Links to nzmaths units and Figure It Outs using Te Mataiaho Outcomes

Year 8

Theme Based Resources

Whakataukī (Unit of work that derives mathematics from Māori proverbs)

Matariki Level 4 (Unit of work for use during Matariki celebrations)

Disasters Strike (A theme-based Figure It Out based on Natural Disasters)

Getting Around (A theme-based Figure It Out based on Transport)

Fascinated by Fibonacci (A unit that explores applications of the Fibonacci Sequence)

Breakfast Biscuits (A cross-strand unit that is inspired by New Zealand's favourite cereal)

Topic and Outcomes	Nzmaths units with Tāhurangi links	Figure It Out links	Numeracy Project Teacher Guides

Number Structure • identify, read, write, compare, and order whole numbers and decimals using powers of 10 (e.g., 0.01 = $\frac{1}{100}$ = 10^{-2}) • use prime factorisation to represent a number and to find the HCF of two numbers • identify and describe the properties of prime and composite numbers up to at least 100 and cube numbers up to at least 125	Two's Company Square and Cube Roots The Truth about Triangles and Squares Cubic Conundrums (Cubes and other contexts)	Factor Towers (Also includes triangular numbers) Tiling Teasers Squaring Off (Extension) Alien Bacteria Square Number Differences	Teaching Number Knowledge (Book 4) Place value Houses (p. 5) Number Hangman (p. 5) Reading Decimal Fractions (p. 8-9) Close to 100 (p. 24) Traffic Lights (p. 25) Zap (p.26) Teaching Number Sense and Algebraic Thinking Book 8 Cubes and Cube Roots (p. 30) Prime Numbers (p. 32) Factor Trees (p. 33) Highest Common Factors (HCFs) (p. 39)
Operations • use rounding, estimation, and benchmarks to predict results and to check the reasonableness of calculations • round whole numbers to any specified power of 10, and round decimals to the nearest tenth, hundredth, thousandth, or whole number • identify and describe the divisibility rules for 2–11		Factorials (Extension) Number Returns (Extension)	Teaching Number Knowledge (Book 4) Swedish Rounding (p.28) Locating Decimal Fractions (p.29) Teaching Multiplication and Division Book 6 Nines and Threes (pp. 70-72) Teaching Number Sense and Algebraic Thinking Book 8 Divisibility Tests (p. 33) Factor Trees (p. 33)

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Operations • divide whole numbers (e.g., 327 ÷ 15 = 21.8 or $21\frac{4}{5}$)	Multiplication and Division Pick n' Mix 2	Revisiting Remainders Remainder Bingo	Teaching Number Sense and Algebraic Thinking Book 8 Finding Remainders (p. 31) Applying Remainders (p. 32)
• use the order of operations		Order of Operations Operations Checker Square Sums (Extension) Digital Delights (Extension)	Teaching Number Sense and Algebraic Thinking Book 8 Using 0 (p. 12) Order of Operations (p. 13)
• order, compare, add, and subtract integers	Integers Investigating Integers	Kynan's Positive and Negative Adventures (Connected 3, 2006) Judo Competition Video Viewing Sign of the Times (Extension)	Teaching Addition, Subtraction and Place Value Book 5 Dollars and Bills (p. 50) Hills and Dales (p.50) Teaching Number Sense and Algebraic Thinking Book 8 6 Minus 8 Does Work (P. 31)

Topic and Outcomes	Nzmaths units with Tāhurangi links	Figure It Out links	Numeracy Project Teacher Guides
Rational Numbers			
• identify, read, write, and represent fractions, decimals, and percentages • compare, order, and convert between fractions, decimals, and percentages		Give It a Heave Wooden Projects Gentle Giants	Teaching Number Knowledge (Book 4) Creating Fractions (p. 6) More Geoboard Fractions (p. 6) Non-unit Fractions (p.6) Packets of Lollies (p.7) Arrow Cards (p. 13) Using Calculators (p.14) Rocket (p.15) Squeeze (p. 15) Super Liquorice (p.19) Who wins? (p. 20) Who gets more? (p.20) Equivalent Fractions, Decimals and Percentages (p. 21) Teaching Fractions, Decimals and Percentages Book 7 Feeding Pets (pp. 67 – 68)
• multiply and divide numbers by powers of 10		Sunburst	Teaching Number Knowledge (Book 4) Digits on the Move (p. 29)
• find equivalent fractions, simplify fractions, and convert between improper fractions and mixed numbers	What's Going On? Fractions		
• multiply fractions and decimals by whole numbers	Getting Partial – Multiplying Decimals	Saving and spending Accident Prone	Teaching Number Sense and Algebraic Thinking Book 8 Whole Numbers Times Fractions (p. 22) Fractions Times Whole Numbers (p. 23) Estimation in Decimal Multiplication and Division (p. 25)

