

Maths Hub: Mathematical modelling resources (F–10)

This document contains mathematical modelling teaching and assessment resources available on the Maths Hub Planning Tool for Year 1–10 Number, Algebra, and Measurement. Some resources are lesson-plans; others are downloadable PDFs or external resource pages.

Links checked on 9 April 2026.

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Primary

Year 1 – Number

Planning page: <https://www.mathematicshub.edu.au/planning-tool/1/number/mathematical-modelling/>

Teaching resources

Title	Link
Eggs in a basket This task presents an open-ended problem without an obvious answer. Solutions emerge through reasoning and trial and error.	rich.maths.org/problems/eggs-baskets
Number books Use various titles to explore everyday and imaginary situations involving number. Invite students to identify and pose number problems to model and solve.	rich.maths.org/number-books
On and off the train Use the context of a train with passengers to apply and consolidate existing number knowledge to everyday contexts.	newzealandcurriculum.tahurangi.education.govt.nz/on-a...
Heads and feet This activity presents an open-ended problem without an obvious answer. Solutions emerge through reasoning, and trial and error.	rich.maths.org/problems/heads-and-feet?tab=teacher
Bank on it Use the context of banking to engage in everyday problem-solving using whole dollar amounts.	newzealandcurriculum.tahurangi.education.govt.nz/bank...
Understanding Australian coins In this lesson, students learn about Australian coins, their features, and their value.	files.moneysmart.gov.au/media/03zjnr44/understanding-...

Assessment resources

Year 1 Number Check for teachers Use this diagnostic interview to gauge students' number knowledge.	www.mathematicshub.edu.au/plan-teach-and-assess/asses...
Assessment task: How many? Use this task to assess students' knowledge and use of additive thinking.	www.mathematicshub.edu.au/media/kqlblkc5/yr0_number_r...
Donuts Use this work sample to assess students' knowledge and skills to solve simple word problems involving additive and multiplicative thinking.	www.australiancurriculum.edu.au/resources/work-sample...

Year 2 – Number

Planning page: <https://www.mathematicshub.edu.au/planning-tool/2/number/mathematical-modelling/>

Teaching resources

Title	Link
Number books Use various titles to explore everyday and imaginary situations involving number. Invite students to identify and pose number problems to model and solve.	rich.maths.org/number-books
Authentic problems: Bunches of balloons Use an authentic context of decorating the classroom to explore and model grouping 29 balloons.	www.mathematicshub.edu.au/plan-teach-and-assess/teach...
Understanding Australian coins In this lesson, students learn about Australian coins, their features, and their value.	files.moneysmart.gov.au/media/03zjnr44/understanding-...
Paying it forward Years F-2 In this unit, students develop understanding about the pros and cons of saving and spending and the skill of prioritising choices based on needs and wants.	taxsuperandyou.gov.au/paying-it-forward/f-2
Meaning of multiplication symbols Students use additive strategies to solve multiplication and division problems.	newzealandcurriculum.tahurangi.education.govt.nz/mean...
Shared fruit Use this task as a mathematical modelling opportunity to find an unknown number.	newzealandcurriculum.tahurangi.education.govt.nz/shar...
Games on all fields Use this challenging problem as an authentic opportunity to use counting strategies and mathematical modelling.	newzealandcurriculum.tahurangi.education.govt.nz/game...
How would you solve this? Use this open-ended task to gauge how students approach problems involving addition and subtraction.	www.mathematicshub.edu.au/media/1krhe2iw/yr2_number a...

Assessment resources

Assessment: Year 2: Fruit shopping Use this task to gain insight into student ability to independently navigate situations involving money.	www.mathematicshub.edu.au/media/4nui4a1c/yr2_number m...
Year 2 Mathematics: Curriculum and assessment plan A sample year-long plan for Year 2 teachers, structured around four units—one per school term. The plan includes assessment	https://www.mathematicshub.edu.au/search/year-2-mathematics-curriculum-and-assessment-plan/

guidance and outlines coverage across relevant strands and content descriptions

Year 3 – Number

Planning page: <https://www.mathematicshub.edu.au/planning-tool/3/number/mathematical-modelling/>

Teaching resources

Title	Link
Additive strategies: Video and teaching guide Use this video to explore the use of computation strategies, rounding and estimation in real-world, additive situations.	www.mathematicshub.edu.au/plan-teach-and-assess/teach...
Mathematical modelling: Word problems This lesson introduces students to using mathematical modelling to solve practical problems involving both additive and multiplicative relationships.	www.mathematicshub.edu.au/plan-teach-and-assess/teach...

