

Year 4			
	Block 1	Block 2	Block 3
Calculation content	<p>ADDITION AND SUBTRACTION (UNIT 1)</p> <ul style="list-style-type: none"> + and - facts for 100 (r) Friendly number pairs Scaling addition and subtraction number facts by 100 Mental calculation: <ul style="list-style-type: none"> Making next ten/previous ten Near doubles Left to right addition Empty number line Add a four digit number to a four digit number (exchanging ones, tens and hundreds) Subtract a three-digit number from a three-digit number (exchanging hundreds for tens and tens for ones) 	<p>MONEY AND DECIMALS (UNIT 1) n/a</p> <p>ADDITION AND SUBTRACTION (UNIT 2)</p> <ul style="list-style-type: none"> Mental strategies for addition and subtraction (r) Making the next/previous thousand Subtract a four-digit number from a four-digit number <p>FRACTIONS (UNIT 2)</p> <ul style="list-style-type: none"> Adding like fractions where sum is equal to or greater than one Adding improper and mixed fractions Subtracting fractions from whole numbers Subtraction of improper and mixed fractions 	<p>CALCULATION UNIT</p> <ul style="list-style-type: none"> Different methods for addition (a) Different methods for addition (b) Different methods for subtraction <p>MONEY (UNIT 2)</p> <ul style="list-style-type: none"> Calculating with money Add decimal numbers Subtract decimal numbers

Year 4			
	Block 1	Block 2	Block 3
Strategies/ methods	<p><u>+ and - facts for 100 (r)</u> As in Year 3, teaching needs to stress how to avoid common errors when calculating complements to 100. (eg: $64 + 46 = 110$ instead of 100.) See notes in lesson. The core strategy for addition is to partition the addends in to tens and ones, combine the tens, combine the ones, combine the results. For subtraction the strategy is to partition the subtrahend: partition the subtrahend into tens and ones; subtract the tens from the minuend; subtract the ones from the result. Eg: $100 - 46 = 100 - 40 - 6$.</p> <p><u>Friendly number pairs</u> Children first encountered friendly numbers in Year 2. Friendly numbers fit together to make a number that is easy to work with. Re-ordering is often used to simplify calculations. Eg: $14 + 37 + 6$ becomes $14 + 6 + 37$ which becomes $20 + 37$.</p>	<p><u>Mental strategies for addition and subtraction</u> The unit begins with revisiting efficient strategies for mental calculation including near doubles and making the next/previous ten.</p> <p><u>Making the next/previous thousand</u> Children's knowledge of making the next/previous is extended to examples where they make the next/previous thousand, eg: $900 + 600 = 900 + 100 + 500$</p> <p><u>Subtract a four-digit number from a four-digit number</u> Column method (exchanging thousands for hundreds, hundreds for tens and tens for ones).</p>	<p><u>Different methods for addition</u> Working with four-digit numbers children explore the following methods:</p> <ul style="list-style-type: none"> ○ column method; ○ partitioning the second addend; ○ making the next hundred; ○ compensation. <p><u>Different methods for subtraction</u> Working with four-digit numbers children explore the following methods:</p> <ul style="list-style-type: none"> ○ column method; ○ counting on using empty number line; ○ compensation.

Year 4			
	Block 1	Block 2	Block 3
Strategies/ methods	<p><u>Scaling addition and subtraction number facts by 100</u> Use known facts, eg: $5 + 6 = 11$ so</p> <p>5 hundreds + 6 hundreds = 11 hundreds = 1 thousand and 1 hundred</p> <p>$500 + 600 = 1100 = 1,100$</p>	<p><u>Adding like fractions less than one where sum is equal to or greater than one</u> Continue to develop the fact that when the denominators are the same, we add the numerators. Also introduce making the next whole, eg:</p> $\frac{5}{6} + \frac{5}{6} = \frac{5}{6} + \frac{1}{6} + \frac{4}{6} = 1\frac{4}{6}$ <p><u>Adding improper and mixed fractions</u> Same approaches as above, with numbers greater than one. An improper fraction example:</p> $\frac{7}{6} + \frac{7}{6} = \frac{14}{6} = 2\frac{2}{6} = 2\frac{1}{3}$ <p><i>(when the denominators are the same, we add the numerators)</i></p> <p>or</p> $\frac{7}{6} + \frac{7}{6} = \frac{7}{6} + \frac{5}{6} + \frac{2}{6} = \frac{12}{6} + \frac{2}{6} = 2\frac{2}{6}$ <p><i>(making the next whole).</i></p>	<p><u>Calculating with money (r)</u> Revision of methods for addition and subtraction of money.</p> <p>For addition the core strategy is to add the pounds, then add the pence, then combine, eg: £4 and 70p + £3 and 60p = £7 and 130p = £8 and 30p</p> <p>For subtraction, the strategies are using an empty number line and subtracting by partitioning the minuend.</p> <p><u>Adding decimal numbers</u> Children learn to add ones and tenths using a strategies they are very familiar with: partitioning both addends and making the next whole.</p> <p><u>Subtracting decimal numbers</u> Empty number line and subtracting by partitioning the minuend.</p>

