The Rydal Academy
Calculations Policy

Accepted by: The Rydal Academy LGB May 2019
Approving Body: Local Governing Body
Committee: LGB
Review Cycle: 3 years
Last reviewed: October 2020
Date for next review: October 2023

Here at The Rydal Academy, our Calculation Policy has been created to meet the expectations of the new national curriculum but most importantly the learning needs of our children. The methods chosen match the National Curriculum but have also been specifically selected after considera-

Age Expectations

This policy has been organised by year group, considering the National Curriculum 2014 expectations. The new curriculum focuses on skills, depth of knowledge and mastering the subject. This leads children to working on more complex and richer problems, rather than the teaching of new methods, and supports their 'mastering' of Mathematics. Throughout our primary Mathematics learning journey, there will continue to be examples of further support and challenge for children dependent on their level of indi-
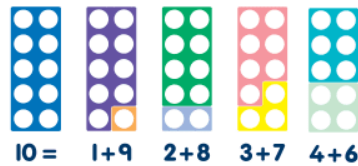
Year 1 - Addition
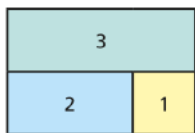
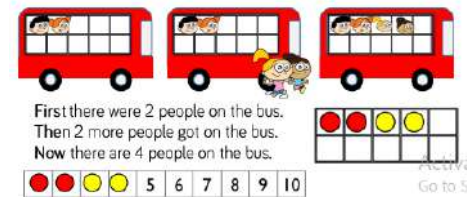## Adding with numbers up to 20

Children should use a variety and manipulatives and pictorial representations to add. They should learn strategies such as counting in ones, counting on from the greatest number and counting on the smaller number.

Variation

$3 + 4 =$

$3 + 5 =$

$3 + 6 =$

"I know that 14 - 4 = 10, so 14 - 5 must = 9."

"I know that 9 + 1 = 10, so 9 + 2 must = 11."
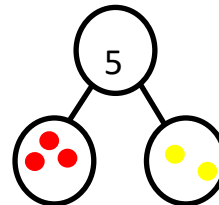
10 =   1+9   2+8   3+7   4+6

'First, then, now' struc-

First there were 2 people on the bus.
Then 2 more people got on the bus.
Now there are 4 people on the bus.

Bar model.

$9 + 3 = ?$

think:

9 + 3   →   10 + 2

Number bond facts on a tens

5

Part/Whole

$6+3=9$

"I know that 8 + 3 = 11, so 11 - 8 must = 3."

"I know that 4 + 4 = 8, so 8 - 4 must = 4."

"I know that 9 + 1 = 10, so 10 - 9 must = 1."

$6+3=9$

Near dou-

"I know that 4 + 4 = 8, so 4 + 5 must = 9."

Key Vocabulary

Addition, add, more, and, make, sum, total, altogether, one more, two more ... ten more,

How many more to make ...? How many more is ... than ...? How much more is ...?

Near double, equals, is the same as, number bonds/pairs, missing number.

Key Skills

- Reading and writing numbers to 100 in numerals
- Represent and use number bonds and related subtraction facts within 20.
- Count to and over 100, forward from any number in the ones.
- Counting in multiples of 2, 5 and 10 from any given number.
- Solving simple one step addition problems, using pictorial or manipulative representations.
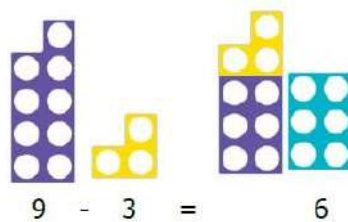- Given a number, count on one more.

Year 1 - Subtraction
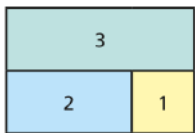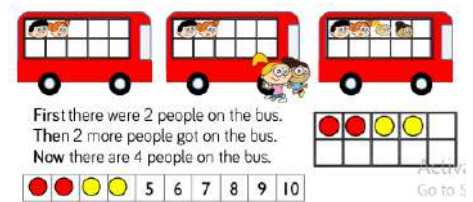
Subtracting from numbers up to 20

Children should use a variety and manipulatives and pictorial representations to subtract. They should learn strategies to understand that subtraction is not only taking away, but also the difference or distance between
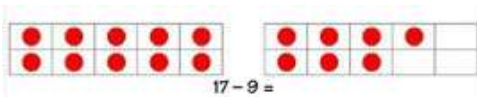
Variation

$10 - 4 =$

$10 - 3 =$

$10 - 2 =$

"I know that 14 - 4 = 10, so 14 - 5 must = 9."

"I know that 9 + 1 = 10, so 9 + 2 must = 11."

$9 - 3 = 6$

'First, then, now' struc-

First there were 2 people on the bus.
Then 2 more people got on the bus.
Now there are 4 people on the bus.

Bar model.

$17 - 9 =$

10's facts on a tens

$9 - 3 =$

5

Part/Whole

"I know that 8 + 3 = 11, so 11 - 8 must = 3."

"I know that 4 + 4 = 8, so 8 - 4 must = 4."

"I know that 9 + 1 = 10, so 10 - 9 must = 1.

Key Vocabulary

Subtract, take away, How many are left/left over? How many have gone? One less, two less, ten less ... How many fewer is ... than ...? How much less is ...? Difference between, equals, is the same as , number bonds/pairs, missing number, half, halve.

Key Skills

- Given a number, count one less.
- Count back from over 100 from any number in ones..
- Represent and use subtraction facts to 20 and within 20, including number bonds.
- Subtract with 1 digit numbers and 2 digit numbers., including 0.

Year 1 - Multiplication

Repeated addition with objects, arrays and pictorial representatives.

Children should be exposed to many different multiplications based activities in a variety of contexts. Much of these will be repeated addition activi-

2 + 2 =

2 + 2 =

2 + 2 + 2 =

2 + 2 + 2 =

3 x 5 =
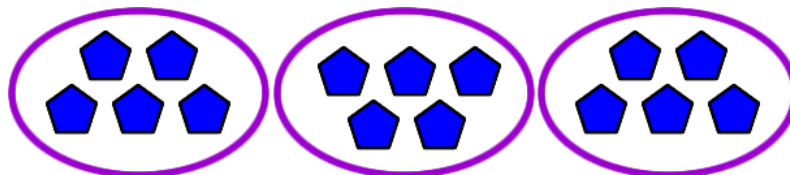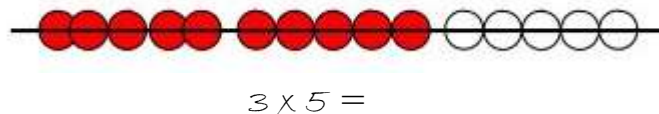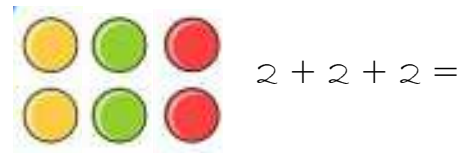
3 of lots of 5

Key Vocabulary

Multiplication, multiply, multiplied by, multiple, grouping, doubling, array, number patterns, repeated addition, lots of

Key Skills

- Count in multiples of 2's, 5's and 10's using manipulatives or pictorial representations.
- Make connections between arrays and counting in 2's, 5's and 10's.
- Double using manipulatives or pictorial representations.