Assessment resources

Assessment: WS01 - Ways to make 18 This work sample demonstrates a student's response to representing the answer of 18 in a variety of ways. It partially covers the achievement standard related to this topic.	www.australiancurriculum.edu.au/resources/work-sample...
Year 3 Mathematics: Curriculum and assessment plan A sample year-long plan for Year 3 teachers, structured around four units—one per school term. The plan includes assessment guidance and outlines coverage across relevant strands and content descriptions.	www.mathematicshub.edu.au/search/year-3-mathematics-c...

Year 4 – Number

Planning page: <https://www.mathematicshub.edu.au/planning-tool/4/number/mathematical-modelling/>

Teaching resources

Title	Link
Buying presents In this lesson, students will use mathematical modelling to make decisions based on the purchasing of gifts.	www.mathematicshub.edu.au/plan-teach-and-assess/teach...
Pocket money: Mathematical modelling In this lesson, students use mathematical modelling to solve problems that involve financial decisions.	www.mathematicshub.edu.au/plan-teach-and-assess/teach...
The netball tournament	newzealandcurriculum.tahurangi.education.govt.nz/netb...

Use this task to explore, discuss and model strategies to solve a problem choosing relevant number operation to perform the calculations.	
Mathematical modelling pocket money Use the context of pocket money to investigate and problem-solve using mathematical modelling.	www.mathematicshub.edu.au/media/wzsh3iwp/yr4_number_m...
Estimate and match the number sentence Use this slide deck as a prompt to develop estimation skills when making calculations and also discuss relevant mathematical models.	www.mathematicshub.edu.au/media/to2nakwn/yr4_number_m...
Let's party! Students learn about needs and wants, while budgeting for a birthday party.	files.moneySMART.gov.au/media/ev2bc2lh/lets-party-les...
Paying it forward Years 3-4 In this unit, students develop financial literacy skills including the costs and benefits of saving and spending and strategies that can be used to reach financial goals.	taxsuperandyou.gov.au/paying-it-forward/3-4

Assessment resources

Assessment: Get it while it's hot! In this assessment task, students use mathematical modelling to solve a problem related to owning and running a pizza store.	www.mathematicshub.edu.au/media/dxpde4dc/yr4_number_m...
WS03 - Serving a customer at the market stall Use this work sample to assess students' knowledge and skills to solve financial problems, choosing efficient strategies and interpreting the results in terms of the situation.	www.australiancurriculum.edu.au/resources/work-sample...
Year 4 Mathematics: Curriculum and assessment plan A sample year-long plan for Year 4 teachers, structured around four units—one per school term. The plan includes assessment guidance and outlines coverage across relevant strands and content descriptions.	www.mathematicshub.edu.au/search/year-4-mathematics-c...

Year 5 – Number

Planning page: <https://www.mathematicshub.edu.au/planning-tool/5/number/mathematical-modelling/>

Teaching resources

Title	Link
Mathematical Modelling: A guidebook for teachers and teams Use this guide to familiarise yourself with the framework suggested to introduce mathematical modelling.	research.acer.edu.au/mathematics/2/
The deca tree This task can be used to explore and use mathematical modelling to solve a problem that engages multiplicative thinking.	nrich.maths.org/problems/deca-tree
Counting trees Students devise a method for estimating the numbers of trees in a plantation then use their method to estimate the number of two different kinds of tree.	www.mathematicshub.edu.au/media/dgqfb1vf/yr5_number_m...
Owning a pet Students learn about pet ownership in Australia and the cost of buying and keeping a pet.	files.moneySMART.gov.au/media/hbwdrs3r/owning-a-pet-l...
Paying it forward Years 5-6 In this unit, students will understand how taxation is collected and how it is spent responsibly to provide for all members of the community.	taxsuperandyou.gov.au/paying-it-forward/5-6
Tasty treats This is a level 5 number link activity from the Figure It Out series. It is focused on multiplying fractions by 2 and by 10, as well as multiplying and dividing with money. A PDF of the student activity is included.	newzealandcurriculum.tahurangi.education.govt.nz/tast...

