Parkwood Primary's Calculation Policy (Division)

Vocabulary for Division			
	• The same as • Equal to • Groups of • Lots of • Share • Share equally • Group • Arrays • Divide • Division • Grouping • Number line • Reduce • Long division • Remainder	• Hundred thousand • Ten thousand • Thousands • Hundreds • Tens • Exchange • Divisible • Inverse • Factor • Quotient • Prime • Left over • Short division • Multiple	• Ones • Number (made up of digits) • Digits • Inverse (opposite/from Year 3 onwards) • Estimate (from Year 3/round to estimate more accurately from Year 5 onwards) • Decimal point • Tenths • Hundredths • Thousandth • Prime factor • Common factor

FS

Solve simple problems involving halving and sharing (explore how quantities can be distributed equally)

Share 6 cakes equally between two children.

Solve one-step problem involving division (SHARING using concrete objects or pictorial representations)

Share 12 gold coins with three pirates. How many coins does each pirate get?

There are 10 apples altogether. They are shared equally between 5 baskets. How many apples are in each basket.
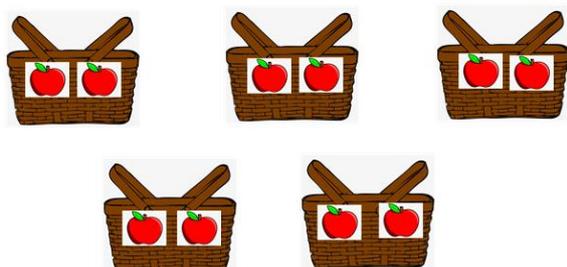
Year 1 are not expected to record division formally and they are not introduced to the division until Year 2.

Solve one-step problem involving division (GROUPING using concrete objects or pictorial representations)

There are 20 pears altogether. They are put in bags of 5. How many bags are there?
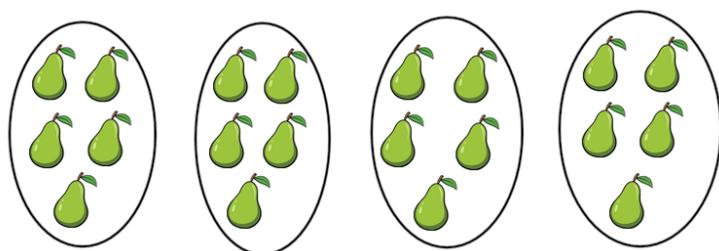
Progress to counting up in groups of the divisor.

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Year 2
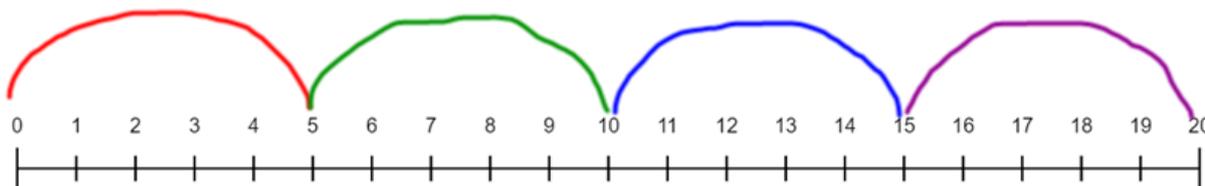
Calculate mathematical statements for division

Use arrays to model using grouping.

$$20 \div 5 = 4$$

20 split into groups of 5
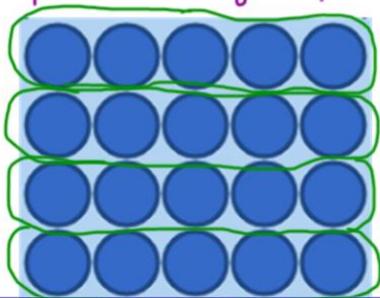
Make it clear that division cannot be done in any order like addition and multiplication. $5 \div 20=$ can be done, however it does give a very different answer.

From Year 3 onwards, children should be actively encouraged to make an estimate before calculating.

