Skill: Add numbers with more than 4 digits	Year: 5/6

Place value counters or plain counters on a place value grid are the most effective concrete resources when adding numbers with more than 4 digits.

At this stage, children should be encouraged to work in the abstract, using the column method to add larger numbers efficiently.

?

104,328	61,731

?

104,328
61,731

?
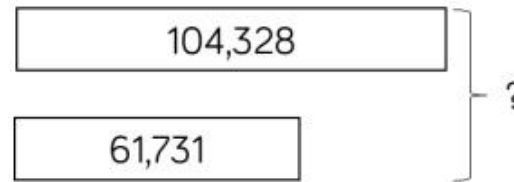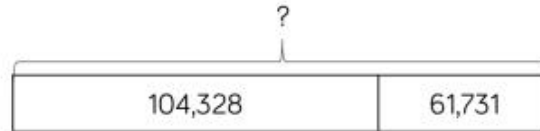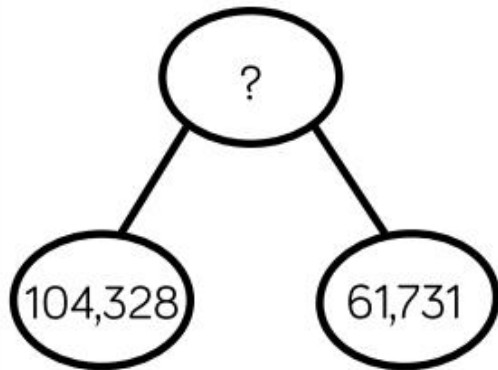
$$104,328 + 61,731 = 166,059$$

HTh	TTh	Th	H	T	O

	1	0	4	3	2	8
+		6	1	7	3	1
	1	6	6	0	5	9
				1		

2.41   3.65

?

?

3.65 | 2.41

3.65

2.41

?

$$3.65 + 2.41 = 6.06$$

$$\begin{array}{r} 3.65 \\ + 2.41 \\ \hline 6.06 \\ \hline \tiny 1 \end{array}$$
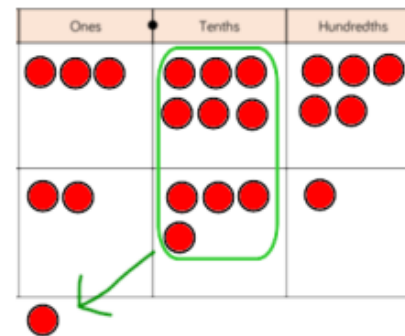
Ones		Tenths	Hundredths
1 1 1		0.1 0.1 0.1 / 0.1 0.1 0.1	0.01 0.01 0.01 / 0.01 0.01
1 1		0.1 0.1 0.1 / 0.1	0.01
1			

Ones	Tenths	Hundredths
● ● ●	● ● ● / ● ● ●	● ● ● / ● ●
● ●	● ● ● / ●	●
●		

Place value counters and plain counters on a place value grid are the most effective manipulatives when adding decimals with 1, 2 and then 3 decimal places.

Ensure children have experience of adding decimals with a variety of decimal places. This includes putting this into context when adding money and other measures.

Skill: Subtract numbers with more than 4 digits	Year: 5/6

294,382

182,501   ?

294,382

| 182,501 | ? |

294,382

182,501 → ?

