

Division

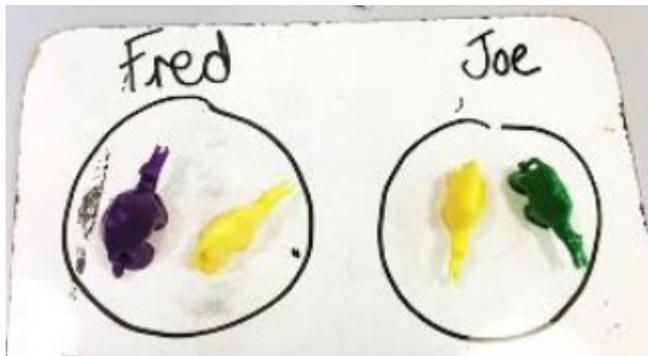
Early Years

Pupils should be able to:

- understand the concept of a fair share

Fair Sharing

Children will use everyday objects in the class-room and outdoor area to share out "fairly". Start understanding the concept of a fair share, everyone having the same amount



Allowing children to explore what is fair sharing but also what is not



Has Joe shared fairly?
Why not?

Children can experience real life problems. "We have 6 sweets. How will we share them equally so Benny and Samni have the same number of sweets?"

Vocabulary fair share, sharing

Division

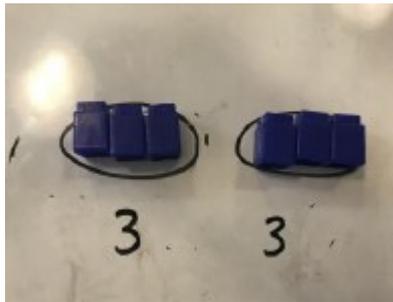
Year 1

Pupils should be able to:

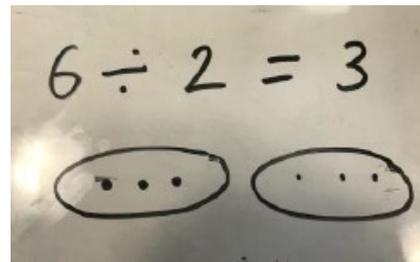
- solve one-step problems involving division by calculating the answers using concrete objects, pictorial representations and arrays with the support of the teacher

Sharing

Children should experience sharing objects out equally between 2, 5 and 10

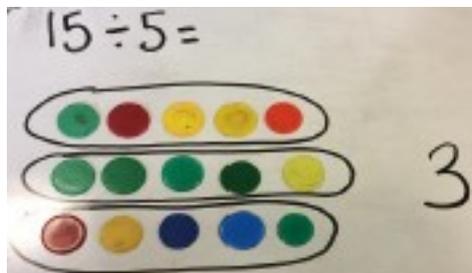


Children then move on to representing pictorially the practical experience either by drawing themselves or sharing circles provided



Grouping

Children should experience grouping objects into groups of the multiple. For example, placing objects into groups of 5 and seeing how many groups there are through the use of arrays



Vocabulary fair share, sharing

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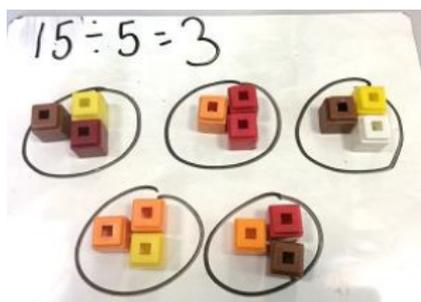
Year 2

Pupils should be taught to:

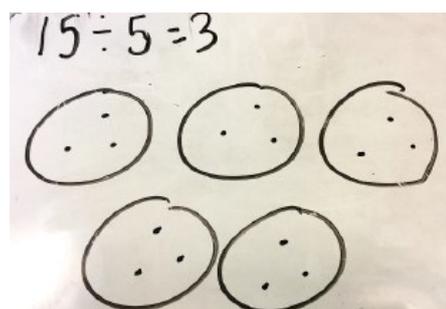
- recall and use division facts for the 2, 5, and 10 multiplication tables, including recognising odd and even numbers
- calculate mathematical statements for division within the multiplication tables and write them using the division (\div) and equals ($=$) symbols
- show that multiplication of two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

Sharing

Children begin with continuing the concept of fair sharing using concrete objects within the classroom