Estimate	Calculate	Check (inverse can be used)

ESTI**MATE**, CALCUL**ATE** THEN CHECK IT M**ATE**

They should also be using the inverse as a way of checking answers from Year 3 onwards confidently (this learning begins in Year 2)

➕ ⇔ ➖

✖ ⇔ ➗
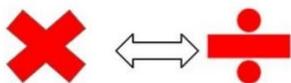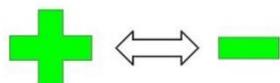
Year 3

Calculate mathematical statements for division (two digits by one digit with no exchange and then with one exchange)

$$48 \div 2 = 24$$

$$2 \overline{)48}^{\,24}$$

T O

Tens	Ones
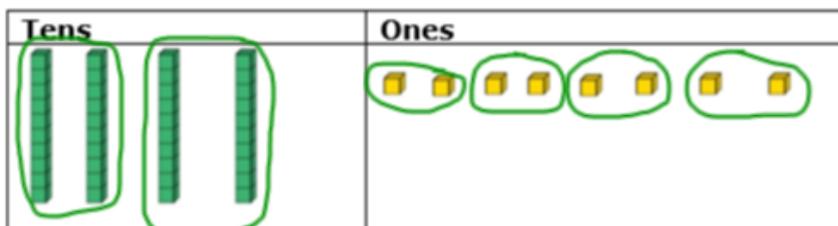
|	
Year 4	**Calculate mathematical statements for division (no exchanging)** **Short division** $484 \div 4 =$ $4 \overline{)484}$ with answer 121 H T O
Year 4	**Calculate mathematical statements for division (one exchange/progress to include remainders and interpreting remainders)** **Short division** $524 \div 4 =$ $4 \overline{)524}$ with answer 131 H T O
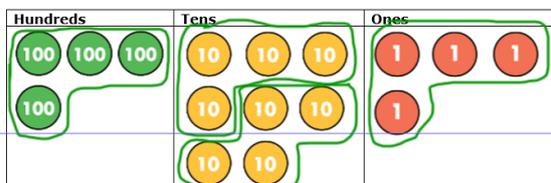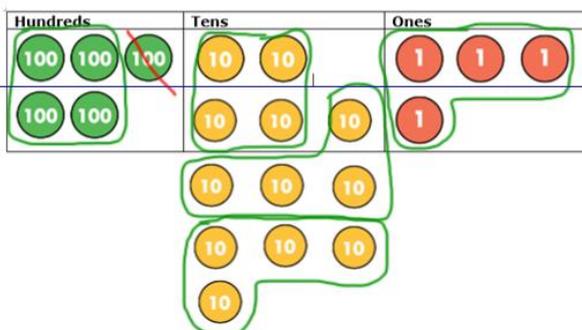
Divide whole numbers by 10 and 100

When children are introduced to dividing by 10, 100 and 1000, they should look at calculations that they are familiar with so they they recognise what happens to the digits in the place value grid as they divide by 10, 100 or 1000.

$20 \div 10 = 2$

20 divided into groups of 10
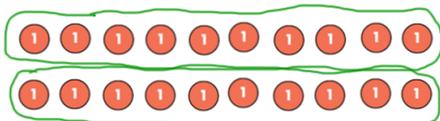
Tens T 10	Ones O 1
2	0
	2

When any number is divided by another, the answer becomes smaller; it has been reduced. This helps us tp remember that when dividing 10, 100 or 1000, the digits move to the right in the place value grid.

Reduce to the right

÷ 10   digits move *one column* to the *right*

÷ 100   digits move *two columns* to the *right*

÷ 1000 digits move *three columns* to the *right*

$3100 \div 10 =$

Hundred Thousands HTh 100,000	Ten Thousands TTh 10,000	Thousands Th 1000	Hundreds H 100	Tens T 10	Ones O 1
		3	1	0	0
			3	1	0

$3100 \div 100 =$

Hundred Thousands HTh 100,000	Ten Thousands TTh 10,000	Thousands Th 1000	Hundreds H 100	Tens T 10	Ones O 1
		3	1	0	0
				3	1

When dealing with decimals, it is important to emphasise the digits move, <u>**not the decimal point**</u>. The decimal point is static. It never moves.

$$32 \div 10 =$$

Hundreds H 100	Tens T 10	Ones O 1	Tenths t 0.1	Hundredths h 0.01	Thousandths th 0.001
	3	2			
		3	2		

Year 5

Divide by whole numbers and decimals by 10, 100 and 1000
*See Year 4 for guidance.

$$31000 \div 1000 = 31$$

Hundred Thousands HTh 100,000	Ten Thousands TTh 10,000	Thousands Th 1000	Hundreds H 100	Tens T 10	Ones O 1
		3	1	0	0	0
				3	1

$$9 \div 100 =$$

Hundreds H 100	Tens T 10	Ones O 1	Tenths t 0.1	Hundredths h 0.01	Thousandths th 0.001
		9			
		0	0	9	