$$294,382 - 182,501 = 111,881$$

HTh	TTh	Th	H	T	O

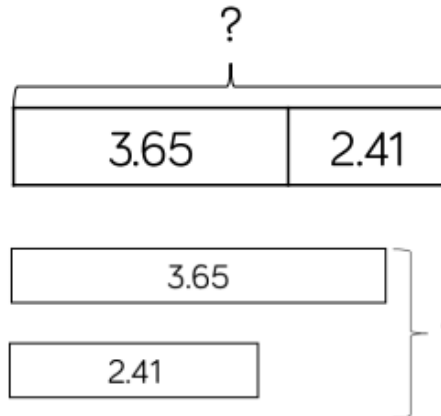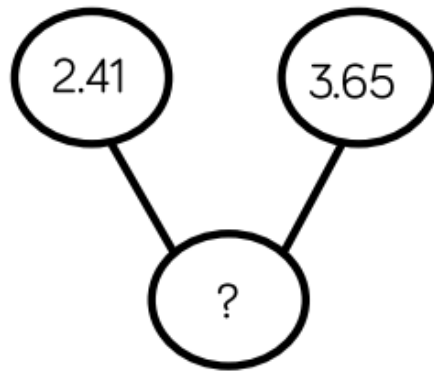|	2	9	³3̸	¹3	8	2
−	1	8	2	5	0	1
	1	1	1	8	8	1

Place value counters or plain counters on a place value grid are the most effective concrete resource when subtracting numbers with more than 4 digits.

At this stage, children should be encouraged to work in the abstract, using column method to subtract larger numbers efficiently.
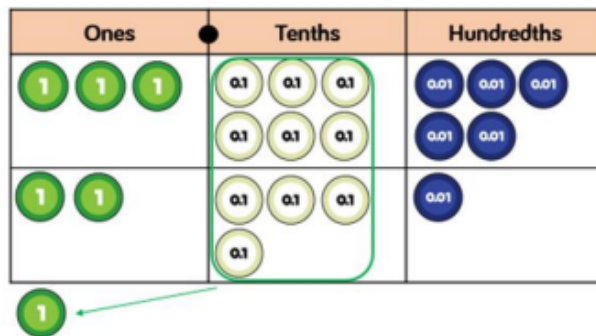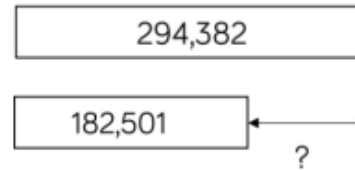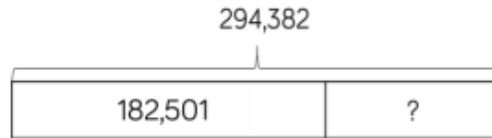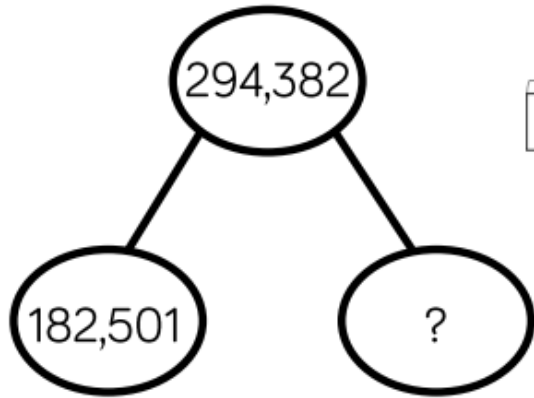
Skill: Subtract with up to 3 decimal places	Year: 5
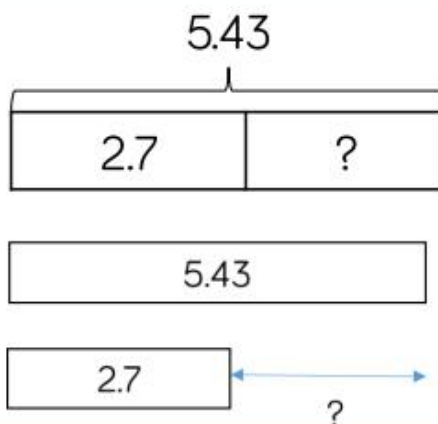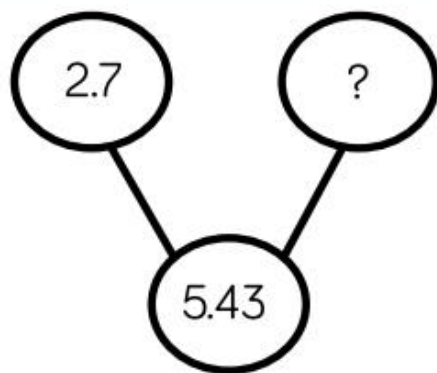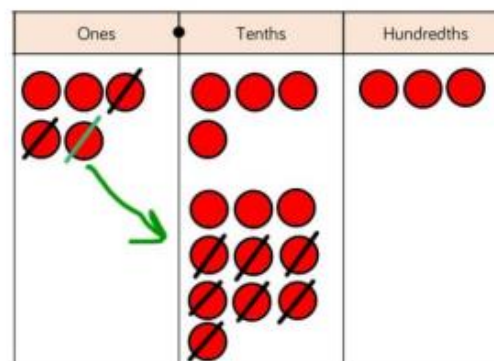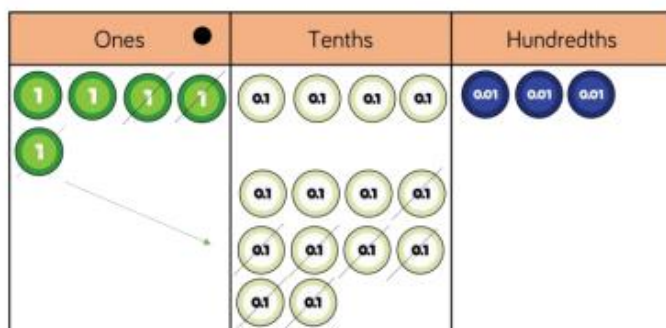
5.43