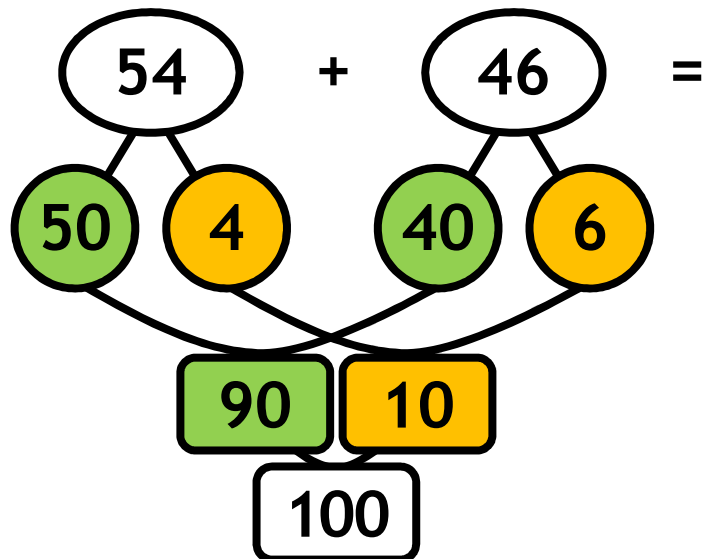
Year 4			
	Block 1	Block 2	Block 3
Strategies/ methods	<p><u>Mental calculation</u></p> <ul style="list-style-type: none"> o Making next ten/previous ten o Near doubles o Partitioning both addends - left to right addition o Partitioning the second addend - empty number line representation <p>Children's knowledge of the making next/previous ten is extended to four-digit numbers plus/minus one digit numbers.</p> <p>Application of near doubles is applied to examples such as $72 + 74 = 72 + 72 + 2$.</p> <p>Children learn that when we calculate with column methods we work from the smallest units to the largest; when we calculate mentally we tend to work with the largest parts first.</p> <p>Empty number lines are used to support consolidation of adding by partitioning the second addend, eg: $335 + 226 = 335 + 200 + 20 + 6$.</p>	<p><u>Subtracting fractions from whole numbers</u></p> <p>Using improper fractions, eg:</p> $3 - 1\frac{5}{6} = \frac{18}{6} - \frac{11}{6} = \frac{7}{6} = 1\frac{1}{6}$ <p>Counting back, including partitioning the subtrahend and counting back, eg:</p> $3 - 1\frac{5}{6} = 3 - 1 - \frac{5}{6} = 2 - \frac{5}{6} = 1\frac{1}{6}$ <p><u>Subtraction of improper and mixed fractions</u></p> <p>Using improper fractions, eg:</p> $3\frac{1}{5} - 1\frac{2}{5} = \frac{16}{5} - \frac{7}{5} = \frac{9}{5} = 1\frac{4}{5}$ <p>Making the previous whole, eg:</p> $3\frac{1}{5} - 1\frac{2}{5} = 3\frac{1}{5} - \frac{1}{5} - 1\frac{1}{5} = 3 - 1\frac{1}{5} = 2\frac{4}{5}$	

Year 4			
	Block 1	Block 2	Block 3
Strategies/ methods	<p><u>Add a four digit number to a four digit number</u> Column method (exchanging ones, tens and hundreds).</p> <p><u>Subtract a three-digit number from a three-digit number</u> Column method (exchanging hundreds for tens and tens for ones).</p>		

