

# Australian National Curriculum and Maths Wiz (Secondary)



**MATHS WIZ**



**KINETIC Education®**  
MATHS AND ENGLISH WIZ

# Australian National Curriculum and Maths Wiz (Secondary)

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# Australian National Curriculum and Maths Wiz (Secondary)

## YEAR 7

AUSTRALIAN NATIONAL CURRICULUM	KINETIC EDUCATION LESSONS
<b>ACMNA150</b> Establish understanding of the language and processes of counting by naming numbers in sequences, initially to and from 20, moving from any starting point.	<ul style="list-style-type: none"> <li>- Square Roots &amp; Cube Roots</li> <li>- Square Numbers</li> </ul>
<b>ACMNA151</b> Apply the associative, commutative and distributive laws to aid mental and written computation.	<ul style="list-style-type: none"> <li>- Comparing Numbers</li> <li>- Missing Signs</li> <li>- Order of Operations</li> </ul>
<b>ACMNA280</b> Compare, order, add and subtract integers.	<ul style="list-style-type: none"> <li>- Directed Numbers</li> <li>- Adding and Subtracting on the Number Line</li> <li>- Taking away a Larger Number</li> <li>- Negatives Challenge</li> <li>- Negative Numbers</li> </ul>
<b>Real Numbers</b>	
<b>ACMNA152</b> Compare fractions using equivalence. Locate and represent fractions and mixed numerals on a number line.	<ul style="list-style-type: none"> <li>- What is a Fraction</li> <li>- Equivalent Fractions 1</li> <li>- Equivalent Fraction 2</li> <li>- Comparing Fractions</li> </ul>
<b>ACMNA153</b> Solve problems involving addition and subtraction of fractions, including those with unrelated denominators.	<ul style="list-style-type: none"> <li>- Adding and Subtracting Fractions</li> </ul>
<b>ACMNA154</b> Multiply and divide fractions and decimals using efficient written strategies and digital technologies.	<ul style="list-style-type: none"> <li>- Multiplying Fractions</li> <li>- Dividing Fractions</li> <li>- Earning Money</li> <li>- Calculator: Multiplication and Division</li> <li>- Division and the 1 Times Table</li> <li>- Multiplication of Decimals</li> </ul>
<b>ACMNA155</b> Express one quantity as a fraction of another, with and without the use of digital technologies.	<ul style="list-style-type: none"> <li>- Simplifying Fractions</li> </ul>

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AUSTRALIAN NATIONAL CURRICULUM	KINETIC EDUCATION LESSONS
<b>ACMNA156</b> Round decimals to a specified number of decimal places.	- Decimal Rounding*
<b>ACMNA157</b> Connect fractions, decimals and percentages and carry out simple conversions.	<ul style="list-style-type: none"> <li>- Ordering Decimal Fractions</li> <li>- Changing Decimal Fractions</li> <li>- Changing Harder Fractions to Decimals</li> <li>- Converting Mixed to Improper Fractions</li> <li>- Changing Decimals to Fractions</li> <li>- Changing Easy Fractions to Decimals</li> <li>- Percentage is a Special Fraction</li> <li>- Writing Percentages as Fractions</li> <li>- Changing Fractions to Percentages</li> <li>- Converting Improper to Mixed Fractions</li> <li>- Changing Percentages into Decimals</li> <li>- Changing Decimals to Percentages</li> </ul>
<b>ACMNA158</b> Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies.	- Percentage Problems
<b>ACMNA173</b> Recognise and solve problems involving simple ratios.	<ul style="list-style-type: none"> <li>- What is a Ratio?</li> <li>- Problem Solving with Ratios</li> </ul>
<b>Money and Financial Mathematics</b>	
<b>ACMNA174</b> Investigate and calculate 'best buys', with and without digital technologies.	- Shopping With Decimals
<b>Patterns and Algebra</b>	
<b>ACMNA175</b> Introduce the concept of variables as a way of representing numbers using letters.	<ul style="list-style-type: none"> <li>- Find the Pronumeral</li> <li>- Adding and Subtracting Pronumerals</li> <li>- Replacing a Pronumeral With a Number</li> <li>- Meet The Pronumeral</li> </ul>
<b>ACMNA176</b> Create algebraic expressions and evaluate them by substituting a given value for each variable.	<ul style="list-style-type: none"> <li>- Multiplying Pronumerals</li> <li>- Simple Inequalities</li> <li>- Further Questions</li> <li>- Speed, Distance and Time</li> <li>- Adding and Subtracting Pronumerals</li> </ul>