2.7   ?

5.43

$$5.43$$

2.7	?

5.43

2.7

?

$$\overset{4}{\cancel{5}}.\overset{1}{4}3$$
$$-\ 2.7$$
$$\overline{2.73}$$

$$5.43 - 2.7 = 2.73$$

Ones	•	Tenths	Hundredths

Ones	•	Tenths	Hundredths

Place value counters and plain counters on a place value grid are the most effective manipulative when subtracting decimals with 1, 2 and then 3 decimal places.

Ensure children have experience of subtracting decimals with a variety of decimal places. This includes putting this into context when subtracting money and other measures.

Glossary

Addend - A number to be added to another.

Aggregation - combining two or more quantities or measures to find a total.

Augmentation - increasing a quantity or measure by another quantity.

Commutative – numbers can be added in any order.

Complement – in addition, a number and its complement make a total e.g. 300 is the complement to 700 to make 1,000

Difference – the numerical difference between two numbers is found by comparing the quantity in each group.

Exchange – Change a number or expression for another of an equal value.

Minuend – A quantity or number from which another is subtracted.

Partitioning – Splitting a number into its component parts.

Reduction – Subtraction as take away.

Subitise – Instantly recognise the number of objects in a small group without needing to count.

Subtrahend - A number to be subtracted from another.

Sum - The result of an addition.

Total – The aggregate or the sum found by addition.

Skill: Multiply 4-digit numbers by 1-digit numbers	Year: 5
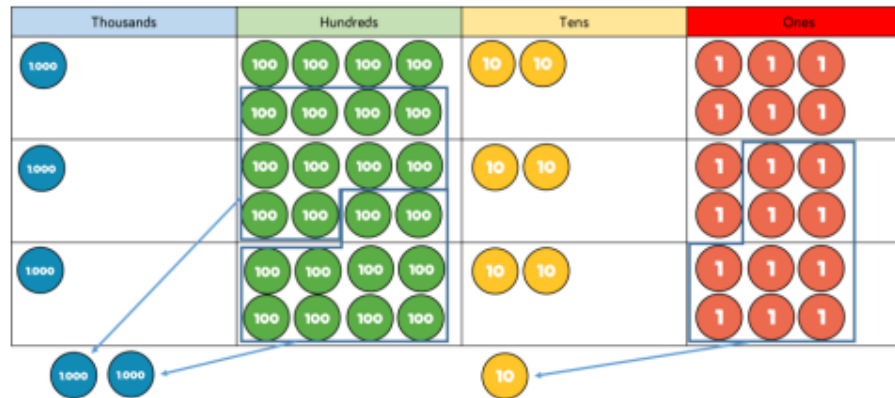
$$1,826 \times 3 = 5,478$$

	Th	H	T	O
	1	8	2	6
×				3
	5	4	7	8
		2		1

When multiplying 4-digit numbers, place value counters are the best manipulative to use to support children in their understanding of the formal written method.

