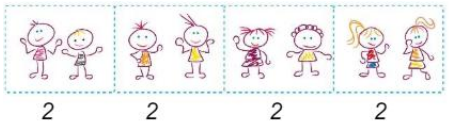
Porthleven 2024 Division Calculation Policy

EYFS

Strategies

Early Learning Goal - Children count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.

Language	Concrete	Pictorial	Abstract
• sharing • halving • half • share out • left over • fair • not fair	  Practically halving objects – both halves being exactly the same size. Start with play dough. You can cut and then progress to practical objects e.g. pizza cut in half to make two pieces – then add toppings – 2 tomatoes – half of 2 is one,	 Ask questions – is it fair? Not fair?	 8 shared into 4 equal groups gives 2 in each group.

Year 1 Division

National Curriculum

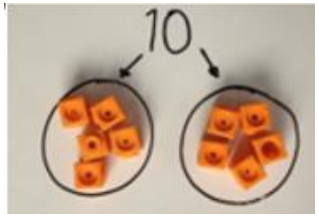
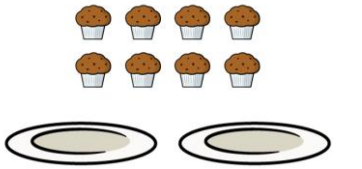
Solve one-step problems involving division, by calculating the answer using concrete objects and pictorial representations with the support of the teacher.

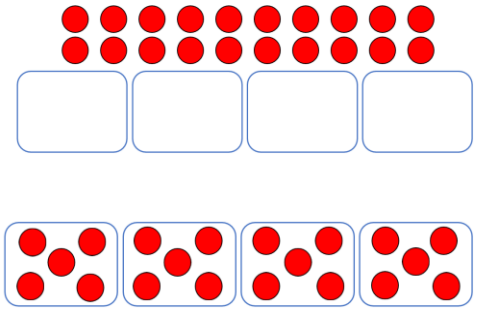
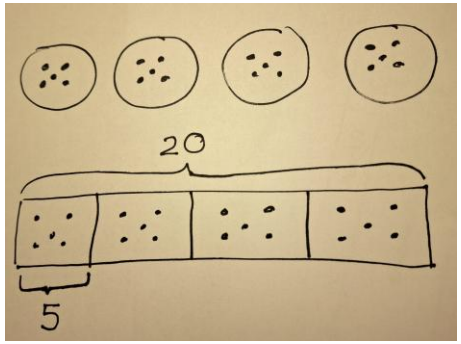
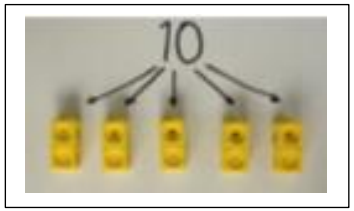
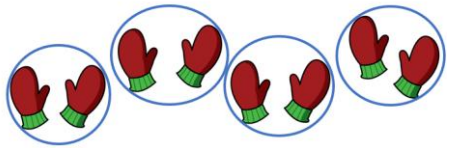
Division in year 1 builds on the learning in EYFS. It is important that children have a secure understanding of halving before moving on. Concrete resources and pictorial representations should be then used to develop children's understanding of division being grouping and sharing.

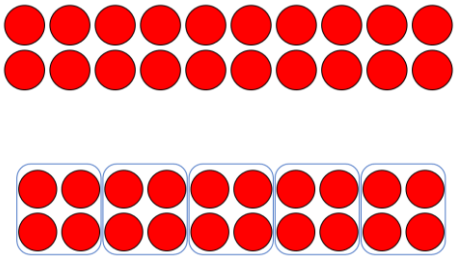
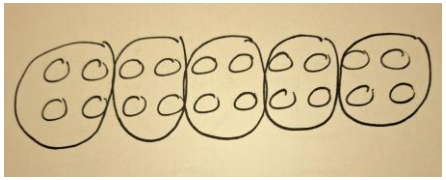
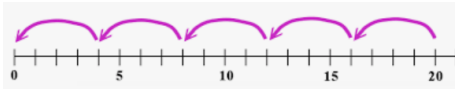
Yr 2 Division

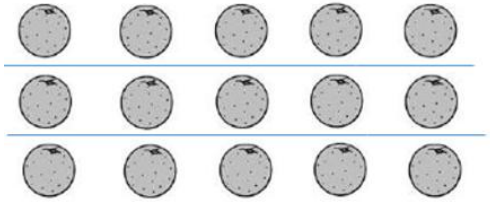
National Curriculum:

- Recall and use division facts for the 2, 3 and 5 and 10 multiplication tables, including recognising odd and even numbers
- Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- Solve problems involving division, using objects sharing, grouping, repeated subtraction, mental method, known facts and practical problems.

