Maths Mastery Policy

DIVISION

Reception:

EHLT are implementing Mastering Number at Reception in September 2024.

The programme aims to secure firm foundations in the development of good number sense for all children from Reception through to Year 1 and Year 2. The aim over time is that children will leave KS1 with fluency in calculation and a confidence and flexibility with number. Attention will be given to key knowledge and understanding needed in Reception classes, and progression through KS1 to support success in the future. Over the year, the children will experience using a range of resources and representations.

Research shows that children with secure 'number sense' early on will make more progress later on in maths and across the curriculum.

DIVISION KEY VOCABULARY					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
share; share equally; one each; two each; groups; groups of; lots of; array	share; share equally; one each; two each; groups; groups of; lots of; array; divide; divided by; divided into; division; grouping; number line;	share; share equally; one each; two each; groups; groups of; lots of; array; divide; divided by; divided into; division; grouping; number line; left; left over	share; share equally; one each; two each; groups; groups of; lots of; array; divide; divided by; divided into; division; grouping; number line; left; left over; inverse; remainder;	share; share equally; one each; two each; groups; groups of; lots of; array; divide; divided by; divided into; division; grouping; number line; left; left over; inverse; remainder; regroup; carry; multiple; short division; divisible by; factor; quotient; prime number; prime factors; composite numbers;	share; share equally; one each; two each; groups; groups of; lots of; array; divide; divided by; divided into; division; grouping; number line; left; left over; inverse; remainder; regroup; carry; multiple; short division; divisible by; factor; quotient; prime number; prime factors; composite numbers; common factors

***This vocabulary is not an exhaustive list. Teachers will use recommended NCETM vocabulary in lessons.**

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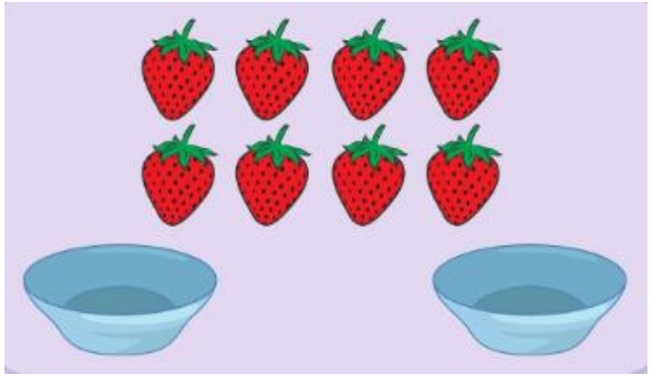
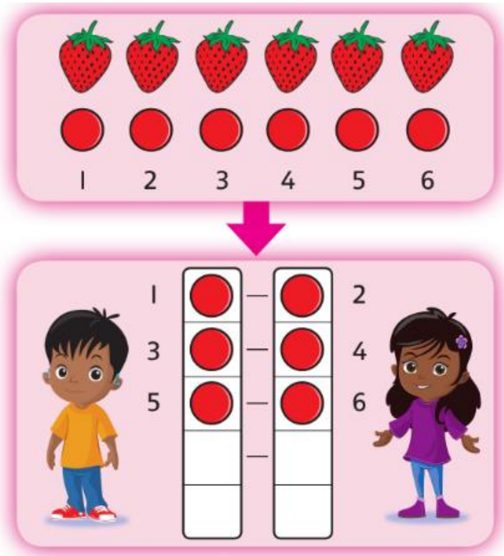
<u>RECEPTION DIVISION</u>

	REAL-LIFE REPRESENTATION	OTHER REPRESENTATION
Halving and sharing	**Children explore halving and sharing through practical sharing using real life scenarios including sharing fruit or classroom equipment.**  *Half of 8 is 4.*	**Children use five frames to share amounts fairly and to check that the groups are equal. They share the counters/cubes one by one.**  *Half of 6 is 3.*