If children are multiplying larger numbers and struggling with their times tables, encourage the use of multiplication grids so children can focus on the use of the written method.

| Skill: Multiply 2-digit numbers by 2-digit numbers | Year: 5 |

When multiplying a multi-digit number by 2-digits, use the area model to help children understand the size of the numbers they are using. This links to finding the area of a rectangle by finding the space covered by the Base 10.

The grid method matches the area model as an initial written method before moving on to the formal written multiplication method.
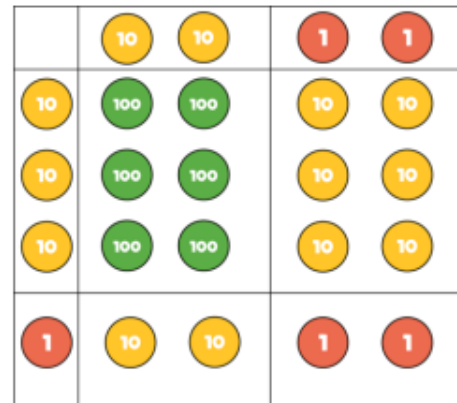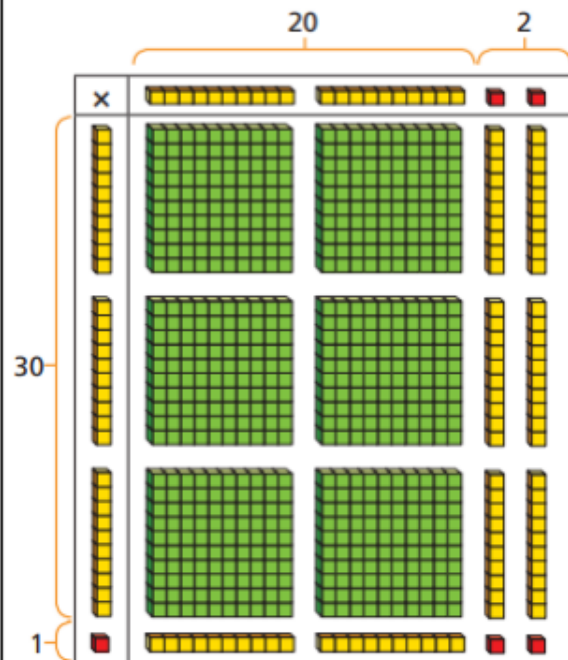
×	20	2
30	600	60
1	20	2

	H	T	O
		2	2
×		3	1
		2	2
	6	6	0
	6	8	2

$$22 \times 31 = 682$$

| | Skill: Multiply 3-digit numbers by 2-digit numbers | Year: 5 |
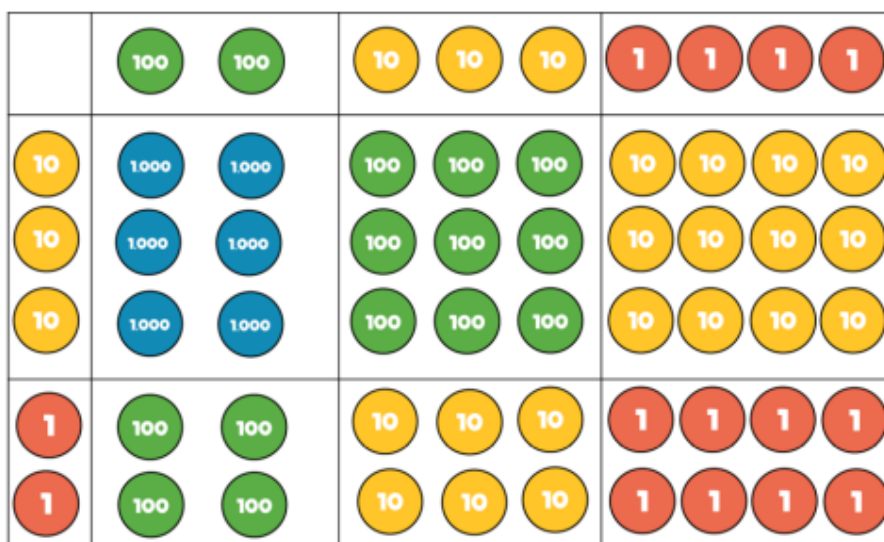
Th	H	T	O
	2	3	4
×		3	2
	4	6	8
1 7	1 0	2	0
7	4	8	8

