Year 5 Mathematics Curriculum and assessment plan

Example

Level description	Context and
In Year 5, learning in Mathematics builds on each student's prior learning and experiences. Students engage in a range of approaches to learning and doing mathematics that develop their understanding of and fluency with concepts, procedures and processes by making connections, reasoning, problem-solving and practice. Proficiency in mathematics enables students to respond to familiar and unfamiliar situations by employing mathematical strategies to make informed decisions and solve problems efficiently.	The Year 5 co learning. This
Students further develop proficiency and positive dispositions towards mathematics and its use as they:	 summative need to sup
• apply their understanding of relationships to convert between forms of numbers, units and spatial representations	of place val
• use mathematical modelling to solve practical problems, with guidance, using natural numbers and operations, and report on insights and conclusions they reach about the context	 timing of N/
use common percentages to make proportional comparisons of quantities	exploration electronic d
use appropriate instruments and digital tools to construct and measure angles in degrees	software) in
 use appropriate metric units to directly measure the area and perimeter of regular and irregular spaces 	learning an
 locate and move positions within a grid coordinate system 	 timing of the incorporate
 recognise what stays the same and what changes when shapes undergo transformations 	timing of the
 experiment with factors and multiples using algorithms and digital tools 	incorporate
• plan, conduct and report findings from statistical investigations that involve an increasing range of types of data and means for representing data	Across the ye
• develop their reasoning skills when they consider relationships between events and connect long-term frequency over many trials to the likelihood of an event occurring.	create auther provides an o and garden p exploring frac provides an o

ACiQ v9.0

and cohort considerations

r 5 cohort participates in daily mathematics This plan has considered:

ative and formative data from Year 4 showing the o support and extend on students' understandings e value in decimal form

of NAPLAN in Term 1

ation and use of digital tools (e.g. virtual material, nic devices, programs and dynamic geometric re) in relevant contexts, which supports the g and doing of mathematics

of the use of the school kitchen as this context is prated into Unit 1

of the athletics carnival as this context is prated into Unit 3.

Across the year, the contexts for teaching and learning create authentic learning experiences for students. Unit 1 provides an opportunity to connect to the school kitchen and garden program as students engaging in a project exploring fractions, mass and capacity in cooking. Unit 3 provides an opportunity to engage in athletics-related activities to develop mathematical understandings.



