## Australian Curriculum - Mathematics - Measurement and Geometry (Strands and Sub-strands with Elaborations)

PROGRESSION IS HIGHLIGHTED IN THE FOLLOWING DOCUMENT VIA BOLDED TEXT.

		Cross-curriculum priorities						
Literacy Numeracy	ICT capability	Critical and creative thinking	Personal and social capability 📫	Ethical understanding 🛨	Intercultural understanding 🥞	Aboriginal and Torres Strait Islander histories and cultures #	Asia and Australia's engagement with Asia 🔥	Sustainability 👍

	PROFICIENCY STRANDS		Sub-strands									
Year Level Indicators	The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in	***************************************		Shape		Geometric reasoning		Location and transformation				
	the developmental aspects of the learning of mathematics.	Content Descriptor	Elaborations	Content Descriptor	Elaborations	Content Descriptor	Elaborations	Content Descriptor	Elaborations			
Foundation	Sourced from Year level descriptions  Call Assessment AND ALEST AN	holds more, and explain reasoning in everyday language  (ACMMG006)  Ref. Compare and order the duration of	* Comparing objects directly, by placing one object against another to determine which is longer or by pouring from one container into the other to see which one holds more  * Using suitable language associated with measurement attributes, such as 'tall' and 'taller', 'heavy' and 'heavier', 'holds more' and 'holds less'  * Knowing and identifying the days of the week and linking specific days to familiar events  * Sequencing familiar events in time order  * Sequencing familiar events in time order  * Choosing events and actions that make connections with students' everyday family routines	Sort, describe and name familiar two-dimensional shapes and three-dimensional objects in the environment  (ACMMG009)	* Sorting and describing squares, circles, triangles, rectangles, spheres and cubes	N/A	N/A	Describe position and movement  (ACMMG010)	* Interpreting the everyday language of location and direction, such as 'between', 'near', 'next to', 'forwards', 'towards'  * Following and giving simple directions to guide a friend around an obstacle path and vice versa			
Foundation Year Achievement Standard CCTT Application AND Appl	NOTE: The standards are not divided into Strands or Sub-strands in the Australian Curriculum documents. However, logic would dictate that the standards could be put into sub- strands, as demonstrated on the right.	They compare objects using mass, length and capacity.  Students connect events and the days of the week.  They explain the order and duration of events.		They group objects based on <b>common characteristics</b> and sort shapes and objects.		N/A	N/A	They use appropriate language to describe location.				
Year 1	Sourced from Year level descriptions  Call ASSTANDANCE CORPCILIUM, ASSTANDANCE	Measure and compare the lengths and capacities of pairs of objects using uniform informal units  (ACMMG019)  [Example 1]  Tell time to the half-hour	* Understanding that in order to compare objects, the unit of measurement must be the same size  * Reading time on analogue and digital clocks and observing the characteristics of half-hour times  * Describing the duration of familiar situations such as 'how long is it until we next come to school?'  ***Example 1.5 **The comparison of the same in the s	Recognise and classify familiar two-dimensional shapes and three-dimensiona objects using obvious features  (ACMMG022)	* Focusing on geometric features and describing shapes and objects using everyday words such as 'corners', 'edges' and 'faces'	N/A	N/A	Give and follow directions to familiar locations  (ACMMG023)	* Understanding that people need to give and follow directions to and from a place, and that this involves turns, direction and distance  * Understanding the meaning and importance of words such as 'clockwise', 'anticlockwise', 'forward' and 'under' when giving and following directions			
Year 1 Achievement Standard  CCATA ARTHMENT AND CHECKUM,	NOTE: The standards are not divided into Strands or Sub-strands in the Australian Curriculum documents. However, logic would dictate that the standards could be put into sub- strands, as demonstrated on the right.	Students explain time durations.  Students order objects based on lengths and capacities using informal units.  They tell time to the half hour.		They describe two-dimensional shapes and three-dimensional objects.  They continue simple patterns involving numbers and objects.		N/A	N/A	They use the language of direction t move from place to place.				