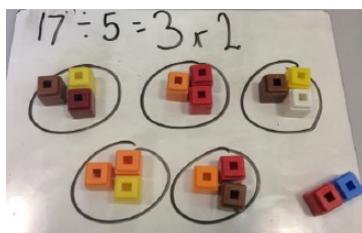


Recap Year 1 then children can move on to use pictorial methods to share out equally

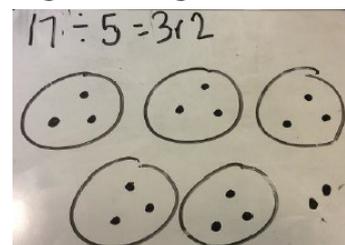


Sharing with Remainders

Children use concrete objects to understand the concept of remainders and the idea that sometimes there cannot be a fair share



Children can use pictorials in their books to solve division sentences through sharing out between 2, 5 and 10 equally



Children can explore the idea of remainders through use of lolly sticks. What shapes can you make with x number of sticks? Are there any left over? Why? Why can't the remainder be greater than... ?



$$7 \div 3 = 2 \text{ r } 1$$



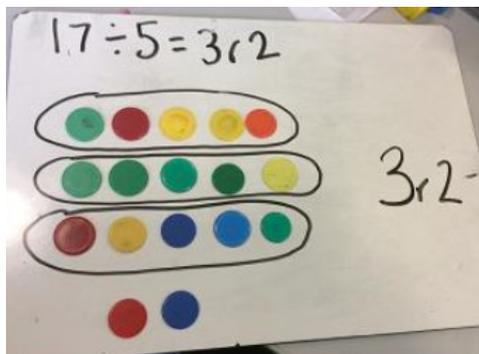
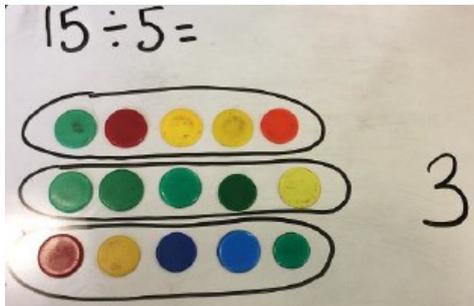
$$9 \div 4 = 2 \text{ r } 1$$

Vocabulary fair share, sharing

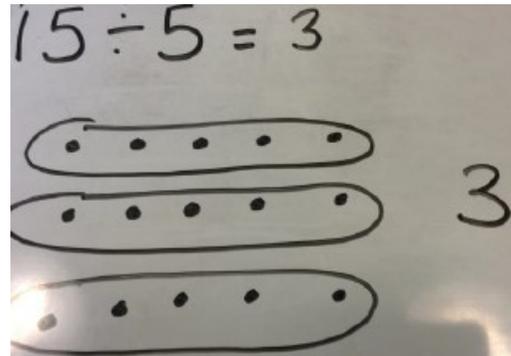
Grouping with Arrays

Children use concrete objects (e.g. lolly sticks or counters) to understand the concept of grouping. Children will place the objects in groups of the multiple and then count how many groups they have made

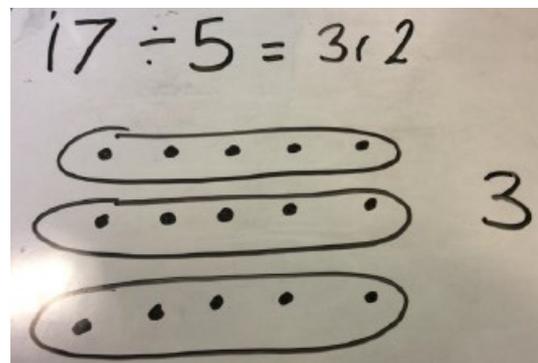
How many groups of 5 can we make from 15?



