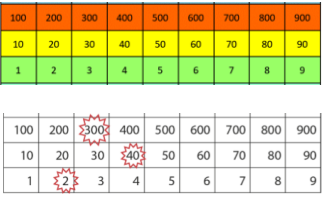
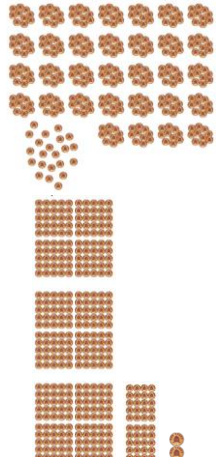
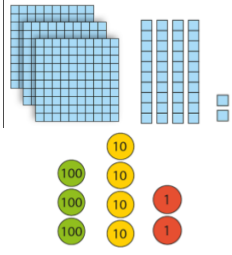
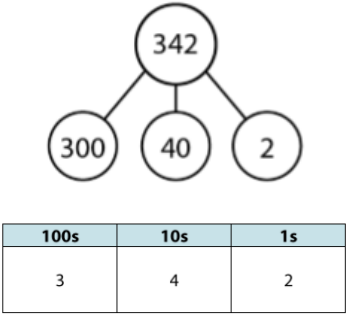
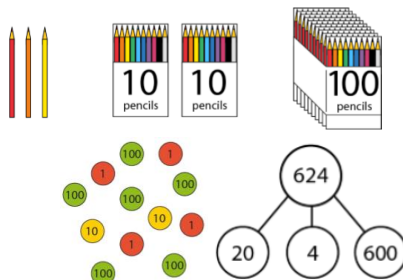
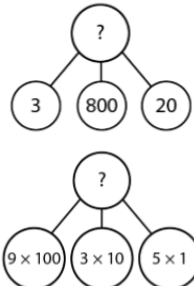
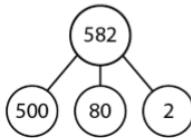



# Weaving CPA and Variation Example 2



Lower Key Stage 2 Concept: Introduction to calculating with 3 digit numbers

Procedural Variation: Small Steps	Concrete, Pictorial and Abstract Representations	Conceptual Variation	Deepening Opportunities (Reasoning and Problem Solving)
<p><b>Small Step One</b></p> <p>Pictorial representation on a Gattengo chart to practise counting up in ones, tens and hundreds and then practise making numbers using it.</p> <p><b>Vocabulary:</b> Chanting with counting in ones, tens and hundreds</p>		<p>Pictorial variation that you could use counters on to create numbers.</p>	
<p><b>Small Step Two</b></p> <p>Image of real life objects to represent the same three digit number.</p> <p><b>Vocabulary:</b> ____ hundreds ____ tens ____ ones</p>		<p>Irregular patterns vs regular patterns to support counting – what is the same and what is different?</p>	<p>Are there any other ways we could organise the coins to make it easy to see?</p>
<p><b>Small Step Three</b></p> <p>Creating the same number as above with the other equipment.</p> <p><b>Vocabulary:</b> ____ hundreds ____ tens ____ ones</p>		<p>Using manipulatives to create the number. (Base ten, place value counters) Link relationship of the image and how they have been organised. What is the same and what is different?</p>	<p>Can children manipulate the concrete objects to find different ways to make 342? E.g. 3 hundreds, 2 tens and 22 ones.</p>
<p><b>Small Step Four</b></p> <p>Comparing manipulatives to pictorial representations. Still fixing the number to focus the structure of the representations.</p> <p><b>Vocabulary:</b> ____ hundreds ____ tens ____ ones ____ is ____ hundreds, ____ tens and ____ ones</p>		<p>Linking the relationship between the concrete and the pictorial representation.</p> <p>Vary the orientation of the part part whole in some examples to consolidate the sum of the parts.</p>	<p>Can you think of another way to represent this information? (E.g a bar model)</p>