	PROFICIENCY STRANDS	Sub-strands Sub-strands								
Year Level Indicators	The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of	Units	s of measurement	Shap	e	Geometric	reasoning	Location and	transformation	
	mathematics.	Content Descriptor	Elaborations	Content Descriptor	Elaborations	Content Descriptor	Elaborations	Content Descriptor	Elaborations	
	Sourced from Year level descriptions  AGENTAL ASTRUMENT CURPOLITY  'At this level:;  'Fluency includes counting numbers in sequences readily, using informal units iteratively to compare measurements,' 'and describing and comparing time durations  Problem Solving includes formulating problems from authentic situations, making		s and objects based on length, <b>area, volume</b> and cunits  (ACMMG037 - Using Units of Measurement)		* Comparing lengths using finger length, hand span or a piece of string  * Comparing areas using the palm of the hand or a stone  * Comparing capacities using a range of containers		N/A	Interpret simple maps of familiar locations and identify the relative positions of key features  (ACMMG044)	* Understanding that we use representations of objects and their positions, such as on maps, to allow us to receive and give directions and to describe place  * Constructing arrangements of objects from a set of directions	
	models and using number sentences that represent problem situations, and matching transformations with their original shape  Reasoning includes using known facts to derive strategies for unfamiliar calculations,'	Compare masses of objects using balance scales  (ACMMG038)	* Using balance scales to determine whether the mass of different objects is more, less or about the same, or to find out how many marbles are needed to balance a tub of margarine or a carton of milk	Describe and draw two-dimensional shapes, with and without digital technologies  (ACMMG042)	* Identifying key features of squares, rectangles, triangles, kites, rhombuses and circles, such as straight lines or curved lines, and counting the edges and corners			Investigate the effect of one-step slides and flips with and without digital technologies  (ACMMG045)	* Understanding that objects can be moved but changing position does not alter an object's size or features	
Year 2		the language of 'past' and 'to'  (ACMMG039)	* Describing the characteristics of quarter past times on an analogue clock, and identifying that the small hand is pointing just past the number and the big hand is pointing to the three	Describe <b>the features</b> of three-dimensional objects  (ACMMG043)	* Identifying geometric features such as the number of faces, corners or edges			Identify and describe half and quarter turns  (ACMMG046)	* Predicting and reproducing a pattern based around half and quarter turns of a shape and sketching the next element in the pattern	
		Name and order months and seasons  (ACMMG040)	* Investigating the seasons used by Aboriginal people, comparing them to those used in Western society and recognising the connection to weather patterns.  * Using calendars to locate specific information,							
			such as finding a given date on a calendar and saying what day it is, and identifying personally or culturally specific days							
	NOTE: The standards are not divided into	They tell time to the quarter hour and use a calendar to identify the date and the months included in seasons.		Students recognise the features of three- dimensional objects.		N/A	N/A	They interpret simple maps of familiar locations.		
Year 2 Achievement Standard  ACATTA AMSTRALAM CURROUTEM, ASSESSMENT ASSESSMEN	Strands or Sub-strands in the Australian Curriculum documents. However, logic would dictate that the standards could be put into sub- strands, as demonstrated on the right.	Students order shapes and objects		They draw two-dimensional shapes.  Students order shapes and objects using informal units.				They explain the effects of one-step transformations.		
CUCCL CL ASSESSMENT AND SEPORTINO AUTHORITY	Sourced from Year level descriptions	using informal units.  Measure, order and compare objects	* Recognising the importance of using common	Make models of three-dimensional	* Exploring the creation of three-	Identify angles as measures of turn	* Opening doors partially and fully	Create and interpret simple grid	* Creating a map of the classroom or	
	ACCITY ASSESSMENT AND SESSMENT	using familiar metric units of length, mass and capacity  (ACMMG061)	units of measurement  Left Continuous Contin	objects and describe key features  (ACMMG063)	dimensional objects using origami, including prisms and pyramids	and compare angle sizes in everyday situations  (ACMMG064)	and comparing the size of the angles created  * Recognising that analogue clocks use the turning of arms to indicate time, and comparing the size of angles between the arms for familiar	maps to show position and pathways  (ACMMG065)	playground	
	Fluency includes,' ,using familiar metric units to order and compare objects,' ,Problem Solving includes,' ,making models of three-dimensional objects,' ,Reasoning includes,' ,comparing angles,'	Tell time to <b>the minute</b> and investigate the relationship between <b>units of time</b> (ACMMG062)	* Recognising there are 60 minutes in an hour and 60 seconds in a minute				times	Identify symmetry in the environment  (ACMMG066)	* Identifying symmetry in Aboriginal rock carvings or art	
Year 3 Achievement Standard CCCCC Additional Confeculation Application And Property Application Application Confeculation And Confeculation Application Application Confeculation Application Confeculation Confecul	NOTE: The standards are not divided into Strands or Sub-strands in the Australian Curriculum documents. However, logic would dictate that the standards could be put into substrands, as demonstrated on the right.	Students use metric units for length, mass and capacity.  They tell time to the nearest minute.		Students make models of three- dimensional objects.		Students recognise angles in real situations.		They match positions on maps with given information.  Students identify symmetry in the environment.		

