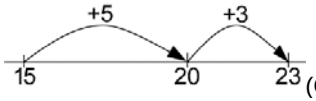
LEVEL: Year 2	CONTENT: Number and Algebra	FOCUS: Addition
In the Classroom		
PURPOSE	• Explain and provide examples of addition • Solve addition problems using a range of efficient mental and written strategies • Use symbols to record the method used to solve the problem • Explain the strategy used to solve the problem • Recognise which strategy is more efficient and why • Recall number facts, including doubling and tens facts, and use these to solve addition problems • Partition numbers in a variety of ways and use this to solve addition problems • Record thinking using equations or an empty number line	
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	Without any explanation to students ask them to solve 24 + 67 using two different methods. Walk around and see method students are using, after a few minutes, go through the strategies being used.	
EXPLICIT TEACHING & LEARNING	**Addition Strategies** Unpack the various strategies used with provided. Focus on identifying the correct name for the strategy and unsure students are not recording the solution incorrectly. Ensure that the split, jump and using an empty number line are all unpacked with students. **Challenge** Using the hot, spicy and super spicy grading system, place three problems on the board and ask students to choose own and solve using two different methods.	
DISCUSSION/KEY QUESTIONS	• What is addition? What are different addition strategies? • How are these strategies used? • How do we partition numbers? How can this help us? • What is an empty number line? How can this be used to solve problems? • Is there another way you can solve this problem? • How can you show your thinking? • Which equation is more efficient and why?	
DELIBERATIVE PRACTICE	The focus of this activity is to find out what students know about addition and what are some of the different strategies students are able to use and explain. Do students prefer to use equations or do students rely more on empty number lines?	
REFLECTION	Reflect on how students have recorded their solution to the problem. Can students use symbols to record the mental strategy that they have used, or do students try and use an algorithm even though they may know how to solve the problem mentally. 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	Unifix blocks	

Curriculum Connections	
CONTENT	**NSW Syllabus Mathematics K-10 – Stage 1.2** **Addition and Subtraction 2** Explore the connection between addition and subtraction (ACMNA029) • use concrete materials to model how addition and subtraction are inverse operations • use related addition and subtraction number facts to at least 20, e.g. 15 + 3 = 18, so 18 – 3 = 15 and 18 – 15 = 3 Solve simple addition and subtraction problems using a range of efficient mental and written strategies(ACMNA030) • use and record a range of mental strategies to solve addition and subtraction problems involving two-digit numbers, including: • the jump strategy on an empty number line • the split strategy, e.g. record how the answer to 37 + 45 was obtained using the split strategy 30+40=70; 7+5=12 so 70+12=82 • an inverse strategy to change a subtraction into an addition, e.g. 54 – 38: start at 38, adding 2 makes 40, then adding 10 makes 50, then adding 4 makes 54, and so the answer is 2 + 10 + 4 = 16 • select and use a variety of strategies to solve addition and subtraction problems involving one- and two-digit numbers • perform simple calculations with money, e.g. buying items from a class shop and giving change (Problem Solving) • check solutions using a different strategy (Problem Solving) • recognise which strategies are more efficient and explain why (Communicating, Reasoning) • explain or demonstrate how an answer was obtained for addition and subtraction problems, e.g. show how the answer to 15 + 8 was obtained using a jump strategy on an empty number line  (Communicating, Reasoning)
WHAT CAME BEFORE	Students have some basic strategies to add numbers together, but may return to less efficient strategies, like counting all, when confronted with larger numbers.
WHAT COMES NEXT	Students need to be able to develop strategies for not just adding 2 numbers, but multiple numbers. The strategies needed will be different.
VOCABULARY	Add, combine, count all, count on, split, jump, partition, algorithm, equation, expression, subtract, take-away, difference, compare, empty number line
MISCONCEPTIONS	Students may have trouble with adding numbers when renaming or trading is involved, e.g. adding 23 and 23 is ok, but adding 23 and 29 requires students to make another ten. Sometimes this 10 becomes lost in the calculation. Student may also incorrectly record solutions using a running equation, so mathematically to solve 34 + 7, it is incorrect to write 34 + 6 = 40 + 1 = 41 as this no longer balances. Instead students need to record a series of equations: 34 + 6 = 40 40 + 1 = 41

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 • uses objects, diagrams and technology to explore mathematical problems • supports conclusions by explaining or demonstrating how answers were obtained • uses a range of strategies and informal recording methods for addition and subtraction involving one- and two-digit numbers
ASSESSMENT	**EXIT PASS** – Show two different strategies to solve 24 + 67