• find a percentage of a whole number, and find a whole amount, given a simple fraction or percentage (e.g., “75% is $45, what is the total amount?”)	Getting Partial to Percentages	Census Sense (2001 data – look up 2023 data) Percentage Passes	Teaching Fractions, Decimals and Percentages Book 7 Extending Hotshots (pp. 56 – 60)
• add and subtract fractions with different denominators, using equivalent fractions	Addition, Subtraction, and Equivalent Fractions	Egyptian Fractions (Extension)	Teaching Fractions, Decimals and Percentages Book 7 Comparing Apples with Apples (pp. 65 – 67)
• add, subtract, and multiply decimals, with an emphasis on estimating before calculating		Dreaming of millions (update exchange rates and populations) Body Mass	
Proportional Reasoning • use proportional reasoning to share with unequal proportions (e.g., “We have 100 stickers to share. For every 1 sticker I get, you get 3. How many do we each get?”)	Rates and Ratios Ratios	Bargain Packs In Proportion? Skilful Skaters Deb the Driver The Right Gear Family Likeness Muffin Mania (Scale the recipe by other numbers) Hypertufa Tiles Skateboard Factory Da Vinci’s Ratio (Extension) Pulley Power (Extension) What you see? (Extension) Ancient Architecture (Extension)	Teaching Addition, Subtraction and Place Value Book 5 Combining Proportions (p. 55) Teaching Fractions, Decimals and Percentages Book 7 Extending Mixing Colours (pp. 61–62) Rates of Change (pp.71-75)
Financial Mathematics • create and compare weekly, monthly, and yearly finance plans (e.g., saving plans, phone plans, budgets, and ‘buy now, pay later’ services)		Charu in a Pickle On Your Bike Mike Keep Your Shirt On	
• apply percentage discounts		Spending on Sport Bargain Bonanza	Teaching Number Sense and Algebraic Thinking Book 8 Estimating Percentages (p. 26)

			Percentage Problems in Two Steps (p. 27) Percentages Increases and Decreases in One Step (p. 27)

Algebra

Topic and Outcomes	Nzmaths units with Tāhurangi links	Figure It Out links	Numeracy Project Teacher Guides
Equations and relationships			
• form and solve one- or two-step linear equations (e.g., 5s + 3 = 18) • find the value of an expression or formula, given the values of variables	Solving multi-step equations Solving Linear Equations 2	Visual Algebra (Level 3) Visual Algebra (Level 4)	
• simplify algebraic expressions involving sums, products, differences, and single brackets (e.g., using the distributive property, (e.g., 2(x + 3) + 1 = 2x + 6 + 1 = 2x + 7)		Problem Smorgasbord Patterns, Rules and Spreadsheets Calendars and Shortcuts Number Juggling Initials Logo	
• determine if a pattern is linear and, if it is, write the equation for the pattern and use the equation to make conjectures	Down on the Farm Choices	Straw Chains Stick Houses Which DJ? Bailey Bridges Web Circles Frieze Table Mats Stacking Up Letter Designs Bathroom Tiles Patterns and Designs Non-linear extensions Up the Garden Path Table Tennis Rotten Apples Number Crunching Island Roads Domino Stacks Counting Cubes	

		Save some, Spend some The Power of 2 Kidding Around Stepping Stones (Fibonacci) Marooned Areas of Interest Graphing relationships Surfboard Sums Holiday Pay Jam Jars	

Measurement

Topic and Outcomes	Nzmaths units with Tāhurangi links	Figure It Out links	Numeracy Project Teacher Guides
Measuring			
• estimate and then measure length, area, volume, capacity, mass (weight), temperature, data storage, time, and angle, using appropriate units • select and use an appropriate base measure within the metric system, along with a prefix to show the size of units • convert between metric measurement units, including square units	All about angles Irrigating the trees Time Zones How long is a Slinky? Fractions of Mass	Icey Contents Little Links (Length, Area and Volume) Plentiful Plankton (Length and Scale) Fat in Foods (Mass and Ratios) Television Views (Length and Ratios) Pounamu Pendants (Area and Percentage) Time and Tide The Big Drip (Area and Volume) Gumboot Games (length, Mass and Ratios) Chilling Out (Temperature, Time, Speed)	Teaching Number Knowledge (Book 4) Measurement and Zeros (p. 10)