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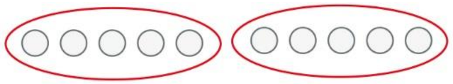
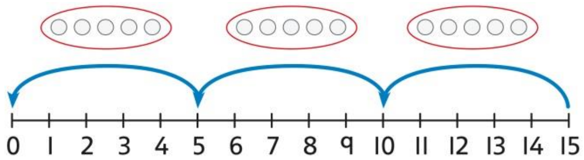
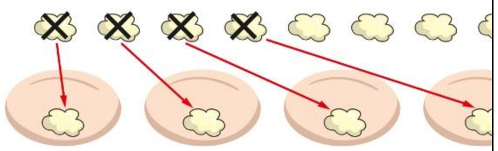
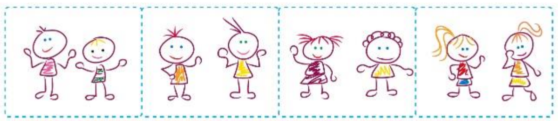
YEAR 1 DIVISION

	CONCRETE	PICTORIAL	ABSTRACT
Grouping	**Learn to make equal groups from a whole and find how many equal groups of a certain size can be made.** **Sort a whole set people and objects into equal groups.**  ***There are 10 children altogether.*** ***There are 2 in each group.*** ***There are 5 groups.***	**Represent a whole and work out how many equal groups.**  ***There are 10 in total.*** ***There are 5 in each group.*** ***There are 2 groups.***	**Children may relate this to counting back in steps of 2, 5 or 10.** 
Sharing	**Share a set of objects into equal parts and work out how many are in each part.** 	**Sketch or draw to represent sharing into equal parts. This may be related to fractions.** 	***10 shared into 2 equal groups gives 5 in each group.***

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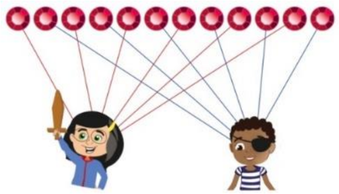
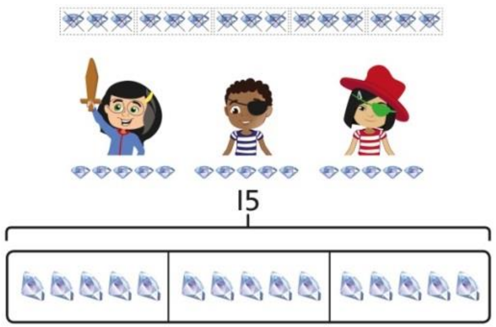
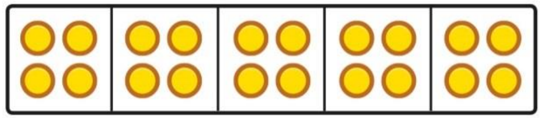
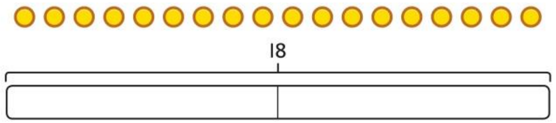
YEAR 2 DIVISION

	CONCRETE	PICTORIAL	ABSTRACT
Sharing equally	**Start with a whole and share into equal parts, one at a time.**  *12 shared equally between 2.* *They get 6 each.* **Start to understand how this also relates to grouping. To share equally between 3 people, take a group of 3 and give 1 to each person. Keep going until all the objects have been shared**  They get 5  each. *15 shared equally between 3.* *They get 5 each.*	**Represent the objects shared into equal parts using a bar model.**  *20 shared into 5 equal parts.* *There are 4 in each part.*	**Use a bar model to support understanding of the division.**  *18 ÷ 2 = 9*

