# Mathletics NSW Curriculum Activities (Courses) and Skill Quests 


Catiact


Stage 5
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## Stage 5 - Core

## 1 Number and Algebra

| Financial mathematics A: MA5-FIN-C-01 <br> Solves financial problems involving simple interest, earning money and spending money |  |
| :---: | :---: |
| Skill Quests | Skills |
| Solve problems involving simple interest | Calculating simple interest |
| Solve problems involving spending money | Understanding hire purchase agreements |
| Course Topic | Activities Title |
| Income and simple interest | Wages and Salaries |
|  | Calculating Income Tax |
|  | Deductions and Tax Instalments |
|  | Net Pay |
|  | Working Overtime |
|  | Special Allowances |
|  | Commission |
|  | Bonuses and Leave Loading |
|  | Piecework and Royalties |
|  | Simple Interest |
| Spending money | Purchase Options |
|  | Credit Card Repayments |
|  | Comparing Loans |
|  | Comparing Home Loans |


| Financial mathematics B: MA5-FIN-C-02 <br> Financial mathematics (B): MA5-FIN-C-02 |  |
| :---: | :---: |
| Skill Quests | Skills |
| Compound \& simple interest | Calculating compound interest |
|  | Solving problems with compound interest |
|  | Comparing simple \& compound interest |
| Appreciation \& depreciation | Understanding appreciation |
|  | Understanding depreciation |
| Course Topic | Activities Title |
| Compound interest and depreciation | Compound Interest |
|  | Compound Interest by Formula |
|  | Future Value of Investments 1 |
|  | Future Value of Investments 2 |
|  | Straight Line Depreciation |
|  | Depreciation |
|  | Declining Balance Depreciation |


| Algebraic techniques A: MA5-ALG-C-01 |  |
| :--- | :--- |
| Simplifies algebraic fractions with numerical denominators and expands algebraic expressions |  |
| Skill Quests | Skills |
| Use 4 operations in <br> algebraic fractions | Algebraic fractions with numerical denominators |
| Apply the distributive law to <br> expand | Expanding expressions by removing brackets |
| Course Topic | Expanding binomial products using area model |
| Simplifying algebraic <br> fractions |  |
| Algebraic expansion Title |  |
|  | Algebraic Fractions 1 |
|  | Algebraic Fractions 2 |
|  | Expanding with Negatives |
|  | Expand then Simplify |
|  | Expanding Binomial Products |

## Indices A: MA5-IND-C-01

Simplifies algebraic expressions involving positive-integer and zero indices, and establishes the meaning of negative indices for numerical bases

| Skill Quests | Skills |
| :--- | :--- |
| Apply index laws using <br> positive indices | Index law for multiplication |
|  | Index law for division |
|  | Index law for a power of a power |
|  | Zero index law |
| Simplify expressions using <br> index laws | Mixed operations with indices including zero |
|  | Mixed operations with positive indices |
|  | Evaluating numerical expressions (negative index) |
|  | Index Notation and Algebra |
|  | Multiplication with Indices Title |
|  | Index Laws and Algebra |
|  | Index Laws with Brackets |
|  | Zero Index and Algebra |
|  | Negative Indices |

## Equations A: MA5-EQU-C-01

Solves linear equations of up to 3 steps, limited to one algebraic fraction

| Skill Quests |  |
| :--- | :--- |
| Solve linear equations up to <br> 3 steps | Solving linear equations up to 3 steps |
|  | Solving equations with one algebraic fraction |
|  | Solving linear equation word problems |
| Activities Title |  |
|  |  |
|  | Equations with Grouping Symbols |
|  | Equations with Fractions |
|  | Equations to Solve Problems |
|  | Checking Solutions |
|  | Real Formulae |


| Linear relationships A: MA5-LIN-C-01 <br> Determines the midpoint, gradient and length of an interval, and graphs linear relationships, with and without digital tools |  |
| :---: | :---: |
| Skill Quests | Skills |
| Midpoint \& gradient of a line segment | Calculating gradient without the formula |
|  | Calculating midpoint without the formula |
| Find the distance between 2 points | Distance between 2 points without the formula |
| Recognise \& graph equations | Graphing equations using a table of values |
|  | Identifying the equation of a line as $\mathrm{y}=\mathrm{mx}+\mathrm{c}$ |
| Parallel, horizontal \& vertical lines | Examining parallel lines |
|  | Examining horizontal lines |
|  | Examining vertical lines |
| Course Topic | Activities Title |
| Linear relationships | Slope of a line |
|  | Midpoint by formula |
|  | Distance Between Two Points |
|  | Intercepts |
|  | Pattern Rules and Tables |
|  | Graphing from a Table of Values |
|  | Are they Parallel? |
|  | Horizontal and Vertical Lines |