Unit 1 — Cooking with Maths	Unit 2 — What are the possibilities?	Unit 3 — Run, jump, calculate!	Unit 4 — D
Ouration: 10 weeks	Duration: 10 weeks	Duration: 10 weeks	Duration: 1
ngagement with simple recipes and cooking skills ovides a meaningful context for the applications of nowledge and skills in fractions, mass and capacity. hese learnings are the focus of this unit. the first phase of this unit, understandings related to juivalent fractions from Year 4 are revised and onsolidated. Students order and represent fractions with e same or related denominators, including mixed umerals, using diagrams, fraction walls, paper models, umber lines and virtual materials. They draw on their oficiency with multiplication facts from Year 4 to convert extend their understanding of fractions to include the didtion and subtraction of fractions with the same or dated denominators. Using their part-whole knowledge of actions, students transfer their understandings to present common percentages, recognising 100% as the hole. Students are then supported to connect ercentages to their decimal and fraction equivalents. the second phase of this unit, students draw on their ear 4 knowledge, understanding and skills to use scaled struments and approximate units to measure mass and apacity. Students then engage in a project using the ontext of cooking where they measure the mass and apacity of ingredients and make connections to fractional nderstandings. Using the mathematical modelling occess, students calculate the amount of ingredients equired to cater for the class group of students, and the st of purchasing the ingredients. They add and subtract actions with related denominators and apply estimation rategies to check the reasonableness of their alculations. Students choose and use appropriate metric nits when measuring the attributes of mass and capacity they double, triple or quadruple ingredient amounts. Hey develop critical and creative thinking skills as they ake choices when completing the modelling task, using poservations and prior knowledge to provide reasons for noices made. As students work in groups to complete the oyied tasks, opportunities for peer collaboration, mmunication, decision-maki	Problem-solving experiences provide students with meaningful contexts to develop critical and creative thinking skills through exploration of possibilities and testing of options. This unit provides students with a range of problem-solving experiences as they conduct chance experiments, explore factors and multiples of natural numbers and apply computational thinking skills to identify patterns and develop algorithms. In the first phase of this unit, students draw on their fractional understandings developed in Unit 1 to investigate chance events. Through hands-on investigations involving dice, spinners, cards and chance games, students explore possible outcomes, discussing the likelihood of the outcomes occurring and consider the fairness of the event. Students then apply these findings to develop logical thought and deductive reasoning skills as they compare situations that involve 'equally likely' and 'not equally likely' outcomes. Students consolidate their knowledge by conducting repeated chance experiments, observing and recording results, and describing the relative frequency, e.g. the number five was rolled three times out of ten. These activities lead students to develop a simple game of chance that a peer can review and play, making statements about likelihood of outcomes in their game. Students present their findings from the probability experiment in an investigation report. In the second phase of this unit, students develop computational thinking skills as they explore factors and multiples of natural numbers. They use hands-on materials and work systematically to identify all possible factors of a number. Through the computational thinking process, students recognise number patterns and develop algorithms to determine divisibility tests. In a supervised assessment, students create a flow chart using branching and yes/no decisions to represent their understanding of factors and multiples.	The school athletics carnival provides an engaging context for students to consolidate mathematical knowledge and see the connection to their everyday experiences. In this unit, students engage in athletics-related activities to develop their understanding of decimal numbers, measurement, statistics and grid coordinates. In the first phase of this unit, the context for investigations (athletics) and the means to collect evidence of learning (project) is established. There is an ongoing collection of evidence of students' learning throughout the unit. As students practise and train for the athletics carnival, they choose and use appropriate metric units to measure attributes of length in events such as long jump, shot put, discus and high jump. They time 100-metre sprint practice sessions to tenths of a second and use their place value understanding to write and order times and measurement results. In the second phase of this unit, there are many opportunities for students to develop digital literacy through statistical investigations, e.g. selecting digital tools in programs and spreadsheets to create data representations. Critical and creative thinking skills can also be enhanced, e.g. identifying relevant information, developing questions, comparing displays. Statistical investigations may include information about favourite events (nominal categorical), levels of enjoyment from the carnival and ordering of personal times from fastest to slowest (ordinal categorical) and the number of students in each sports house or event (discrete numerical). Students represent the data in a variety of ways, e.g. tabulating results and creating column graphs and many-to-one picture graphs. They identify the mode and interpret the shape and distribution of data to make statements about the results. Students interpret line graphs such as forecasted hourly temperatures across the day and make suggestions as to when certain events should be held and breaks should be scheduled. Prior to the athletics carnival, students create a	Mathematic everyday ok and angles structures to students in they identify designs and In the first p that incorpo and rotation in designs fi investigate creations. S to deepen u transformati and measur spatial and dimensiona nets and bu sketches. S prisms and plasticine an Students ke their finding photographs In the secor proficiency v large numbe equations. T diagrams ar properties o strategies (e using the in the reasona of students' supervised

- Designing solutions

10 weeks

atics is integral to design in architecture, art and objects. Concepts of pattern, shape, symmetry es are combined in design models and provide s to design ideas and principles. This unit engages in developing critical and creative thinking skills as atify, process and evaluate information in geometric and communicate their understandings.

phase of this unit, students explore motif designs porate shapes, angles, translations, reflections ons of shapes and symmetry. They are immersed from a range of cultures and time periods to e how each of these concepts is applied to motif Students then use dynamic geometric software understandings by describing the results of ations, identifying any symmetries and estimating suring angles in degrees. Students use their d geometrical reasoning skills to investigate twonal nets of three-dimensional objects. They sketch build three-dimensional objects from these Students create skeletal models that contain d pyramids out of materials including straws and and sketch their designs on isometric dot paper. keep a digital investigation folio with samples of ngs using sketches, designs, digital presentations, ohs and annotations.

cond phase of this unit, students use their cy with multiplication facts to multiply and divide mbers and to find unknown values in numerical s. They use physical and virtual materials, s and arrays to explore associative and cumulative s of multiplication. Students use a range of s (e.g. doubling or halving, thinking of factors, e inverse relationship) to find solutions and check onableness of answers using estimation. Evidence hts' proficiency will be captured through a ed assessment.