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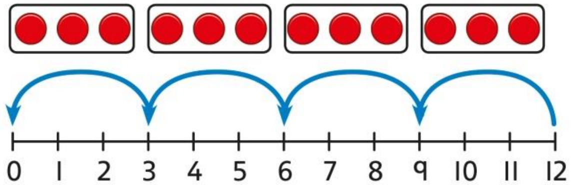
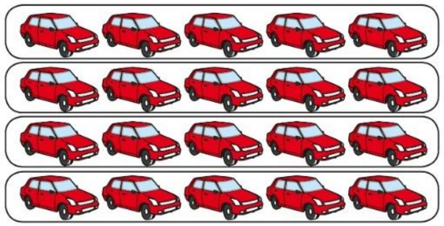
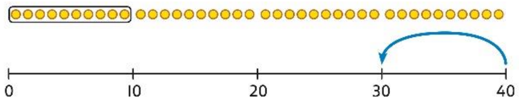
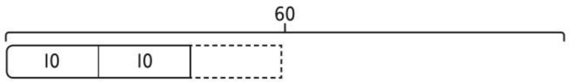
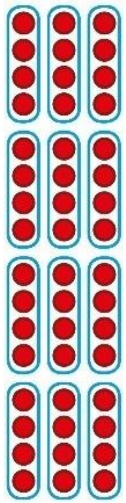
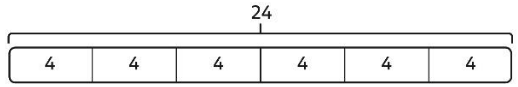
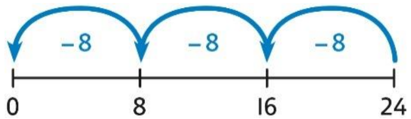
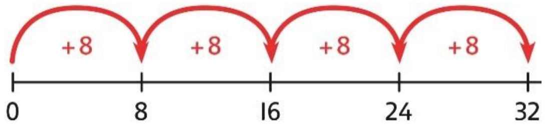
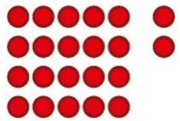
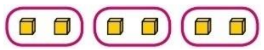
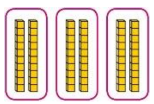
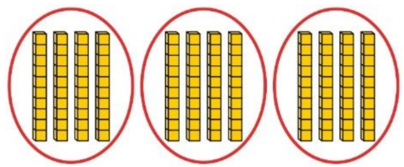
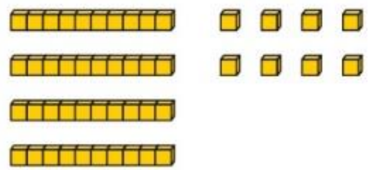
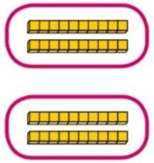
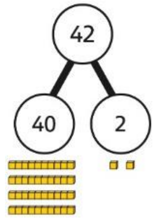
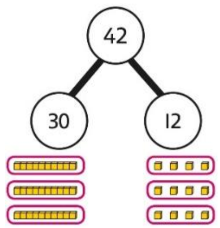
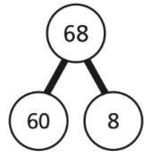
Grouping equally	**Understand how to make equal groups from a whole.**  *8 divided into 4 equal groups.* *There are 2 in each group.*	**Understand the relationship between grouping and the division statements.** 12 ÷ 3 = 4  12 ÷ 4 = 3  12 ÷ 6 = 2  12 ÷ 2 = 6 	**Understand how to relate division by grouping to repeated subtraction.**  There are 4 groups now. ***12 divided into groups of 3.*** ***12 ÷ 3 = 4*** ***There are 4 groups.***
Using known times-tables to solve divisions	**Understand the relationship between multiplication facts and division.**  *4 groups of 5 cars is 20 cars in total.* *20 divided by 4 is 5.*	**Link equal grouping with repeated subtraction and known times-table facts to support division.**  *40 divided by 4 is 10.* **Use a bar model to support understanding of the link between times-table knowledge and division.**  	**Relate times-table knowledge directly to division.** 1 × 10 = 10 2 × 10 = 20 3 × 10 = 30 4 × 10 = 40 5 × 10 = 50 6 × 10 = 60 7 × 10 = 70 8 × 10 = 80 I used the 10 times-table to help me. 3 × 10 = 30. *I know that 3 groups of 10 makes 30, so I know that 30 divided by 10 is 3.* *3 × 10 = 30 so 30 ÷ 10 = 3*

Maths Mastery Policy

YEAR 3 DIVISION

	CONCRETE	PICTORIAL	ABSTRACT
Using times-tables knowledge to divide	**Use knowledge of known times-tables to calculate divisions.**  *24 divided into groups of 8.* *There are 3 groups of 8.*	**Use knowledge of known times-tables to calculate divisions.**  48 ÷ 4 = 12 *48 divided into groups of 4.* *There are 12 groups.* *4 × 12 = 48* **48 ÷ 4 = 12**	**Use knowledge of known times-tables to calculate divisions.** *I need to work out 30 shared between 5.* *I know that 6 × 5 = 30* *so I know that 30 ÷ 5 = 6.* **A bar model may represent the relationship between sharing and grouping.**  *24 ÷ 4 = 6* *24 ÷ 6 = 4* **Children understand how division is related to both repeated subtraction and repeated addition.**  *24 ÷ 8 = 3*  *32 ÷ 8 = 4*