Year 1 - Division

Grouping and sharing small quantities without remainders.

Children should be exposed to many different division based activities in a variety of   contexts. They will use manipulatives and pictorial representa-
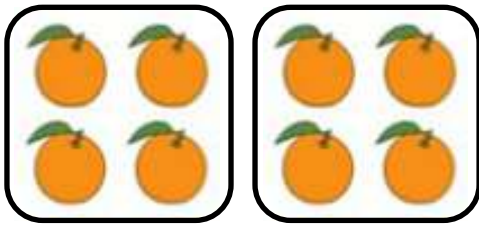
$8 \div 2 = 4$

$12 \div 2 =$

$10 \div 2 = 5$

15 shared into 5

Key Skills

- Children to use grouping and sharing to understand division.
- Make connections between arrays and counting in 2's, 5's and 10's.
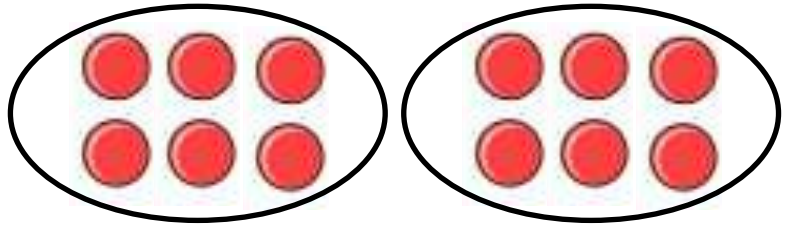- Half using manipulatives or pictorial representations., understanding it is being split into 2 equal groups.
- Solve 1 step problems involving multiplications using manipulatives or pictorial representations.

Year 2 - Addition

Adding with 2 digit numbers.

Children will continue to use a variety of manipulatives and pictorial representations to support their learning. Their written methods will move onto the traditional column method. In addition, they will develop their mental

Mental partitioning

71 + 23 =

70 + 20 =
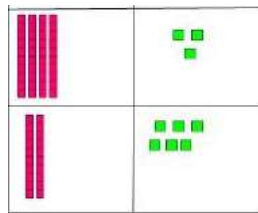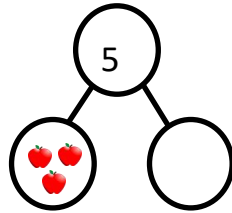
5

+30   +2

56   86 88

$$43 + 26$$

Number bonds

4 + 6 = 10

14 + 6 =

£

Complete the bar model.

100
41	

Variation

3 + 4 =

3 + 5 =

3 + 6 =

"I know that 14 - 4 = 10, so 14 - 5 must = 9."

"I know that 9 + 1 = 10, so 9 + 2 must = 11."
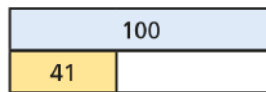
Near dou-

"I know that 4 + 4 = 8 so 4 + 5 must = 9."

9 + 3 = ?

think:
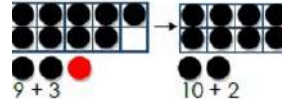
9 + 3   10 + 2   +

Number bond facts on a

Tens	Ones
1	3
	4
1	7

Key Vocabulary

Addition, add, more, and, make, sum, total, altogether, double , near double, one more, two more … ten
more … one hundred more , How many more to make …? How many more is … than …? Equals, is the same as , number bonds/pairs/facts , tens boundary

Key Skills

- Add a 2 digit number to a ones number,
- Add a 2 digit number to a tens number.
- Add pairs of 2 digit numbers.
- Add three single digit numbers.
- Understand that adding can be done in any order. (Commutative law)
- Recall number bonds to 20.
- Recall multiples of 10, bonds to 100.
- Count in steps of 2, 3 and 5 forwards and backwards.
- Count in steps of 10 from any number.

Year 2 - Subtraction

Subtracting with 2 digit numbers.

Children will continue to use a variety of manipulatives and pictorial representations to support their learning. Their written methods will move onto the traditional column method. In subtraction, they will develop their men-
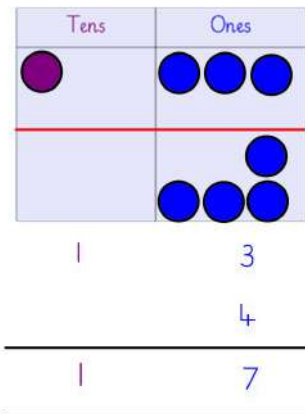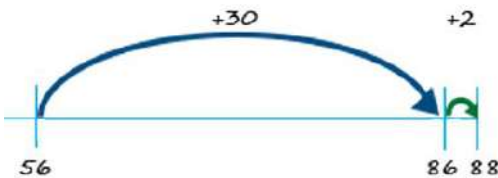
Mental partitioning

76 - 23 =

70 - 20 =
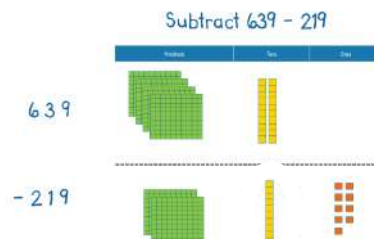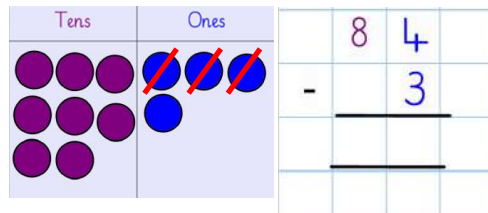
Tens	Ones

8 4
-   3

Subtract 639 – 219

639

- 219

Number bonds

10 - 6 = 4

47 - 19 =

9 jumps back   10 jumps back

28   29 30 31 32 33 34 35 36 37   47

5

Complete the bar model.