Unit 1 — Cooking with Maths		Unit 2 — What are the possibilities?		Unit 3 — Run, jump, calculate!		Unit 4 — Designing solutions				
-	Term/ week	Assessment 2 — Project: Probability experiment and simulations	Term/ week	Assessment 4 — Project: Statistical investigation	Term/ week	Assessment 5 — Project	Term/ week			
 Description: Through a series of cooking experiences, students record responses to mathematical problems in a learning journal (e.g. drawings, photographs/ diagrams, written descriptions and calculations) to demonstrate their proficiency when: using the mathematical modelling process to plan a cooking lesson for the class calculating the amount of ingredients required to cater for the class by ordering, representing, adding and subtracting fractions with the same or related denominators representing common percentages and connecting them to their fraction and decimal equivalents applying estimation strategies to check the reasonableness of their calculations choosing and using appropriate metric units to measure the attributes of mass and capacity. Technique: Project Mode: Multimodal (written and practical with 		 Description: Students conduct a chance experiment investigating the fairness of their classmate's simple game of chance. Students demonstrate their proficiency in their investigation report when: conducting repeated chance experiments listing the possible outcomes of the simple game of chance estimating likelihoods of outcomes making comparisons between outcomes with and without equally likely outcomes identifying the fairness of the simple game of chance. Technique: Project Mode: Multimodal (written and practical with materials to conduct chance experiments) Conditions: completed over multiple lessons in Week 5 written responses up to 400 words practical components are observed by the teacher 	Term 2 Week 5	 Description: Throughout the term, students collect evidence of their learning through a learning journal. Using the athletics carnival as a context, they record results from 100-metre sprint, long jump, shot put, discus and high jump practice sessions. They conduct statistical investigations, representing the data in a variety of ways and interpreting the data connected to the athletics carnival. Students also create a timetable in 24-hour time and a map of the area, which they use to locate positions and solve problems involving area and perimeter. Technique: Project Mode: Multimodal (written and practical with scaled instruments to measure length) Conditions: started in Week 3 and completed over multiple lessons by the end of Week 10 written responses up to 400 words practical components are observed by the teacher 	Term 3 Week 10	 Description: Students keep a digital investigation folio (e.g. drawings/sketches, photographs/diagrams) on how mathematics is used in design (e.g. motif designs, artworks, skeletal models). The folio shows annotated samples of students' learning, focusing on: performing transformations and identifying any symmetries in motif designs describing the results of the transformations estimating, constructing and measuring angles in degrees in motif designs connecting objects to their two-dimensional nets in skeletal models and diagrams. Technique: Project Mode: Multimodal (written and practical with tools to construct and measure angles, perform transformations) Conditions: started in Week 2 and completed over multiple lessons by end of Week 4 may include the use of digital tools practical components are observed by the teacher 	Term 4 Week 4			
 capacity of objects) Conditions: started in Week 4 and completed over 		Assessment <u>3</u> — Supervised assessment: Computational thinking	Term/ week			Assessment 6 — Supervised assessment	Term/ week			
 started in Week 4 and completed over multiple lessons by the end of Week 10 written responses up to 400 words practical components are observed by the teacher 	Description: Students answer short resp questions to demonstrate their knowledge factors and multiples and to create and u algorithms. They use the computational thinking process to create a flow chart involving branching and yes/no decisions determine divisibility. Technique: Supervised assessment Mode: Written Conditions:	 Description: Students answer short responses to demonstrate their knowledge factors and multiples and to create and us algorithms. They use the computational thinking process to create a flow chart involving branching and yes/no decisions determine divisibility. Technique: Supervised assessment Mode: Written Conditions: up to 60 minutes, plus 5 minutes perusation 	Description: Students answer short resp questions to demonstrate their knowledge factors and multiples and to create and us algorithms. They use the computational thinking process to create a flow chart involving branching and yes/no decisions determine divisibility. Technique: Supervised assessment Mode: Written Conditions: • up to 60 minutes, plus 5 minutes perust	 Description: Students answer short response questions to demonstrate their knowledge of factors and multiples and to create and use algorithms. They use the computational thinking process to create a flow chart involving branching and yes/no decisions to determine divisibility. Technique: Supervised assessment Mode: Written Conditions: up to 60 minutes, plus 5 minutes perusal 	Computational thinking Description: Students answer short response juestions to demonstrate their knowledge of actors and multiples and to create and use ligorithms. They use the computational ninking process to create a flow chart nvolving branching and yes/no decisions to letermine divisibility. Technique: Supervised assessment Mode: Written Conditions: up to 60 minutes, plus 5 minutes perusal	Term 2 Week 9			 Description: Students respond to questions, scenarios, or problems that involve: using their proficiency with multiplication facts and efficient calculation strategies to multiply large numbers by one- and two-digit numbers and divide by single-digit numbers checking the reasonableness of calculations using estimation applying properties of numbers and operations to find unknown values in numerical equations involving multiplication and division. Technique: Supervised assessment Mode: Written Conditions: up to 60 minutes, plus 5 minutes perusal and/or planning time 	Term 4 Week 7