Children will use pictorial methods of arrays in their books to solve division sentences



Arrays with remainders



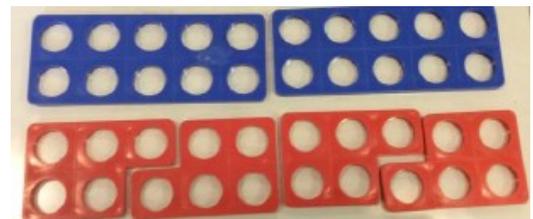
Grouping with Numicon

Use Numicon to solve division sentences to understand the concept of groups of multiples within a number



$$6 \div 2 = 3$$

$$20 \div 5 = 4$$



Bar Model Grouping

Children can use a physical bar model from Cuisenaire rods to support their understanding of grouping. Ensure children count in the multiple until they have reached the total and then count how many groups they have created

$$8 \div 2 = 4$$



Vocabulary fair share, sharing

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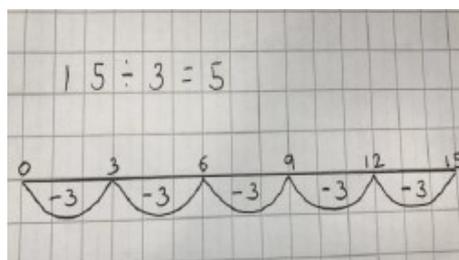
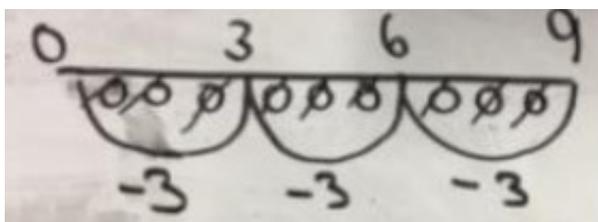
Year 3

Pupils should be taught to:

- recall and use 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

Repeated Subtraction

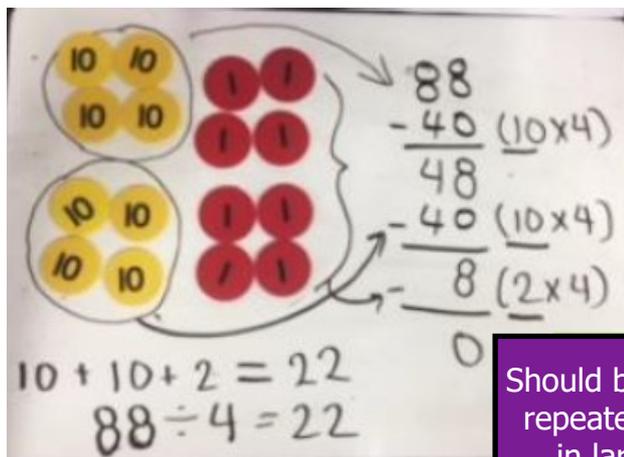
Recall Year 2 grouping with arrays / Cuisenaire rods / Numicon to lead into number lines. Then focus on aspect of repeated subtraction to prepare for subtracting with chunking



Include number lines with remainders

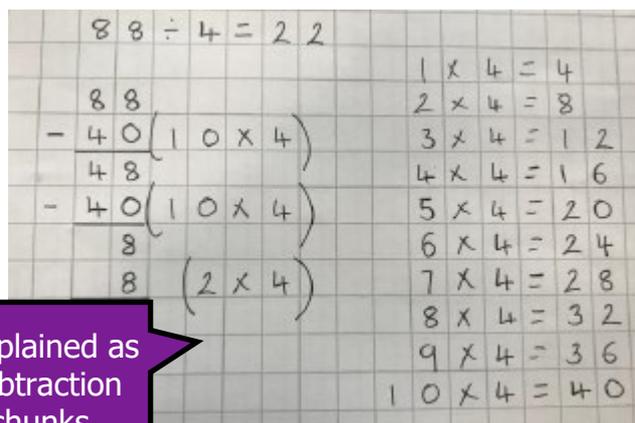
Chunking

Children can use place value counters as well as drawings to support this method



Should be explained as repeated subtraction in larger chunks

Children should be encouraged to write down the related times tables facts to support them with the formal method of chunking



Include examples of chunking with remainders

Vocabulary divisor, dividend, quotient, sharing, groups of, lots of

Division

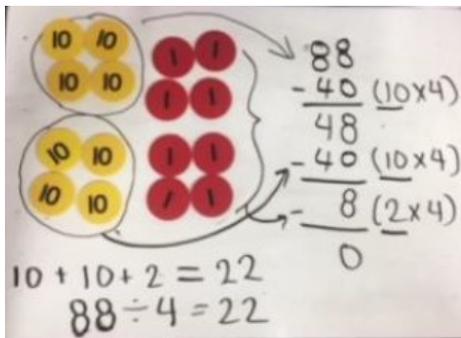
Year 4

Pupils should be taught to:

