LEVEL: Year 3	CONTENT: Number & Algebra	FOCUS: Addition

In the Classroom	
PURPOSE	• Use efficient strategies to find the total when adding a collection of playing cards • Recall and apply addition facts • Identify and continue number patterns resulting from addition • Explain strategy used to find total
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, working systematically, learning from mistakes and believing in yourself.
EXPLICIT TEACHING & LEARNING	**ROWCO** Give pairs of students a deck of cards; remove the picture cards and keep one Joker; place the cards in a 5 x 5 grid with the joker in the middle (see ROWCO instructions below). Object of the game is to collect the highest possible total. Encourage students to name the strategy they are using to find their card total **Challenge** Use the black cards as positive and red as negative (subtraction)
DISCUSSION/KEY QUESTIONS	• What strategy are you using to collect the cards? • Is this the most effective strategy? • What strategies can help you add the total of your collection of cards? • Is there a more efficient strategy? • Does it matter in what order you add the cards? • What is the most efficient way to add the cards? • Can you combine two of the numbers then count on? • Can skip counting or multiplication facts help you? • What other strategies could you use? • Have you tried keeping a running total?
DELIBERATIVE PRACTICE	This activity is designed to see if students are able to apply their addition strategies in order to find the total of their collection of cards. Often students will have a method for adding two numbers, but when asked to add a list of numbers they revert to less efficient methods.
REFLECTION	Students share solutions and strategies with the class; What did they discover? What worked well? What would they do differently next time? Recap the strategies and behaviours good mathematicians use, ask students to nominate someone they saw being a good mathematician and explain which strategy or behaviour they were demonstrating.
RESOURCES	A set of regular playing cards for each pair of students

Curriculum Connections	
CONTENT	**VICTORIAN CURRICULUM F-10 (YEAR 3)** **Number & Place Value** Recall addition facts for single-digit numbers and related subtraction facts to develop increasingly efficient mental strategies for computation(VCMNA133) **Elaborations:** Recognise that certain single-digit number combinations always result in the same answer for addition and subtraction, and using this knowledge for addition and subtraction of larger numbers; Extend strategies for addition and subtraction such as 14 + 8 + 6 = 14 + 6 + 8 = 28 and 54 – 28 = 2 + 20 + 4; Combine knowledge of addition and subtraction facts and partitioning to aid computation. For example, 57 + 19 = 57 + 20 – 1 Recognise and explain the connection between addition and subtraction (VCMNA132) **Elaborations:** Demonstrate the connection between addition and subtraction using partitioning or by writing equivalent number sentences; Solve simple word problems involving addition or subtraction
WHAT CAME BEFORE	Students are often able to recall addition facts for adding two numbers, e.g. 5 and 3 is 8, but for this task students will need to apply this knowledge to add a list of numbers (up to 12). Remind students

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	about efficient strategies and check to see if students are falling back on counting all or counting on to solve problems.
WHAT COMES NEXT	Introducing the subtraction element to the game, allows students to use their knowledge of addition and subtraction. If students understand the relationship between addition and subtraction they may be able to develop a more efficient strategy to find the total of their cards, e.g. rather than adding the red cards and the black cards separately, students can cancel out any matching red and black cards. Asking students to record their numbers as an equation can be a precursor to order of operations and the use of brackets.
VOCABULARY	Add, combine, count, total, commutativity, running total, number facts, tens facts, doubles, skip counting, multiplication, compensation record, explain, systematic
MISCONCEPTIONS	Students will often try to find the total of their cards by starting from the first card in their pile and then adding (often by counting on) the next card, etc. A better strategy is to look at the pile of cards, make tens and then add the remaining cards or adapt your strategy according to your cards.
WHAT PROFICIENCIES ARE TO BE UTILISED? **Understanding** **Fluency** **Problem Solving** **Reasoning** **Communicating (NSW)** **Justifying (NSW)**	**Year 3 (Australian Curriculum)** **Understanding** includes connecting number representations with number sequences, partitioning and combining numbers flexibly, representing unit fractions, using appropriate language to communicate times, and identifying environmental symmetry **Fluency** includes recalling multiplication facts, using familiar metric units to order and compare objects, identifying and describing outcomes of chance experiments, interpreting maps and communicating positions **Problem-solving** includes formulating and modelling authentic situations involving planning methods of data collection and representation, making models of three-dimensional objects and using number properties to continue number patterns **Reasoning** includes using generalising from number properties and results of calculations, comparing angles and creating and interpreting variations in the results of data collections and data displays.
ASSESSMENT	This task is often used as a warm-up game for students. Although there are some strategies for collecting cards, the main focus is on the method students are using to find the total. Overtime students should become more adept at applying their number facts to help them find the final total. For example, initially students may make tens first, then add the remaining cards. Later, students may look at the pile of cards and then may decide their strategy, for example, if there are several 8s students may use their multiplication facts to find the total of the 8s first or if there are consecutive numbers, say 4, 5, 6, students may realise you can use compensation to make three 5s. Ultimately, the aim of this game is to develop students' fluency and number sense.

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