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# Australian National Curriculum and Maths Wiz (Secondary)

AUSTRALIAN NATIONAL CURRICULUM	KINETIC EDUCATION LESSONS
<b>ACMNA177</b> Extend and apply the laws and properties of arithmetic to algebraic terms and expressions.	<ul style="list-style-type: none"> <li>- Multiplying Coefficients</li> <li>- Like and Unlike Terms</li> <li>- Simple Algebra Division</li> <li>- The Basic Rule</li> <li>- Equations Involving More Than One Step</li> <li>- Further Questions</li> <li>- Equations With Fractions</li> <li>- Application of Equations</li> <li>- Multiplying Pronumerals</li> <li>- Equation Involving Brackets</li> <li>- Changing the Subject of an Equation</li> </ul>
<b>Linear and Non-linear Relationships</b>	
<b>ACMNA178</b> Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point.	<ul style="list-style-type: none"> <li>- Co-ordinates of a Point</li> <li>- Travel Graphs</li> </ul>
<b>ACMNA179</b> Solve simple linear equations.	<ul style="list-style-type: none"> <li>- Balancing an Equation</li> <li>- The Basic Rule</li> <li>- Equations Involving More Than One Step</li> </ul>
<b>ACMNA180</b> Investigate, interpret and analyse graphs from authentic data.	<ul style="list-style-type: none"> <li>- Travel Graphs</li> </ul>
<b>Measurement and Geometry – Using Units of Measurement</b>	
<b>ACMMG159</b> Establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving.	<ul style="list-style-type: none"> <li>- Summary of Common Areas</li> <li>- Composite Figures</li> <li>- Surface Area of a Solid</li> </ul>
<b>ACMMG160</b> Establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving.	<ul style="list-style-type: none"> <li>- Volume of a Prism</li> </ul>
<b>Shape</b>	
<b>ACMMG161</b> Draw different views of prisms and solids formed from combination of prisms.	<ul style="list-style-type: none"> <li>- Isometric and Orthographic Drawings</li> </ul>

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AUSTRALIAN NATIONAL CURRICULUM	KINETIC EDUCATION LESSONS
<b>Location and Transformation</b>	
<b>ACMMG181</b>  Describe translations, reflections in an axis, and rotations of multiples of 90 degrees on the Cartesian plane using co-ordinates. Identify line and rotational symmetries.	<ul style="list-style-type: none"> <li>- Axes of Symmetry</li> <li>- Transformations in Cartesian Plane*</li> </ul>
<b>Geometric Reasoning</b>	
<b>ACMMG163</b>  Identify corresponding, alternate and co-interior angles when two parallel straight lines are crossed by a transversal.	<ul style="list-style-type: none"> <li>- Angle Rules</li> <li>- Parallel Lines</li> </ul>
<b>ACMMG164</b>  Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning.	<ul style="list-style-type: none"> <li>- Angle Rules</li> <li>- Parallel Lines</li> </ul>
<b>ACMMG165</b>  Classify triangles according to their side and angle properties and describe quadrilaterals.	<ul style="list-style-type: none"> <li>- Angles of a Triangle</li> <li>- Special Triangles</li> <li>- Triangle Theorems</li> <li>- Quadrilaterals</li> </ul>
<b>ACMMG166</b>  Demonstrate that the angle sum of a triangle is 180 degrees and use this to find the angle sum of a quadrilateral.	<ul style="list-style-type: none"> <li>- Angles of a Triangle</li> <li>- Special Triangles</li> <li>- Quadrilaterals</li> </ul>
<b>Statistics and Probability - Chance</b>	
<b>ACMSP167</b>  Construct sample spaces for single-step experiments with equally likely outcomes.	<ul style="list-style-type: none"> <li>- The Basic Law</li> <li>- Range of Probabilities</li> </ul>
<b>ACMSP168</b>  Assign probabilities to the outcomes of events and determine probabilities for events.	<ul style="list-style-type: none"> <li>- The Basic Law</li> <li>- Range of Probabilities</li> </ul>

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# Australian National Curriculum and Maths Wiz (Secondary)

AUSTRALIAN NATIONAL CURRICULUM	KINETIC EDUCATION LESSONS
<b>Data Representation and Interpretation</b>	
<b>ACMSP169</b> Identify and investigate issues involving continuous or large count data collected from primary and secondary sources.	- Representation of Data
<b>ACMSP170</b> Construct and compare a range of data displays including stem-and-leaf plots and dot plots.	- Histograms
<b>ACMSP171</b> Calculate mean, median mode and range for sets of data. Interpret these statistics in the context of data.	- Mean Median Mode and Range - Frequency Distribution Table
<b>ACMSP172</b> Describe and interpret data displays and the relationship between the median and mean.	- Frequency Distribution Table