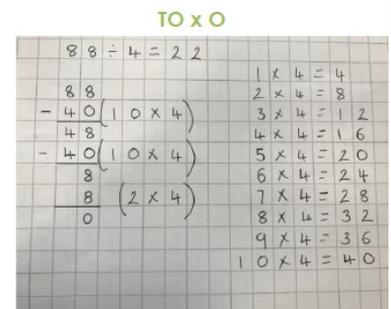
- recall multiplication and division facts for multiplication tables up to 12 x 12
- use place value, known and derived facts to divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
- recognise and use factor pairs and commutativity in mental calculations
- divide two-digit and three-digit numbers by a one-digit number using the formal written layout

Chunking

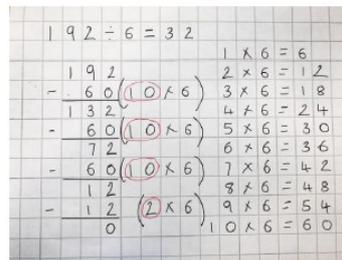
Children can use place value counters to consolidate chunking



Children should consolidate chunking before moving on to the more formal short division

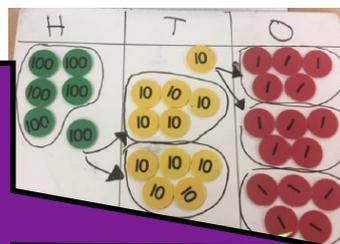


HTO x O



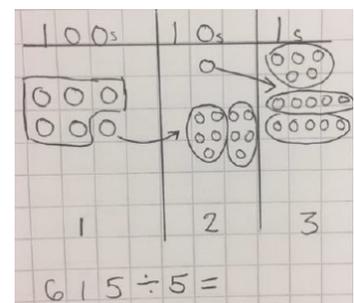
Formal Short Division

Children should understand short division as grouping. Start by using concrete resources such as place value counters



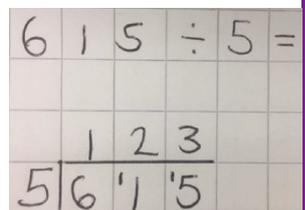
There is one group of 5 in the hundreds, 2 in the tens and 3 groups of 5 in the ones

Children can use place value counters to consolidate chunking



Once children have solved problems both concretely and pictorially, they can use the short division method shown.

Year 4 pupils can do this with both HT ÷ O and HTO ÷ O as well as working out with remainders



Vocabulary divisor, dividend, quotient, sharing, groups of, lots of

Division

Year 5

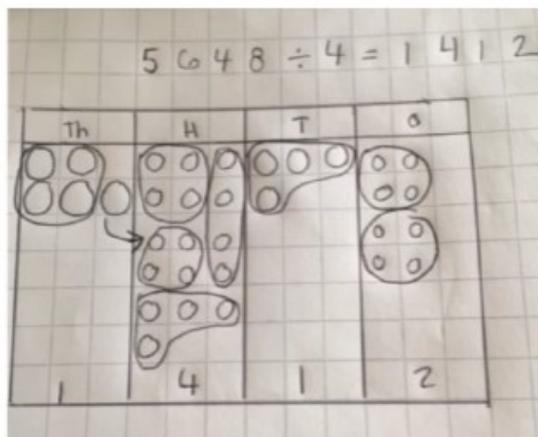
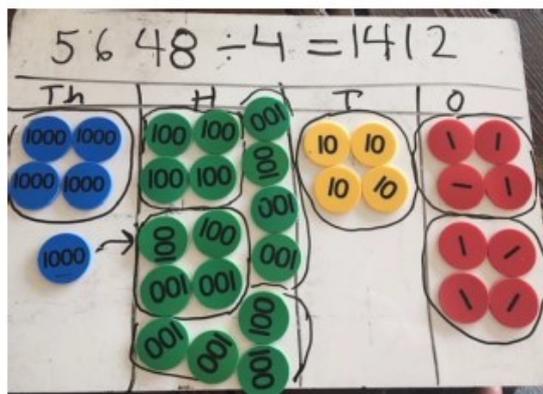
Pupils should be taught to:

- divide numbers mentally, drawing upon known facts
- divide numbers up to 4 digits by one-digit number using the formal written method of short division and interpret remainders appropriately for the context
- divide whole numbers and those involving decimals by 10, 100, 1000
- solve problems involving division, including using their knowledge of factors
- solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals symbol