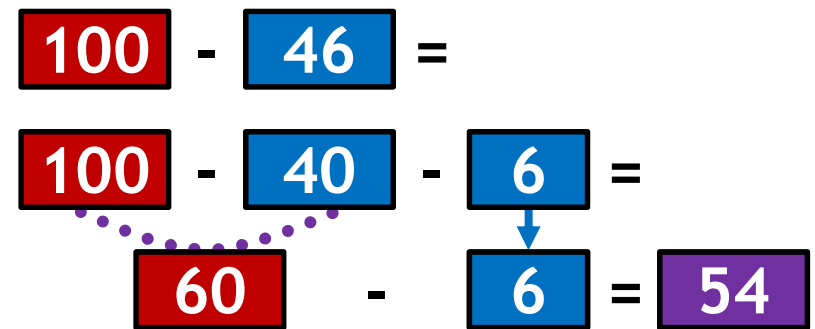
Year 4 - Block 1

$$54 + 46 = 100 \bullet 100 - 46 = 54$$

+ and - facts for 100



partitioning both addends:
combine the tens; combine the ones; combine the results



partitioning the subtrahend

Year 4 - Block 1

Friendly number pairs

$14 + 37 + 6 = 57$
 $24 + 47 + 6 = 77$
 $36 + 57 + 4 = 97$

Year 4 - Block 1

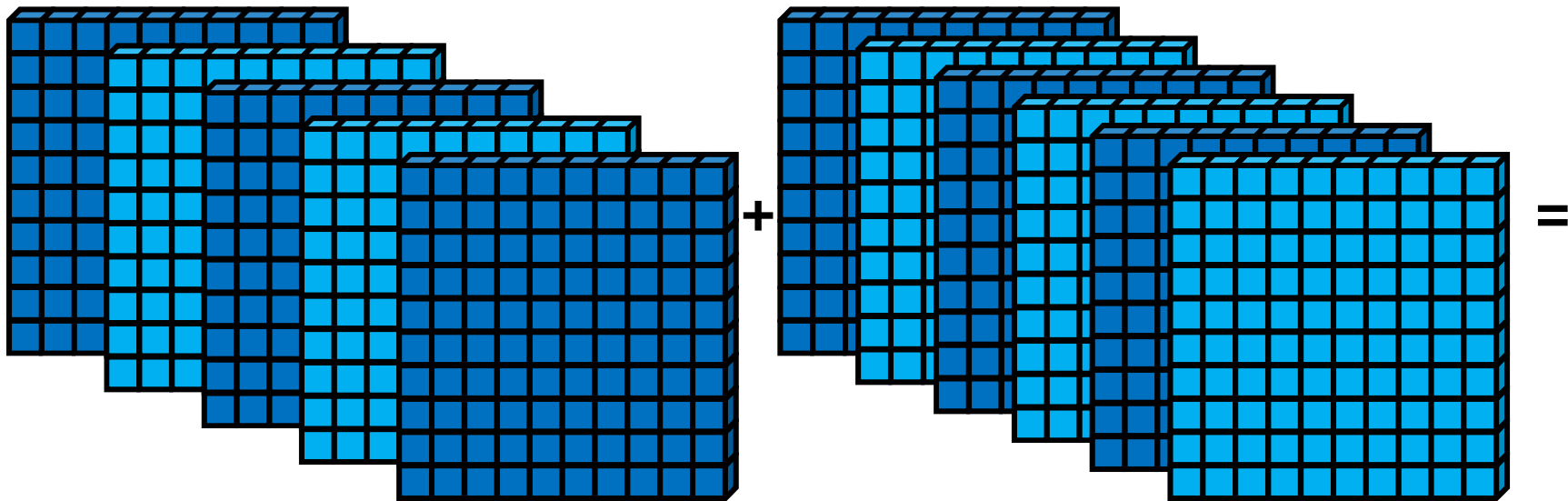
$$5 + 6 = 11 \bullet 500 + 600 = 1,100$$