## YEAR 8

<b>Number and Place Value</b>	
<b>ACMSP182</b> Use index notation with numbers to establish the index laws with positive integral indices and the zero index.	- Index Laws with Numbers*
<b>ACMNA183</b> Carry out the four operations with integers, using efficient mental and written strategies and appropriate digital technologies.	- Multiplying Directed Numbers - Dividing Directed Numbers - Balancing an Equation
<b>Real Numbers</b>	
<b>ACMNA184</b> Investigate terminating and recurring decimals.	- Repeating Decimals

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# Australian National Curriculum and Maths Wiz (Secondary)

AUSTRALIAN NATIONAL CURRICULUM	KINETIC EDUCATION LESSONS
<b>ACMNA186</b> Investigate the concept of irrational numbers, including Pi.	- Surds are Irrational Numbers
<b>ACMNA187</b> Solve problems involving the use of percentages, including percentage increases and decreases, with and without digital technologies.	- Percentage Problems
<b>ACMNA188</b> Solve a range of problems involving rates and ratios, with and without digital technologies.	- Problem Solving With Ratios - Rates
<b>Money and Financial Mathematics</b>	
<b>ACMNA189</b> Solve problems involving profit and loss, with and without digital technologies.	- Profit and Loss*
<b>Patterns and Algebra</b>	
<b>ACMNA190</b> Extend and apply the distributive law to the expansion of algebraic expressions.	- Removing Brackets
<b>ACMNA191</b> Factorise algebraic expressions by identifying numerical factors.	- Factorising
<b>ACMNA192</b> Simplify algebraic expressions involving the four operations.	- Find the Pronumeral - Like and Unlike Terms - Simple Algebra Division

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AUSTRALIAN NATIONAL CURRICULUM	KINETIC EDUCATION LESSONS
<b>Linear and Non-linear Relationships</b>	
<b>ACMNA193</b>  Plot linear relationships on the Cartesian plane with and without the use of digital technologies.	<ul style="list-style-type: none"> <li>- Coordinates of a Point</li> <li>- Speed, Distance and Time, Travel Graphs</li> <li>- Linear Models</li> </ul>
<b>ACMNA194</b>  Solve linear equations using algebraic and graphical techniques. Verify solutions by substitution.	<ul style="list-style-type: none"> <li>- The Basic Rule</li> <li>- Equations With Fractions</li> <li>- Application of Equations</li> <li>- Further Questions</li> <li>- Equations Involving More Than One Step</li> <li>- Changing The Subject of An Equation</li> <li>- Equations Involving Brackets</li> <li>- Addition &amp; Subtraction</li> </ul>
<b>Using Units of Measurement</b>	
<b>ACMMG195</b>  Choose appropriate units of measurement for area and volume and convert from one unit to another.	<ul style="list-style-type: none"> <li>- Important Units</li> </ul>
<b>ACMMG196</b>  Find perimeters and areas of parallelograms, rhombuses and kites.	<ul style="list-style-type: none"> <li>- Summary of Common Areas</li> </ul>
<b>ACMMG197</b>  Investigate the relationship between features of circles such as circumference, area, radius and diameter. Use formulas to solve problems involving circumference and area.	<ul style="list-style-type: none"> <li>- Area and Perimeter of a Circle</li> <li>- Composite Figures</li> <li>- Parts of a Circle</li> </ul>
<b>ACMMG198</b>  Develop the formulas for volume of rectangular and triangular prisms and prisms in general. Use these formulas to solve problems involving volume.	<ul style="list-style-type: none"> <li>- Volume of a Prism</li> </ul>
<b>ACMMG199</b>  Solve problems involving duration, including using 12- and 24- hour time within a single time zone.	<ul style="list-style-type: none"> <li>- Time Taken</li> <li>- Speed, Distance and Time</li> </ul>