| Linear relationships B: MA5-LIN-C-02 <br> Graphs and interprets linear relationships using the gradient/slope-intercept form |  |
| :---: | :---: |
| Skill Quests | Skills |
| Use the gradient-intercept form | Graphing lines using the gradient-intercept form |
| Equation of parallel/perpendicular lines | Examining parallel \& perpendicular lines |
|  | Calculating the equation of parallel lines |
|  | Calculating the equation of perpendicular lines |
| Course Topic | Activities Title |
| Equation of a line | Equation of a Line 1 |
|  | General Form of a Line |
|  | Which Straight Line? |
|  | Modelling Linear Relationships |
|  | Are they Perpendicular? |
|  | Perpendicular and parallel lines |
|  | Equation of a Line 3 |

## Non-linear relationships A: MA5-NLI-C-01

Identifies connections between algebraic and graphical representations of quadratic and exponential relationships in various contexts

| Skill Quests | Skills |
| :--- | :--- |
| Link algebra \& the graph of <br> quadratics | Graphing quadratic relationships |
| Link algebra \& the graph of <br> exponentials | Graphing exponential relationships |
| Course Topic |  |
| Non-linear relationships A | Graphing Parabolas |


|  | Quadratic Equations 1 |
| :--- | :--- |
|  | Monic Quadratic Trinomial Equations |
|  | Equations: Simple quadratics |
|  | Checking Quadratic Solutions |
|  | Simple Quadratic Equations - How Many Solutions? |
|  | Graphing Exponentials |

## Non-linear relationships B: MA5-NLI-C-02

Identifies and compares features of parabolas and exponential curves in various contexts

| Skill Quests | Skills |
| :--- | :--- |
| Graph quadratic <br> relationships | Examining quadratic relationships |
| Graph exponential <br> relationships | Examining exponential relationships |
| Distinguish linear \& non- <br> linear graphs | Distinguishing between linear \& non-linear graphs |
| Course Topic |  |$\quad$| Activities Title |
| :--- |
| Non-linear relationships B | | Parabolas and Marbles |
| :--- |
|  |
|  |

## Numbers of any magnitude: MA5-MAG-C-01

Solves measurement problems by using scientific notation to represent numbers and rounding to a given number of significant figures

| Skill Quests | Skills |
| :---: | :---: |
| Identify very small \& large measurements | Representing small \& large numbers |
| Find percentage error | Calculating percentage error |
| Round numbers to a specified accuracy | Identifying the number of significant figures |
|  | Rounding to number of significant figures |
| Express numbers in scientific notation | Introducing scientific notation |
|  | Numbers with prefixes to scientific notation |
|  | Converting between scientific notation \& numbers |
|  | Rounding with scientific notation |
|  | Calculating in scientific notation |
| Course Topic | Activities Title |
| Numbers of any magnitude | Error in Measurement |
|  | Percentage Error |
|  | Rounding Significant Figures |
|  | Scientific Notation |
|  | Ordering Scientific Notation |
|  | Scientific Notation to Decimal |

## 2 Measurement and Space

| Applies trigonometric ratios to solve right-angled triangle problems |  |
| :--- | :--- |
| Skill Quests |  | Skills

Trigonometry B: MA5-TRG-C-02
Applies trigonometry to solve problems, including bearings and angles of elevation and depression

| Skill Quests | Skills |
| :--- | :--- |
| Solve elevation/depression <br> trig problems | Calculating the angle of elevation or depression |
| Solve trig problems with <br> bearings | Solving trig problems with compass bearings |
| Course Topic | Solving trig problems with true bearings |
| Applications of <br> trigonometry | Activities Title |
|  | True and Compass Bearings |
|  | Bearings |
|  | Trigonometry Problems 2 |