100	
41	

Variation

3 + 4 =

3 + 5 =

3 + 6 =

"I know that 14 - 4 = 10, so 14 - 5 must = 9."
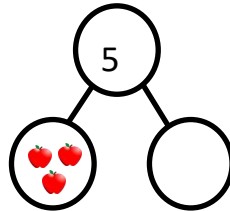
"I know that 9 + 1 = 10, so 9 + 2 must = 11."
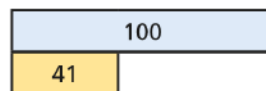
"I know that 8 + 3 = 11, so 11 - 8 must = 3."

"I know that 4 + 4 = 8, so 8 - 4 must = 4."

"I know that 9 + 1 = 10, so 10 - 9 must = 1.

Near number bonds

11 - 5 =

10 - 5 =

9 - 5 =

Key Vocabulary

How many more to make …? How many more is … than …? How much more is …? subtract ,t ake away , How many are left/left over? How many have gone? One less, two less, ten less … one hundred less , How many fewer is … than …? How much less is …? difference between , equals,, is the same as number bonds/pairs/facts,, tens boundary

Key Skills

- Understand the value of two digit numbers (tens and ones)
- Recall and use subtraction facts to 20 fluently.
- Use these facts to derive related facts to 20.
- Use manipulatives, pictorial representatives and mental strategies to subtract a one digit number from a two digit number, a two digit number from a tens number and 2 two digit numbers from each other.
- Understand that subtraction calculations cannot be done in any order.

Year 2 - Multiplication

Multiplying using arrays and repeated addition—2,5,10 x table facts

Children will use their knowledge of simple arrays and pictorial representations from Year 1. They will develop their understanding to make their own arrays, use repeated addition on a number line and use manipulatives to

2 + 2 =

2 + 2 =

2 + 2 + 2 =

2 + 2 + 2 =

3 x 5 =

40			
10	10	10	10
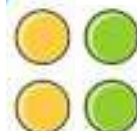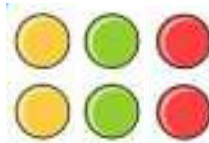
10	10	10	10	10	10	10

3 of lots of 5

Key Vocabulary

Multiplication, multiply, multiplied by, multiple , groups of, times, once, twice, three times … ten times, repeated addition , grouping, one each, two each, three each … ten each , group in pairs, threes … tens
equal groups of , doubling, array, row, column, number patterns , multiplication table , multiplication fact

Key Skills

- Count in steps 2's, 3's, 5's and 10's from any number.
- Recall and use multiplication facts from the 2, 5 and 10 times table.
- Recognise odd and even numbers.
- Write and calculate number statements using x and = signs in different orders.
- Show that multiplication can be done in any order (the commutative law).

Year 2 - Division

Grouping and sharing larger quantities using written methods and symbols.

Children will continue to use methods of sharing and grouping with pictorial representations and manipulatives to support their understanding of
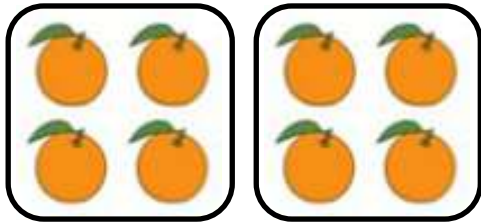
$8 \div 2 = 4$
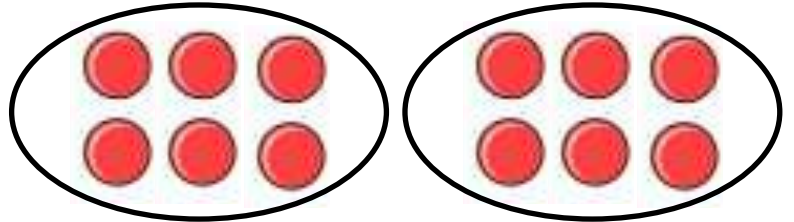
$12 \div 2 =$

$10 \div 2 = 5$

40			
10	10	10	10

10	10	10	10	10	10	10

15 shared into 5

$9 - 3 - 3 = 0$ so $9 \div 3 = 3$
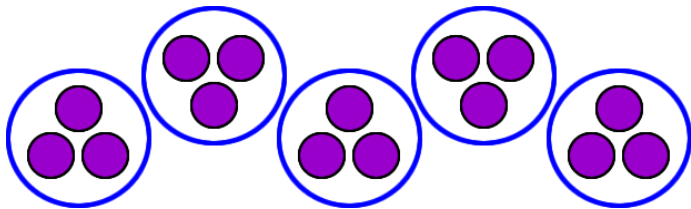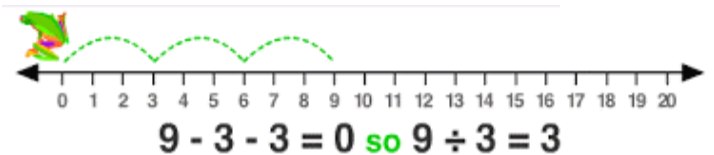
Key Vocabulary

Multiple , groups of , once, twice, three times … ten times, repeated addition, division, dividing, divide,
divided by, divided into, grouping , sharing, share, share equally, left, left over, one each, two each, three
each … ten each, group in pairs, threes … tens, equal groups of ,halving, array, row, column , number
patterns , multiplication table, division fact

Key Skills

- Count in steps of 2,3,5 and 10 to any number divisible by the dividend.
- Recall and use x and ÷ facts for the 2, 5, 10 times tables.

Year 3 - Addition

Adding with 3 digit numbers.

Children will continue using the traditional column method, using pictorial representations and manipulatives for 3 digit numbers. They will also

Mental partitioning

171 + 223 =

100 + 200 =

70 + 20 =

Hundreds		Tens		Ones	
	1		6		3
+			3		8

800	
100	700

| £8 and 99p |
|---|
| £8 and 96p | |
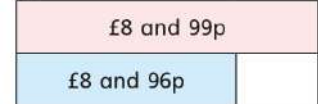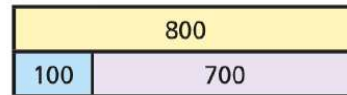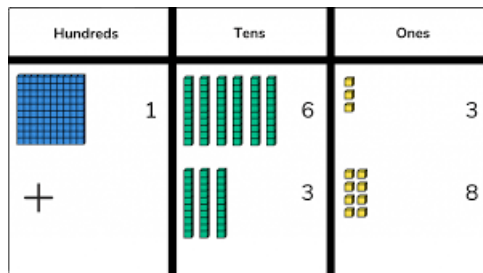
	H	T	O
	^{1}2	4	5
+		8	4
	3	2	9

Number bonds

4 + 6 = 10

14 + 6 =

+30   +2

56   86 88
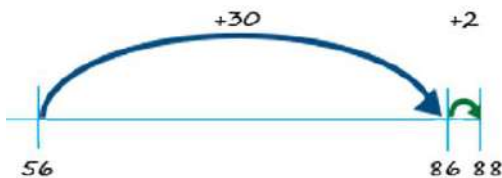
Adding 1, 10, 100 more.