	PROFICIENCY STRANDS	Sub-strands								
Year Level Indicators	The proficiencies reinforce the significance of working mathematically within the content and	Units of measurement		Shape		Geometric reasoning		Location and transformation		
		Content Descriptor	Elaborations	Content Descriptor	Elaborations	Content Descriptor	Elaborations	Content Descriptor	Elaborations	
Year 4	Sourced from Year level descriptions  Cara ASSESSAND AND AND ASSESSAND	Compare objects using familiar metric units of area and volume  (ACMMG290)  (ACMMG290)  (ACMMG85)  (ACMMG085)  (ACMMG086)  (ACMMG086)	*Reading and interpreting the graduated scales on a range of measuring instruments to the nearest graduation  *Comparing areas using grid paper  *Comparing volume using centicubes  *Comparing volume using centicubes  *Recognising that metric units are not the only units used throughout the world, for example measuring the area of floor space using tatami mats (Japan), using squares for room and house area (Australia)  *Identifying and using the correct operation for converting units of time  *Calculating the time spent at school during a normal school day  *Calculating the time required to travel between two locations  *Determining arrival time given departure time  *Determining arrival time given departure time	Compare the areas of regular and irregular shapes by informal means  (ACMMG087)  Compare and describe two dimensional shapes that result from combining and splitting common shapes, with and without the use of digital technologies  (ACMMG088)	dimensional shapes that are part of a composite shape by recreating it	than a right angle  (ACMMG089)  □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	them to a right angle using digital technologies	Use simple scales, legends and directions to interpret information contained in basic maps  (ACMMG090)  (ACMMG090)  Create symmetrical patterns, pictures and shapes with and without digital technologies  (ACMMG091)	and a city in Indonesia and describing the difference  Limit Control of the city of the ci	
Year 4 Achievement Standard CCCCC AUTRALIA CURRICULIA, SESSIBLE AND THE SE	NOTE: The standards are not divided into Strands or Sub-strands in the Australian Curriculum documents. However, logic would dictate that the standards could be put into sub- strands, as demonstrated on the right.	Students use sca They solve problems involving time duration. They convert between units of time.	aled instruments to measure temperatures, lengths	shapes and objects.  Students compare areas of regular and irregular shapes using informal units.		They classify angles in relation to a right angle.		They interpret information contained in maps.  Students create symmetrical shapes and patterns.		

Year Level					Sub-strands				
Indicators	PROFICIENCY STRANDS		s of measurement	Sha		Geometric			transformation
	Sourced from Year level descriptions	Content Descriptor Choose appropriate units of	Elaborations  * Investigating alternative measures of scale to	Content Descriptor Connect three-dimensional objects with	Elaborations  * Identifying the shape and relative	Content Descriptor  Estimate, measure and compare	Elaborations  * Measuring and constructing angles	Content Descriptor Use a grid reference system to	Elaborations  * Comparing aerial views of Country,
	AUSTRALIAN CURRICULUM, ASSESSMENT AND REPORTING AUTHORITY	measurement for length, area,	demonstrate that these vary between countries	their nets and other two-dimensional	position of each face of a solid to	angles using degrees.	using both 180° and 360° protractors	describe locations.	desert paintings and maps with grid
		volume, capacity and mass	and change over time, for example temperature measurement in Australia, Indonesia, Japan and	representations	determine the net of the solid, including that of prisms and pyramids	Construct analysis sains a		Describe routes using landmarks	references
	'At this level:,'	(ACMMG108)	USA	(ACMMG111)	including that or prisms and pyramids	Construct angles using a protractor	* Recognising that angles have arms	and directional language	🗏 🟪 🥝 😘 🦑
	Understanding includes,' ',describing	<b>₽</b> = <b>©</b>			two-dimensional	(10) 110 (10)	and a vertex, and that size is the	(40)410(410)	* Creating a grid reference system
	transformations and identifying line and rotational symmetry.		* Recognising that some units of measurement	** C:	shapes such as photographs,	(ACMMG112)	amount of turn required for one arm to coincide with the other	(ACMMG113)	for the classroom and using it to locate objects and describe routes
	Symmon y.		are better suited for some tasks than others, for		sketches and images created by				from one object to another
	Fluency includes choosing appropriate units of measurement for calculation of perimeter and		example kilometres rather than metres to measure the distance between two towns		digital technologies				<b>■ * @</b>
	area, using estimation to check the		<b>■ № 6: AA</b>						
	reasonableness of answers to calculations	Calculate the perimeter and area or	f * Exploring efficient ways of calculating the		= ×= + K			Describe translations, reflections	* Identifying and describing the line
	and using instruments to measure angles	rectangles using familiar metric	perimeters of rectangles such as adding the					and rotations of two-dimensional	and rotational symmetry of a range of