Scaling addition and subtraction number facts by 100



$$5 + 6 = 5 \text{ ones} + 6 \text{ ones} = 11 \text{ ones} = 11$$

base ten supports understanding of scaling



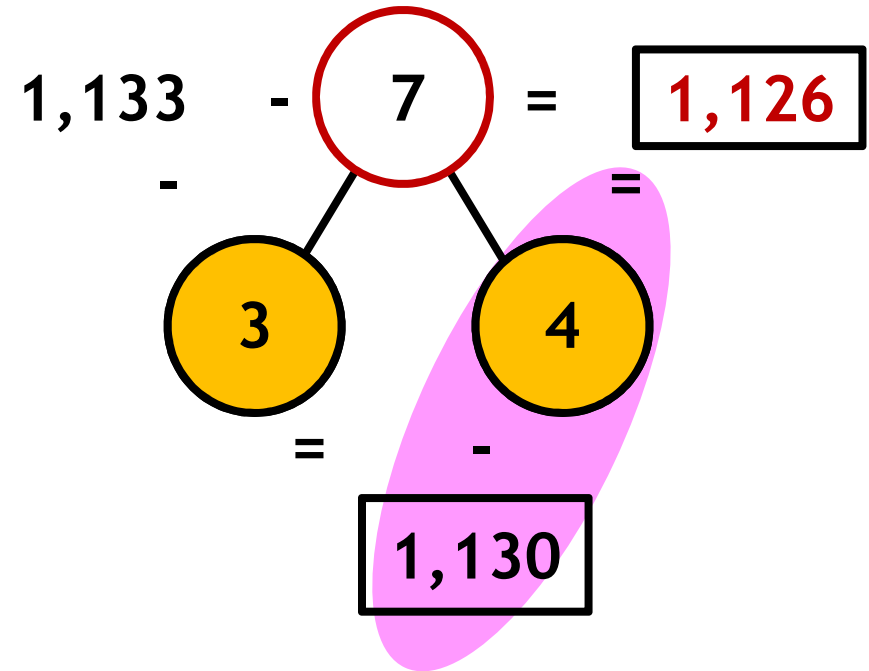
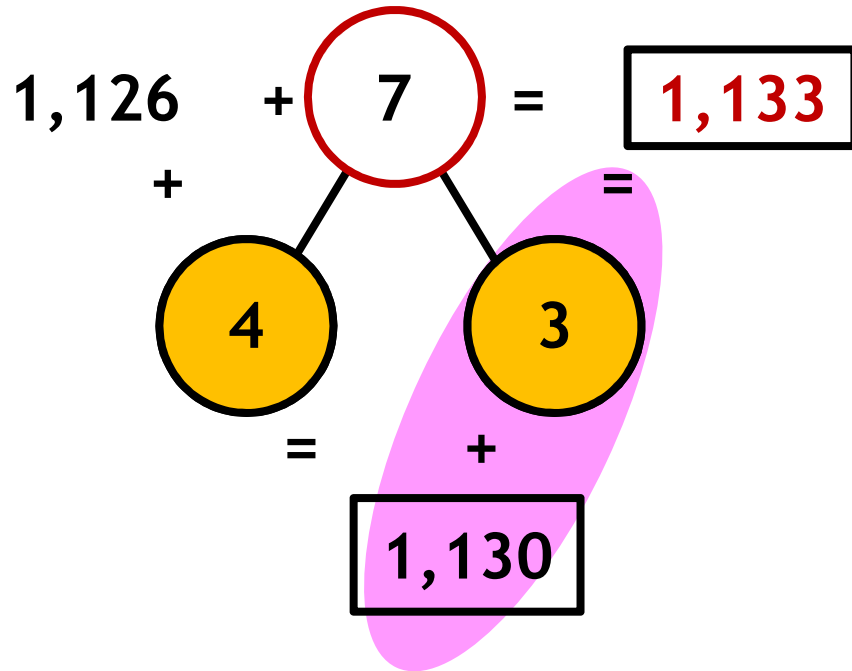
$$500 + 600 = 5 \text{ hundreds} + 6 \text{ hundreds} = 11 \text{ hundreds} \quad 1,100$$