Year 5

Divide a four-digit number by a one-digit number (with exchanges, no remainders)
Short division

$$6510 \div 5 = 1302$$

$$5 \overline{)6^{1}510}$$ with answer 1302
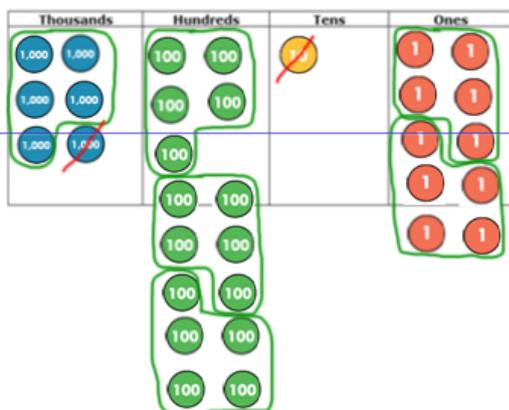
Year 5

Divide a four-digit number by a one-digit number (with exchange and remainders)
Short division
*The arithmetic test doesn't include division with remainders, however the children will need this skill when attemping division problems that require children to round up or down after division.

$$4034 \div 3 =$$

$$\begin{array}{r} 1344\,r\,2 \\ 3\overline{\smash{)}4034} \end{array}$$

Th H T O
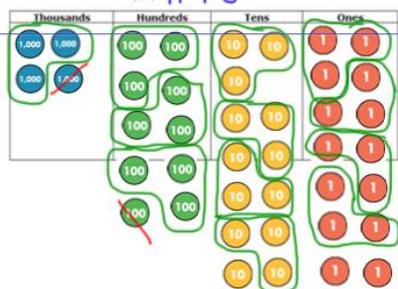
Year 5

Solve problems including decimals with up to three decimal places
*This skill is also needed for reasoning questions as opposed to arithmetic questions.

$$6.72 \div 3 =$$

$$\begin{array}{r} 3.24 \\ 3\overline{\smash{)}6.72} \end{array}$$
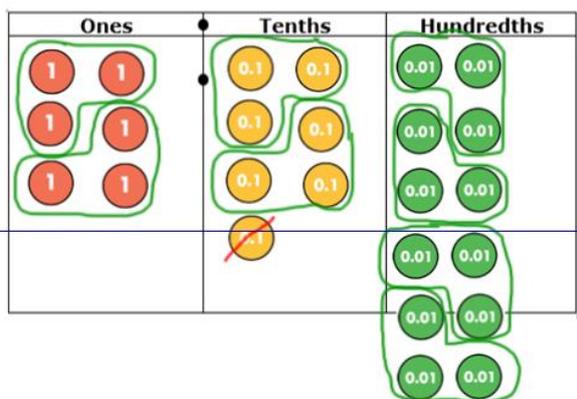
Divide a a four-digit number by a two-digit number

$$3768 \div 12 = 314$$

$$12 \overline{)3\,7\,6\,8}$$

0314

Th H T O

12	12
× 2	× 3
24	36

12	12
× 4	× 5
48	60

$$888 \div 37 = 24$$

$$37 \overline{)888}$$

024

H T O

88
− 74
14

37	37
× 2	× 3
74	111

37	37
× 4	× 5
148	185

Divide with money

$$£12 \div 5 = £2.40$$

$$5 \overline{)£12.0}$$

02.4

T O . t

	Write remainders as fractions
Year 6	$6042 \div 5$ $\begin{array}{r} 1208 \\ 5\overline{\smash{)}6^{1}04^{4}2} \end{array}$ r2 or $\frac{2}{5}$ Th H T O

Foundation Stage:

Mathematics

Number ELG
Children at the expected level of development will:

- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Year 1

Statutory requirements

Pupils should be taught to:

- solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

Year 2

Statutory requirements

Pupils should be taught to:

- recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
- show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Year 3:

Statutory requirements

Pupils should be taught to:

- recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
- write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
- solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

Year 4:

Statutory requirements
Pupils should be taught to:

- 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
- solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.

- find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths

Year 5:

Statutory requirements
Pupils should be taught to:

- identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
- know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
- establish whether a number up to 100 is prime and recall prime numbers up to 19
- multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
- multiply and divide numbers mentally drawing upon known facts
- divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
- multiply and divide whole numbers and those involving decimals by 10, 100 and 1000

- solve problems involving number up to three decimal places

Year 6

Statutory requirements

Pupils should be taught to:

- multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication

- divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

- divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context

- perform mental calculations, including with mixed operations and large numbers

- identify common factors, common multiples and prime numbers

- use their knowledge of the order of operations to carry out calculations involving the four operations

- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why