## Area and surface area A: MA5-ARE-C-01

Solves problems involving the surface area of right prisms and practical problems involving the area of composite shapes and solids

| Skill Quests | area of composite shapes and solids |
| :--- | :--- |
| Solve problems involving <br> areas | Calculating area of composite shapes |
|  | Connecting surface area of right prism with nets |
|  | Solving problems involving surface areas |
|  | Calculating surface area of cylinders |
|  | Calculating surface area of composite solids |
| Course Topic |  |
| Surface area of right prisms <br> and cylinders | Area: Composite Shapes |
|  | Nets |
|  | Surface Area: Rectangular Prisms |
|  | Surface Area: Triangular Prisms |
|  | Surface Area: Cylinders |

Volume A: MA5-VOL-C-01
Solves problems involving the volume of composite solids consisting of right prisms and cylinders

| Skill Quests |  |
| :--- | :--- |
| Volume of composite solids | Solving volume problems involving composite solids |
|  | Solving volume problems involving cylinders |
| Course Topic | Activities Title |
| Volume of composite <br> figures | Volume: Composite Figures |

## Properties of geometrical figures A: MA5-GEO-C-01

Identifies and applies the properties of similar figures and scale drawings to solve problems

| Skill Quests | Skills |  |  |  |
| :--- | :--- | :---: | :---: | :---: |
| Identify properties of similar <br> figures | Identifying similar figure properties |  |  |  |
| Use scale factors in similar <br> figures | Applying scale factor to enlarge/reduce polygons |  |  |  |
|  | Applying scale factors to polygons |  |  |  |
|  | Applying scale factors to triangles |  |  |  |
| Course Topic |  |  |  |  |
|  | Similar figures |  |  |  |
|  | Similar Figures 1 Tigures |  |  |  |
|  | Scale Factor |  |  |  |
|  | Similar Triangles |  |  |  |

## 3 Statistics and Probability

| Data analysis A: MA5-DAT-C-01 <br> Compares and analyses datasets using summary statistics and graphical representations |  |
| :---: | :---: |
| Skill Quests | Skills |
| Use standard deviation to measure spread | Calculating standard deviation |
|  | Comparing data using mean \& standard deviation |
| Use quartiles \& interquartile range | Determining quartiles \& interquartile range |
| Represent data using box plots | Constructing \& interpreting box plots |
|  | Comparing box plots |
| Course Topic | Activities Title |
| Summary statistics | Calculating Standard Deviation |
|  | Data Terms |
|  | Calculating Interquartile Range |
|  | Box-and-Whisker Plots 1 |
|  | Box-and-Whisker Plots 2 |
|  | Skewness of Data |

## Data analysis B: MA5-DAT-C-02

Displays and interprets datasets involving bivariate data

| Skill Quests |  |  | Skills |
| :--- | :--- | :---: | :---: |
| Understand bivariate data | Identifying \& describing bivariate data |  |  |
|  | Constructing \& interpreting scatter plots |  |  |
|  | Determining the line of best fit |  |  |
| Course Topic | Activities Title |  |  |
| Bivariate data | Data Analysis: Scatter Plots |  |  |
|  | Correlation |  |  |

Probability A: MA5-PRO-C-01
Solves problems involving probabilities in multistage chance experiments and simulations

Skill Quests
The fundamental counting principle
Independent \& dependent events
Solve multistage chance experiments

Course Topic
Chance experiments

Skills
Understanding the fundamental counting principle
Understanding independent \& dependent events
2-step chance experiments with replacement
2-step chance experiments without replacement
3 -step chance experiments with replacement
3-step chance experiments without replacement
Activities Title
Probability With Replacement
Probability Without Replacement
Tree Diagrams

## Stage 5 - Path

## 1 Number and Algebra

| Variation and rates of change A (Path): MA5-RAT-P-01 <br> Identifies and solves problems involving direct and inverse variation and their graphical representations (Path: Stn, Adv) |  |
| :---: | :---: |
| Skill Quests | Skills |
| Identify direct \& inverse variation | Understand direct \& inverse proportion |
|  | Representing the constant of proportionality |
|  | Describing graphs of direct \& inverse proportion |
|  | Solving direct/inverse proportion problems |
|  | Interpreting \& using conversion graphs |
|  | Graphing equations of direct proportion |
| Course Topic | Activities Title |
| Direct \& inverse variation | Solve proportions |
|  | Ratio and Proportion |
|  | Rates Word Problems |
|  | Average speed |
|  | Distance Travelled |
|  | Time taken |
|  | Converting Rates |
|  | Rates |
|  | Travel graphs |


