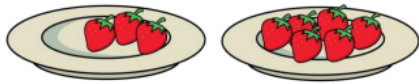**Early Learning Goals:**

- Have a deep understanding of number to 10, including the composition of each number
- Subitise (recognise quantities without counting) up to 5
- Explore and represent patterns within numbers to 10, including evens and odds, double facts and how quantities can be shared equally
- Automatically recall (without reference to rhymes, counting or other aids) double facts
- (Solve problems including halving and sharing)

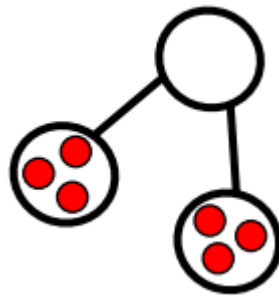| Concrete	Pictorial	Abstract
Halving with real objects	Halving	Using digits to represent halving in the part part whole model

Concrete — Halving with real objects

Show the children a bowl of strawberries. Explain that you are going to share them into 2 equal groups so there will be half for you and half for your friend. Put a handful straight onto each plate without counting – make sure that one plate has much more strawberries than the other. Ask the children if that is fair. Prompt them to show you how to share the strawberries fairly.
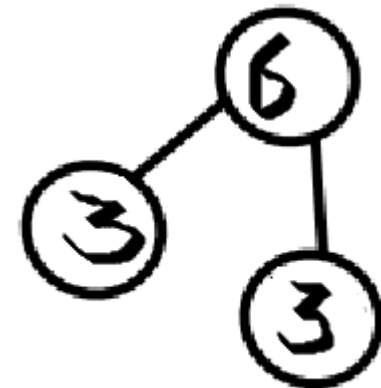

Key Vocabulary:

Half, halving, half of, share between, sharing, equal, equal groups, sets, count in 2s/5s/10s

STEM Sentences:

I have ____. If I share them equally between 2 there are ____ each.

Half of ____ is ____.

The groups are equal because...

St Nicholas Church School	Progression and Calculation Document—DIVISION	KS1

NC Learning Objectives:

End of Year One

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

NC Learning Objectives:

End of Year 2

- Recall and use division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- Calculate mathematical statements for division within the multiplication tables and write them using the division (÷) and equals (=) signs
- Show that division of one number by another cannot be done in any order
- Solve problems involving division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts
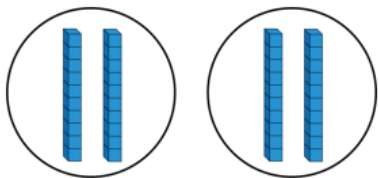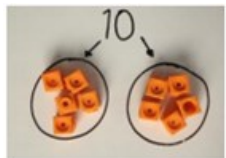
Concrete	Pictorial	Abstract

Concrete

- Sharing using real objects

$10 \div 2 = 5$

$8 \div 2 = 4$

10

$40 \div 2 = 20$

Pictorial

- Bar model to divide
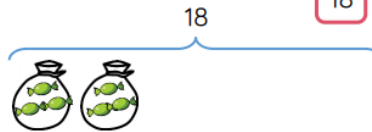
20

$5 \quad 5 \quad 5 \quad 5$
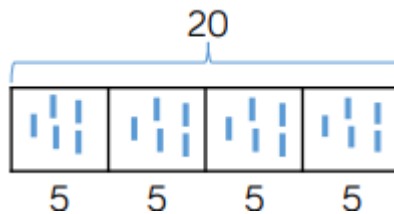
- Solving problems using the inverse and pictorial representations

Mrs Green has 18 sweets.
She puts 3 sweets in each bag.
How many bags can she fill?

18

$18 \div \boxed{} = 3$

$18 \div \boxed{3} = \boxed{}$

$21 \div 3 = 7$

Abstract

- Solve problems using the inverse/ write using ÷ and = signs

Complete the stem sentences.

I have ___ cubes altogether.
There are ___ in each group.
There are ___ groups.

$\boxed{} \div \boxed{} = \boxed{}$

$\boxed{} \times \boxed{} = \boxed{}$

Key Vocabulary:

Equal groups, sharing objects, divide, division, dividing, grouping, share into, unequal, equal, inverse, divided by, divided into, left, left over, repeated subtraction, array, row, column, fact family, equals, is equal to

STEM Sentences:

_____ has been shared equally into _____ equal groups. I have _____ in each group. _____ groups of _____ make _____.

NC Learning Objectives:
End of Year 3
- Recall division facts for the 3, 4 and 8 multiplication tables
- Write and calculate mathematical statements for 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 division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

NC Learning Objectives:
End of Year 4
- Recall division facts for multiplication tables up to 12 × 12
- Use place value, known and derived facts to divide mentally, including dividing by 1
- Recognise and use factor pairs and commutativity in mental calculations
- Solve problems involving division, including positive integer scaling problems and harder correspondence problems such as n objects are connected to m objects.
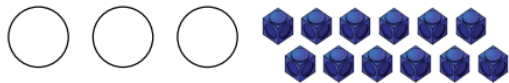
Concrete

- Using objects to represent numbers

Circle the buttons in groups of 4.

Can you also split the buttons into 4 equal groups?
How is this the same? How is it different?