Assessment resources

Assessment: Class fundraiser Use this task to assess a student's application of mathematical modelling to a challenging task within a financial context.	www.mathematicshub.edu.au/media/yd0do4fz/yr5_number_m...
WS01 - Who were the fastest swimmers? Use this work sample to assess students' knowledge and skills to order and represent decimals to two decimal places.	www.australiancurriculum.edu.au/resources/work-sample...
Year 5 Mathematics: Curriculum and assessment plan A sample year-long plan for Year 5 teachers, structured around four units—one per school term. The plan includes assessment guidance	www.mathematicshub.edu.au/search/year-5-mathematics-c...

and outlines coverage across relevant strands and content descriptions.

Year 6 – Number

Planning page: <https://www.mathematicshub.edu.au/planning-tool/6/number/mathematical-modelling/>

Teaching resource

Title	Link
Mathematical modelling: Discounts In this lesson, students are provided with a real-world problem related to shopping and investigate the effect of discounts.	www.mathematicshub.edu.au/plan-teach-and-assess/teach...
Fractional funds Reinforce understanding of fractions in a practical context, by learning how to find a fraction or percentage of an amount, through budgeting.	www.mathematicshub.edu.au/plan-teach-and-assess/teach...
How much water does our class use? In this lesson, students gain awareness about water usage associated with common activities around the home.	www.mathematicshub.edu.au/plan-teach-and-assess/teach...
Mathematical Modelling: A guidebook for teachers and teams Use this guide to familiarise yourself with the framework suggested to introduce mathematical modelling.	research.acer.edu.au/mathematics/2/
Mathematical modelling: Pancakes Use this task to investigate the problem of using a recipe for a different number of people than stated in the recipe.	www.mathematicshub.edu.au/media/oe kb uixz/mathematical...
Place your orders Students choose from a range of challenges to rank quantities in order from smallest to largest, using mathematical modelling.	rich.maths.org/problems/place-your-orders
Buy me! Students learn how advertising can influence consumers.	files.moneySMART.gov.au/media/flreldch/buy-me-lesson-...
Owning a pet Students learn about pet ownership in Australia and the cost of buying and keeping a pet.	files.moneySMART.gov.au/media/hbwdrs3r/owning-a-pet-l...
Paying it forward Years 5-6	taxsuperandyou.gov.au/paying-it-forward/5-6

In this unit, students will understand how taxation is collected and how it is spent responsibly to provide for all members of the community.	
Moana's watch This problem solving activity has a measurement focus.	newzealandcurriculum.tahurangi.education.govt.nz/moan...

Assessment resources

Assessment: Mathematical modelling: A kitten for free? Use this task to assess a student's application of mathematical modelling to a challenging task within a financial context.	www.mathematicshub.edu.au/media/azolqus/yr6_number m...
WS02 - Fundraiser Use this work sample to assess students' knowledge and skills to use mathematical modelling to model the costs of a fundraising event.	www.australiancurriculum.edu.au/resources/work-sample...
WS04 - Travel itinerary Use this work sample to assess students' knowledge and skills to use mathematical modelling when planning a travel itinerary.	www.australiancurriculum.edu.au/resources/work-sample...
WS03 - Interpreting and comparing data Use this work sample to assess students' knowledge and skills to compare and interpret data using different displays.	www.australiancurriculum.edu.au/resources/work-sample...
Year 6 Mathematics: Curriculum and assessment plan A sample year-long plan for Year 6 teachers, structured around four units—one per school term. The plan includes assessment guidance and outlines coverage across relevant strands and content descriptions	www.mathematicshub.edu.au/search/year-6-mathematics-curriculum-and-assessment-plan/

Secondary

Year 7 – Number

Planning page: <https://www.mathematicshub.edu.au/planning-tool/7/number/mathematical-modelling/>