| Variation and rates of change B (Path): MA5-RAT-P-02 <br> Analyses and constructs graphs relating to rates of change (Path: Adv) |  |
| :--- | :--- |
| Skill Quests |  |$\quad$ Skills | Interpreting \& sketching travel graphs |
| :--- |
| Analyse rate of change <br> graphs |
| Course Topic |
| Rate of change |


| Algebraic techniques B (Path): MA5-ALG-P-01 <br> Simplifies algebraic fractions involving indices, and expands and factorises algebraic <br> expressions (Path: Adv) |  |
| :--- | :--- |
| Skill Quests |  |
| Use 4 operations in <br> algebraic fractions | Algebraic fractions with pronumeral denominators |
| Factorise by removing the <br> common factor | Factorising by removing the common number |
|  | Factorising by removing common letters (\& powers) |
|  | Factorising by removing the HCF (number \& letters) |
| Expand binomial products | Expanding binomial products |
| Factorise monic quadratic <br> trinomials <br> Course Topic | Factorising monic quadratic trinomials <br> Algebraic expressions |


|  | Algebraic Fractions 3 |
| :---: | :---: |
|  | Highest Common Algebraic Factor |
|  | Factorising with Indices |
|  | Expanding Binomial Products |
|  | Grouping in Pairs |
|  | Factorising Quadratics 1 |

## Algebraic techniques C (Path): MA5-ALG-P-02

Selects and applies appropriate algebraic techniques to operate with algebraic fractions, and expands, factorises and simplifies algebraic expressions (Path: Adv)

| Skill Quests | Skills |
| :---: | :---: |
| Expand algebraic expressions | Expanding expressions with special products |
| Factorise algebraic expressions | Factorising using difference of 2 squares |
|  | Factorising non-monic quadratic expressions |
|  | Factorising using perfect squares |
|  | Factorising quadratic trinomials |
| Simplify algebraic expressions | Simplifying binomial expansions |
|  | Simplifying algebraic fractions by factorising |
| Course Topic | Activities Title |
| Advanced algebraic expressions | Simplifying Algebraic Fractions by Factorising |
|  | Partial Fractions |
|  | Factorising and Fractions 1 |
|  | Factorising and Fractions 2 |
|  | Special Binomial Products |
|  | Factorising Quadratics 2 |
|  | Completing the Square |
|  | Completing the Square 2 |
|  | Sum and Difference of Cubes |

## Indices B (Path): MA5-IND-P-01

Applies the index laws to operate with algebraic expressions involving negative-integer indices (Path: Adv)

## Skill Quests

Index laws with negativeinteger indices

Course Topic
Indices

Skills
Algebraic expressions with negative indices Evaluating expressions with negative index

Activities Title
Multiplication and Division with Indices Simplifying with Index Laws 2

| Indices C (Path): MA5-IND-P-02  <br> Describes and performs operations with surds and fractional indices (Path: Adv)  <br> Skill Quests  |  |
| :--- | :--- |
| Describe surds | Understanding rational \& irrational numbers |
|  | Converting between recurring decimals \& fractions |
|  | Introduction to surds |
| Solve problems using <br> knowledge of surds | Understanding surd rules |
|  | Simplifying surds |
|  | Adding \& subtracting surds |


|  | Multiplying \& dividing surds |
| :---: | :---: |
|  | Expanding brackets with surds |
|  | Rationalising the denominator |
|  | Solving problems involving surds |
| Describe \& use fractional indices | Converting surd to index form |
| Course Topic | Activities Title |
| Surds and fractional indices | Simplifying Surds |
|  | Adding and Subtracting Surds |
|  | Multiplying Surds |
|  | Expanding Surd Expressions |
|  | Surd Form to Index Form |
|  | Dividing Surds |
|  | Expanding Binomial Surds |
|  | Fractional Indices |

Equations B (Path): MA5-EQU-P-01
Solves monic quadratic equations, linear inequalities and cubic equations of the form (Path: Adv)

Skill Quests
Solve monic quadratic equations
Solve cubic equations
Solve linear inequalities

Skills
Solving monic quadratic equations

Solving cubic equations
Understanding inequalities
Solving 1 step linear inequalities
Solving 2 step linear inequalities
Solving 3 step linear equalities
Activities Title
Quadratic Equations 1
Quadratic Equations 2
Monic Quadratic Equations by Factorising
Monic Quadratic Trinomial Equations
Simple Quadratic Equations - How Many Solutions?
Equations: Simple quadratics
Graphing Inequalities 3
Teacher directed