$$1100$$

Year 4 - Block 1

$$1,126 + 7 = 1,133 \bullet 1,133 - 7 = 1,126$$

Making next/previous ten

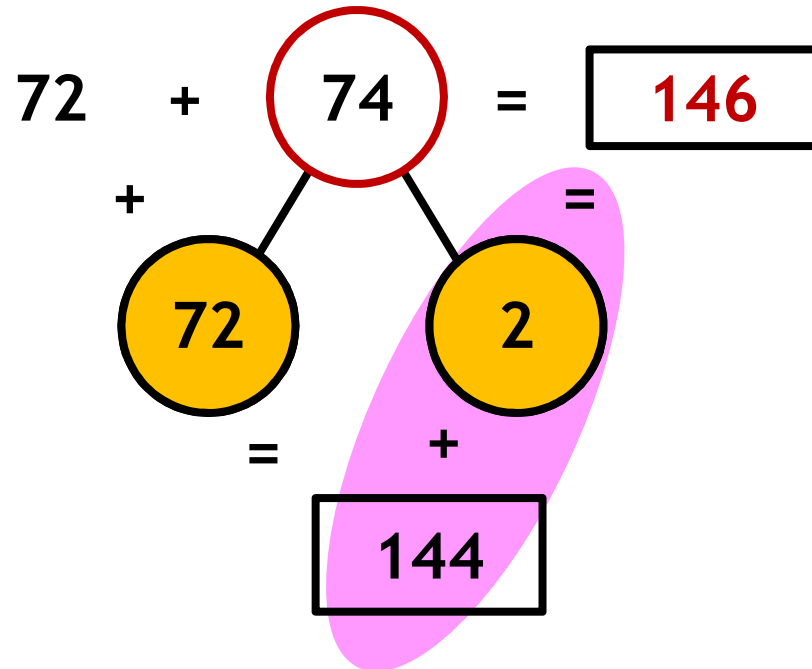


numeric representations of making the next/previous ten

Year 4 - Block 1

$$72 + 74 = 146$$

Near doubles



numeric representation for use of near doubles

Year 4 - Block 1

$$661 + 523 = 1,184$$

Partitioning both addends

$$\begin{array}{r}
 661 + 523 = \\
 600 + 60 + 1 + 500 + 20 + 3 = \\
 1,100 + 80 + 4 = 1,184
 \end{array}$$

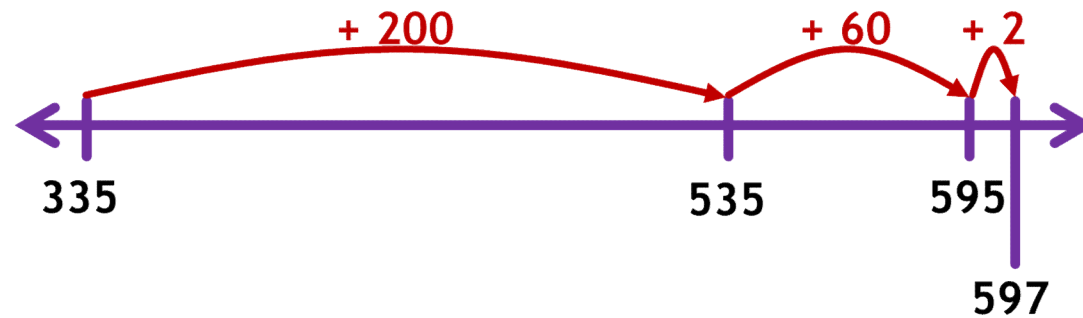
numeric representation of both addends being partitioned

Year 4 - Block 1

$$335 + 262 = 597$$

Partitioning the second addend

$$335 + 200 + 60 + 2 =$$



counting on using an empty number line

Year 4 - Block 1

$$2,879 + 1,964 = 4,843$$

Add a four digit number to a four digit number

	Th	H	T	O
	2	8	7	9
+	1	9	6	4
	4	8	4	3
	1	1	1	

Add the ones.

*9 ones + 4 ones = 13 ones
13 ones = 1 ten and 3 ones*

Add the tens.

*7 tens + 6 tens + 1 ten = 14 tens
14 tens = 1 hundred and 4 tens*

Add the hundreds.

8 hundreds + 9 hundreds + 1 hundred = 18 hundreds = 1 thousand and 8 hundreds

Add the thousands.

2 thousands + 1 thousand + 1 thousand = 4 thousands

column method supported by very clear use of language to ensure conceptual understanding

Year 4 - Block 1

$$400 - 289 = 111$$

Subtract a three-digit number from a three-digit number

	H	T	O
		9	
	3 4	1 0	10
-	2	8	9
	1	1	1

Subtract the ones.

