Addition and Subtraction 2

Stage 3 Outcome

A student:
› describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions MA3-1WM
› selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations MA3-2WM
› gives a valid reason for supporting one possible solution over another MA3-3WM
› selects and applies appropriate strategies for addition and subtraction with counting numbers of any size MA3-5NA

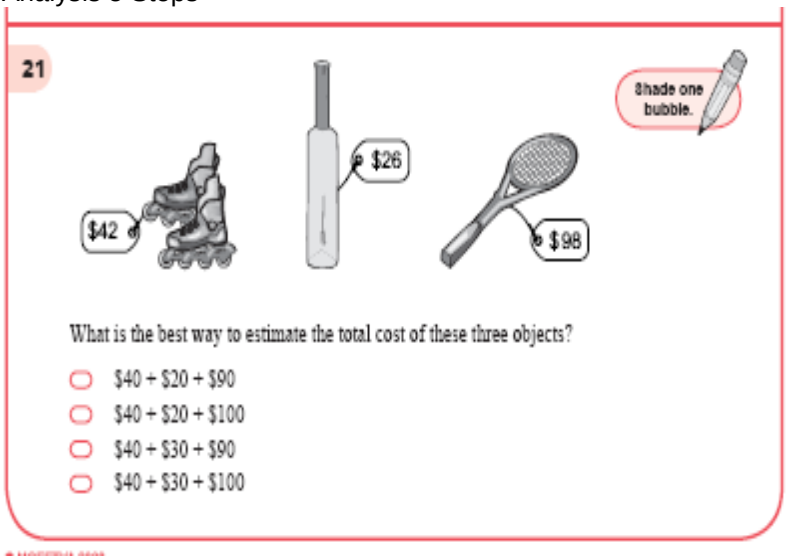
Language: Students should be able to communicate using the following language: plus, sum, add, addition, increase, minus, the difference between, subtract, subtraction, decrease, equals, is equal to, **operation**, digit.

Teaching and Learning Activities	Notes/ Future Directions/Evaluation	Date
Ignition Activities **Make 1000** 1. The aim is to score 100 or as close as possible without 'busting' (passing 100). 2. The teacher rolls the die and announces the number. Students may choose to multiply that number by 10 or score it at face value, e.g. 2 may be scored as 2 or 20. Once a decision has been made it cannot be changed. 3. The die is rolled again. If the number is (say) 4, students decide to score this as 4 or 40 and record it, completing the progressive total. 4. This continues until 9 rolls have been completed. Note: All rolls must be used. 5. The student who scores 100 or the number closest to (but below) 100 wins. Variations (a) Use a 1–6 die or a 0–9 die. Ask students how they will vary their strategies if you change from a 1–6 to a 0–9 die. (b) Set a different target. (i) Target = 200 "How will you vary your strategies from the original game?" (Students should realise that they will need to multiply by 10 more often.) (ii) Target = 1000 and you may multiply by 100 once and once only during the game. (c) Allow addition or subtraction of each number rolled.		
Explicit Mathematical Teaching At this Stage, mental strategies need to be continually reinforced and used to check results obtained using formal algorithms. Students may find that their own written strategies that are based on mental strategies may be more efficient than a formal written algorithm, particularly for the case of subtraction. Students need to discuss and explain possible approaches and compare them to determine the most efficient.		

Present a range of problems and students ask themselves "What is the best method to find a solution to this problem? Use "Newman's Analysis" questions. Review language for addition and subtraction. Demonstrate using a formal written algorithm using place value - stress the setting out in columns. Add numbers with different number of digits highlighting the importance of maintaining the place value columns. Have students estimate answers before completing addition and subtraction algorithms. Use inverse operations as a checking strategy.		
Problem Solving Create and solve addition and subtraction word problems involving whole numbers of any size, including problems that require more than one operation, eg 'I have saved $40 000 to buy a new car. The basic model costs $36 118 and I add tinted windows for $860 and Bluetooth connectivity for $1376. How much money will I have left over?' Explain how the answer was obtained and justify the selected calculation method Students reflect on their chosen method of solution for a problem, considering whether it can be improved.		
Calculator Race Give students a series of addition combinations of various numbers. One group can add these numbers using pencil and paper another group could use calculators and a third group could try and solve the problems mentally. Students will come to realise that the most efficient strategy to solve addition problems varies according to the difficultly of problems.		

Country Size Compare the relative sizes of countries by subtracting area and populations. Rank in order from smallest to largest. Are the two rankings the same? Discuss.		
Missing Digits I did a subtraction task last night but I can only remember the answer and that it looked like this: □ □ □ - □ □ □ 5 7 What might the missing numbers be? Describe all the possibilities.		
Inverse Operations Prepare a presentation explaining why addition and subtraction are inverse operations		
Calculator Problems Estimate first then use a calculator. A stadium contained 27685 seats. 15306 seats were filled. How many seats were empty? There were 53685 trout in a hatchery. If 13987 trout were sold to farmers, how many trout were left in the hatchery? Josie had 11493 stickers. To win a prize in a sticker collection competition she needed to collect 20000 stickers. How many more stickers did she need to collect?		
Replacing A, B, and C are different digits. Same letters are the same digits. Copy the sums and replace A, B and C with digits that make the sums true. A A A A + B B C C C C A B + B A B B C		

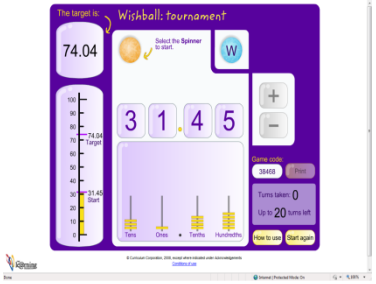
Previous NAPLAN Question -2008-Work through this with class using Newman's Analysis 5 Steps



Computer Learning Objects

Wishball-Stage 2-3
Stage 3 Hyper Link Below
Wishball: tournament - (TLF L8460 v2.0.0)
Stage 2 Hyper Link Below
Wishball: whole numbers - (TLF L867 v4.0.0)
The Wishball series of learning objects encourages thinking about place value. It also provides opportunities for mental addition and subtraction.

Stage 3



Stage 2

Hopper Challenge – Stage 3 **Hopper Hyper Link Below** Hopper challenge: whole numbers - (TLF L1087 v4.0.0) Help a frog to jump along a number line. Estimate the exact finishing point on a number line, after adding or subtracting multiples of whole numbers to a starting number. For example, 1+ (5 x 2) = 11. Explore the patterns made on a counting grid and number line. Identify counting rules that match the pattern of 'landing spots' on a counting grid. This learning object is one in a series of seven objects.