Language	Concrete	Pictorial	Abstract
1	Sharing		
• grouping • sharing • share equally • equal groups of • divide • divided by/into	I have 10 cubes. Can you share them equally between 2 people  	  Children can use pictures or shapes to share quantities.	There are 8 muffins. They are shared equally between 2 plates. There are 4 muffins on each plate.

	Concrete	Pictorial	Abstract
2	Sharing		
	Share 20 counters into 4 equal groups 	Present sharing pictorially 	There are 20 counters altogether. I have shared them into 4 equal groups. There are 5 in each group. 20 ÷ 4 = 5
Language	Concrete	Pictorial	Abstract
1	Grouping		
	Divide quantities into equal groups. Use cubes, counters or objects to aid understanding.    Use Cuisenaire and number tracks.	Circle groups of 2 mittens 	Divide 8 mittens into groups of 2. There are 4 groups of 2 mittens.

Language	Concrete	Pictorial	Abstract
2	Grouping		
	There are 20 counters. Put them into groups of 4. 	Draw a picture and circle groups of 4  Use a number line to show jumps in groups. The number of jumps equals the number of groups **(repeated subtraction)**  20 – 4 – 4 – 4 – 4 – 4 =0 The number of jumps = 5	There are 20 counters altogether. I have put them into equal groups of 4 There are 5 groups. 20 ÷ 4 = 5

Language	Concrete	Pictorial	Abstract
2	Division with arrays		
	Link division to multiplication by creating an array and thinking about the number sentences that can be created.  Eg 15 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15	 Draw an array and use lines to split the array into groups to make multiplication and division sentences.	Find the inverse of multiplication and division sentences by creating four linking number sentences. 5 x 3 = 15 3 x 5 = 15 15 ÷ 5 = 3 15 ÷ 3 = 5

Year 3 Division

National Curriculum

- Recall and use multiplication facts for the 3, 4 and 8 multiplication table (Use of doubling for 4 and 8 times tables)
- Write and calculate mathematical statements for division using the multiplication tables that they know, including two digit numbers times one-digit numbers, using mental and progressing to written methods
- Solve problems involving missing number problems involving division including positive number scaling problems and correspondence problems where n objects are connected to m objects.

Language

As above

- Divide
- Dividend
- Divisibility
- Division
- Divisor
- Quotient

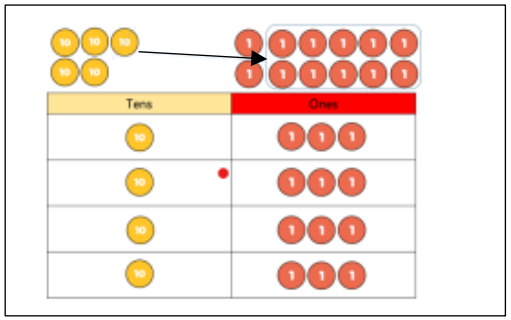
Concrete

Use place value counters or dienes. Start with the equipment outside the the place vlaue grid before sharing the tens and one equally between the rows

48 ÷ 4

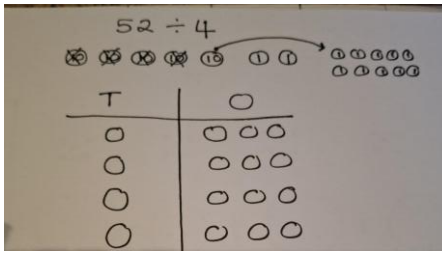
2 digit by 1 digit exchanging

52 ÷ 4 = 13

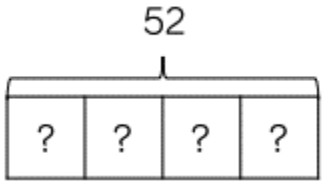


Pictorial

Children can represent the place value counter pictorially



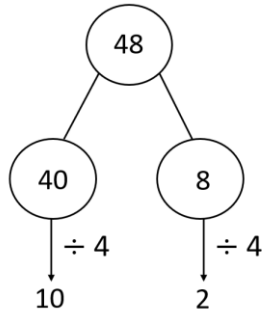
Children should be encouraged to use their times table facts.



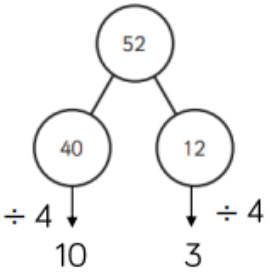
Abstract

Children to be encouraged to show the steps they have taken.