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AUSTRALIAN NATIONAL CURRICULUM	KINETIC EDUCATION LESSONS
<b>Geometric Reasoning</b>	
<b>ACMMG200</b> Define congruence of plane shapes using transformations.	<ul style="list-style-type: none"> <li>- Application of Congruency</li> </ul>
<b>ACMMG201</b> Develop the conditions for congruence of triangles.	<ul style="list-style-type: none"> <li>- Tests for Congruency</li> </ul>
<b>Using Units of Measurement</b>	
<b>ACMG202</b> Establish properties of quadrilaterals using congruent triangles and angle properties, and solve related numerical problems using reasoning.	<ul style="list-style-type: none"> <li>- Quadrilaterals</li> <li>- Congruent Triangles</li> </ul>
<b>Statistics and Probability - Chance</b>	
<b>ACMSP204</b> Identify complementary events and use the sum of probabilities to solve problems.	<ul style="list-style-type: none"> <li>- The Basic Law of Probability</li> <li>- Range of Probabilities</li> </ul>
<b>ACMSP205</b> Describe events using language of 'at least' exclusive 'or' (A of B but not both), inclusive 'or' (A of B or both) and 'and'.	<ul style="list-style-type: none"> <li>- Addition Rule (Probability)</li> </ul>
<b>ACMSP292</b> Represent such events in two-way tables and Venn diagrams and solve related problems.	<ul style="list-style-type: none"> <li>- Venn Diagrams and Tree Diagrams</li> <li>- Set Theory</li> <li>- Venn Diagrams</li> </ul>
<b>Data Representation and Interpretation</b>	
<b>ACMSP206</b> Explore the practicalities and implications of obtaining representative data using a variety of investigative processes.	<ul style="list-style-type: none"> <li>- Sampling</li> <li>- Sample Statistics</li> </ul>

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AUSTRALIAN NATIONAL CURRICULUM	KINETIC EDUCATION LESSONS
<b>ACMSP207</b> Investigate the effects of individual data values, including outliers, on the mean and median.	<ul style="list-style-type: none"> <li>- Mean, Median, Mode and Range</li> <li>- Scatter Plots</li> </ul>
<b>ACMSP293</b> Explore the variation of means and proportions in representative data.	<ul style="list-style-type: none"> <li>- Variation of Means and Proportions*</li> </ul>

## YEAR 9

<b>ACMNA208</b> Solve problems involving direct proportion. Explore the relationship between graphs and equations corresponding to simple rate problems.	<ul style="list-style-type: none"> <li>- Rates</li> <li>- Proportion Method</li> </ul>
<b>ACMNA209</b> Apply index laws to numerical expressions with integer indices.	<ul style="list-style-type: none"> <li>- Square Numbers</li> <li>- Basic Law of Indices</li> <li>- More Advanced Laws</li> <li>- Multiplication of Surds</li> <li>- Division of Surds</li> <li>- Simplifying Surds</li> <li>- Adding and Subtracting Surds</li> <li>- Rationalising the Denominator</li> <li>- Surd Problem</li> </ul>
<b>ACMNA210</b> Express numbers in scientific notation.	<ul style="list-style-type: none"> <li>- Scientific Notation</li> <li>- Scientific Notation: Large Numbers</li> <li>- Scientific Notation: Small Numbers</li> </ul>
<b>Money and Financial Mathematics</b>	
<b>ACMNA211</b> Solve problems involving simple interest.	<ul style="list-style-type: none"> <li>- Earning Money</li> <li>- Simple Interest</li> <li>- Purchasing by Instalments</li> <li>- Further Question on Money</li> </ul>
<b>Patterns and Algebra</b>	
<b>ACMNA212</b> Extend and apply index laws to variables, using positive integral indices and the zero index.	<ul style="list-style-type: none"> <li>- Division of Surds</li> <li>- Simplifying Surds</li> <li>- Surd Problems</li> <li>- Multiplication of Surds</li> <li>- Multiplying Pronumerals</li> <li>- Equations Involving Brackets</li> <li>- Adding and Subtracting Surds</li> <li>- Rationalising the Denominator</li> </ul>

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# Australian National Curriculum and Maths Wiz (Secondary)