Understanding remainders	**Use equipment to understand that a remainder occurs when a set of objects cannot be divided equally any further.**  *There are 13 sticks in total.* *There are 3 groups of 4, with 1 remainder.*	**Use images to explain remainders.**  ***22 ÷ 5 = 4 remainder 2***	**Understand that the remainder is what cannot be shared equally from a set.** ***22 ÷ 5 = ?*** ***3 × 5 = 15*** ***4 × 5 = 20*** ***5 × 5 = 25 … this is larger than 22*** ***So, 22 ÷ 5 = 4 remainder 2***
Using known facts to divide multiples of 10	**Use place value equipment to understand how to divide by unitising.** ***Make 6 ones divided by 3.***  ***Now make 6 tens divided by 3.***  **What is the same? What is different?**	**Divide multiples of 10 by unitising.**  ***12 tens shared into 3 equal groups.*** **4 tens in each group.**	**Divide multiples of 10 by a single digit using known times-tables.** ***180 ÷ 3 = ?*** ***180 is 18 tens.*** ***18 divided by 3 is 6.*** ***18 tens divided by 3 is 6 tens.*** ***18 ÷ 3 = 6*** **180 ÷ 3 = 60**

2-digit number divided by 1-digit number, no remainders	**Children explore dividing 2-digit numbers by using place value equipment.**  *48 ÷ 2 = ?* *First divide the 10s.*  *Then divide the 1s.* 	**Children explore which partitions support particular divisions.**  *I need to partition 42 differently to divide by 3.*  *42 = 30 + 12* *42 ÷ 3 = 14*	**Children partition a number into 10s and 1s to divide where appropriate.**  *60 ÷ 2 = 30* *8 ÷ 2 = 4* *30 + 4 = 34* *68 ÷ 2 = 34* **Children partition flexibly to divide where appropriate.** *42 ÷ 3 = ?* *42 = 40 + 2* *I need to partition 42 differently to divide by 3.* *42 = 30 + 12* *30 ÷ 3 = 10* *12 ÷ 3 = 4* *10 + 4 = 14* *42 ÷ 3 = 14*

2-digit number divided by 1-digit number, with remainders	**Use place value equipment to understand the concept of remainder.** *Make 29 from place value equipment. Share it into 2 equal groups.*  *There are two groups of 14 and 1 remainder.*	**Use place value equipment to understand the concept of remainder in division.** *29 ÷ 2 = ?*  *29 ÷ 2 = 14 remainder 1*	**Partition to divide, understanding the remainder in context.** *67 children try to make 5 equal lines.* *67 = 50 + 17* *50 ÷ 5 = 10* *17 ÷ 5 = 3 remainder 2* *67 ÷ 5 = 13 remainder 2* *There are 13 children in each line and 2 children left out.*

Maths Mastery Policy

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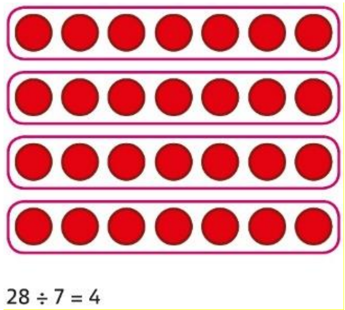
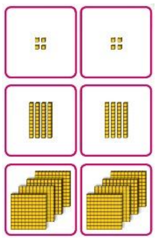
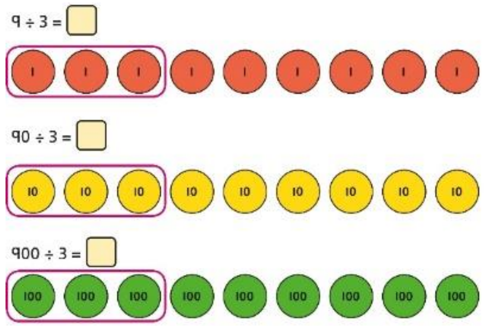
YEAR 4 DIVISION

