

What is compensation?

Purpose

To recognise that when the same amount is added to two numbers, the difference remains the same.

Outcomes

NS2.2: Uses mental and written strategies for addition and subtraction involving two-, three- and four-digit numbers

MA2-5NA

Framework reference

To move students to Place value level 2

Materials

Cubes


Teaching points

Compensation with subtraction is based on the fact that the difference between the two numbers stays the same as long as we add to both numbers, or subtract from them, the same quantity.


Using compensation with subtraction is different from using compensation with addition. With addition, the strategy of compensation is based on the total remaining the same. Consequently, if something is added to one number, the other number in the sum must be reduced by the same amount.



Suggested *Short, focussed, frequent* activity

	Outline	Questions
Introduction	<p>Select two students to stand next to each other at the front of the class.</p> <p>Have the shorter student stand on a small stool or a chair.</p> <p>Use blocks to make two towers which represent the difference between two heights.</p> 	<p><i>Which student is taller?</i></p> <p><i>If we wanted to have an accurate way to find the difference in height now, what would we need to do? Why?</i></p> <p><i>What is the difference between these two towers?</i></p>



	Outline	Questions
Introduction continued	<p>Record the difference as a number sentence on the board.</p> <p>Select a student to demonstrate the result.</p> <p>Select a student to demonstrate the result and record the difference as a number sentence.</p> <p>Repeat the activity, adding another three blocks to each tower.</p>	<p><i>What will happen to the difference if I add two more blocks to the top of each tower?</i></p> <p><i>Does the difference change if I add the blocks to the bottom of each tower? Why?</i></p> <p><i>How will the difference change if we keep adding the same number of blocks to each tower?</i></p>
Concept development	<p>Write the following sequence of subtractions on the board.</p> $34 - 28$ $35 - 29$ $36 - 30$ <p>Repeat the process with the following sequence of subtractions.</p> $77 - 38$ $78 - 39$ $79 - 40$ $80 - 41$ $81 - 42$	<p><i>Which question is easiest to solve? Why? Will the answer be the same for the other questions? Why?</i></p> <p><i>Which question is easiest to solve? Why? Will the answer be the same for the other questions? Why?</i></p>
Strengthening the concept	<p>Write the following subtractions on the board and have the students share their strategies for mentally solving each one.</p> $65 - 49$ $43 - 19$ $58 - 27$ $46 - 28$ <p> Have the students create similar subtraction questions for others to solve mentally.</p>	