23 + 1 = 24

23 + 10 = 33

Variation

1 + 3 = 4

11 + 3 = 14
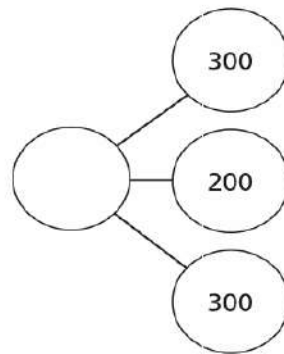
21 + 3 = 24

300

200

300

100s	10s	1s

Key Vocabulary

Addition, add, more, and, make, sum, total, altogether , double, near double, half, halve, one more, two more ... ten more ... one hundred more How many more to make ...? How many more is ... than ...?

How much more is ...? Equals, is the same as, number bonds/pairs/facts, missing number,   tens boundary, hundreds boundary

Key Skills

- Read and write numbers to 1,000 in numerals.
- Add 2 digit numbers mentally, including those that bridge 100.
- Add a 3 digit number and ones, a 3 digit number and 10s and a 3 digit number and 100s   mentally.
- Estimate answers to calculations, using the inverse operation to check.
- Solve problems, including missing number problems using number facts and place value.

Year 3 - Subtraction

Subtracting with 2 and 3 digit numbers.

Children will continue using the traditional column method, using pictorial representations and manipulatives for 3 digit numbers. Also, they will consolidate their knowledge of counting both backwards and forwards us-

Mental partitioning

$223 - 112 =$

$200 - 100 =$

$20 - 10 =$

Subtract: 47 – 32.

47
40 7

32
30 2

1,000

900
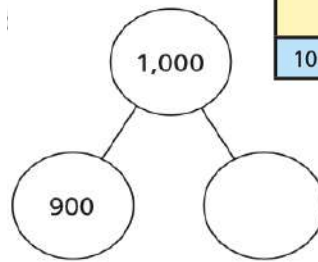
800
100 | 700

£8 and 99p
£8 and 96p

$57 - 9 = 48$

−2   −7

48   50   57

Tens   Ones

$\begin{array}{r} 4\cancel{5}6 \\ -29 \end{array}$

When subtracting, the top number is the most important.

I borrowed ten ones from the tens.

Number bonds

$10 - 4 = 6$

$20 - 4 = 16$

Subtracting 1, 10, 100

$123 - 1 = 122$

$123 - 10 = 113$

Variation

$130 - 3 = 127$

$130 - 4 = 126$

$130 - 5 = 125$

T   O

	4\cancel{5}	1\cancel{2}
-	2	7
	2	5

100s   10s   1s

Key Vocabulary

Half, halve, How many more to make …? How many more is … than …? How much more is …?Subtract, take away, How many are left/left over? How many have gone? One less, two less, ten less … one hundred less, How many fewer is … than …? How much less is …? Difference between, equals, is the same as, number bonds/pairs/facts, missing number, tens boundary, hundreds boundary.

Key Skills

- Subtract mentally: a 3 digit numbers and 1's, a 3 digit number and 10's, and a 3 dgit number and 100's.
- Estimate answers and use the inverse to check.
- Solve problems in different contexts, including missing number problems.
- Find 10 or 100 more or less than a given number.
- Recognise the place value of a 3 digit number (Hundreds, tens and ones.)
- Solve 'finding the difference' problems by counting on.

Year 3 - Multiplication

Multiplying 2 digit numbers by 1 digit numbers.

Children will move on from arrays and start using the traditional, formal method of short multiplication, alongside developing their mental strate-

	3	1
X		3
	9	3

	②	①
	4	2
X		5
2	1	0

34 x 3

22 x

t	o
2	2
X	4

Key Vocabulary

Multiplication, multiply, multiplied by, multiple, factor, groups of , times, product, once, twice, three times … ten times, repeated addition, grouping, one each, two each, three each … ten each, group in pairs, threes … tens, equal groups of, doubling, array, row, column, number patterns, multiplication table,   multiplication fact.

Key Skills

- Recall and use multiplication facts for 2, 3, 4, 5, 8 and 10 times tables and multiply multiples of 10.
- Use other times table to derive facts. (For example, doubling to learn 4's and 8's.)
- Answer 2 digit x 1 digit problemsing using mental strategies (when appropriate) and written, formal methods.
- Solve multiplication problems in context, including missing number problems and scaling.
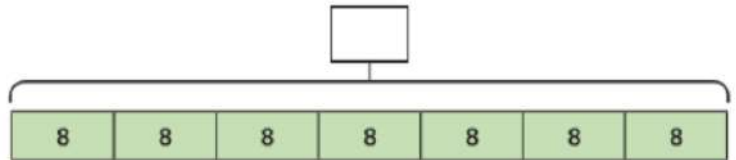- Develop mental strategies and when is appropriate to use them.

Year 3 - Division

Dividing 2 digit numbers by 1 digit numbers.
Children will move on from arrays and start using the traditional, formal method of short division (without remainders), alongside developing their

	36	

$$\begin{array}{r} 1\ 3 \\ 3\overline{)3\ 9} \end{array}$$

$$\begin{array}{r} 0\ 6 \\ 7\overline{)4\ {}^{4}2} \end{array}$$

$$\begin{array}{r} 1\ 1 \\ 8\overline{)8\ 8} \end{array}$$

$$2\overline{)4\ 4}$$

Key Vocabulary
Multiple , factor, groups of , once, twice, three times ... ten times, repeated addition, division, dividing,,
divide, divided by, divided into, grouping , sharing, share, share equally, left, left over, remainders, one
each, two each, three each ... ten each, group in pairs, threes ... tens, equal groups of ,halving, array, row, column , number patterns , multiplication table, division fact

Key Skills
- Recall and use multiplication facts for 2, 3, 4, 5, 8 and 10 times tables and multiply multiples of 10.
- Use other times table to derive facts. (For example, doubling to learn 4's and 8's.)
- Answer 2 digit x 1 digit problemsing using mental strategies (when appropriate) and written, formal methods.

Year 4 - Addition

Adding with 4 digit numbers.