Small Step Five	<p>Creating equations to match the representations.</p> <p><b>Vocabulary:</b></p> <p>_____ is equal to</p> <p>____ + ____ +</p> <p>_____ + _____</p> <p>etc.</p>	$342 = 100 + 100 + 100 + 10 + 10 + 10 + 10 + 1 + 1$	<p>Abstract representation to create the number sentence from the pictorial representation. Have concrete manipulatives available to scaffold the correct number sentence where appropriate. Vary the position of the = symbol to consolidate 'equal to', not the answer.</p>	<p>How else can we write this number sentence?</p> <p>Does it matter what order we calculate?</p> <p>An equation with a mistake – is it wrong or right? Prove it! (CPA to do this)</p>																																										
Small Step Six	<p>Building relationship between multiplication and addition.</p> <p><b>Vocabulary:</b></p> <p>_____ is equal to</p> <p>____ x ____ +</p> <p>_____ x ____ +</p> <p>_____ x _____ etc.</p>	$342 = 3 \times 100 + 4 \times 10 + 2 \times 1$ <div style="display: flex; justify-content: space-around; align-items: center;"><div style="text-align: center;">↓ 300</div><div style="text-align: center;">↓ 40</div><div style="text-align: center;">↓ 2</div></div>	<p>Model with base ten if necessary to consolidate understanding of 'lots of'.</p> <p><b>Fluency:</b></p> <p>Consolidation of multiplication facts</p>	<p>Independent practice with different numbers / contexts to apply knowledge so far.</p> <div style="text-align: center;"></div>																																										
Small Step Seven	<p>Applying knowledge to missing number situations.</p> <p><b>Vocabulary:</b></p> <p>A variety of all vocabulary so far to consolidate understanding through questioning.</p>	<div style="text-align: center;"></div> <table border="1" style="margin-top: 10px; width: 100%; text-align: center;"><tr><td>1000</td><td>2000</td><td>3000</td><td>4000</td><td>5000</td><td>6000</td><td>7000</td><td>8000</td><td>9000</td></tr><tr><td>100</td><td>200</td><td>300</td><td>400</td><td>500</td><td>600</td><td>700</td><td>800</td><td>900</td></tr><tr><td>10</td><td>20</td><td>30</td><td>40</td><td>50</td><td>60</td><td>70</td><td>80</td><td>90</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr></table>	1000	2000	3000	4000	5000	6000	7000	8000	9000	100	200	300	400	500	600	700	800	900	10	20	30	40	50	60	70	80	90	1	2	3	4	5	6	7	8	9	<p>All to have access to base ten and / or place value counters to use if required.</p> <p>Weaving the CPA throughout all questions to ensure a deep understanding.</p>	<p>Prove it!</p> <p>Show me with a different representation</p> <p><i>'These counters have been arranged on a place value grid to show the number 222.'</i></p> <table border="1" style="margin: 10px auto; width: 200px;"><tr><th>100s</th><th>10s</th><th>1s</th></tr><tr><td style="text-align: center;">● ●</td><td style="text-align: center;">● ● ●</td><td style="text-align: center;">● ● ●</td></tr></table> <p>• 'Using all of the counters, how many different three-digit numbers can you make?' • 'Have you made all the possible numbers? How do you know?'</p>	100s	10s	1s	● ●	● ● ●	● ● ●
1000	2000	3000	4000	5000	6000	7000	8000	9000																																						
100	200	300	400	500	600	700	800	900																																						
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100s	10s	1s																																												
● ●	● ● ●	● ● ●																																												
Small step Eight	<p>Furthering knowledge of addition equations.</p> <p><b>Vocabulary:</b></p> <p>A variety of all vocabulary so far to consolidate understanding through questioning.</p>	<div style="text-align: center;"></div> <p>How many different equations can we write and how do you know we have them all?</p> <div style="margin-left: 40px;"><math>582 = 500 + 2 + 80</math> <math>582 = 2 + 500 + 80</math> <math>582 = 2 + 80 + 500</math> <math>582 = 80 + 2 + 500</math> <math>582 = 80 + 500 + 2</math></div>	<p>Linking equations used so far to now consolidate the hundreds, tens and ones. Ensuring that zero is in an examples to check understanding of place holders. Have base ten or place value counters to explore where required.</p>	<p>Missing number calculations</p> <p>Varying the missing number</p> <div style="display: flex; justify-content: space-between;"><div><math>70 + 3 + 100 = \square</math> <math>300 + 1 + 70 = \square</math> <math>30 + 100 + 7 = \square</math></div><div><math>\square = 900 + 40</math> <math>\square = 400 + 9</math></div></div>																																										
Small Step Nine	<p>Exploring partitioning flexibly.</p> <p><b>Vocabulary:</b></p> <p>A variety of all vocabulary so far to consolidate understanding</p>	<div style="text-align: center;"></div> <div style="margin-top: 5px;"><math>500 + 82 = 582</math>    <math>502 + 80 = 582</math>    <math>580 + 2 = 582</math></div>	<p>Children to use concrete manipulatives to check this e.g. base ten to physically partition the number in a variety of ways.</p>	<p><i>'Fill in the missing numbers.'</i></p> <div style="margin-top: 10px;"><math>400 + 20 + 3 = \square</math> <math>400 + 23 = \square</math> <math>420 + 3 = \square</math> <math>403 + 20 = \square</math></div>																																										