	CONCRETE	PICTORIAL	ABSTRACT
Understanding the relationship between multiplication and division, including times-tables	**Use objects to explore families of multiplication and division facts.**  *4 × 6 = 24* *24 is 6 groups of 4.* *24 is 4 groups of 6.* *24 divided by 6 is 4.* *24 divided by 4 is 6.*	**Represent divisions using an array.** 	**Understand families of related multiplication and division facts.** *I know that 5 × 7 = 35* *so I know all these facts:* *5 × 7 = 35* *7 × 5 = 35* *35 = 5 × 7* *35 = 7 × 5* *35 ÷ 5 = 7* *35 ÷ 7 = 5* *7 = 35 ÷ 5* 5 = 35 ÷ 7
Dividing multiples of 10 and 100 by a single digit	**Use place value equipment to understand how to use unitising to divide.**  *8 ones divided into 2 equal groups* *4 ones in each group* *8 tens divided into 2 equal groups* *4 tens in each group* *8 hundreds divided into 2 equal groups* *4 hundreds in each group*	**Represent divisions using place value equipment.**  *9 ÷ 3 = 3* *9 tens divided by 3 is 3 tens.* *9 hundreds divided by 3 is 3 hundreds.*	**Use known facts to divide 10s and 100s by a single digit.** *15 ÷ 3 = 5* *150 ÷ 3 = 50* *1500 ÷ 3 = 500*

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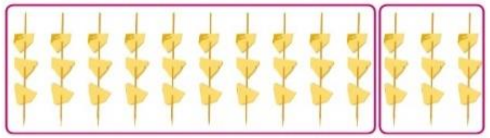
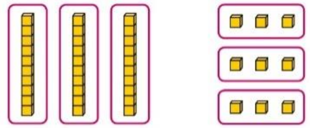
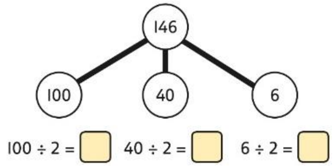
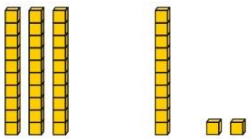
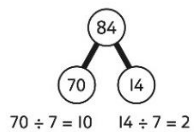
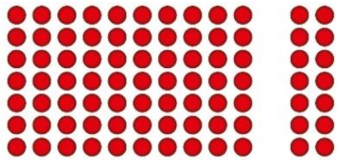
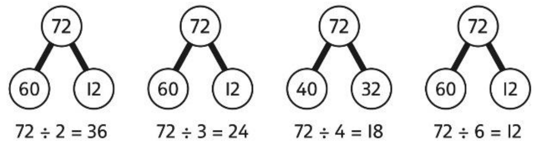
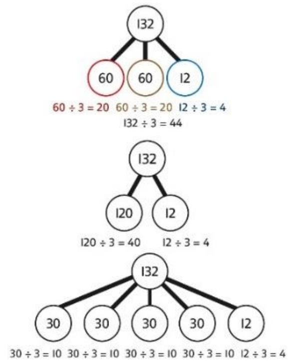
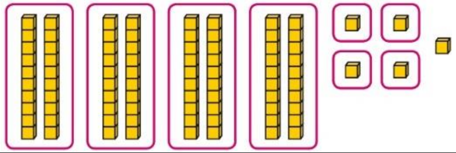
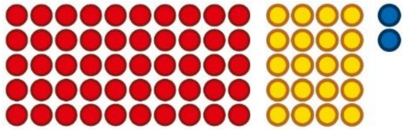
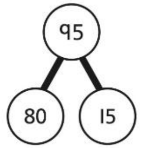
Dividing 2-digit and 3-digit numbers by a single digit by partitioning into 100s, 10s and 1s	**Partition into 10s and 1s to divide where appropriate.** *39 ÷ 3 = ?*  3 × 10 = 30 3 × 3 = 9 *39 = 30 + 9* *30 ÷ 3 = 10* *9 ÷ 3 = 3* *39 ÷ 3 = 13*	**Partition into 100s, 10s and 1s using Base 10 equipment to divide where appropriate.** *39 ÷ 3 = ?*  3 groups of 1 ten 3 groups of 3 ones *39 = 30 + 9* *30 ÷ 3 = 10* *9 ÷ 3 = 3* *39 ÷ 3 = 13*	**Partition into 100s, 10s and 1s using a part-whole model to divide where appropriate.** *142 ÷ 2 = ?*  *100 ÷ 2 = 50* *40 ÷ 2 = 20* *6 ÷ 2 = 3* *50 + 20 + 3 = 73* 142 ÷ 2 = 73
Dividing 2-digit and 3-digit numbers by a single digit, using flexible partitioning	**Use place value equipment to explore why different partitions are needed.** *42 ÷ 3 = ?* *I will split it into 30 and 12, so that I can divide by 3 more easily.* 	**Represent how to partition flexibly where needed.** *84 ÷ 7 = ?* *I will partition into 70 and 14 because I am dividing by 7.*   84 ÷ 7 = 12	**Make decisions about appropriate partitioning based on the division required.**  **Understand that different partitions can be used to complete the same division.** 