There are not enough ones. Let's exchange.

Exchange 1 hundred for 10 tens.

Exchange 1 ten for 10 ones.

Subtract the ones.

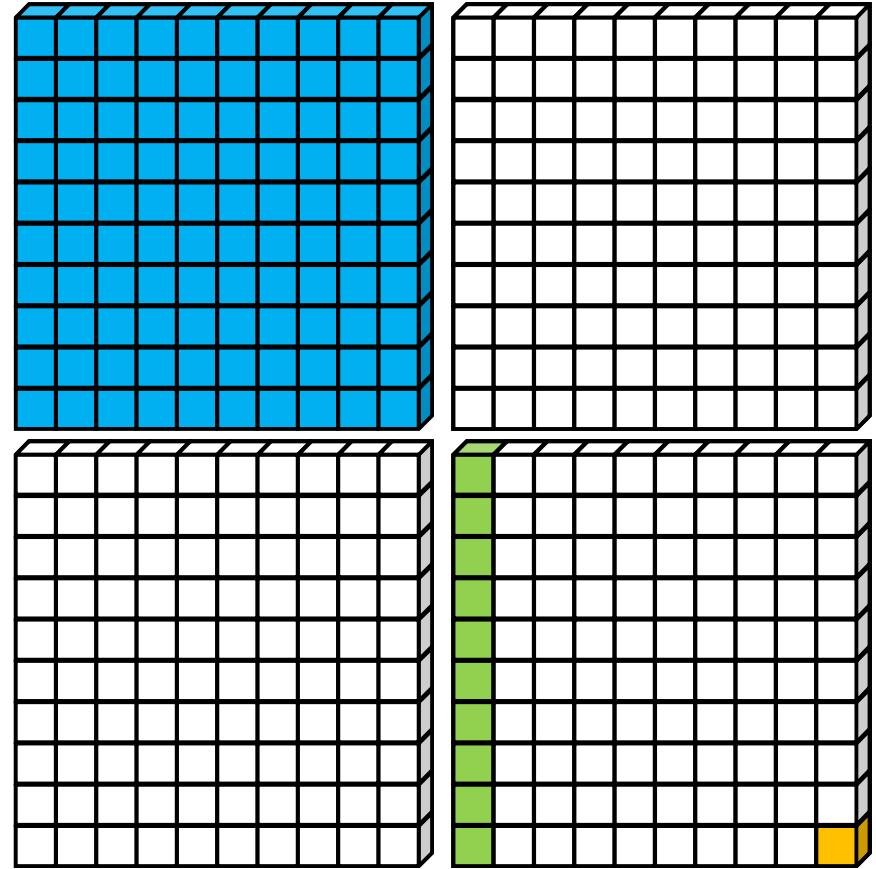
10 ones - 9 ones = 1 one

Subtract the tens.

9 tens - 8 tens = 1 ten

Subtract the hundreds.