	Unit 1 — Cooking with Maths	Unit 2 — What are the possibilities?	Unit 3 — Run, jump, calculate!	Uni
ent standard	By the end of Year 5, students use place value to write and order decimals including decimals greater than one. They express natural numbers as products of factors and identify multiples. Students order and represent, add and subtract fractions with the same or related denominators. They represent common percentages and connect them to their fraction and decimal equivalents. Students use their proficiency with multiplication facts and efficient calculation strategies to multiply large numbers by one- and two-digit numbers and divide by single-digit numbers. They check the reasonableness of their calculations using estimation. Students use mathematical modelling to solve financial and other practical problems, formulating and solving problems, choosing arithmetic operations and interpreting results in terms of the situation. They apply properties of numbers and operations to find unknown values in numerical equations involving multiplication and division. Students create and use algorithms to identify and explain patterns in the factors and multiples of numbers.	By the end of Year 5, students use place value to write and order decimals including decimals greater than one. They express natural numbers as products of factors and identify multiples. Students order and represent, add and subtract fractions with the same or related denominators. They represent common percentages and connect them to their fraction and decimal equivalents. Students use their proficiency with multiplication facts and efficient calculation strategies to multiply large numbers by one- and two-digit numbers and divide by single-digit numbers. They check the reasonableness of their calculations using estimation. Students use mathematical modelling to solve financial and other practical problems, formulating and solving problems, choosing arithmetic operations and interpreting results in terms of the situation. They apply properties of numbers and operations to find unknown values in numerical equations involving multiplication and division. Students create and use algorithms to identify and explain patterns in the factors and multiples of numbers.	By the end of Year 5, students use place value to write and order decimals including decimals greater than one. They express natural numbers as products of factors and identify multiples. Students order and represent, add and subtract fractions with the same or related denominators. They represent common percentages and connect them to their fraction and decimal equivalents. Students use their proficiency with multiplication facts and efficient calculation strategies to multiply large numbers by one- and two-digit numbers and divide by single-digit numbers. They check the reasonableness of their calculations using estimation. Students use mathematical modelling to solve financial and other practical problems, formulating and solving problems, choosing arithmetic operations and interpreting results in terms of the situation. They apply properties of numbers and operations to find unknown values in numerical equations involving multiplication and division. Students create and use algorithms to identify and explain patterns in the factors and multiples of numbers.	By t and The ider sub The to tt thei calc and nun calc nun calc form ope situ ope invo use fact
Achievement	They choose and use appropriate metric units to measure the attributes of length, mass and capacity, and to solve problems involving perimeter and area. Students convert between 12- and 24-hour time. They estimate, construct and measure angles in degrees. Students use grid coordinates to locate and move positions. They connect objects to their two-dimensional nets. Students perform and describe the results of transformations and identify any symmetries.	They choose and use appropriate metric units to measure the attributes of length, mass and capacity, and to solve problems involving perimeter and area. Students convert between 12- and 24-hour time. They estimate, construct and measure angles in degrees. Students use grid coordinates to locate and move positions. They connect objects to their two-dimensional nets. Students perform and describe the results of transformations and identify any symmetries.	They choose and use appropriate metric units to measure the attributes of length, mass and capacity, and to solve problems involving perimeter and area. Students convert between 12- and 24-hour time. They estimate, construct and measure angles in degrees. Students use grid coordinates to locate and move positions. They connect objects to their two-dimensional nets. Students perform and describe the results of transformations and identify any symmetries.	The mea to s con grid con perf ider
	They plan and conduct statistical investigations that collect nominal and ordinal categorical and discrete numerical data using digital tools. Students identify the mode and interpret the shape of distributions of data in context. They interpret and compare data represented in line graphs. Students conduct repeated chance experiments, list the possible outcomes, estimate likelihoods and make comparisons between those with and without equally likely outcomes.	They plan and conduct statistical investigations that collect nominal and ordinal categorical and discrete numerical data using digital tools. Students identify the mode and interpret the shape of distributions of data in context. They interpret and compare data represented in line graphs. Students conduct repeated chance experiments, list the possible outcomes, estimate likelihoods and make comparisons between those with and without equally likely outcomes.	They plan and conduct statistical investigations that collect nominal and ordinal categorical and discrete numerical data using digital tools. Students identify the mode and interpret the shape of distributions of data in context. They interpret and compare data represented in line graphs. Students conduct repeated chance experiments, list the possible outcomes, estimate likelihoods and make comparisons between those with and without equally likely outcomes.	The colling con line exp likel and
Moderation	Calibration: Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.	Consensus: Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.	Calibration: Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.	Exp Ref und

nit 4 — Designing solutions

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xpert:

efer to QCAA moderation advice on the QCAA website nder the Assessment tab in the learning area.