AUSTRALIAN NATIONAL CURRICULUM	KINETIC EDUCATION LESSONS
<b>ACMNA213</b> Apply the distributive law to the expansion of algebraic expressions, including binomials, and collect like terms where appropriate.	<ul style="list-style-type: none"> <li>- Equations Involving Brackets</li> <li>- Removing One Set of Brackets</li> <li>- Removing Two Sets of Brackets</li> <li>- Further Questions with Indices</li> <li>- Brackets With Surds</li> <li>- Further Questions</li> </ul>
<b>Linear and Non-linear Relationships</b>	
<b>ACMNA214</b> Find the distance between two points located on a Cartesian plane using a range of strategies, including graphing software.	<ul style="list-style-type: none"> <li>- Distance between Two Points</li> <li>- Further Questions on Gradients</li> <li>- Further Questions</li> <li>- Using Graphs to Solve Simultaneous Equations</li> <li>- Simultaneous Equations by Elimination</li> </ul>
<b>ACMNA215</b> Sketch linear graph using the coordinates of two points.	<ul style="list-style-type: none"> <li>- Graphing Linear Equations</li> <li>- Sketching a Line using: <math>y = mx + c</math></li> </ul>
<b>ACMNA294</b> Find the midpoint and gradient of a line segment interval on the Cartesian plane using a range of strategies, including graphing and software.	<ul style="list-style-type: none"> <li>- Gradient of a Line</li> <li>- Midpoint Formula</li> <li>- The Two Point Formula</li> <li>- Further Questions</li> <li>- Further Questions on Coordinates</li> <li>- The Point-Gradient Formula</li> <li>- Gradient: Intercept Form of a Line</li> </ul>
<b>ACMNA296</b> Sketch simple non-linear relations with and without the use of digital technologies.	<ul style="list-style-type: none"> <li>- Rate of Change of Non-linear Functions</li> </ul>
<b>Measurement and Geometry - Using Units of Measurement</b>	
<b>ACMMG216</b> Calculate the areas of composite shapes.	<ul style="list-style-type: none"> <li>- Composite Figures</li> <li>- Summary of Common Areas</li> </ul>
<b>ACMMG217</b> Calculate the surface area and volume of cylinders and solve related problems.	<ul style="list-style-type: none"> <li>- Surface Area of a Cylinder</li> <li>- Volume of a Cylinder</li> </ul>
<b>ACMMG218</b> Solve problems involving the surface area and volume of right prisms.	<ul style="list-style-type: none"> <li>- Volume of a Solid</li> <li>- Other Solid Shapes</li> </ul>

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# Australian National Curriculum and Maths Wiz (Secondary)

AUSTRALIAN NATIONAL CURRICULUM	KINETIC EDUCATION LESSONS
<b>ACMMG219</b>  Investigate very small and very large time scales and intervals.	
<b>Geometric Reasoning</b>	
<b>ACMMG220</b>  Use the enlargement transformation to explain similarity and develop the conditions for triangles to be similar.	<ul style="list-style-type: none"> <li>- Tests for Congruency</li> <li>- Applications of Congruency Tests</li> </ul>
<b>ACMMG221</b>  Solve problems using ratio and scale factors in similar figures.	<ul style="list-style-type: none"> <li>- What is a Ratio</li> <li>- Equivalent Ratios</li> <li>- Simplifying Ratios</li> <li>- Problem Solving With Ratios</li> <li>- Scale Drawings</li> <li>- Dividing a Quantity into a Given Ratio</li> </ul>
<b>Pythagoras Theorem and Trigonometry</b>	
<b>ACMMG222</b>  Investigate Pythagoras Theorem and its application to solving simple problems involving right angled triangles.	<ul style="list-style-type: none"> <li>- Pythagoras Theorem</li> <li>- Problems Using Pythagoras and Trig</li> </ul>
<b>ACMMG223</b>  Use similarity to investigate the constancy of the sine, cosine and tangent ratios for a given angle in right angled triangles.	<ul style="list-style-type: none"> <li>- Further Questions on Trig</li> <li>- Review of Basic Trigonometry</li> </ul>
<b>ACMMG224</b>  Apply trigonometry to solve right angled triangle problems.	<ul style="list-style-type: none"> <li>- Sine Ratio</li> <li>- Cosine Ratio</li> <li>- Tangent Ratio</li> <li>- Degrees and Minutes</li> <li>- Trig. Problems Using Pythagoras Theorem</li> <li>- Naming The Sides</li> <li>- Further Questions</li> <li>- Unknown in the Denominator</li> <li>- Angles Larger than 90deg</li> <li>- Finding the Size of an Unknown Angle</li> <li>- Finding the Length of an Unknown Side</li> </ul>
<b>Statistics and Probability - Chance</b>	
<b>ACMSP225</b>  List all outcomes for two-step chance experiments, both with and without replacement using tree diagrams or arrays. Assign probabilities to outcomes and determine probabilities for events.	<ul style="list-style-type: none"> <li>- The Basic Law</li> <li>- Range of Probabilities</li> <li>- Tossing Coins</li> <li>- Replacement Problems</li> <li>- Non-replacement</li> <li>- Probabilities Involving 2 Dice</li> <li>- Further Questions on Probability</li> </ul>

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# Australian National Curriculum and Maths Wiz (Secondary)