Teaching resource

Title	Link
Estimating and rounding decimals In this lesson, students draw on prior knowledge of rounding whole numbers.	www.mathematicshub.edu.au/plan-teach-and-assess/teach...
Graphs: Formulas and variables In this lesson, students use algebra and linear equations to model two real-world scenarios.	www.mathematicshub.edu.au/plan-teach-and-assess/teach...
Patterns, rules and graphs In this lesson, students use games to learn about space and location on a Cartesian plane.	www.mathematicshub.edu.au/plan-teach-and-assess/teach...
Practical numbers: Part 2 In this lesson, we use the context of an ancient bazaar to investigate measurement systems.	www.mathematicshub.edu.au/plan-teach-and-assess/teach...
Prime factorisation This mathematical modelling investigation explores prime factorisation and how we can use number grids, prime factorisation, factors and multiples, HCM and LCM to solve problems.	resolve.edu.au/v84-sequences/prime-factorisation
Real numbers: Sum of squares This mathematical investigation explores history, encourages the collection of evidence, working systematically to find patterns to solve problems using whole numbers, square roots and perfect squares.	resolve.edu.au/v84-sequences/real-numbers-sum-squares
Mathematical modelling: A guidebook for teachers Use this comprehensive guide to learn how to implement mathematical modelling to solve authentic problems into your teaching. Activities are included for all developmental levels.	research.acer.edu.au/mathematics/2/
Friday 13th This question encourages mathematical thinking by using real-world tools and working collaboratively to solve an interesting question around number.	nrich.maths.org/problems/friday-13th
Mixing paints What ratio of red and white paint will give you the correct shade of pink?	nrich.maths.org/problems/mixing-paints

Using proportional reasoning This lesson will help you to assess students' ability to use proportional reasoning. The activities allow them to demonstrate their ability to describe a ratio, express a ratio in different ways and answer contextual problems.	www.map.mathshell.org/lessons.php?collection=8&unit=6230
Best-buy tickets This resource uses a contextualised problem to assess students' ability to calculate a best buy.	www.map.mathshell.org/tasks.php?collection=9&unit=HE14
Alison's quilt This investigation asks students to use manipulatives to solve a problem involving prime factorisation. It is suitable as a collaborative task or assessment.	nrich.maths.org/problems/alisons-quilt

Assessment resources

Year 7 Mathematics: Curriculum and assessment plan A sample year-long plan for Year 7 teachers, structured around four units—one per school term. The plan includes assessment guidance and outlines coverage across relevant strands and content descriptions.	www.mathematicshub.edu.au/search/year-7-mathematics-c...
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Year 7 – Measurement

Planning page: <https://www.mathematicshub.edu.au/planning-tool/7/measurement/mathematical-modelling/>

Teaching resources

Title	Link
Mathematical modelling: Pizza problem In this lesson, students are provided with a real-world problem related to takeaway pizza where they gathering evidence as they investigate a claim.	www.mathematicshub.edu.au/plan-teach-and-ass...
Teacher package: Mathematical modelling Numerous differentiated activities and ideas to bring mathematical modelling into the classroom.	plus.maths.org/content/teacher-package-mathe...
Fence it What is the largest area you can fence given a length of fencing?	nrich.maths.org/problems/fence-it
Old scales Which three weights do you need to weigh any whole number of kilograms from 1kg to 13kg?	newzealandcurriculum.tahurangi.education.gov...
Cuboid challenge What is the largest volume of a box for a given surface area?	nrich.maths.org/problems/cuboid-challenge

Year 8 – Number

Planning page: <https://www.mathematicshub.edu.au/planning-tool/8/number/mathematical-modelling/>

Teaching resources

Title	Link
Shooting 3-pointers: Part 1 In this lesson, students are guided through solving a problem using mathematical modelling.	www.mathematicshub.edu.au/plan-teach-and-assess/teach...
Shooting 3-pointers: Part 2 In this lesson, students conduct a statistical investigation.	www.mathematicshub.edu.au/plan-teach-and-assess/teach...
Solving problems with percentages In this resource, students are presented with a series of problems with the solutions fully explained. There are similar problems for the students to try.	www.amsi.org.au/ESA_Resources/Q1770/Q1770_1.html
Increasing and decreasing quantities by a percentage Students use a modelling exercise to practise converting, recognising and representing percentages, decimals and fractions.	www.map.mathshell.org/lessons.php?collection=8&unit=7100
Money and financial mathematics In this resource, teachers are taught to use questioning to guide students to successfully solve problems involving profit and loss.	www.acladersresource.sa.edu.au/features/conceptual-n...
Teacher and student guide to mathematical modelling This guide trains teachers to think and teach with a mathematical modelling mindset. Students use their investigative skills to solve real-world problems.	research.acer.edu.au/mathematics/2/
Electric vs petrol cars In this task, students develop reasoning by analysing the costs of an electric vs petrol powered vehicle.	arc.educationapps.vic.gov.au/learning/resource/75972
Profit and loss Students answer a series of questions based on scenarios where two shop owners have made both a profit and loss. They are required to calculate profit amount, compare profits and calculate the percentage profit.	arc.educationapps.vic.gov.au/learning/sites/mcc/VCMA...
Rational tangles This mathematics investigation prompts students to solve a 'dancing' problem with ropes using rational numbers. This task is for students who are familiar with adding fractions.	resolve.edu.au/v84-sequences/rational-tangles