3 hundreds - 2 hundreds = 1 hundred

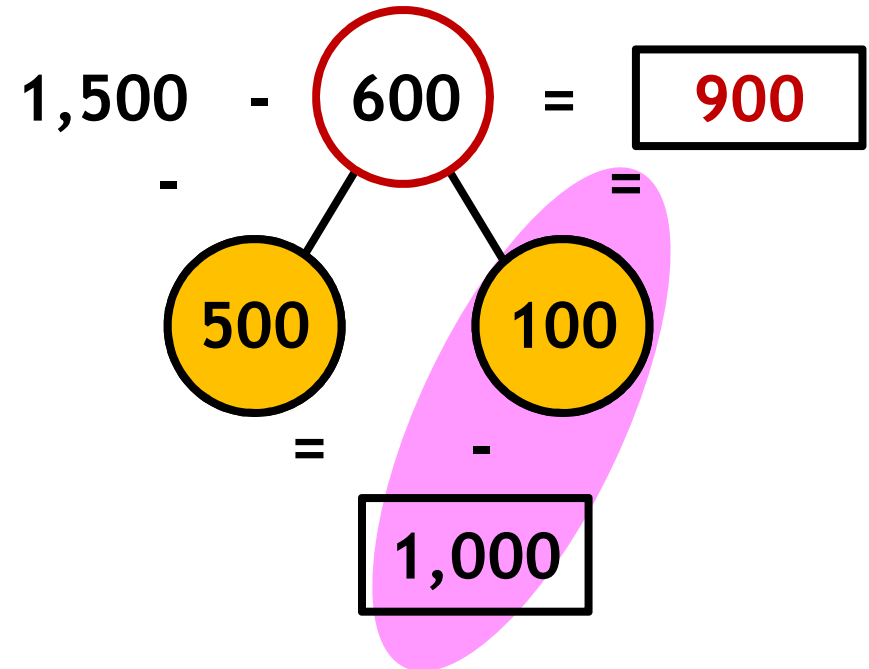
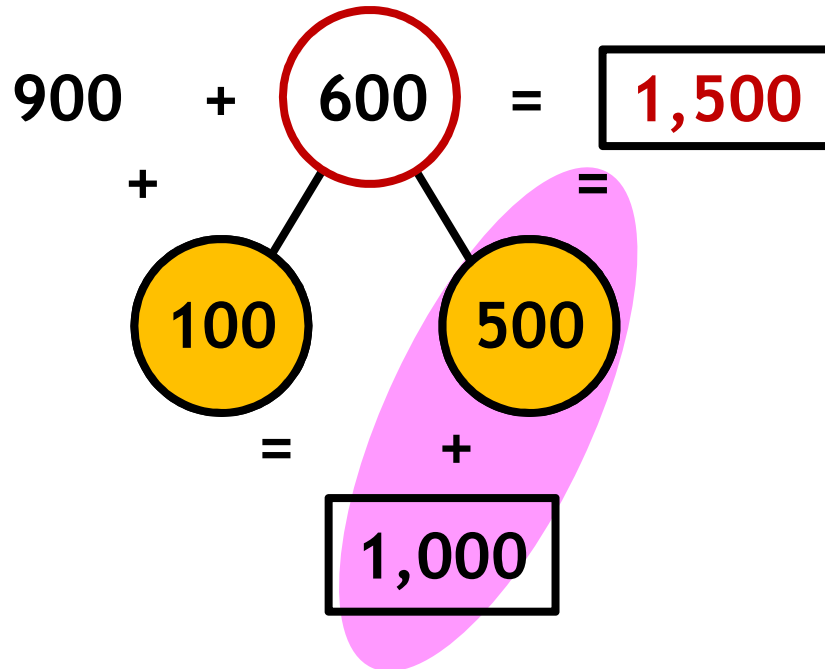


column method supported by base ten

Year 4 - Block 2

$$900 + 600 = 1,500 \bullet 1,500 - 600 = 900$$

Making next/previous thousand



numeric representations of making the next/previous thousand

Year 4 - Block 2

$$6,052 - 4,367 = 1,685$$

Subtract a four-digit number from a four-digit number

	Th	H	T	O
		9		
	5	10	14	12
-	4	3	6	7
	1	6	8	5

Subtract the ones.

There are not enough ones. Let's exchange.

Exchange 1 ten for 10 ones.

Subtract the ones.

12 ones - 7 ones = 5 ones

Subtract the tens.

There are not enough tens. Let's exchange.

Exchange 1 thousand for 10 hundreds.

Exchange 1 hundred for 10 tens

14 tens - 6 tens = 8 tens

Subtract the hundreds.

9 hundreds - 3 hundreds = 6 hundreds

Subtract the thousands

5 thousands - 4 thousands = 1 thousand

column method supported by very clear use of language to ensure conceptual understanding

Year 4 - Block 3

$$1,375 + 1,129 = 2,504$$

Different methods for addition

	1	3	7	5
+	1	1	2	9
	2	5	0	4
		1	1	

column method

$$\begin{array}{r}
 1,375 + 1,129 = \\
 \text{+ 25} \\
 \hline
 1,400 + 1,129 = \\
 \hline
 2,529 \\
 \text{- 25} \\
 \hline
 = 2,504
 \end{array}$$

compensation

$$1,375 + 1,129 =$$

partitioning the second addend

$$\begin{array}{l}
 1,375 + 1,000 + 100 + 20 + 9 = \\
 \text{2,375} + 100 \\
 \text{2,475} + 20 \\
 \text{2,495} + 9 = 2,504
 \end{array}$$

making the next hundred

$$\begin{array}{l}
 1,375 + 1,129 = 2,504 \\
 \text{+} \\
 \text{25} \quad \text{1,104} \\
 \text{=} \\
 \text{1,400}
 \end{array}$$

