

Year 4

Coffee and Calculations



Aims of the National Curriculum

Fluent recall of mental maths facts e.g. times tables, number bonds. Etc.

To **reason** mathematically - children need to be able to **explain** the mathematical concepts with number sense; they must explain **how** they got the answer and **why** they are correct.

Problem solving - applying their skills to real-life contexts.

ADDITION AND SUBTRACTION

National Curriculum Objectives:

Pupils should be taught to:

- * Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- * Estimate and use inverse operations to check answers to a calculation
- * Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

Addition

Addition of three digit + 3-digit and four digit + four digit

$$\begin{array}{r} 576 \\ 369 \\ \hline 945 \\ \hline \end{array}$$
$$\begin{array}{r} 7268 \\ 5179 \\ \hline 12447 \\ \hline \end{array}$$

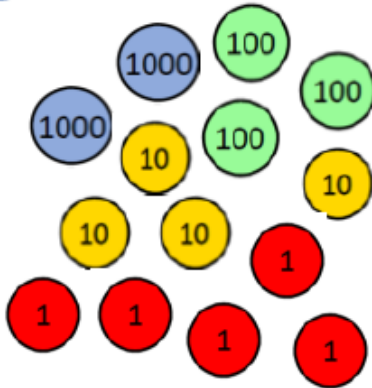
Addition of numbers to 2 decimal places

$$\begin{array}{r} 4.45 \\ 3.55 \\ \hline 8.00 \\ \hline \end{array}$$
$$\begin{array}{r} 57.89 \\ 46.67 \\ \hline 104.56 \\ \hline \end{array}$$

Place Value

1

Here is a number. Add 3 thousands to the number.



Which counter did you use?

Add 3 hundreds to the number. What

number do you have now?

Subtract 3 tens from the number. Which

counters do you need to take away?
Add five ones to the number. How many

2

Here is a number.

Thousands	Hundreds	Tens	Ones
5	3	8	2

Add three hundreds to the number.

Subtract 4 thousands.

Subtract 2 ones.

Add 5 tens.

What number do you have now?

3

Complete:

$3456 + 1000 =$

$734 - 400 =$

$7234 + 500 =$

$6218 - 200 =$

$3821 + 700 =$

$715 + 50 =$

$8527 - 2000 =$

$4060 - 200 =$

Reasoning with Addition

Two children completed the following calculation:

$$1,234 + 345$$

When I added 1,234 and 345 together I got 1,589.



Suri



Eleanor

I added 1,234 to 345 and I got 4,684.

Both of the children have made a mistake in their calculations.

Calculate the actual answer to the question.

What mistakes did they make?

Tamsin adds 2 numbers together that total 4,444

Both numbers have 4 digits.

All the digits in both numbers are even.



Tamsin

What could the numbers be? Prove it.
How many ways can you find?

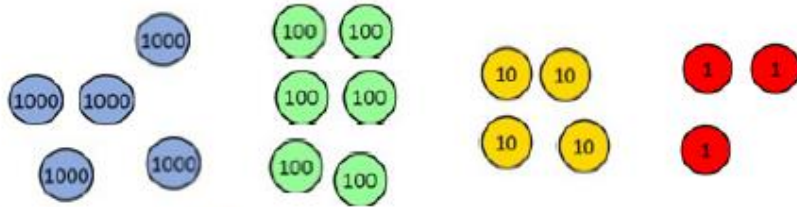
Complete:

$$\begin{array}{r} 6 \square \square 8 \\ + \square \square 8 \square \\ \hline 9,325 \\ \hline 1 \quad 1 \quad 1 \end{array}$$

Greg says that 'there is more than one answer for the missing numbers in the hundreds column'. Is he correct? Explain your answer.

Subtraction

- 1 Here is a number.



Subtract 4,345.

What is your answer?

Can you subtract 5 from 3?

What do you have to do?

You exchange a 10 – what does your number become that you are subtracting from?

- 2 Complete the calculation.

What do we do?

Where do we exchange from? Why do we exchange from there?

$$\begin{array}{r} 4578 \\ - 3643 \\ \hline \end{array}$$

- 3 Find the difference between 6,528 and 469 using column subtraction.

Reasoning with Subtraction

Max and Will solve a problem.



Max

When I subtract 546 from 3,232 my answer is 2,714.

Will



When I subtract 546 from 3,232 my answer is 2,686.

Who is right?
Which answer is correct?
Explain your reasons why.
Why is one of the answers wrong?

Chloe is performing a column subtraction with two four digit numbers.



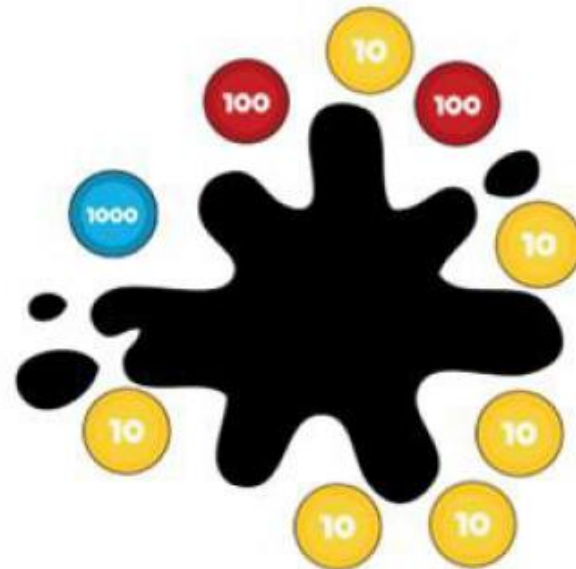
The larger number has a digit total of 35.
The smaller number has a digit total of 2.

Use cards to help you find the numbers.

What could Chloe's subtraction be?

How many different options can you find?

There are counters to the value of 3,470 on the table but some have been covered by the splat.



How many different ways can you make the missing amounts?

Multiplication and Division

National Curriculum Objectives:

- Recall multiplication and division facts for multiplication tables up to 12×12
- Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
- Recognise and use factor pairs and commutativity in mental calculations
- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout

Times Table Rockstars



Multiplication

67×9			
\times	60	7	$540 + 63 = 603$
9	540	63	
437×6			
\times	400	30	7
6	2400	180	42
$2400 + 180 + 42 = 2622$			

Partitioning grid multiplication leading to formal compact methods

$$67 \times 9 =$$
$$\begin{array}{r} 67 \\ 9 \\ \hline 603 \end{array}$$

Roll Dice and Rally Coaching

Reasoning with Multiplication

Here are three multiplications.

	6	1			7	4			2	6
x		5		x		7		x		4
	3	5		4	9	8		8	2	4

Correct the multiplications.

Tom baked muffins in a tray like this.

Tom wasn't sure how many he baked, but he used 27, 28 or 29 tins!



When he counted them there were 174 muffins. How many tins did he use?

Division

Division by grouping leading to formal division

$$87 \div 6$$

$$\begin{array}{r} 14 \text{ r}3 \\ 6 \overline{) 87} \\ \underline{60} \\ 27 \\ \underline{24} \\ 3 \end{array}$$

Place Value Counters



Rally Coaching

Place $<$, $>$ or $=$ to make these number sentences correct.

$738 \div 6$		$868 \div 7$
$976 \div 8$		$625 \div 5$
$584 \div 4$		$438 \div 3$

FRACTIONS

National Curriculum Objectives:

Pupils should be taught to:

- Recognise and show, using diagrams, families of common equivalent fractions
 - * Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.
 - * Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number
 - * Add and subtract fractions with the same denominator