Children will consolidate their use of the traditional, column addition method and will be able to use it confidently to add numbers up to 4 digits. This will include carrying hundreds, tens and ones. Children will also

23 + 45

20 + 40 = 60   3 + 5 = 8
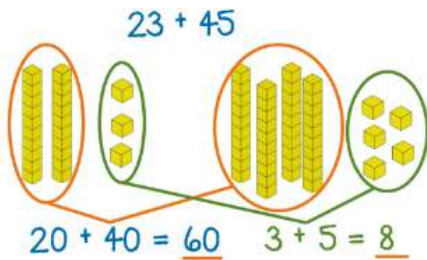
Number bonds

$4 + 6 = 10$

$14 + 6 =$

Mental partitioning

$171 + 223 =$

$100 + 200 =$

$70 + 20 =$
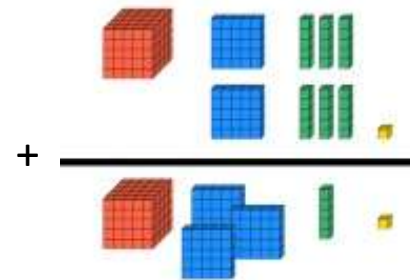
Variation

$1 + 3 = 4$

$11 + 3 = 14$

$21 + 3 = 24$

4,563	
2,160	2,403

Adding 1, 10, 100 more.

$23 + 1 = 24$

$23 + 10 = 33$

```
    1
  2 4 5
+   8 4
-------
  3 2 9
```

1232 + 3114

TH	H	T	O

Key Vocabulary

Addition, add, more, and, make, sum, total, altogether , double, near double, half, halve, one more, two more ... ten more ... one hundred more How many more to make ...? How many more is ... than ...?

How much more is ...? Equals, is the same as, number bonds/pairs/facts, missing number,   tens boundary, hundreds boundary

Key Skills

- Select the most appropriate method (written, formal methods or mental) and explain why this method has been chosen.
- Recognise the place value of every digit in a 4 digit number. (Thousands, hundreds, tens and ones.)
- Round any number to the nearest 10, 100 or 1,000.
- Estimate and use inverse operations to check answers.

Year 4 - Subtraction

Subtracting with 4 digit numbers.

Children will consolidate their use of the traditional, column subtraction method and will be able to use it confidently to subtract from numbers up to 4 digits. This will include borrowing hundreds, tens and ones. Children
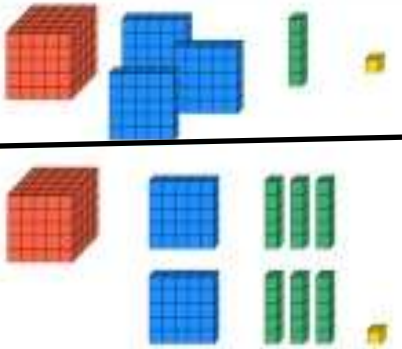

Number bonds

$10 - 4 = 6$

$20 - 4 = 16$

Subtracting 1, 10, 100

$123 - 1 = 122$

$123 - 10 = 113$

4,563	
2,160	2,403

Mental partitioning

$223 - 112 =$

$200 - 100 =$

$20 - 10 =$

Variation

$130 - 3 = 127$

$130 - 4 = 126$

$130 - 5 = 125$

$$2232 - 1121$$

TH	H	T	O

TH	H	T	O

Key Vocabulary

Half, halve, How many more to make …? How many more is … than …? How much more is …? Subtract, take away, How many are left/left over? How many have gone? One less, two less, ten less … one hundred less, How many fewer is … than …? How much less is …? Difference between, equals, is the same as, number bonds/pairs/facts, missing number, tens boundary, hundreds boundary.

Key Skills

- Select the most appropriate method (written, formal methods or mental) and explain why this method has been chosen.
- Recognise the place value of every digit in a 4 digit number. (Thousands, hundreds, tens and ones.)
- Round any number to the nearest 10, 100 or 1,000.
- Estimate and use inverse operations to check answers.
- Solve 2 step problems in different contexts, picking the correct operation to use.
- Continue to use a wide range of mental subtraction strategies.

Year 4 - Multiplication

Multiplying 2 and 3 digit numbers by 1 digit

Children will consolidate their use of the traditional, formal method of short multiplication (with remainders), alongside developing their mental strategies. They will also continue to use bar models for problem solving and rea-

	②	①
	4	2
X		5
2	1	0

①	②	①
2	4	3
X		6
1	4	5	8

| | 7 | 7 | 7 | 7 |

122 x 2

322 x 4 = ▢

▢ ▢ ▢

◯ ◯ ◯

h	t	o
3	2	2
X		4

Key Vocabulary

Multiplication, multiply, multiplied by, multiple, factor, groups of , times, product, once, twice, three times ... ten times, repeated addition, grouping, one each, two each, three each ... ten each, group in pairs, threes ... tens, equal groups of, doubling, array, row, column, number patterns, multiplication table,   multiplication fact, inverse, square, squared, cube, cubed.

Key Skills

- Count in multiples of 6, 7, 9, 25 and 1,000.
- Recall multiplication facts for all multiplication tables up to 12 x 12.
- Recognise the place value of every digit in a 4 digit number. (Thousands, hundreds, tens and ones.)

Year 4 - Division

Dividing 2 digit numbers by 1 digit numbers with remainders.

Children will consolidate their use of the traditional, formal method of short division (with remainders), alongside developing their mental strategies. They will also continue to use bar models for problem solving and reason-