	Problem Solving includes formulating and	units	length and width together and doubling the result					shapes.	two-dimensional shapes, by manually cutting, folding and turning shapes
V	solving authentic problems,' ',using measurements,'	(ACMMG109)	ient ways of finding the areas of					Identify line and rotational	and by using digital technologies
Year 5	,	<b>₹</b> ≣ <b>(?</b>	rectangles					symmetries	
			,					(ACMMG114)	* Identifying the effects of
								<b>■ № @</b>	transformations by manually flipping, sliding and turning two-dimensional
									shapes and by using digital
									technologies
		Compare 12 and 24 hour time systems and convert between	* Investigating the ways time was and is measured in different Aboriginal Country, such as					Apply the enlargement transformation to familiar two	* Using digital technologies to enlarge shapes
		them	using tidal change					dimensional shapes and explore the	• _
		(ACMMG110)	<b>■ © S </b> #					properties of the resulting image compared with the original	* Using a grid system to enlarge a
		(ACIMINATIO)	* Using units hours, minutes and seconds						favourite image or cartoon
		□ ×■ <b>C</b> ;	<b>□</b> _ × <b>□</b>					(ACMMG115)	- ×=
		They convert between 12 and 24		Students connect three-dimensional		They measure and construct different		Students use a grid reference	
	NOTE: The standards are not divided into Strands or Sub-strands in the Australian	hour time.  They use appropriate units of	-	objects with their two-dimensional representations.		angles.		system to locate landmarks.  They describe transformations of two	<u> </u>
Year 5 Achievement Standard	Curriculum documents. However, logic would	measurement for length, area,		representations.				dimensional shapes and identify line	
	dictate that the standards could be put into sub- strands, as demonstrated on the right.	volume, capacity and mass, and calculate perimeter and area of						and rotational symmetry.	
ACCATA AUSTRALIAN CURRICULUM, ASSESSMENT AND REPORTING AUTHORITY	stratius, as demonstrated on the right.	rectangles.							
	Sourced from Year level descriptions	Connect decimal representations	* Recognising the equivalence of measurements such as 1.25 metres and 125 centimetres	Construct simple prisms and	* Considering the history and	Investigate, with and without	* Identifying the size of a right angle	Investigate combinations of	* Designing a school or brand logo
	acara Australian curriculum, ASSESSMENT AND REPORTING AUTHORITY	to the metric system		pyramids	significance of pyramids from a range of cultural perspectives	digital technologies, angles on a straight line, angles at a point and	as 90° and defining acute, obtuse, straight and reflex angles	translations, reflections and rotations with and without the use of digital	
	'At this level:,'	(ACMMG135)		(ACMMG140)	including those structures found in China, Korea and Indonesia	vertically opposite angles.	<b>₽ № 6</b>	technologies	<b>©</b>
	',Fluency includes,' ',measuring using	■ ×=		<b>₹</b>	,	Use results to find unknown angles	* Measuring, estimating and	(ACMMG142)	* Understanding that translations,
	metric units, and interpreting timetables	Convert between common metric	* Identifying and using the correct operations when converting units including millimetres,		* Constructing prisms and pyramids	(40)410444)	comparing angles in degrees and classifying angles according to their		rotations and reflections can change the position and orientation but not
	Problem Solving includes formulating and		centimetres, metres, kilometres, milligrams,		from nets, and skeletal models	(ACMMG141)  □ ♣ ★ ♠	E C		shape or size
	solving authentic problems using,'	(ACMMG136)	grams, kilograms, tonnes, millilitres, litres, kilolitres and megalitres		<b>₽</b> - <b>©</b>	- × - × C:			<b>₽ ©</b>
	', <mark>measurements</mark> ,' ',and finding the size of unknown angles		E C				* Investigating the use of rotation and		
	Second to the se		* Recognising the significance of the prefixes in				symmetry in the diagrammatic representations of kinship		
	Reasoning includes,'',explaining the transformation of one shape into another,'		units of measurement				relationships of Central and Western		
							<b>≘</b> € €		
Year 6		Solve problems involving the	* Recognising and investigating familiar objects using concrete materials and digital technologies					Introduce the Cartesian	* Understanding that the Cartesian plane provides a graphical or visual
		comparison of lengths and areas using appropriate units	using concrete materials and digital technologies				* Recognising and using the two alternate conventions for naming	coordinate system using all four quadrants	way of describing location
		(ACMMG137)	<b>■・</b>					(ACMMG143)	<u>@</u>
		(ACMMG137)						(ACMMG143)	
			*Recognising that 1ml is equivalent to 1cm3					<b>□</b> × <b>□</b>	
		their units of measurement							
		(ACMMG138)	_ · <b>_</b>						
		<b>■ 👫 ⓒ</b>							
		Interpret and use timetables	* Planning a trip involving one or more modes of						
		(ACMMG139)	public transport						
		<u> </u>	* Developing a timetable of daily activities						
		Students connect decimal	= V: <b>-</b>	They construct simple prisms and		They solve problems using the		Students locate an ordered pair in	
		representations to the metric system		They construct simple prisms and pyramids.		properties of angles.		any one of the four quadrants on	
	NOTE: The standards are not divided into	and choose appropriate units of						the Cartesian plane.	