Equations C (Path): MA5-EQU-P-02
Solves linear equations of more than 3 steps, monic and non-monic quadratic equations, and linear simultaneous equations (Path: Adv)

| Skill Quests |  |
| :--- | :--- |
| Linear equations with <br> algebraic fraction | Solving linear equations with algebraic fractions |
|  | Solving non-monic quadratic equations |
|  | Solving equations by completing the square |
|  | Solving equations with quadratic formula |
|  | Solving a variety of quadratic equations |
|  | Identifying the number of distinct solutions |
|  | Solving quadratic equation word problems |
| Solve simultaneous <br> equations | Solving simultaneous equations algebraically |
|  | Solve simultaneous equations graphically |

Course Topic

## Activities Title

Advanced algebraic
equations

Solving More Equations
Solve Multi-Step Equations
Equations: Variables, Both Sides
Checking Quadratic Solutions
Nature of Solutions of Quadratics
Simultaneous Linear Equations
Simultaneous Equations 1
Simultaneous Equations 2
Solve Systems by Graphing

## 2 Measurement and Space

| Linear relationships C (Path): MA5-LIN-P-01 <br> Describes and applies transformations, the midpoint, gradient/slope and distance formulas, and equations of lines to solve problems (Path: Adv) |  |
| :---: | :---: |
| Skill Quests | Skills |
| Midpoint \& gradient using the formula | Calculating midpoint with the formula |
|  | Calculating gradient with the formula |
| Find distance using the formula | Calculate distance between 2 points with a formula |
| Find the equation of a straight line | Finding \& using x and y -intercepts |
|  | Finding the equation of a line |
|  | Finding equation of parallel/perpendicular lines |
| Solve problems with coordinate geometry | Solving problems with coordinate geometry formulas |
|  | Identifying line \& rotational symmetry |
|  | Describing transformations on the Cartesian plane |
| Course Topic | Activities Title |
| Linear relationships | Midpoint by Formula |
|  | Distance Between Two Points |
|  | Gradient |
|  | Equation from Point and Gradient |
|  | Equation from Two Points |
|  | Perpendicular and parallel lines |
|  | Are they Perpendicular? |
|  | Perpendicular Distance 1 |
|  | Perpendicular Distance 2 |

## Non-linear relationships C (Path): MA5-NLI-P-01

Interprets and compares non-linear relationships and their transformations, both algebraically and graphically (Path: Adv)

| Skill Quests | Skills |  |  |  |
| :--- | :--- | :---: | :---: | :---: |
|  <br> transformations | Graphing parabola \& describing features |  |  |  |
|  | Finding x- and y-intercepts of parabolas |  |  |  |
|  | Determining the vertex \& axis of symmetry |  |  |  |
|  | Graphing parabolas |  |  |  |
|  | Describing parabolas \& their transformations |  |  |  |
|  | Graphing exponentials |  |  |  |
|  | Describing exponentials \& their transformations |  |  |  |
|  <br> transformations | Graphing hyperbolas |  |  |  |
|  <br> transformations | Describing hyperbolas \& their transformations |  |  |  |
| Distinguish between <br> different graphs | Graphing circles |  |  |  |
|  | Course Topic |  |  |  | Describing circles \& their transformations |
|  | Sketching different types of graphs |  |  |  |
|  | Vertex of a Parabola |  |  |  |
|  | Graphing Parabolas |  |  |  |
|  | Graphing Exponentials Title |  |  |  |
|  | Graphing Hyperbolas |  |  |  |
|  | Graphing Circles |  |  |  |


|  | Non Linear Graphs |
| :--- | :--- |
|  | Identifying graphs |

## Polynomials (Path): MA5-POL-P-01

Defines, operates with and graphs polynomials and applies the factor and remainder theorems to solve problems (Path: Adv, Ext)

| Skill Quests | Skills |
| :--- | :--- |
| Define \& operate with <br> polynomials | Understanding polynomial terms |
|  | Performing operations with polynomials |
| Divide polynomials | Dividing a polynomial by a linear polynomial |
|  <br> remainder theorems | Solving problems using factor \& remainder theorems |
| Graph polynomials | Identifying polynomials |
|  | Graphing polynomials |
| Course Topic | Activities Title |
| Polynomials | Polynomial Long Division |
|  | Polynomial Factor Theorem |