Year 8 – Algebra

Planning page: <https://www.mathematicshub.edu.au/planning-tool/8/algebra/mathematical-modelling/>

Teaching resource

Title	Link
Addition chain Students use spreadsheets to investigate potential arithmetic relationships and then use algebra to identify and justify which relationships are generally true.	resolve.edu.au/v84-sequences/algebra-additio...

Working with algebra This resource includes three separate activities that consolidate the core algebra skills of operating with and manipulating algebraic expressions.	resolve.edu.au/v84-sequences/working-algebra
Plotting linear relationships This resource provides detailed explanations of the curriculum content, worked examples and assessment questions. This resource focuses on how to plot points on a Cartesian plane, and how to find the gradient and equation of a line.	www.amsi.org.au/ESA_middle_years/Year8/Year8...
Linear and non-linear relationships This resource covers linear and non-linear relationships. There are examples of classroom activities and teacher question stems. The activities are based on the BitL tool.	www.acleadersresource.sa.edu.au/features/con...
Your number was ... This problem prompts students to think mathematically and come up with a model to explain why the end result of this game always comes out as it does.	rich.maths.org/problems/your-number-was?tab...
Proportional reasoning: Video and teaching guide Use this video as a springboard to explore scaling or proportional thinking, and to apply that thinking to a food-related context, drawing on reasoning and mathematical modelling.	www.mathematicshub.edu.au/plan-teach-and-ass...
Algebraic equations: Video and teaching guide Use this video as a springboard to explore algebraic thinking, and to apply that thinking to a financial context, drawing on reasoning and mathematical modelling.	www.mathematicshub.edu.au/plan-teach-and-ass...
Comparing proportional quantities - Level 8 This sequence of 7 lessons empowers students to develop their mathematical modelling skills through hands-on activities focused on rates and financial concepts.	www.mathematicshub.edu.au/search/comparing-p...
Working with algebra This resource includes three separate activities that consolidate the core algebra skills of operating with and manipulating algebraic expressions.	resolve.edu.au/v84-sequences/working-algebra
Addition chain This lesson is designed to consolidate skills in algebra, including collecting like terms, and expanding and factorising using the distributive law. Students use spreadsheets to investigate potential arithmetic relationships and then use algebra to identify and justify which relationships are generally true.	resolve.edu.au/v84-sequences/algebra-additio...
Your number was ... This problem prompts students to think mathematically and come up with a model to explain why the end result of this game always comes out as it does.	rich.maths.org/problems/your-number-was?tab...

Assessment resources

Year 8 Mathematics: Curriculum and assessment plan

A sample year-long plan for Year 8 teachers, structured around four units—one per school term. The plan includes assessment guidance and outlines coverage across relevant strands and content descriptions

www.mathematicshub.edu.au/search/year-8-math...

Year 8 – Measurement

Planning page: <https://www.mathematicshub.edu.au/planning-tool/8/measurement/mathematical-modelling/>

Teaching resource

Title	Link
Solving problems involving rates and ratios A teaching resource on how to teach ratios and rates. Includes activities.	arc.educationapps.vic.gov.au/learning/sites/...
Recognise and solve problems involving simple ratios Students can work individually or in groups to complete each real-world scenario.	arc.educationapps.vic.gov.au/learning/sites/...
Different ways to pay Students learn about the pros and cons of various payment options, what happens to their money, different consumer products and where to go for more information.	files.moneySMART.gov.au/media/lnqgvfar/diffe...