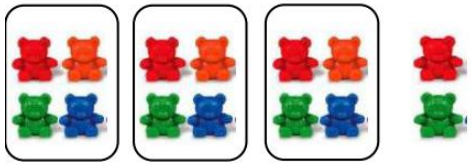
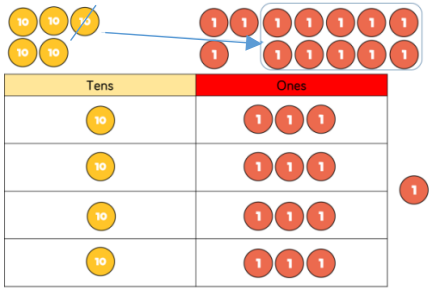
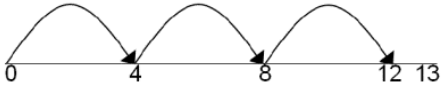
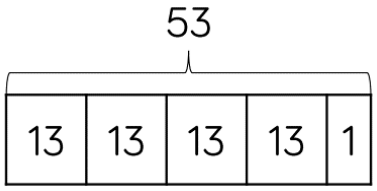
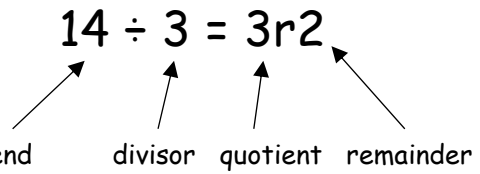
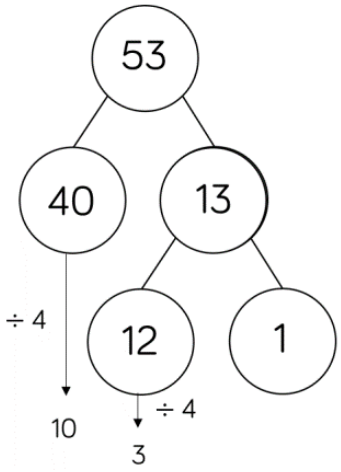
48 ÷ 4 = 12



52 ÷ 4 = 13



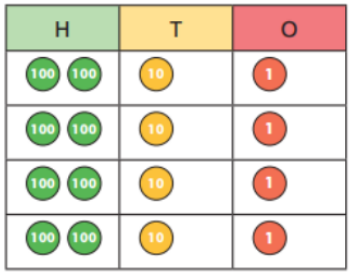
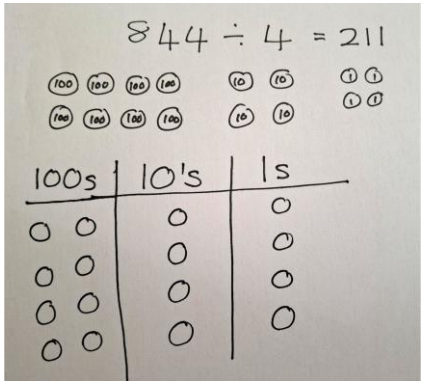
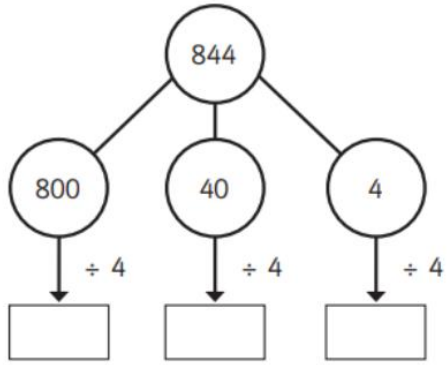
10 + 3 = 13

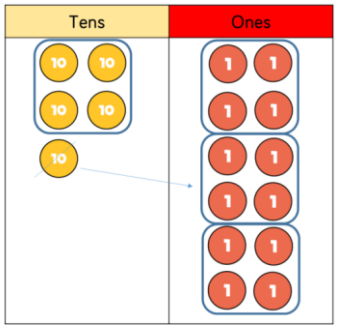
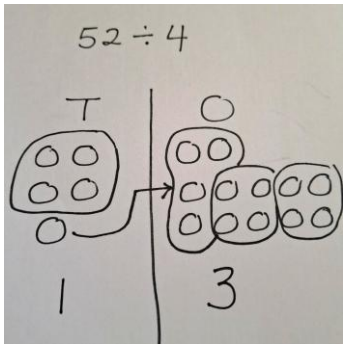
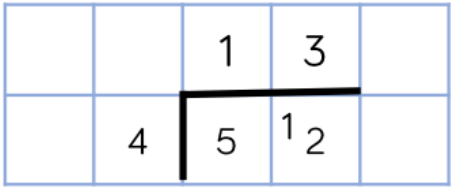
	If we put 1 ten in each group we have 1 ten left over. We exchange this for 10 ones and share equally among the groups.		
Language	Concrete	Pictorial	Abstract
3/4	Division with remainders		
	14 ÷ 3 Divide objects between groups and see how much is left over.  Use place value counters 53 ÷ 4 = 13r1  Remainders will be left outside the grid once the equal groups have been made.	Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder.  Draw dots and group them to divide an amount and clearly show a remainder. 14 ÷ 4   	Complete written division showing the remainders using 'r'  53 ÷ 4 = 13r1 