Understanding remainders	**Use place value equipment to find remainders.** *85 shared into 4 equal groups* *There are 24, and 1 that cannot be shared.* 	**Represent the remainder as the part that cannot be shared equally.**  **72 ÷ 5 = 14 remainder 2**	**Understand how partitioning can reveal remainders of divisions.**  ***80 ÷ 4 = 20*** ***12 ÷ 4 = 3*** **95 ÷ 4 = 23 remainder 3**

Maths Mastery Policy

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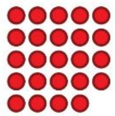
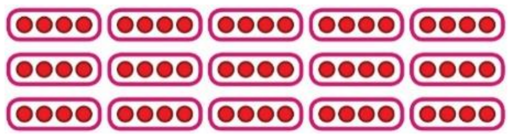
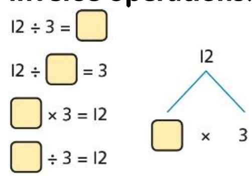
YEAR 5 DIVISION

	CONCRETE	PICTORIAL	ABSTRACT
Understanding factors and prime numbers	**Use equipment to explore the factors of a given number.**  *24 ÷ 3 = 8* *24 ÷ 8 = 3* *8 and 3 are factors of 24 because they divide 24 exactly.* 24 ÷ 5 = 4 remainder 4.  **5 is not a factor of 24 because there is a remainder.**	**Understand that prime numbers are numbers with exactly two factors.** *13 ÷ 1 = 13* *13 ÷ 2 = 6 r 1* *13 ÷ 4 = 4 r 1* *1 and 13 are the only factors of 13.* *13 is a prime number.*	**Understand how to recognise prime and composite numbers.** *I know that 31 is a prime number because it can be divided by only 1 and itself without leaving a remainder.* *I know that 33 is not a prime number as it can be divided by 1, 3, 11 and 33.* *I know that 1 is not a prime number, as it has only 1 factor.*
Understanding inverse operations and the link with multiplication, grouping and sharing	**Use equipment to group and share and to explore the calculations that are present.** *I have 28 counters.* *I made 7 groups of 4. There are 28 in total.* *I have 28 in total. I shared them equally into 7 groups. There are 4 in each group.* *I have 28 in total. I made groups of 4. There are 7 equal groups.*	**Represent multiplicative relationships and explore the families of division facts.**  *60 ÷ 4 = 15* *60 ÷ 15 = 4*	**Represent the different multiplicative relationships to solve problems requiring inverse operations.**  **Understand missing number problems for division calculations and know how to solve them using inverse operations.** *22 ÷ ? = 2* *22 ÷ 2 = ?* *? ÷ 2 = 22* **? ÷ 22 = 2**

Maths Mastery Policy

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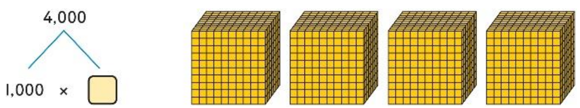
<table>
<tr>
<td>Dividing whole numbers by 10, 100 and 1,000</td>
<td>Use place value equipment to support unitising for division.

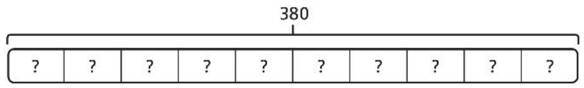
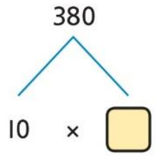
4,000 ÷ 1,000



4,000 is 4 thousands.