Year 6	Strands or Sub-strands in the Australian	measurement to perform a calculation.							]
Achievement Standard	Curriculum documents. However, logic would dictate that the standards could be put into sub-	They make connections between						Students describe combinations of	]
acara AUSTRALIAN CURRICULUM, ASSESSMENT AND ASSESSMENT AND AUTORITY	strands, as demonstrated on the right.	capacity and volume.  They solve problems involving	1					transformations.	
CUCCLE CU REPORTING AUTHORITY		length and area.							
	l	They interpret timetables.	 riculum Frameworks for Mathematics AC (F-7) by N	A.A			1	1	

		Sub-strands								
Year Level Indicators	PROFICIENCY STRANDS  The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of	Units of measurement		Shape		Geometric reasoning		Location and transformation		
	mathematics.	Content Descriptor	Elaborations	Content Descriptor	Elaborations	Content Descriptor	Elaborations	Content Descriptor	Elaborations	
Year 7	Sourced from Year level descriptions  Calla AUSTRAIAN CURRICULUM.  'At this level:  Understanding includes,'',plotting points on the Cartesian plane, identifying angles formed by a transversal crossing a pair of lines,'  ',Fluency includes,'',calculating areas of shapes and volumes of prisms  Problem Solving includes formulating and solving authentic problems using,'  ',measurements, working with transformations and identifying symmetry, calculating angles,'  ',Reasoning includes,'',applying known geometric facts to draw conclusions about shapes,'	Establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving  (ACMMG159)  (ACMMG159)  (ACMMG160)  (ACMMG160)	* Building on the understanding of the area of rectangles to develop formulas for the area of triangles  * Establishing that the area of a triangle is half the area of an appropriate rectangle  * Using area formulas for rectangles and triangles to solve problems involving areas of surfaces  * Investigating volumes of cubes and rectangular prisms and establishing and using the formula V  = I × b × h  * Inderstanding and using cubic units when interpreting and finding volumes of cubes and rectangular prisms  C:	Draw different views of prisms and solids formed from combinations of prisms  (ACMMG161)	* Using aerial views of buildings and other 3D structures to visualise the structure of the building or prism	Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning  (ACMMG164)	* Defining and classifying pairs of angles as complementary, supplementary, adjacent and vertically opposite  * Constructing parallel and perpendicular lines using their properties, a pair of compasses and a ruler, and dynamic geometry software  Defining and identifying the relationships between alternate, corresponding and co-interior angles for a pair of parallel lines cut by a transversal  * Identifying side and angle properties of scalene, isosceles, right angled and obtuse- angled triangles  Describing squares, rectangles, rhombuses, parallelograms, kites and trapeziums  * Using concrete materials and digital technologies to investigate the angle sum of a triangle and quadrilateral	Describe translations, reflections in an axis, and rotations of multiples of 90° on the Cartesian plane using coordinates.  Identify line and rotational symmetries  (ACMMG181)	* Describing patterns and investigating different ways to produce the same transformation such as using two successive reflections to provide the same result as a translation  * Experimenting with, creating and recreating patterns using combinations of reflections and rotations using digital technologies  * Experimenting with creating and recreating patterns using combinations of reflections and rotations using digital technologies	
Year 7 Achievement Standard  CCATA ANDTHUM CURCOUNT  ACCURATION AND ADDRESS AN	NOTE: The standards are not divided into Strands or Sub-strands in the Australian Curriculum documents. However, logic would dictate that the standards could be put into substrands, as demonstrated on the right.			Students describe different views of three- dimensional objects.  Students use formulas for the area and perimeter of rectangles and calculate volumes of rectangular prisms.  Students describe different views of three-	ents classify triangles and quadrilatera	They solve simple numerical problems involving angles formed by a transversal crossing two parallel lines.  They name the types of angles formed by a transversal crossing parallel line.		They represent transformations in the Cartesian plane.  They assign ordered pairs to given points on the Cartesian plane.		