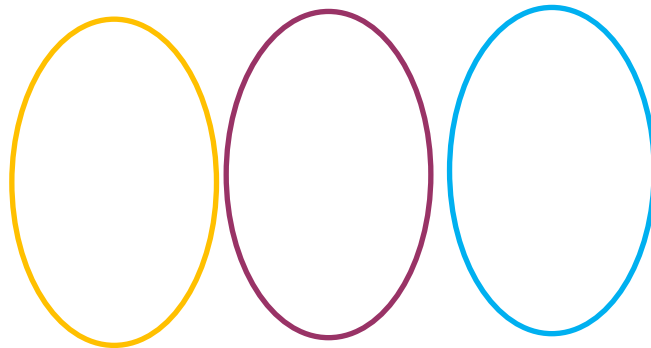$92 \div 4$

$$4 \overline{)9^12}$$ = 2
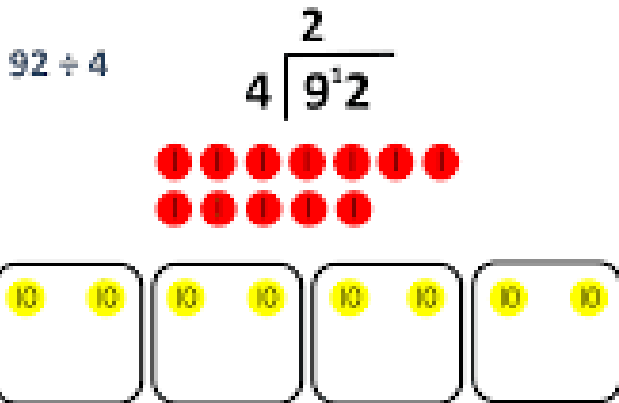
56
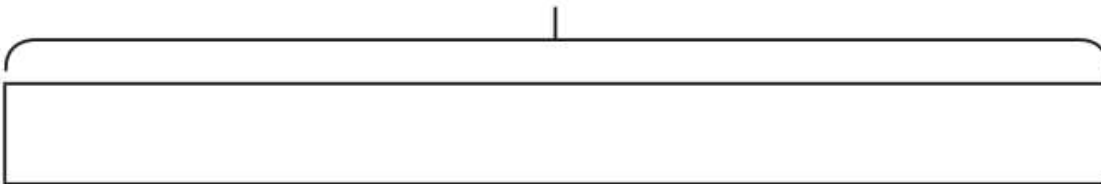
Key Vocabulary

Multiple, factor, groups of, once, twice, three times ... ten times, repeated addition, division, dividing,,

divide, divided by, divided into, grouping, sharing, share, share equally, left, left over, remainders, one

each, two each, three each ... ten each, group in pairs, threes ... tens, equal groups of, halving, array, row, column, number patterns, multiplication table, division fact, inverse, square, squared, cube, cubed.

Key Skills

- Count in multiples of 6, 7, 9, 25 and 1,000.
- Recall multiplication facts for all multiplication tables up to 12 x 12.
- Recognise the place value of every digit in a 4 digit number. (Thousands, hundreds, tens and ones.)

Year 5 - Addition

Adding with more than 4 digits and decimal numbers.

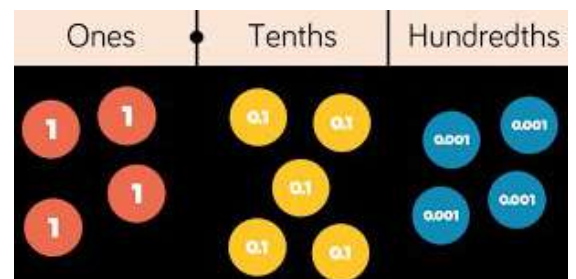Children will consolidate their use of the traditional, column addition method with more than 4 digits and will be move on to adding decimal numbers, including in context of money and measures. It is important

	①				
	2	4	5	.	3
+		8	4	.	5
	3	2	9	.	8

	¹		
	2	4	5
+		8	4
	3	2	9

50,000	470

Ones	Tenths	Hundredths

Number bonds

4 + 6 = 10

40 + 60 = 100

400 + 600 = 1,000

4,000 + 6,000 = 10,000

40,000 + 60,000 = 100,000

Adding 1, 10, 100, 1000, 10,000, 100,000 more.

23 + 1 = 24

23 + 10 = 33

23 + 100 = 123

23 + 1,000 = 1023

23 + 10,00 = 10,023

23 + 100,000 = 100,023

Variation

1 + 3 = 4

11 + 3 = 14

21 + 3 = 24

Mental partition-ing

171 + 223 =

100 + 200 =

70 + 20 =

Key Vocabulary

Addition, add, more, and, make, sum, total, altogether , double, near double, half, halve, one more, two more … ten more … one hundred more How many more to make …? How many more is … than …?

How much more is …? Equals, is the same as, number bonds/pairs/facts, missing number,   tens boundary, hundreds boundary, ones boundary, tenths boundary.

Key Skills

- Select the most appropriate method (written, formal methods or mental) and explain why this method has been chosen.
- Recognise the place value of every digit in numbers to 1,000,000.
- Use rounding to check answers and estimate.
- Understand the place value of tenths and hundredths.
- Solve multi-step problems in different contexts, picking the correct operations to use and explaining why they have been chosen.

Year 5 - Subtraction

Subtracting with numbers beyond 4 digits, including decimals,
Children will consolidate their use of the traditional, column subtraction method and will be able to use it confidently. They will start to subtract larger integers and begin to subtract decimal amounts whilst also develop-

	¹2̸	¹2	5	.	7
−		8	4	.	5
	1	4	1	.	2

	⁷8̸	¹3	4
-		9	2
	7	4	2

20,000		
3,729		8,451

Subtracting 1, 10, 100, 1000

1,123 - 1 = 1,122

1,123 - 10 = 1,113

1,123 - 100 = 1,023

Variation

130 - 3 = 127

130 - 4 = 126

130 - 5 = 125

Number bonds

10 - 4 = 6

20 - 4 = 16

100 - 40 = 60

1,000—400 = 600

10,000—4,000 = 6,000

Mental partitioning

223 - 112=

200 - 100 =

20 - 10 =

1s	•	$\frac{1}{10s}$	$\frac{1}{100s}$	$\frac{1}{1000s}$	
oo⌀		ooo⌀⌀	ooooo⌀⌀ ⌀⌀	⌀⌀⌀⌀⌀ o	3.576
					-1.245
					2.331

Key Vocabulary

Half, halve, How many more to make …? How many more is … than …? How much more is …?Subtract, take away, How many are left/left over? How many have gone? One less, two less, ten less … one hundred less, How many fewer is … than …? How much less is …? Difference between, equals, is the same as, number bonds/pairs/facts, missing number, tens boundary, hundreds boundary, ones   boundary, tenths boundary.

Key Skills

- Select the most appropriate method (written, formal methods or mental) and explain why this method has been chosen.
- Recognise the place value of every digit in numbers to 1,000,000.
- Round any number from 1,000,000 to the nearest 10, 100, 1,000, 10,000 or 100,000.
- Use rounding to check answers and estimate.
- Solve 2 step problems in different contexts, picking the correct operation to use.