AUSTRALIAN NATIONAL CURRICULUM	KINETIC EDUCATION LESSONS
<b>ACMSP226</b> Calculate relative frequencies from given or collected data to estimate probabilities of events 'and' or 'or'.	<ul style="list-style-type: none"> <li>- Grouped Frequency Table</li> <li>- Cumulative Frequency</li> <li>- Cumulative Frequency histogram</li> </ul>
<b>ACMSP227</b> Investigate reports of surveys in digital media and elsewhere for information on how data were obtained to estimate population means and medians.	<ul style="list-style-type: none"> <li>- Sampling</li> </ul>
<b>Data Representation and Interpretation</b>	
<b>ACMSP228</b> Identify everyday questions and issues involving at least one numerical and at least one categorical variable, and collect data directly from secondary sources.	
<b>ACMSP282</b> Construct back-to-back stem and leaf plots and histograms and describe data, using terms including 'skewed', 'symmetric' and 'bi modal'.	<ul style="list-style-type: none"> <li>- Cumulative Frequency Histogram</li> </ul>
<b>ACMSP283</b> Compare data display using mean, median and range to describe and interpret numerical data sets in terms on location (centre) and spread.	<ul style="list-style-type: none"> <li>- Mean Deviation</li> <li>- Standard Deviation</li> <li>- Using the Standard Deviation</li> </ul>
<b>ACMSP284</b> Investigate techniques for collection data, including census, sampling and observation.	<ul style="list-style-type: none"> <li>- Representation Data</li> <li>- Sampling</li> </ul>

## YEAR 10

### Data Representation and Interpretation

### Money and Financial Mathematics

<b>ACMNA229</b> Connect the compound interest formula to repeated applications of simple interest using appropriate digital technologies.	<ul style="list-style-type: none"> <li>- Compound Interest</li> <li>- Constant Multiplier Key for Compound Interest</li> <li>- Depreciation</li> <li>- Further Questions on Money</li> </ul>
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# Australian National Curriculum and Maths Wiz (Secondary)

AUSTRALIAN NATIONAL CURRICULUM	KINETIC EDUCATION LESSONS
<b>Patterns and Algebra</b>	
<b>ACMNA230</b> Factorise algebraic expressions by taking out a common algebraic factor.	<ul style="list-style-type: none"> <li>- Factorising Binomials</li> <li>- Factorising Trinomials</li> <li>- Factorising Harder Trinomials</li> <li>- Solving Quadratic Equations</li> <li>- Further Questions With Indices</li> <li>- The Cross Sword Method of Factoring</li> <li>- Factorising With Division</li> <li>- Factorising Four Term Expressions</li> </ul>
<b>ACMNA231</b> Simplify algebraic products and quotients using index laws.	<ul style="list-style-type: none"> <li>- Basic Laws of Indices</li> <li>- More Advanced Laws</li> <li>- Further Questions With Indices</li> </ul>
<b>ACMNA232</b> Apply the four operations to simple algebraic fractions with numerical denominators.	<ul style="list-style-type: none"> <li>- Equations With Fractions</li> </ul>
<b>ACMNA233</b> Expand binomial products and factorise monic quadratic expressions using a variety of strategies.	<ul style="list-style-type: none"> <li>- Perfect Squares</li> <li>- Further Questions</li> <li>- Quadratic Equations</li> <li>- Factorising Binomials</li> <li>- Factorising Trinomials</li> <li>- The Cross Sword Method of Factorising</li> <li>- The Difference of Two Squares</li> <li>- Solving Quadratic Equations</li> <li>- Factorising Harder Trinomials</li> <li>- Factorising Four Term Expressions</li> <li>- Factorising With Division</li> </ul>
<b>ACMNA234</b> Substitute values into formulas to determine an unknown.	<ul style="list-style-type: none"> <li>- Substitution</li> <li>- Further Questions</li> <li>- Constructing Formulas</li> <li>- Substituting into Formulas</li> <li>- Application of Equations</li> <li>- Constructing Formulas into Formulas</li> <li>- Further Questions on Coordinates</li> <li>- Determining whether a Point lies on a Line</li> </ul>
<b>ACMNA235</b> Solve problems involving linear equations, including those derived from formulas.	<ul style="list-style-type: none"> <li>- Constructing Formulas</li> <li>- Further Questions</li> <li>- The Two Point Formula</li> <li>- The Point Gradient Formula</li> <li>- Further Questions on Gradients</li> <li>- Constructing Formulas from Formulas</li> <li>- Changing the Subject of a Formula</li> <li>- General Form of a Straight Line</li> </ul>
<b>ACMNA236</b> Solve linear inequalities and graph their solutions on a number line.	
<b>ACMNA237</b> Solve linear simultaneous equations, using algebraic and graphical techniques including using digital technology.	<ul style="list-style-type: none"> <li>- Further Questions</li> <li>- Using Graphs to Solve Simultaneous Equations</li> <li>- Simultaneous Equations by Elimination</li> <li>- Simultaneous Equations by Substitution</li> <li>- Further Question on Co-ordinates</li> </ul>