×	200	30	4
30	6,000	900	120
2	400	60	8

$234 \times 32 = 7{,}488$

Children can continue to use the area model when multiplying 3-digits by 2-digits. Place value counters become more efficient to use but Base 10 can be used to highlight the size of numbers.

Encourage children to move towards the formal written method, seeing the links with the grid method.

	Skill: Multiply 4-digit numbers by 2-digit numbers	Year: 5/6

TTh	Th	H	T	O
	2	7	3	9
×			2	8
2 ₂	1 ₅	9 ₃	1 ₇	2
5 ₁	4	7 ₁	8	0
7	6	6	9	2
		1		

$2,739 \times 28 = 76,692$

When multiplying 4-digits by 2-digits, children should be confident in the written method.

If they are still struggling with times tables, provide multiplication grids to support when they are focusing on the use of the method.

Consider where exchanged digits are placed and make sure this is consistent.

| | Skill: Divide 3-digits by 1-digit (grouping) | Year: 5 |

Skill: Divide 3-digits by 1-digit (grouping) — Year: 5

Hundreds	Tens	Ones
100 100 100 100	10 10 10 10	1 1 1 1
100 100 100 100	10	1 1
		1 1 1 1
		1 1 1 1
		1 1

		2	1	4
4	8	5	¹6

$$2 \quad 1 \quad 4$$
$$4 \,\overline{)\,8 \quad 5 \quad ^16}$$

Hundreds	Tens	Ones
●●●●	●●●●	●●●●
●●●●	●	●●
		●● ●●
		●● ●●

856 ÷ 4 = 214

Children can continue to use grouping to support their understanding of short division when dividing a 3-digit number by a 1-digit number.

Place value counters or plain counters can be used on a place value grid to support this understanding. Children can also draw their own counters and group them through a more pictorial method.

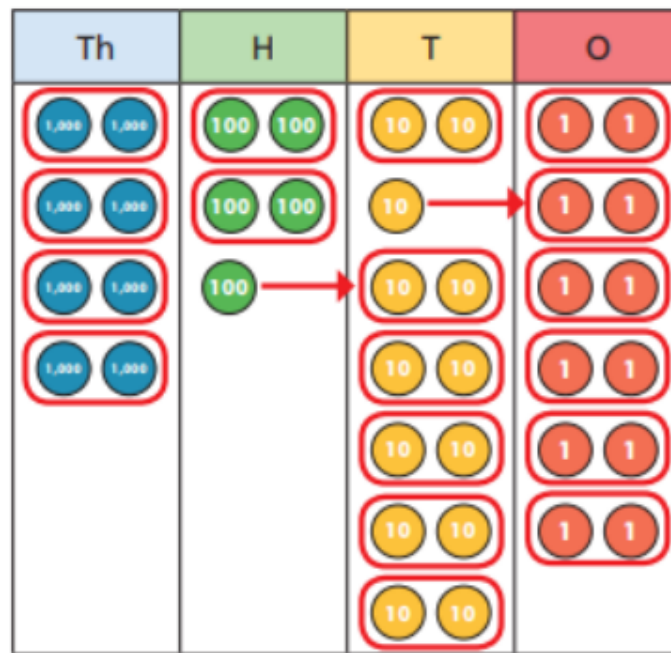| Skill: Divide 4-digits by 1-digit (grouping)	Year: 5

Th	H	T	O

8,532 ÷ 2 = 4,266

	4	2	6	6
2	8	5	^{1}3	^{1}2

Place value counters or plain counters can be used on a place value grid to support children to divide 4-digits by 1-digit. Children can also draw their own counters and group them through a more pictorial method.