Year 5 - Multiplication

Multiplying up to 4 digits by 1 or 2 digits.
Children will continue to use short multiplication to solve increasingly richer problems that involve multiplying by 1 digit, before moving on to long multiplication. They will then move onto making estimations to check

Key Vocabulary

Multiplication, multiply, multiplied by, multiple, factor, groups of , times, product, once, twice, three times ... ten times, repeated addition, grouping, one each, two each, three each ... ten each, group in pairs, threes ... tens, equal groups of, doubling, array, row, column, number patterns, multiplication table, multiplication fact, inverse, square, squared, cube, cubed, prime numbers, prime factors and composite numbers.
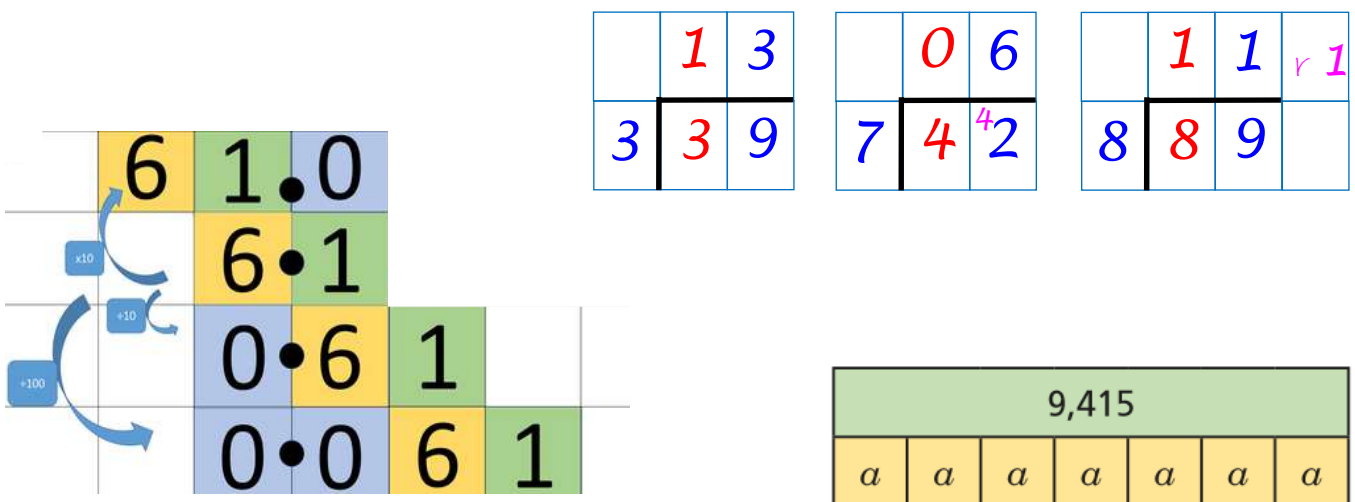
Key Skills

- Multiply and divide numbers mentally, using known facts.
- Identify multiples and factors.
- Solve problems where larger numbers are decomposed into their factors.
- Multiply and divide integers and decimals by 10, 100 and 100.
- Recognise and use square and cube numbers and their notations.

Year 5 - Division

Extending the use of short division to 4 digits and remainders.
Children will consolidate their use of the traditional, formal method of short division (with remainders), alongside developing their mental strategies. They will also continue to use bar models for problem solving and reason-

		1	3
	3	3	9

		0	6
	7	4	⁴2

		1	1	r 1
	8	8	9	

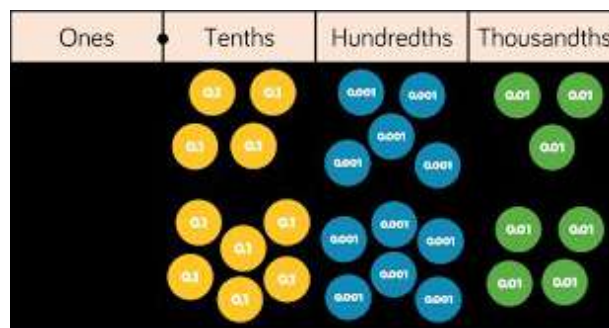| 9,415 |
|---|
| a | a | a | a | a | a | a |

Year 6 - Addition

Adding several numbers with an increasing level of complexity.
Children will consolidate their use of the traditional, column subtraction method with   increasingly complex range of calculations. These will include using decimals (including in the context of money or measure) and

	2	4	5	.	3
+		8	4	.	5
	3	2	9	.	8

	2	4	5
+		8	4
	3	2	9

?		
2,354	750	1,500

Ones	Tenths	Hundredths	Thousandths

Adding 1, 10, 100, 1000, 10,000, 100,000 more.

23 + 1 = 24

23 + 10 = 33

23 + 100 = 123

23 + 1,000 = 1023

23 + 10,00 = 10,023

23 + 100,000 = 100,023

Number bonds

4 + 6 = 10

40 + 60 = 100

400 + 600 = 1,000

4,000 + 6,000 = 10,000

40,000 + 60,000 = 100,000

Variation

1 + 3 = 4

11 + 3 = 14

21 + 3 = 24

Mental partitioning

171 + 223 =

100 + 200 =

70 + 20 =

Key Vocabulary

Addition, add, more, and, make, sum, total, altogether , double, near double, half, halve, one more, two more … ten more … one hundred more How many more to make …? How many more is … than …?

How much more is …? Equals, is the same as, number bonds/pairs/facts, missing number,   tens boundary, hundreds boundary, ones boundary, tenths boundary.

Key Skills

- Solve problems mentally, including those with mixed operations and large numbers, using all the mental strategies learnt in previous years.
- Solve multi-step problems in context, deciding which operations and methods to use.
- Use estimation to check answers to a calculation.
- Understand the place value of digits up to 10,000,000.

Year 6 - Subtraction

Subtracting with increasingly complex numbers including decimals, Children will consolidate their use of the traditional, column subtraction method with increasingly complex range of calculations. These will include

	$^7\cancel{8}^1$	3	4
-		9	2
	7	4	2

	$^1\cancel{2}$	2	5	.	7
−			8	4	.	5
	1	4	1	.	2

20,000		
3,729		8,451

Subtracting 1, 10, 100, 1000

1,123 - 1 = 1,122

1,123 - 10 = 1,113

1,123 - 100 = 1,023

Variation

130 - 3 = 127

130 - 4 = 126

130 - 5 = 125

Number bonds

10 - 4 = 6

20 - 4 = 16

100 - 40 = 60

1,000—400 = 600

10,000—4,000 = 6,000

Mental partitioning

223 - 112=

200 - 100 =

20 - 10 =

1s	•	$\frac{1}{10s}$	$\frac{1}{100s}$	$\frac{1}{1000s}$	
○○∅		○○○∅∅	○○○∅∅ ∅∅	∅∅∅∅∅ ○	3.576 -1.245 2.331

Key Vocabulary

Half, halve, How many more to make …? How many more is … than …? How much more is …? Subtract, take away, How many are left/left over? How many have gone? One less, two less, ten less … one hundred less, How many fewer is … than …? How much less is …? Difference between, equals, is the same as, number bonds/pairs/facts, missing number, tens boundary, hundreds boundary, ones boundary, tenths boundary.