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# Australian National Curriculum and Maths Wiz (Secondary)

AUSTRALIAN NATIONAL CURRICULUM	KINETIC EDUCATION LESSONS
<b>ACMNA238</b> Solve problems involving parallel and perpendicular lines.	- Parallel Lines
<b>ACMNA239</b> Explore the connection between algebraic and graphical representations of relations such as simple quadratics, circles and exponentials using digital technology as appropriate.	- The Parabola - Finding The Intercept With a Graphics Calculator
<b>Linear and Non-linear Relationships</b>	
<b>ACMNA240</b> Solve linear equations involving simple algebraic fractions.	
<b>ACMNA241</b> Solve simple quadratic equations using a range of strategies	<ul style="list-style-type: none"> <li>- Perfect Squares</li> <li>- Further Questions</li> <li>- Factorising Binomials</li> <li>- Factorising Trinomials</li> <li>- The Quadratic Formula</li> <li>- Quadratic Equations</li> <li>- The Difference of Two Squares</li> <li>- Solving Quadratic Equations</li> <li>- Factorising Four Term Expressions</li> <li>- Factoring Harder Trinomials</li> <li>- Factorising With Division</li> <li>- The Cross Sword Method Of Factoring</li> </ul>
<b>Measurement and Geometry</b>	
<b>Using units of Measurement</b>	
<b>ACMMG242</b> Solve problems involving surface area and volume for a range of prisms, cylinders and composite solids.	<ul style="list-style-type: none"> <li>- Other Solid Shapes</li> <li>- Further Questions on Shapes</li> </ul>
<b>Geometric Reasoning</b>	
<b>ACMMG243</b> Formulate proofs involving congruent triangles and angle properties.	<ul style="list-style-type: none"> <li>- Angles of a Triangle</li> <li>- Special Triangles</li> <li>- Triangle Problems</li> <li>- Tests For Congruency</li> <li>- The Angle Sum of a Polygon</li> <li>- Constructions in Geometry</li> <li>- Applications of Congruency Tests</li> </ul>
<b>ACMMG244</b> Apply logical reasoning, including the use of congruence and similarity, to proofs and numerical exercises involving plane shapes.	<ul style="list-style-type: none"> <li>- Similar Triangles</li> <li>- Tests for Congruency</li> <li>- Applications of Congruency Tests</li> </ul>

\* under development



# Australian National Curriculum and Maths Wiz (Secondary)

## AUSTRALIAN NATIONAL CURRICULUM

## KINETIC EDUCATION LESSONS

### Pythagoras Theorem and Trigonometry

#### ACMMG245

Solve right angled triangle problems including those involving direction and angles of elevation and depression.

- Angles of Elevation and Depression

### Statistics and Probability - Chance

#### ACMSP246

Describe the results of two and three step chance experiments both with and without replacements assign probabilities to outcomes and determine probabilities of events. Investigate the concept of independence.

- Replacement Problems  
- Non-replacement  
- Further Questions on Probability

#### ACMSP247

Use the language of 'if...then', 'given', 'of' 'knowing that' to investigate conditional statements and identify common mistakes in interpreting such language.

### Data Representation and Interpretation

#### ACMSP248

Determine quartiles and interquartile range.

- Interpreting Statistics

#### ACMSP249

Construct and interpret box plots and use them to compare data sets.

- Constructing a Box Plot

#### ACMSP250

Compare shapes of box plots to corresponding histograms and dot plots

- Histograms

#### ACMSP251

Use scatter plots to investigate and comment on relationships between two continuous variables.