Assessment resources

WS3 - Design a putt putt course V9 Australian Curriculum Use this task to guide assessment of students' proficiency in using mathematical modelling to solve a practical problem involving measurement.	www.australiancurriculum.edu.au/resources/wo...
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Year 9 – Algebra

Planning page: <https://www.mathematicshub.edu.au/planning-tool/9/algebra/mathematical-modelling/>

Teaching resources

Title	Link
Writing equations to model relationships (Part 1) Students investigate quantity and variance when variables are given and when variables are not given. There is a level of repetition in the investigation to allow for practice and confident interpretation.	im.kendallhunt.com/HS/teachers/1/2/2/index.h...
Mathematical modelling Use this guide to learn more about mathematical modelling and how it can be used in the classroom. Go to page 16 for a specific example in relation to linear functions to find the answer to a hypothetical question regarding Mozart and his opus.	research.acer.edu.au/mathematics/2/

Real-world algebra: Linear functions Students use dynamic geometry software to investigate the variables of the linear function rule as line graphs are matched to features of object in an image to assess their suitability, for example, the gradient of a slide.	resolve.edu.au/v84-sequences/real-world-alge...
Mathematical modelling: Pricing for profit Students use prior knowledge to model financial problems around profit and pricing. This activity presents problems from Year 7 to Year 9, providing opportunity for differentiation.	resolve.edu.au/v84-sequences/mathematical-mo...
Planning a pizza party This problem provides prompts and questions for students to use linear functions to model problems when planning catering for a party.	im.kendallhunt.com/HS/teachers/1/2/1/index.h...
Enclosing squares Set this task as a challenge. Students may work collaboratively to use their knowledge of algebra, Pythagoras' theorem and graphing to explore and practise gradients and straight lines.	nrich.maths.org/problems/enclosing-squares
Handshake problem Students work in pairs or groups to nut out this problem. Students are required to apply a numerical model to a party scenario. They are asked to question their method in solving the problem – was it the most efficient approach?	nrich.maths.org/problems/handshakes?tab=help

Year 9 – Measurement

Planning page: <https://www.mathematicshub.edu.au/planning-tool/9/measurement/mathematical-modelling/>

Teaching resource

Title	Link
Mathematical modelling: A guidebook for teachers and teams This extensive resource guides teachers on teaching and demonstrates mathematical-modelling approaches to solve problems. It allows for differentiated learning and progression.	research.acer.edu.au/mathematics/2/
Overarch 2 In this challenging problem, students are asked to build a tower of bricks in the shape of an overarch and to investigate how high the arch could be built within limitations.	nrich.maths.org/problems/overarch-2
Tree biomass This resource sets up an environmental problem of cutting down trees to make paper. Students are asked to consider the number of trees that need to be cut down to supply all the paper a school uses in one year.	resolve.edu.au/v84-sequences/tree-biomass
Lunch lap Students are given the opportunity to use physical and digital technologies to model and explore problems of a geometric nature. They use dynamic modelling and graphing techniques to model and solve two variations of the problem. Opportunities for further extension are given.	resolve.edu.au/v84-sequences/geometry-lunch-...
Understanding compound interest	files.moneySMART.gov.au/media/mfmd32me/under...

Students learn how compound interest works and why saving now can help you later.	
Different ways to pay Students learn about the pros and cons of various payment options, what happens to their money, different consumer products and where to go for more information.	files.moneySMART.gov.au/media/lnqgvfar/diffe...
The cost of cars Students learn about car ownership in Australia and the real cost of buying and running a car.	files.moneySMART.gov.au/media/opei-peps/cost-...
Lunch lap Students are given the opportunity to use physical and digital technologies to model and explore problems of a geometric nature. They use dynamic modelling and graphing techniques to model and solve two variations of the problem. Opportunities for further extension are given.	resolve.edu.au/v84-sequences/geometry-lunch-...
Tree biomass This resource sets up an environmental problem of cutting down trees to make paper. Students are asked to consider the number of trees that need to be cut down to supply all the paper a school uses in one year.	resolve.edu.au/v84-sequences/tree-biomass

Year 10 – Algebra

Planning page: <https://www.mathematicshub.edu.au/planning-tool/10/algebra/mathematical-modelling/>