4 × 1,000= 4,000

So, 4,000 ÷ 1,000 = 4</td>
<td>Use a bar model to support dividing by unitising.

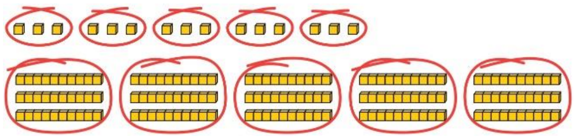
380 ÷ 10 = 38



380 is 38 tens.
38 × 10 = 380
10 × 38 = 380
So, 380 ÷ 10 = 38</td>
<td>Understand how and why the digits change on a place value grid when dividing by 10, 100 or 1,000.

<table><tr><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td>3</td><td>2</td><td>0</td><td>0</td></tr></table>3,200 ÷ 100 = ?

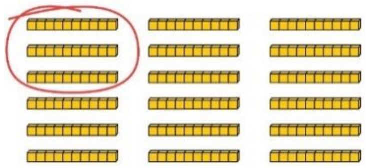
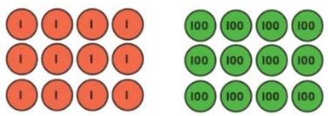
3,200 is 3 thousands and 2 hundreds.
200 ÷ 100 = 2
3,000 ÷ 100 = 30
3,200 ÷ 100 = 32

So, the digits will move two places to the right.</td>
</tr>
<tr>
<td>Dividing by multiples of 10, 100 and 1,000</td>
<td>Use place value equipment to represent known facts and unitising.



15 ones put into groups of 3 ones. There are 5 groups.
15 ÷ 3 = 5

15 tens put into groups of 3 tens. There are 5 groups.

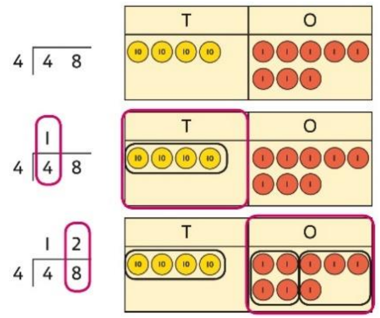
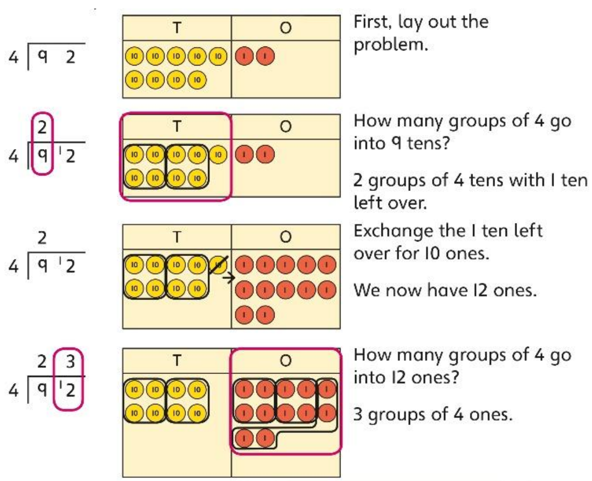
150 ÷ 30 = 5</td>
<td>Represent related facts with place value equipment when dividing by unitising.

180 is 18 tens.
18 tens divided into groups of 3 tens. There are 6 groups.
180 ÷ 30 = 6

12 ones divided into groups of 4. There are 3 groups.
12 hundreds divided into groups of 4 hundreds. There are 3 groups.
1200 ÷ 400 = 3</td>
<td>Reason from known facts, based on understanding of unitising. Use knowledge of the inverse relationship to check.