Logarithms (Path): MA5-LOG-P-01
Establishes and applies the laws of logarithms to solve problems (Path: Adv)

| Skill Quests |  |  |  |  |
| :--- | :--- | :---: | :---: | :---: |
| Examine logarithms <br> numerically | Defining \& evaluating logarithms |  |  |  |
| Examine logarithms <br> graphically | Log graphs \& the relationship with exponentials |  |  |  |
| Establish \& apply the laws <br> of logarithms | Deducing log rule from multiplication of indices |  |  |  |
|  | Deducing log rule from division of indices |  |  |  |
|  | Deducing log rule from power rule of indices |  |  |  |
|  | Applying log rules to evaluate/simplify expressions |  |  |  |
|  | Solving equations with logarithms |  |  |  |
|  | Solving equations with exponentials |  |  |  |
| Course Topic |  |  |  |  |

## Functions and other graphs (Path): MA5-FNC-P-01

Uses function notation to describe and graph functions of one variable and graphs inequalities in one and 2 variables (Path: Adv)

| Skill Quests |  |
| :--- | :--- |
| Define relations \& functions | Defining relations \& functions |
| Find the domain \& range of <br> a function | Describing domain \& range of a function |
| Graph regions to linear <br> inequalities | Graphing linear inequalities |
| Course Topic | Activities Title |
| Functions | Function Notation 1 |
|  | Function Notation 2 |


|  | Function Notation 3 |
| :--- | :--- |
|  | Domain and Range |

## Trigonometry C (Path): MA5-TRG-P-01

Applies Pythagoras' theorem and trigonometry to solve 3-dimensional problems and applies the sine, cosine and area rules to solve 2-dimensional problems, including bearings (Path: Stn, Adv)

Skill Quests

| Solve 3D right-angled |
| :--- |
| triangle problems |
| Apply sine, cosine \& area <br> rules |

rules

Course Topic
Applications of trigonometry

## Skills

Solving 3D problems with right-angled triangles
Using the sine rule to solve problems
Using the cosine rule to solve problems
Using the area rule to solve problems
Solving problems with non-right angled triangles

| 3D Trigonometry |
| :--- |
| Sine Rule: Sides \& Acute Angles |
| Sine Rule: Obtuse Angle |
| Cosine Rule: Find Unknown Side |
| Cosine Rule: Find Unknown Angle |
| Area Rule 1 |
| Area Rule 2 |
| Area Problems |

## Trigonometry D (Path): MA5-TRG-P-02

Establishes and applies the properties of trigonometric functions and finds solutions to trigonometric equations (Path: Adv)

Skill Quests
Use unit circle to define trig functions

## Skills

Using the unit circle to define trig functions
Representing sin, cos, tan functions graphically
Apply relationships using unit circle/trig graphs
Finding the angle of inclination \& gradient
Solving trig equations using exact answers
Solve trig equations using exact answers

Course Topic
Trigonometric equations
Activities Title

| Which Quadrant? |
| :--- |
| Unit Circle Reductions |
| Exact Trigonometric Ratios |
| Sign of the Angle |
| Trig Equations 1 |
| Trig Equations 2 |
| Trig Equations 3 |

## Area and surface area B (Path): MA5-ARE-P-01

Applies knowledge of the surface area of right pyramids and cones, spheres and composite solids to solve problems (Path: Stn, Adv)

## Skill Quests

Solve problems involving surface area

Skills
Surface area of pyramids
Surface area of cones

|  | Surface area of spheres |
| :--- | :--- |
|  | Finding dimensions, given the surface area |
|  | Surface area of composite solids |
|  | Activities Title |
| Surface area | Surface Area: Square Pyramids |
|  | Surface Area: Rectangular Pyramids |
|  | Surface Area: Cones |
|  | Surface Area: Spheres |
|  | Surface Area: Rearrange formula |
|  | Field Diagrams |
|  | Cone \& Pyramid dimensions |


| Volume B (Path): MA5-VOL-P-01 <br> Applies knowledge of the volume of right pyramids, cones and spheres to solve problems involving related composite solids (Path: Stn, Adv) |  |
| :---: | :---: |
| Skill Quests | Skills |
| Solve problems involving volumes | Volume of pyramids \& cones |
|  | Volume of spheres |
|  | Volume of composite solids |
| Course Topic | Activities Title |
| Volume | Volume: Pyramids |
|  | Volume: Cones |
|  | Volume: Spheres |

