johannes Kepler | A – all strands | Thinking  Self management  Social  Communication | Students will gain basic concepts of vectors |
| Statistics and Probability – Probability, tree diagrams, binomial probabilities  (MYP3) | Logic | Patterns | Globalization and sustainability | Generalizing and representing relationships, can help to claryfy trends among individuals. | A – all strands | Thinking  Self management  Social  Communication | Students will face various probability tasks and methods |
| Statistics and Probability – Statistics, comparing numerical data  (MYP3) | Form | Measurement | Fairness and develompement | Generalizing and representing relationships, can help to claryfy trends among individuals. | D - all strands | Thinking  Self management  Social  Communication | Students will know how to measure the spread of data, to plot box and whisker diagram, to work with grouped continuous data and cumulative data, to compare graphicaly represented data |
| Numbers – Indices and surds  (MYP3) | Relationships | Equivalence | Globalization and sustainability | Forms could be changed through simplification. | B – all strands | Thinking  Self management  Social  Communication | Students will gain skills to operate with inices and surds |
| Numbers – Sets and Venn diagrams  (MYP3) | Form | Systems | Identities and relationships | Generalizing changes in quantity helps establish relationships that can model duration, frequency and variability | C – all strands | Thinking  Self management  Social  Communication | Students will know basic concepts of The theory of sets |
| Number – sequences and series  (MYP4) | Relationships -relationships between the Fibonacci sequence and the golden ratio | Change -  investigating patterns in special sequences | Orientation in space and time | Mother nature loves maths! | A – i, ii, iii  B – i, ii, iii  C – all strands  D – all strands | Thinking  Research  Social  Communication  Research | Students will find basic formulae for AS and GS; they will create a poster on which they mention relationships between FS and golden ratio; they will find patterns in sequences of triangle numbers, square numbers, ... |
| Geometry – Sine and Cosine Rule  (MYP4) | Form | Measurement | Identities and relationships | We can find out everything about any triangle | A, D – all strands | Thinking  Self management  Social  Communication  Research | Students will apply their knowledge to solve any triangle. |
| Probability – Conditional probability, Binomial distribution  (MYP4) | Logic | Generalization | Fairness and development | Success and failure. | A – all strands  C – all strands | Thinking  Self management  Social  Communication  Research | Students will know how to distinguish binomial distribution problems. |
| Algebra – modulus function, transformations of functions.  (MYP4) | Relationships | Representation | Personal and cultural expression | Lines as mirrors | A – all strands  B – all strands | Thinking  Self management  Social  Communication  Research | Students will be able to perform translation, reflection, rotation. |
| Number: Logic  (MYP5) | Identity | Justification | Identities and relationships | Do we really need to prove? | A – all strands  B – all strands | Thinking  Self management  Research | Negation  Truth tables  Divisibility |
| Algebra: Exponential and logarithmic function  (MYP5) | Relationships | Pattern | Globalization and sustainability | When will the money on the account double? | A – all strands  C – all strands  D – all strands | Thinking  Social  Communication  Research | Students should be able to:  Solve easy exponential and logarithmic equations  Deal with various problem whose solution is based on exponential growth and decay. |
| Trigonometry: Sine and cosine functions  (MYP5) | Form | Representation | Orientation in space and time | When can a boat enter the harbour? | A – all strands  B – all strands  C – all strands  D – all strands | Thinking  Self management  Social  Communication  Research | Students should know:  how to solve simple and more difficult trigonometric equations.  How to read sinusoids properly. |
| Probability: Probability distributions.  (MYP5) | Logic | Quantity | Fairness and development | When do I go even in the game? | A - all strands | Thinking  Self management  Social  Research  Communication | Students should be able to:  Distinguish probability distributions. |