3,000 ÷ 5 = 600
3,000 ÷ 50 = 60
3,000 ÷ 500 = 6

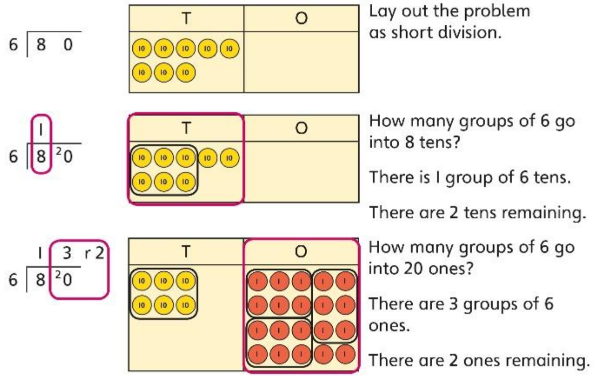
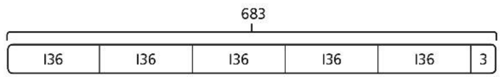
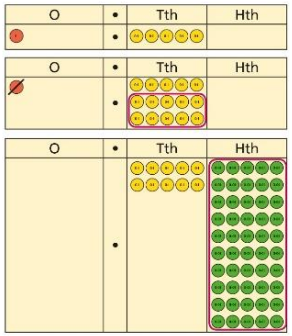
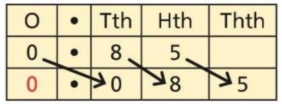
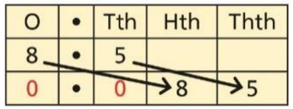
5 × 600 = 3,000
50 × 60 = 3,000
500 × 6 = 3,000</td>
</tr>
</table>

Maths Mastery Policy

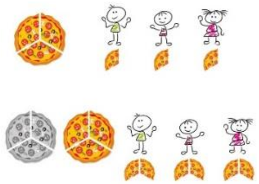
ELSTON HALL Learning Trust

Dividing up to four digits by a single digit using short division	**Explore grouping using place value equipment.** *268 ÷ 2 = ?* *There is 1 group of 2 hundreds.* *There are 3 groups of 2 tens.* *There are 4 groups of 2 ones.* *264 ÷ 2 = 134*	**Use place value equipment on a place value grid alongside short division.** **The model uses grouping.** **A sharing model can also be used, although the model would need adapting.**  **Lay out the problem as a short division.** ***There is 1 group of 4 in 4 tens.*** ***There are 2 groups of 4 in 8 ones.*** **Work with divisions that require exchange.**  	**Use short division for up to 4-digit numbers divided by a single digit.** $\begin{array}{r} 0\;\;5\;\;5\;\;6 \\ 7\overline{)\,3\;{}^{3}8\;{}^{3}9\;{}^{4}2} \end{array}$ *3,892 ÷ 7 = 556* **Use multiplication to check.** *556 × 7 = ?* *6 × 7 = 42* *50 × 7 = 350* *500 × 7 = 3500* *3,500 + 350 + 42 = 3,892*

Maths Mastery Policy

Understanding remainders	**Understand remainders using concrete versions of a problem.** *80 cakes divided into trays of 6.*  *80 cakes in total. They make 13 groups of 6, with 2 remaining.*	**Use short division and understand remainders as the last remaining 1s.** 	**In problem solving contexts, represent divisions including remainders with a bar model.**  *683 = 136 × 5 + 3* *683 ÷ 5 = 136 r 3*
Dividing decimals by 10, 100 and 1,000	**Understand division by 10 using exchange.** *2 ones are 20 tenths.* *20 tenths divided by 10 is 2 tenths.*	**Represent division using exchange on a place value grid.**  *1·5 is 1 one and 5 tenths.* *This is equivalent to 10 tenths and 50 hundredths.* *10 tenths divided by 10 is 1 tenth.* *50 hundredths divided by 10 is 5 hundredths.* *1·5 divided by 10 is 1 tenth and 5 hundredths.* **1·5 ÷ 10 = 0.15**	**Understand the movement of digits on a place value grid.**  *0·85 ÷ 10 = 0·085*  **8·5 ÷ 100 = 0·085**

Maths Mastery Policy

Understanding the relationship between fractions and division	**Use sharing to explore the link between fractions and division.** ***1 whole shared between 3 people. Each person receives one-third.*** 	**Use a bar model and other fraction representations to show the link between fractions and division.**  $1 \div 3 = \frac{1}{3}$	**Use the link between division and fractions to calculate divisions.** $5 \div 4 = \frac{5}{4} = 1\frac{1}{4}$ $11 \div 4 = \frac{11}{4} = 2\frac{3}{4}$