• find distance, given speed and time; or time, given distance and speed		Car Journeys Cellphone Confusion (Extension of rates)	
• read, interpret, and use timetables, charts, and results that present information about duration • convert times to a common unit, such as seconds or minutes, and use decimal units of time (milliseconds)		Ways to Go	

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Perimeter, Area and Volume			
• calculate the volume of triangular prisms and shapes composed of rectangular prisms.	Spaced Out	Hot Dogs (Volume and Ratio) Circle Links (Extension) Colossal Kiwifruit (Extension)	

Geometry

Topic and Outcomes	Nzmaths units with Tāhurangi links	Figure It Out links	Numeracy Project Teacher Guides
Shapes			
• describe triangles, quadrilaterals, and other polygons in relation to their sides, diagonals, and angles		Tempting Tangrams	
• reason about unknown angles in situations involving angles at a point, angles on a straight line, vertically opposite angles, and interior angles of triangles and quadrilaterals	Reflex Angle? Acute Angle? Obtuse Angle? Acute Interior Angles? Closest to a Right Angle Closest to 45^0?	Sharp Corners	
Spatial Reasoning			

• visualise and draw nets for prisms with a fixed cross section	Solid Understanding (Extends beyond prisms)	Open and Shut Cute Cubes Fantastic Folding Loads of Lamingtons Perfect Packing Cylinder Collection (Extension to Cylinders) Tricky Truncations (Extension)	
• recognise the invariant properties of 2D and 3D shapes under different transformations	Transformations	Stencil Style Design a Logo Escher Envy Snazzy Snowflakes Chessboard Challenges (Extension)	
Pathways			
• use map scales, compass points, distance, and turn to interpret and communicate positions and pathways in coordinate systems and grid reference systems	X Marks the Spot Red October	Making Tracks	

Statistics

Topic and Outcomes	Nzmaths units with Tāhurangi links	Figure It Out links	Numeracy Project Teacher Guides
Enquiry			
Pose ● investigate, using multivariate datasets, summary, comparison, time-series, and relationship situations by: ● posing an investigative question about a local community matter ● making conjectures or assertions about expected findings	Exploring New Zealand's Data How Much Bullying? Paper Planes How many Words? It Takes a Village Rugby World Cup Stats	Fish Figures (Bivariate) Testing Times (Bivariate) Suspect on Foot (Bivariate)	
Plan ● plan how to collect or source data to answer the investigative question, including: - determining or identifying the variables needed - planning how to collect data for each variable (e.g., how to measure it) or finding out how provided data was collected - identifying the group of interest or who the data was collected from building awareness of ethical practices in data collection by strategic questioning of data-collection questions or methods		Social Sounds	

Data ● collect or source data, including: ● checking for errors and following up and correcting them when possible ● creating an informal data dictionary with information that will help others know about the context			
Analysis ● create data visualisations for the investigation, using multiple visualisations to provide different views of the data ● make statements about the data, including its features and context, in descriptions of distributions		Guess the Mass Wim's Waffles Population Pyramids Just Average Walking Tall (Extension)	
Communication ● communicate findings in context to answer the investigative question, using evidence from analysis, considering possible explanations for findings, and comparing findings to initial conjectures or assertions and their existing knowledge of the world		Often Absent Action and Reaction Price Hike	
Statistical Literacy			
● evaluate the data-collection methods, data visualisations, and findings of others' statistical investigations to see if their claims are reasonable.	Making Evaluations		

Probability

Topic and Outcomes	Nzmaths units with Tāhurangi links	Figure It Out links	Numeracy Project Teacher Guides
Probability Investigations			

• plan and conduct probability experiments for chance-based situations, including undertaking a large number of trials using digital tools, by:
  • posing an investigative question
  • anticipating what outcomes are possible and which of them are more or less likely to occur
  • identifying and systematically listing possible answers to the investigative question
  • collecting and recording data
  • creating data visualisations for the distribution of observed outcomes and for all possible outcomes for theoretical probability models, where they exist
  • describing what these visualisations show
  • finding the probability estimates for the different outcomes
  • proposing possible theoretical outcomes and associated probabilities, for situations where no theoretical model exists
  • answering the investigative question
  • identifying similarities and differences between their findings and those of others
	Flip and Roll
	Beat It
	Murphy's Law
		Slater Mazes
		Rough Justice
		Unlucky Lines
		On a Plate
		Card Sharp
		Paper, Scissors, Rock
		Birth Months	

● reflecting on anticipated outcomes ● identifying similarities and differences between findings from the probability experiment and associated theoretical probabilities, as appropriate			
Critical Thinking			
● identify, explain, and check others' statements about chance-based investigations, referring to evidence.			