CALCULATION POLICY FOR ADDITION AND SUBTRACTION

YEAR 4

Year 4 - Block 3

$$7,045 - 5,888 = 1,157$$

Different methods for subtraction

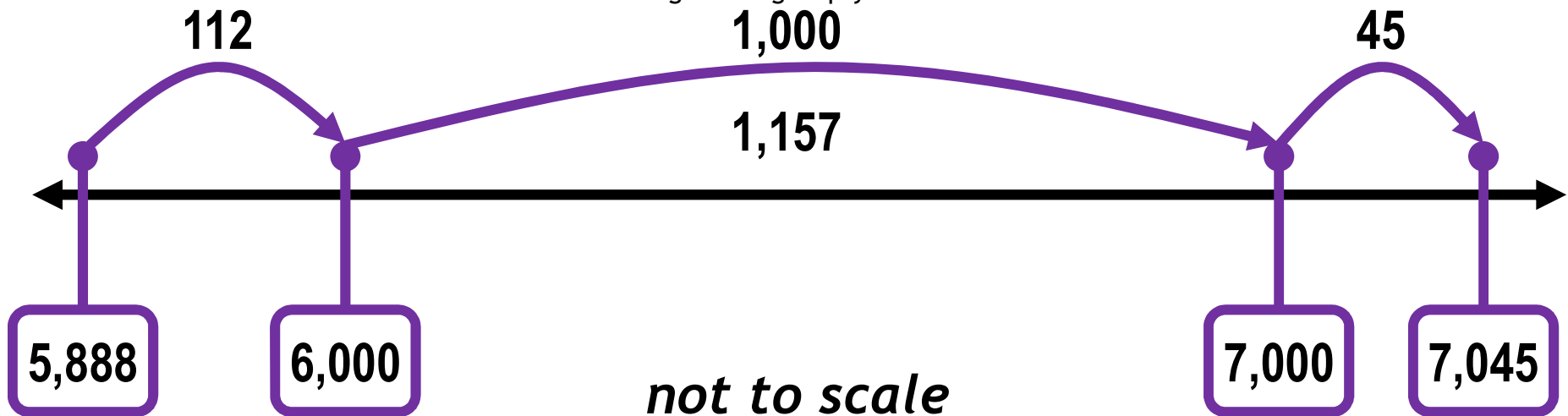
		9		
	6	7	10	13 15
	5	8	8	8
	1	1	5	7

column method

$$\begin{array}{r}
 7,045 - 5,888 = \\
 \text{---} - 45 \\
 7,000 - 5,888 = 1,112 \\
 \text{---} + 45 \\
 1,157
 \end{array}$$

compensation

counting on using empty number line



Year 4 - Block 3

$$7,045 - 5,888 = 1,157$$

Different ways of using compensation

$\boxed{895} - \boxed{796} =$ <p style="text-align: center;">+ 5</p> $\boxed{900} - \boxed{796} = \boxed{104}$ <p style="text-align: center;">- 5</p> $\boxed{99}$ <p style="text-align: center;">We increased the minuend. We now need to decrease.</p>	$\boxed{901} - \boxed{609} =$ <p style="text-align: center;">- 1</p> $\boxed{900} - \boxed{609} = \boxed{291}$ <p style="text-align: center;">+ 1</p> $\boxed{292}$ <p style="text-align: center;">We decreased the minuend. We now need to increase.</p>
$\boxed{895} - \boxed{796} =$ <p style="text-align: center;">+ 4</p> $\boxed{895} - \boxed{800} = \boxed{95}$ <p style="text-align: center;">+ 4</p> $\boxed{99}$ <p style="text-align: center;">We increased the subtrahend. We now need to increase.</p>	$\boxed{901} - \boxed{609} =$ <p style="text-align: center;">- 9</p> $\boxed{901} - \boxed{600} = \boxed{301}$ <p style="text-align: center;">- 9</p> $\boxed{292}$ <p style="text-align: center;">We decreased the subtrahend. We now need to decrease.</p>