- Scatter Plots  
- Using Scatter Plots to Identify Relationships

# Australian National Curriculum and Maths Wiz (Secondary)

AUSTRALIAN NATIONAL CURRICULUM	KINETIC EDUCATION LESSONS
<b>Number and Algebra - Number and Place Value</b>	
<b>ACMSP 252</b>  Investigate and describe bivariate numerical data where the independent variable is time.	- Linear Models
<b>ACMSP253</b>  Evaluate statistical reports in the media and other places by linking claims to displays, statistics and representative data.	- Interpreting Statistics - Pie Graphs

## YEAR 10A

<b>Number and Algebra – Real Numbers</b>	
<b>ACMNA264</b>  Define rational and irrational numbers and perform operations with surds and fractional indices.	- Rational Numbers - Surds
<b>ACMNA265</b>  Use the definition of a logarithm to establish and apply the laws of logarithms	- Logarithms
<b>Patterns and Algebra</b>	
<b>ACMNA266</b>  Investigate the concept of a polynomial and apply to the factor and remainder theorems to solve problems	- Remainder and Factor Theorem
<b>Linear and Non-linear Relationships</b>	
<b>ACMNA267</b>  Describe, interpret and sketch parabolas, hyperbolas, circles and exponential functions and their transformations.	<div>             - The Parabola              - Definition of Parabola              - The Hyperbola              - Exponential Models           </div> <div>             - Circles and Other Curves              - Exponential Relations              - The Role of H and K in Parabolas              - The Role of A in Parabolas           </div>

\* under development

# Australian National Curriculum and Maths Wiz (Secondary)

AUSTRALIAN NATIONAL CURRICULUM	KINETIC EDUCATION LESSONS
<b>ACMNA268</b> Apply understanding of polynomials to sketch a range of curves and describe the features of these curves from their equation.	<ul style="list-style-type: none"> <li>- Curve Sketching</li> <li>- Curve Sketching: Translation and Dilation</li> </ul>
<b>ACMNA269</b> Factorise monic and non-monic quadratic expressions and solve a wide range of quadratic equations derived from a variety of contexts.	<ul style="list-style-type: none"> <li>- Factoring Binomials</li> <li>- Factoring Trinomials</li> <li>- Factoring 4-Term Expressions</li> <li>- The Cross Sword Method of Factoring</li> <li>- Factoring Harder Tri-Nomials</li> </ul>
<b>ACMNA270</b> Solve simple exponential equations.	<ul style="list-style-type: none"> <li>- Basic Laws of Indices</li> <li>- Indices with Radicals</li> <li>- More Advanced Laws</li> </ul>
<b>Measurement and Geometry</b>	
<b>Using Units of Measurement</b>	
<b>ACMMG271</b> Solve problems involving surface area and volume of right pyramids, right cones, spheres and related composite solids.	<ul style="list-style-type: none"> <li>- Surface Area of a Prism</li> <li>- Composite Figures</li> <li>- Area of an Annulus</li> <li>- Volume of Pyramid, Cone and Sphere</li> <li>- Surface Area of a Cylinder</li> <li>- Surface Area of a Solid</li> <li>- Surface Area of a Sphere</li> </ul>
<b>Geometric Reasoning</b>	
<b>ACMMG272</b> Provide and apply angle and chord properties of circles.	<ul style="list-style-type: none"> <li>- The Circle</li> <li>- Parts of a Circle</li> <li>- Angle in a Semi-circle</li> <li>- Angles at the Centre of a Circle</li> <li>- Angles in the Same Segment</li> <li>- Cyclic Quadrilaterals</li> <li>- Tangent to a Circle</li> <li>- Area and Circumference of a Circle</li> </ul>
<b>ACMMG274</b> Provide and apply angle and chord properties of circles.	<ul style="list-style-type: none"> <li>- The CAST Rule</li> </ul>
<b>ACMMG275</b> Solve simple trigonometric equations.	<ul style="list-style-type: none"> <li>- Problems Using Pythagoras and Trig</li> <li>- Further Trig Problems</li> </ul>
<b>ACMMG276</b> Apply 'Pythagoras' theorem and trigonometry to solving three-dimensional problems in right-angled triangles.	<ul style="list-style-type: none"> <li>- The Theorem of Pythagoras</li> <li>- Problems Using Pythagoras and Trig</li> </ul>

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# Australian National Curriculum and Maths Wiz (Secondary)

AUSTRALIAN NATIONAL CURRICULUM	KINETIC EDUCATION LESSONS
Statistics and Probability	
Chance	
<b>ACMSP277</b>  Investigate reports of studies in digital media and elsewhere for information on the planning and implementation of such studies, and the report in of variability.	- N/A
Data Representation and Interpretation	
<b>ACMSP278</b>  Calculate and interpret the mean and standard deviation of data and use these to compare data sets.	- Normal Distribution Using Mean and Standard Deviation - Standard Deviation - Using the Standard Deviation
<b>ACMSP279</b>  Use information technologies to investigate bivariate numerical data sets. Where appropriate use a straight line to describe the relationship allowing for variation,	- Variation

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