Content descriptions		Ur	nits		Content descriptions		Uı	nits	Content descriptions		
Number	1	2	3	4	Algebra	1	2	3	4	Measurement	
interpret, compare and order numbers with more than 2 decimal places, including numbers greater than one, using place value understanding; represent these on a number line AC9M5N01					recognise and explain the connection between multiplication and division as inverse operations and use this to develop families of number facts AC9M5A01					choose appropriate me measuring the length, n objects; use smaller un units to obtain a more a AC9M5M01	
express natural numbers as products of their factors, recognise multiples and determine if one number is divisible by another AC9M5N02		V			find unknown values in numerical equations involving multiplication and division using the properties of numbers and operations AC9M5A02					solve practical problems perimeter and area of re shapes using appropria AC9M5M02	
compare and order fractions with the same and related denominators including mixed numerals, applying knowledge of factors and multiples; represent these fractions on a number line AC9M5N03										compare 12- and 24-ho solve practical problems conversion between the AC9M5M03	
recognise that 100% represents the complete whole and use percentages to describe, represent and compare relative size; connect familiar percentages to their decimal and fraction equivalents AC9M5N04	V									estimate, construct and degrees, using appropr protractor, and relate th names AC9M5M04	
solve problems involving addition and subtraction of fractions with the same or related denominators, using different strategies AC9M5N05	V										
solve problems involving multiplication of larger numbers by one- or two-digit numbers, choosing efficient calculation strategies and using digital tools where appropriate; check the reasonableness of answers AC9M5N06				Ø							
solve problems involving division, choosing efficient strategies and using digital tools where appropriate; interpret any remainder according to the context and express results as a whole number, decimal or fraction AC9M5N07											
check and explain the reasonableness of solutions to problems including financial contexts using estimation strategies appropriate to the context AC9M5N08	V			V							
use mathematical modelling to solve practical problems involving additive and multiplicative situations including financial contexts; formulate the problems, choosing operations and efficient calculation strategies, using digital tools where appropriate; interpret and communicate solutions in terms of the situation AC9M5N09											
create and use algorithms involving a sequence of steps and decisions and digital tools to experiment with factors, multiples and divisibility; identify, interpret and describe emerging patterns AC9M5N010		Ø									

าร	Units						
	1	2	3	4			
etric units when mass and capacity of nits or a combination of accurate measure	V		V				
ns involving the regular and irregular iate metric units							
nour time systems and ns involving the hem							
nd measure angles in priate tools including a these measures to angle				V			

Content descriptions		Ur	nits		Content descriptions	Content descriptions Units Content description			Content descriptions	Units				
Space	1	2	3	4	Statistics	1	2	3	4	Probability	1	2	3	4
connect objects to their nets and build objects from their nets using spatial and geometric reasoning AC9M5SP01					acquire, validate and represent data for nominal and ordinal categorical and discrete numerical variables, to address a question of interest or purpose using software including spreadsheets; discuss and report on data distributions in terms of highest frequency (mode) and shape, in the context of the data AC9M5ST01					list the possible outcomes of chance experiments involving equally likely outcomes and compare to those which are not equally likely AC9M5P01				
construct a grid coordinate system that uses coordinates to locate positions within a space; use coordinates and directional language to describe position and movement AC9M5SP02					interpret line graphs representing change over time; discuss the relationships that are represented and conclusions that can be made AC9M5ST02					conduct repeated chance experiments including those with and without equally likely outcomes, observe and record the results; use frequency to compare outcomes and estimate their likelihoods AC9M5P02				
describe and perform translations, reflections and rotations of shapes, using dynamic geometric software where appropriate; recognise what changes and what remains the same, and identify any symmetries AC9M5SP03					plan and conduct statistical investigations by posing questions or identifying a problem and collecting relevant data; choose appropriate displays and interpret the data; communicate findings within the context of the investigation AC9M5ST03									

General capabilities	Units			
	1	2	3	4
Critical and creative thinking	V	\checkmark	\checkmark	V
Digital literacy				V
Ethical understanding				
Intercultural understanding				
Literacy		V		
Numeracy	V	V	V	V
Personal and social capability				

Cross-curriculum priorities

Aboriginal and Torres Strait Islander histories and cultures

Asia and Australia's engagement with Asia

Sustainability

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Units								
1	2	3	4					