There are 12 pieces of fruit. They are shared equally between 3 bowls. How many pieces of fruit are in each bowl?
Use cubes/counters to represent fruit and share between 3 circles.

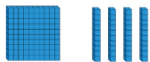- Using base 10/ place value counters

Use place value counters to show the steps to divide 30 by 10

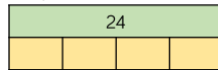Can you use the same steps to divide a 3-digit number like 210 by 10?

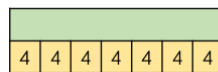Use Base 10 to divide 140 by 10
Explain what you have done.

Pictorial

- Using bar models

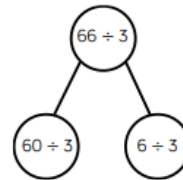Complete the bar models and the calculations.

| 24 |
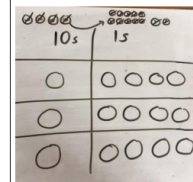$24 \div 4 =$ ___

| 4 | 4 | 4 | 4 | 4 | 4 |
___ $\div 4 =$ ___

- Using place value grid and part whole model

Eva uses a place value grid and part-whole model to solve $66 \div 3$

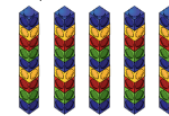| Tens | Ones |
10 10	1 1
10 10	1 1
10 10	1 1

$66 \div 3$
$60 \div 3$ $6 \div 3$

Children to represent the place value counters pictorially.

Abstract

- Writing number sentences to describe fact families

Complete the fact family.

___ × ___ = ___
___ × ___ = ___
___ ÷ ___ = ___
___ ÷ ___ = ___

Complete the sentences.

There are ___ lots of ___.
___ × ___ = ___
___ ÷ ___ = ___

| 9 | 9 | 9 |

There are ___ lots of ___.
___ × ___ = ___
___ ÷ ___ = ___

| 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
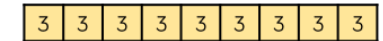
What's the same about each question? What's different?

Children to be able to make sense of the place value counters and write calculations to show the process.

$42 \div 3$
$42 = 30 + 12$
$30 \div 3 = 10$
$12 \div 3 = 4$
$10 + 4 = 14$

Key Vocabulary:
Quotient (quantity produced by the division of 2 numbers), inverse, sharing, grouping, partition, remainder, repeated subtraction, inverse operation, factors

STEM/ model Sentences:
Can you use concrete or pictorial representations to help you? Can you write a number sentence to show this? What is the difference between sharing and grouping? There are _____ lots of _____ in _____.

| St Nicholas Church School	Progression and Calculation Document—DIVISION	UKS2

NC Learning Objectives: Year 5:
- Divide numbers mentally drawing upon known facts
- Divide whole numbers and those involving decimals by 10, 100 and 1000
- Divide numbers up to 4 digits by a 1-digit number using the formal written method of short division and interpret remainders appropriately for the context
- Solve problems involving division including using their knowledge of factors and multiples, square and cubes; involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign; involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

NC Learning Objectives: Year 6:
- Divide numbers up to 4 digitis by a 2-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 2-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 problems involving addition, subtraction, multiplication and division.
- Use estimation to check answers to calculations and determine, in the context of the problem, an appropriate degree of accuracy
- Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
- use written division methods in cases where the answer has up to two decimal places

Concrete	Pictorial	Abstract

Concrete

Using place value counters
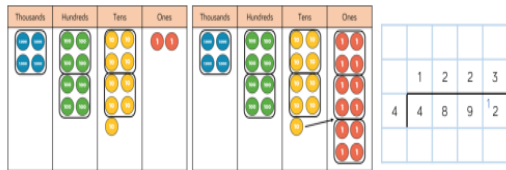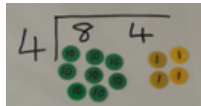
Scott uses place value counters in a place value chart to work out $5.32 ÷ 4$
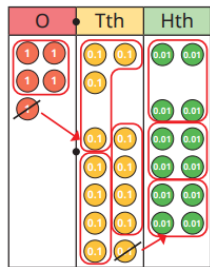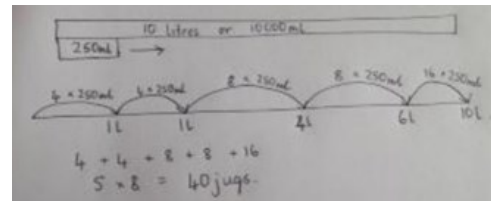

Pictorial

Using a place value grid

HTh	TTh	Th	H	T	O
	○	○ ○	○ ○ ○		

What number is represented in the place value grid?
Divide the number by 100
Which direction do the counters move?
How many columns do they move? How do you know how many columns to move?
What number do we have now?

Bar modelling

456
57	57	57	57	57	57	57	57

$57 × 8 = 456$

Abstract

Using short division

$954 ÷ 6 = 159$

$6138 ÷ 9 = 682$

Using long division (including with remainders)

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

Key Vocabulary:
Dividend (starting number), divisor (number you are dividing by), short division, multiples, inverse, compact short, divisibility, brackets, balance, order of operations

STEM/ model Sentences:
Can you list multiples of ….. (the divisor)? In the hundreds, how many groups of …. are in …? Is the remainder smaller than the divisor? Why is the context of the question important when deciding how to round the remainders after a division?