LEVEL: Year 2	CONTENT: Measurement	FOCUS: Length
In the Classroom		
PURPOSE	• Recognise and explain different ways we measure • Develop an accurate definition of length • Explain how and when we measure length • Recognise the different materials used to measure length • Explain how the different measurement tools are used • Recognise and explain the different between units, e.g. uniform and non-uniform units, formal and informal units • Choose appropriate materials to estimate and measure the length of objects • Compare the length of objects and explain which is longer/shorter/equal to, etc. • Order a set of objects according to their length • Apply what we have discovered to help us estimate the length of different objects	
INTRODUCTION	Brief introduction to Good Mathematicians – make a list and place on the board, include teamwork, asking questions, sharing ideas, recording ideas, explaining thinking, persistence, checking solutions, learning from mistakes and believing in yourself	
WARM UP	What is measurement? What are the different ways me measure? What is length? Can you give me a definition for length? How do we measure length? What are the different tools we can use to measure length? What is important to remember when measuring length? What is estimation? How can estimation help us with measuring length?	
EXPLICIT TEACHING & LEARNING	**Measuring Length** Ask students to measure the length of their maths book. Students may choose any of the materials provided. Before measuring they must record their estimate, then measure and compare their results. **Challenge** Students must now find at least one object that is larger, bigger and close to equal in length to their book. Students must estimate, measure, compare and order he lengths of their objects.	
DISCUSSION/KEY QUESTIONS	• What are the different ways me measure? • What is length? How do we measure length? • What are some examples of length? • What are some different materials or tools we can use? How do we use these tools? • Why do we estimate? How can estimating help us? • How can we compare the size of objects? • How can we check to ensure our comparisons are correct? • What is the standard unit for length? What is the relationship between the units?	
DELIBERATIVE PRACTICE	The focus of this activity is to find out what students know and understand about length. By Year 2 students need to begin to move beyond a familiar definition of length and must begin to see the importance of using uniform units.	
REFLECTION	Reflect on how students have estimated and measured their object. Point out any misconceptions, such as having large gaps or not using the graduations on rulers and what issues this can cause. Establish a clear and useable definition for length. Also reflect as a class on students who were a Good Mathematician and why – have students nominate one another. Remind students of list created at the beginning of the lesson.	
RESOURCES	Range of measuring materials such as counters, popsticks, cubes, tiles, rulers and tape measures	

Curriculum Connections	
CONTENT	**NSW Syllabus Mathematics K-10 – Stage 1.2** **Length** Compare and order several shapes and objects based on length, using appropriate uniform informal units(ACMMG037) • relate the term 'length' to the longest dimension when referring to an object • make and use a tape measure calibrated in uniform informal units, e.g. calibrate a paper strip using footprints as a repeated unit • compare and order two or more shapes or objects according to their lengths using an appropriate uniform informal unit • compare the lengths of two or more objects that cannot be moved or aligned (Reasoning) • record length comparisons informally using drawings, numerals and words, and by referring to the uniform informal unit used Recognise and use formal units to measure the lengths of objects • recognise the need for formal units to measure lengths and distances • use the metre as a unit to measure lengths and distances to the nearest metre or half-metre • explain and model, using concrete materials, that a metre-length can be a straight line or a curved line (Communicating, Reasoning) • record lengths and distances using the abbreviation for metres (m) • estimate lengths and distances to the nearest metre and check by measuring • recognise the need for a formal unit smaller than the metre • recognise that there are 100 centimetres in one metre, i.e. 100 centimetres = 1 metre • use the centimetre as a unit to measure lengths to the nearest centimetre, using a device with 1 cm markings, e.g. use a paper strip of length 10 cm • record lengths and distances using the abbreviation for centimetres (cm) • estimate lengths and distances to the nearest centimetre and check by measuring
WHAT CAME BEFORE	Students will have a basic definition of length but may not be able to explain the difference between different units used to measure and the importance of not having gaps between the units
WHAT COMES NEXT	Students need to be able accurately use measurement tools to measure and compare the size of objects using standard formal units, so for length that is metres. It is important that students have a clear definition of length, beyond “how long something is” this will help students to measure accurately.
VOCABULARY	Measure, size, compare, length, height, width, distance, perimeter, diameter, circumference, informal, formal, uniform, non-uniform units, metres, cm, mm, ruler, tape, iteration, graduations
MISCONCEPTIONS	Students may have a basic definition for length (how long something is) but may not realise that this also applies to height, width, distance, perimeter, diameter, circumference, etc. Students may be aware of how to accurately use measuring tools, like rulers, and may not realise the importance of not having gaps between units when measuring.
WHAT PROFICIENCIES ARE TO BE UTILISED? **Understanding** **Fluency** **Problem Solving** **Reasoning** **Communicating (NSW)** **Justifying (NSW)**	**Year 2 (Australian Curriculum)** **Understanding** includes connecting number calculations with counting sequences, partitioning and combining numbers flexibly and identifying and describing the relationship between addition and subtraction and between multiplication and division **Fluency** includes readily counting numbers in sequences, using informal units iteratively to compare measurements, using the language of chance to describe outcomes of familiar chance events and describing and comparing time durations **Problem-solving** includes formulating problems from authentic situations, making 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, comparing and contrasting related models of operations and creating and interpreting simple representations of data. **NSW Syllabus Mathematics K-10 – Stage 1.2 Outcomes** • describes mathematical situations and methods using everyday and some mathematical language, actions, materials, diagrams and symbols • supports conclusions by explaining or demonstrating how answers were obtained • measures, records, compares and estimates lengths and distances using uniform informal units, metres and centimetres
ASSESSMENT	**EXIT PASS** – write own definition of length and draw a diagram to help explain length