Children should be encouraged to move away from the concrete and pictorial when dividing numbers with multiple exchanges.

Skill: Divide multi digits by 2-digits (short division)	Year: 6

		0	3	6
	12	4	^{4}3	^{7}2

$$432 \div 12 = 36$$

$$7,335 \div 15 = 489$$

		0	4	8	9
	15	7	^{7}3	^{13}3	^{13}5

15	30	45	60	75	90	105	120	135	150

When children begin to divide up to 4-digits by 2-digits, written methods become the most accurate as concrete and pictorial representations become less effective. Children can write out multiples to support their calculations with larger remainders. Children will also solve problems with remainders where the quotient can be rounded as appropriate.

Skill: Divide multi-digits by 2-digits (long division)	Year: 6

$$12 \times 1 = 12$$
$$12 \times 2 = 24$$
$$12 \times 3 = 36 \quad (\times 30)$$
$$12 \times 4 = 48$$
$$12 \times 5 = 60$$
$$12 \times 6 = 72 \quad (\times 6)$$
$$12 \times 7 = 84$$
$$12 \times 8 = 96$$
$$12 \times 7 = 108$$
$$12 \times 10 = 120$$

$$432 \div 12 = 36$$

$$7,335 \div 15 = 489$$

$$1 \times 15 = 15$$
$$2 \times 15 = 30$$
$$3 \times 15 = 45$$
$$4 \times 15 = 60$$
$$5 \times 15 = 75$$
$$10 \times 15 = 150$$

Children can also divide by 2-digit numbers using long division.

Children can write out multiples to support their calculations with larger remainders.

Children will also solve problems with remainders where the quotient can be rounded as appropriate.

| Skill: Divide multi digits by 2-digits (long division) | Year: 6 |

$372 \div 15 = 24 \text{ r}12$

$$
\begin{array}{c|cccccc}
 & & & 2 & 4 & \text{r} & 1 & 2 \\
\hline
1\ 5 & 3 & 7 & 2 & & & \\
 & - & 3 & 0 & 0 & & \\
\hline
 & & & 7 & 2 & & \\
 & & - & 6 & 0 & & \\
\hline
 & & & 1 & 2 & & \\
\end{array}
$$

$1 \times 15 = 15$
$2 \times 15 = 30$
$3 \times 15 = 45$
$4 \times 15 = 60$
$5 \times 15 = 75$
$10 \times 15 = 150$

$372 \div 15 = 24\frac{4}{5}$

$$
\begin{array}{c|ccccc}
 & & & 2 & 4 & \frac{4}{5} \\
\hline
1\ 5 & 3 & 7 & 2 & & \\
 & - & 3 & 0 & 0 & \\
\hline
 & & & 7 & 2 & \\
 & & - & 6 & 0 & \\
\hline
 & & & 1 & 2 & \\
\end{array}
$$

When a remainder is left at the end of a calculation, children can either leave it as a remainder or convert it to a fraction. This will depend on the context of the question.

Children can also answer questions where the quotient needs to be rounded according to the context.

Glossary

Array – An ordered collection of counters, cubes or other item in rows and columns.

Commutative – Numbers can be multiplied in any order.

Dividend – In division, the number that is divided.

Divisor – In division, the number by which another is divided.

Exchange – Change a number or expression for another of an equal value.

Factor – A number that multiplies with another to make a product.

Multiplicand – In multiplication, a number to be multiplied by another.

Partitioning – Splitting a number into its component parts.

Product – The result of multiplying one number by another.

Quotient – The result of a division

Remainder – The amount left over after a division when the divisor is not a factor of the dividend.

Scaling – Enlarging or reducing a number by a given amount, called the scale factor