Teaching resources

Title	Link
Capital Airways: Part 1 In this lesson students are introduced to the concept of a network through an airline route map.	www.mathematicshub.edu.au/plan-teach-and-assess...
Capital Airways: Part 2 In this lesson, students use mathematical modelling to re-design the network map of the airline route to improve the airline's profitability.	www.mathematicshub.edu.au/plan-teach-and-assess...
Predicting populations An inquiry-based lesson encompassing activities that have been developed from real-world data, where students take a mathematical modelling approach. Teacher guidance, student lesson and practice are provided.	im.kendallhunt.com/HS/teachers/1/5/21/prepar...
Mathematical modelling Use this guide to learn more about mathematical modelling and how it can be used in the classroom. Go to 'Köchel numbers' (p. 16) for a specific example in relation to linear functions to find the answer to a hypothetical question regarding Mozart and his opus.	research.acer.edu.au/mathematics/2/
Real-world algebra: Exponential functions Students use dynamic geometry software to investigate exponential functions that model fossil data and trends in energy use.	resolve.edu.au/v84-sequences/real-world-alge...
Real-world algebra: Quadratic functions	resolve.edu.au/v84-sequences/real-world-alge...

Students investigate quadratic functions in three lessons using dynamic graphing software.	
Understanding compound interest Students learn how compound interest works and why saving now can help you later.	files.moneySMART.gov.au/media/mfmd32me/under...
Different ways to pay Students learn about the pros and cons of various payment options, what happens to their money, different consumer products and where to go for more information.	files.moneySMART.gov.au/media/lnggvfar/diffe...
Mathematical modelling Use this guide to learn more about mathematical modelling and how it can be used in the classroom. Go to 'Köchel numbers' (p. 16) for a specific example in relation to linear functions to find the answer to a hypothetical question regarding Mozart and his opus.	research.acer.edu.au/mathematics/2/
Real-world algebra: Exponential functions Students use dynamic geometry software to investigate exponential functions that model fossil data and trends in energy use.	resolve.edu.au/v84-sequences/real-world-alge...
Cricket ratings This problem uses cricket data to analyse questions regarding the scoring rates of two players. Students are guided through the activity and are shown how mathematical modelling can help answer our questions.	rich.maths.org/articles/cricket-ratings
Disease dynamics: Understanding the spread of diseases This collection of investigations allows for differentiation and is based around the topic of disease spread within populations. Choose the activity you wish students to investigate and apply a mathematical modelling approach to.	rich.maths.org/disease-dynamics-understandi...

Assessment resources

WS04 - Polynomial math art Use this worksample to guide assessment of students' knowledge and skills in the use of mathematical modelling to solve problems involving change in applied contexts, choosing to use linear and quadratic functions.	www.mathematicshub.edu.au/search/ws04-polyno...
WS01 - Mathematics assignment Use this work sample to guide assessment of students' knowledge and skills in using mathematical modelling to solve problems involving quadratic functions numerically and graphically.	www.mathematicshub.edu.au/search/ws01-mathem...

Year 10 – Measurement

Planning page: <https://www.mathematicshub.edu.au/planning-tool/10/measurement/mathematical-modelling/>

Teaching resources

Title	Link
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A piece of cake In this lesson, students build on their skills in finding volumes and surface areas of prisms and cylinders to design a multi-level celebration cake for a party.	www.mathematicshub.edu.au/plan-teach-and-assess...
Mathematical modelling: A guidebook An excellent guide for teachers to learn about and employ mathematical-modelling projects in the classroom. The guide discusses what mathematical modelling is, discusses a framework that students can follow, describes types of models and provides age-appropriate example problems.	research.acer.edu.au/mathematics/2/
Teacher package: Mathematical modelling Numerous differentiated activities and ideas to bring mathematical modelling into the classroom.	plus.maths.org/content/teacher-package-mathe...
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Constructions A modelling activity that uses geometry and scaling, and applies this knowledge to a real-world defence problem.	www.stem.org.uk/resources/library/resource/2...
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Seaside This video employs knowledge of geometry, similar triangles, scale drawing and loci. An effective short activity to use on the board in the classroom.	www.stem.org.uk/resources/library/resource/3...