Properties of geometrical figures B (Path): MA5-GEO-P-01
Establishes conditions for congruent triangles and similar triangles and solves problems relating to properties of similar figures and plane shapes (Path: Ext)

| Skill Quests | Skills |  |  |
| :--- | :--- | :---: | :---: |
| Use conditions for <br> congruent triangles | Identifying \& explaining congruence |  |  |
|  | Identifying congruent triangles |  |  |
|  | Determine congruent triangles using tests |  |  |
| Use conditions for similar <br> triangles | Determine similar triangles using 4 tests |  |  |
|  | Solving area problems of similar shapes \& solids |  |  |
|  | Solving volume problems of similar shapes \& solids |  |  |
| Solve problems with plane <br> shapes | Applying interior \& exterior sum of angles |  |  |
| Course Topic |  |  |  |
| Congruent and similar <br> triangles | Congruent Triangles Activities Title |  |  |
|  | Similar Figures 1 |  |  |
|  | Similar Figures |  |  |
|  | Similarity Proofs |  |  |
|  | Similar Triangles |  |  |

## Properties of geometrical figures C (Path): MA5-GEO-P-02

Constructs proofs involving congruent triangles and similar triangles and proves properties of plane shapes (Path: Ext)

| Skill Quests | Skills |
| :---: | :---: |
| Construct formal proofs | Formal proofs for congruent \& similar triangles |
| Course Topic | Activities Title |


| Geometrical figures proof | Similar Areas and Volumes |
| :--- | :--- |
|  | Plane Figure Theorems |

## Circle geometry (Path): MA5-CIR-P-01

Applies deductive reasoning to prove circle theorems and solve related problems (Path: Ext)

| Skill Quests | Skills |
| :--- | :--- |
| Apply angle \& chord <br> properties | Using circle terminology |
|  | Proving \& applying chord properties of circles |
|  | Proving \& applying angle properties of circles |
|  | Proving \& applying angle properties of semicircles |
|  | Solving problems using circle properties |
| Apply tangent properties of <br> circles | Proving \& applying tangent properties of circles |
|  | Circtivities Title Terms |
|  | Circle Theorems |
|  | Tangents and Secants |

## Introduction to networks (Path): MA5-NET-P-01

Solves problems involving the characteristics of graphs/networks, planar graphs and Eulerian trails and circuits (Path: Stn)

Skill Quests
Examine \& describe a network

Skills
Teacher directed

## Activities Title

Networks Introduction
Minimum Spanning Trees

## 3 Statistics and Probability

| Data analysis C (Path): MA5-DAT-P-01 <br> Plans, conducts and reviews a statistical inquiry into a question of interest (Path: Stn, Adv) |  |
| :---: | :---: |
| Skill Quests | Skills |
| Examine reports in digital media | Analysing reports critically in digital media |
| Course Topic | Activities Title |
| Statistical inquiry | Data terms |
|  | Data sampling |
|  | Methods of Data Sampling |
|  | Stem and Leaf Plots with Range |
|  | Calculating Interquartile Range |
|  | Box-and-Whisker Plots 1 |
|  | Box-and-Whisker Plots 2 |
|  | Understanding Box-and-Whisker Plots |

## Probability B (Path): MA5-PRO-P-01

Solves problems involving Venn diagrams, 2-way tables and conditional probability (Path:
Adv)

| Skill Quests | Skills |
| :---: | :---: |
| Use language of conditional probability | Understanding conditional probability |
| Mutually \& non-mutually exclusive events | Describing mutually/non-mutually exclusive events |
| Solve problems involving Venn diagrams | Interpreting \& constructing Venn diagrams |
|  | Understanding set theory \& Venn diagrams |
|  | Using Venn diagrams for conditional probability |
| Solve problems involving 2way tables | Constructing \& interpreting 2-way tables |
|  | Converting between Venn diagrams \& 2-way tables |
|  | Using 2-way tables to find conditional probability |
| Course Topic | Activities Title |
| Conditional probability | Venn Diagrams 1 |
|  | Venn Diagrams |
|  | Carroll Diagram |
|  | Probability Tables |
|  | Two- way Table Probability |
|  | Fit the condition |
|  | Probability - 'And' and 'Or' |
|  | Conditional Probability |

## Mathletics

For more information about Mathletics, contact our friendly team.
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3P Learning