Key Skills

- Solve problems mentally, including those with mixed operations and large numbers, using all the mental strategies learnt in previous years.
- Solve multi-step problems in context, deciding which operations and methods to use.
- Use estimation to check answers to a calculation.
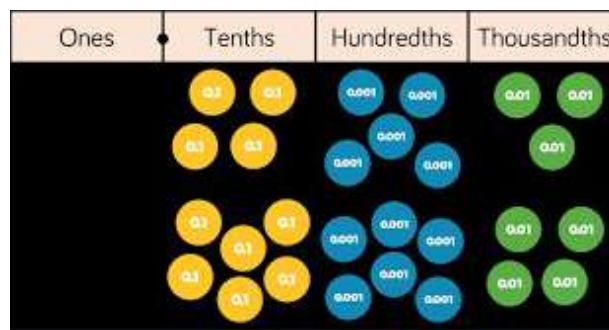- Understand the place value of digits up to 10,000,000.

Year 6 - Addition

Adding several numbers with an increasing level of complexity.
Children will consolidate their use of the traditional, column subtraction method with   increasingly complex range of calculations. These will include using decimals (including in the context of money or measure) and

	①				
	2	4	5	.	3
+		8	4	.	5
	3	2	9	.	8

	1		
	2	4	5
+		8	4
	3	2	9

?		
2,354	750	1,500

Ones	Tenths	Hundredths	Thousandths

Number bonds

$4 + 6 = 10$

$40 + 60 = 100$

$400 + 600 = 1,000$

$4,000 + 6,000 = 10,000$

$40,000 + 60,000 = 100,000$

Adding 1, 10, 100, 1000, 10,000, 100,000 more.

$23 + 1 = 24$

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$23 + 100,000 = 100,023$

Variation

$1 + 3 = 4$

$11 + 3 = 14$

$21 + 3 = 24$

Mental partitioning

$171 + 223 =$

$100 + 200 =$

$70 + 20 =$

Key Vocabulary

Addition, add, more, and, make, sum, total, altogether , double, near double, half, halve, one more, two more … ten more … one hundred more How many more to make …? How many more is … than …?
How much more is …? Equals, is the same as, number bonds/pairs/facts, missing number,   tens boundary, hundreds boundary, ones boundary, tenths boundary.

Key Skills

- Solve problems mentally, including those with mixed operations and large numbers, using all the mental strategies learnt in previous years.
- Solve multi-step problems in context, deciding which operations and methods to use.
- Use estimation to check answers to a calculation.
- Understand the place value of digits up to 10,000,000.

Year 6 - Multiplication

Consolidating short and long multiplication, multiplying decimals by 1 digit.

Children will continue to use short multiplication to solve increasingly richer problems that involve multiplying by 1 digit, before moving on to

322 x 4 = ☐

Key Vocabulary

Multiplication, multiply, multiplied by, multiple, factor, groups of , times, product, once, twice, three times … ten times, repeated addition, grouping, one each, two each, three each … ten each, group in pairs, threes … tens, equal groups of, doubling, array, row, column, number patterns, multiplication table, multiplication fact, inverse, square, squared, cube, cubed, prime numbers, prime factors and composite numbers.

Key Skills

- Multiply up to 4 digits by 2 digits using long multiplication.
- Solve mixed operations and large number problems using mental maths.
- Solve multi-step problems involving a range of operations.
- Estimate and approximate answers of problems to improve accuracy.
- Round any integer to the determined level of accuracy..

Year 6 - Division

Using short division to divide 4 digit numbers and long division for dividing 2 digit numbers.
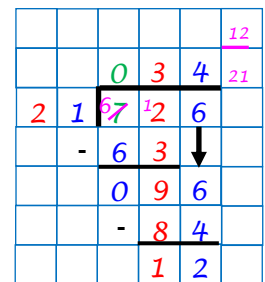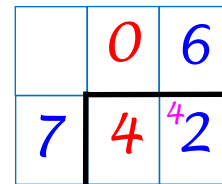
Children will consolidate their use of the traditional, formal method of short division (with remainders), alongside developing their mental strategies.

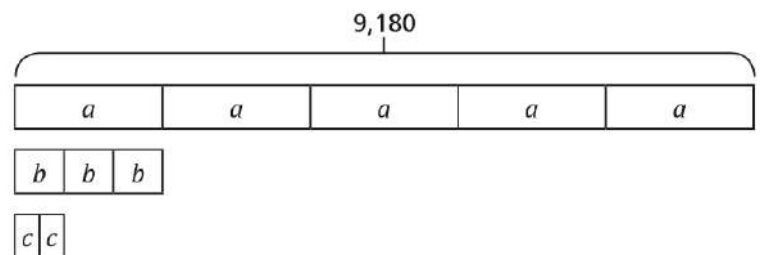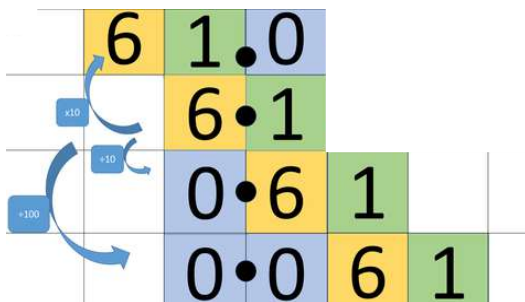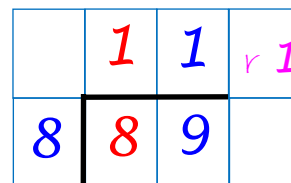**Long division** using place value counters
2544 ÷ 12

We can't group 2 thousands into groups of 12 so will exchange them.

We can group 24 hundreds into groups of 12 which leaves with 1 hundred.

$$\begin{array}{r} 0\,2 \\ 12\overline{)2544} \\ 24 \\ \hline 1 \end{array}$$

Key Vocabulary

Multiplication, multiply, multiplied by, multiple, factor, groups of , times, product, once, twice, three times ... ten times, repeated addition, grouping, one each, two each, three each ... ten each, group in pairs, threes ... tens, equal groups of, doubling, array, row, column, number patterns, multiplication table, multiplication fact, inverse, square, squared, cube, cubed, prime numbers, prime factors and composite numbers

Key Skills

- Use multiplication and division facts up to 12 x 12 to solve more complex problems.
- Decide whether to use short or long division and interpret remainders in a way that is appropriate to the problem.
- Solve mixed operations and large number problems using mental maths.
- Solve multi-step problems involving a range of operations.
- Estimate and approximate answers of problems to improve accuracy.