Year 4 Division

National Curriculum

- Recall multiplication and division facts for multiplication tables up to 12 x 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
- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout
- Solve problems involving multiplying, including the distributive law to multiply two-digit numbers by one-digit including positive number scaling problems and correspondence problems where n objects are connected to m objects

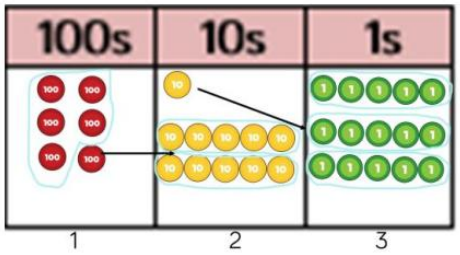
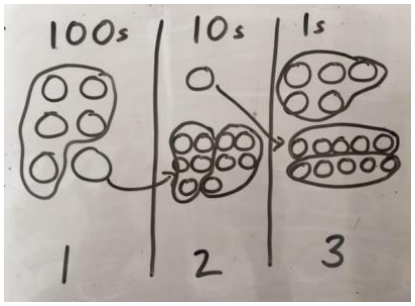
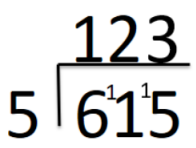
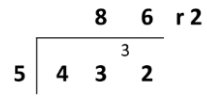
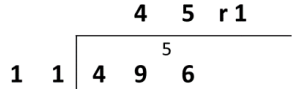
Language	Concrete	Pictorial	Abstract
As above • Divide • Dividend • Divisibility • Division • Divisor • Quotient • Short division	Use representations from Year 3, developing further. Divide 3 digit by 1 digit (**sharing**) 844 ÷ 4 = 211  Share the hundreds, tens and one equally between the rows. This method can also highlight remainders. Divide 2 digit by 1 digit (**grouping**) Short division When using the short method of division group by the divisor.	 	 Children to calculate using the short division method.

	52 ÷ 4 =13  How many groups of 10 can we make? How many groups of 4 can we make?	Represent the place value counters pictorially.  	52 ÷ 4 =13 

Year 5 Division

National Curriculum

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

Language	Concrete	Pictorial	Abstract
As above	Children continue as in year 4 to use **grouping** to support their understanding of short division 615 ÷ 5 = 123  1.Make 615 with place value counters 2.How many groups of 5 hundreds can you omake with 6 hundred counters? 3. Exchange 1 hundred for 10 tens. 4. How many groups of 5 tens can you make with 11 tens counters? 5. Exchange 1 ten for 10 ones. 6. How many groups of 5 can you make with 15 ones? Children should be encouraged to move away from concrete and pictorial when dividing numbers with multiple exchanges.	Represent the place value counters pictorially.  	Children to calculate using the short division method.  Short division examples  432 ÷ 5 becomes  Answer: 86 remainder 2 496 ÷ 11 becomes 

Year 6 Division

National Curriculum

- 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 4 operations

Language

As above

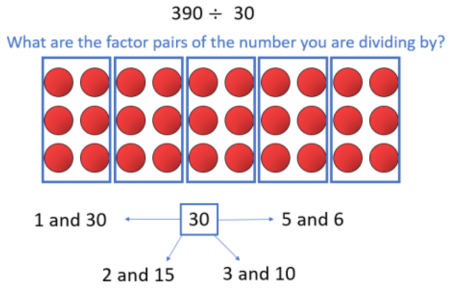
- long division

Concrete

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

Pictorial

Dividing by factor pairs of the divisor



Which is the easiest factors to divide by? - 3 and 10
Divide by 10 then divide by 3.

$390 \div 30 = 13$

$390 \div 10 = 39$

$39 \div 3 = 13$

Abstract

Continue to divide up to 4 digit by 2 digit using the short division written method. Children can write out multiples to support their calculations:

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

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

15	30	45	60	75	90	105	120	135	150

Use long division 7,335 ÷ 15

	0	4	8	9	
15	7	3	3	5	
–	6	0	0	0	(×400
	1	3	3	5	
–	1	2	0	0	(×80)
		1	3	5	
–		1	3	5	(×9)
				0	

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

			When a remainder is left at the end of a calculation, children can either leave it as a remainder of convert to a fraction. 372 ÷ 15 = 24 r 12 or 24 4/5