Formal Short Division

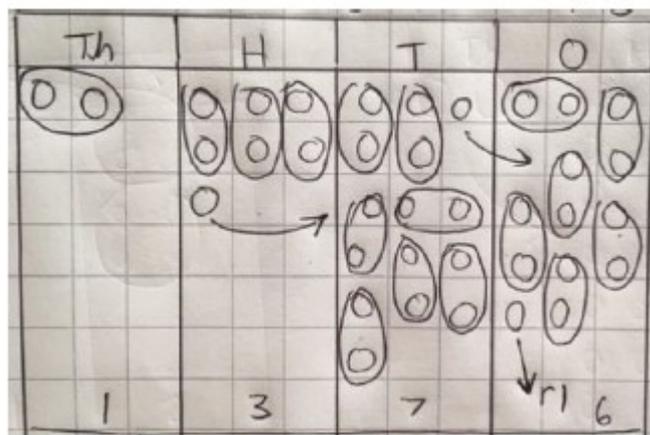
Children should recall Year 4 and understand short division as grouping. Start by using concrete resources such as place value counters and pictorial methods to solve

$$5648 \div 4 = 1412$$



Children can do the same when working out remainders

$$2753 \div 2 = 1376 \text{ r}1$$



Vocabulary divisor, dividend, quotient, sharing, groups of, lots of

Division

Year 6

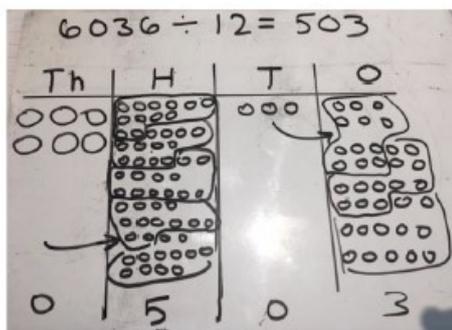
Pupils should be taught to:

- divide numbers up to 4 digits by a two-digit whole number using the formal written method of short division
- where appropriate for the context, 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
- solve problems involving division
- use written division methods in cases where the answer has up to two decimal places

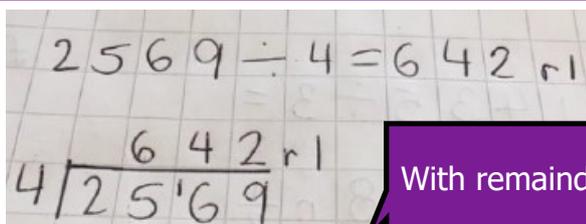
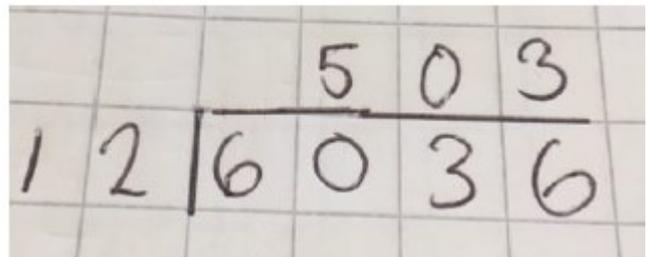
Formal Short Division

Children can use pictorial methods to grasp the concept before moving to the formal short division method

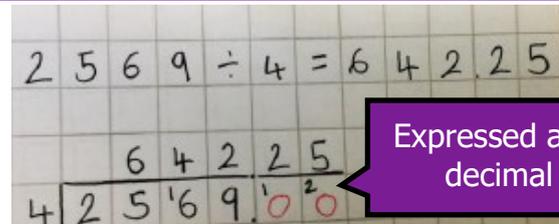
Th H T O X TO



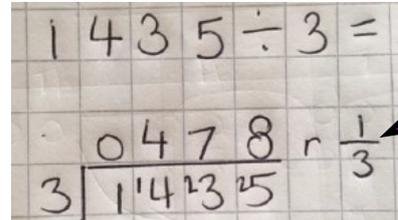
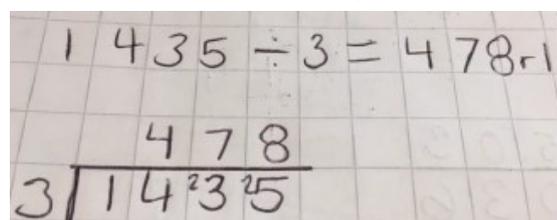
$$6036 \div 12 = 503$$



With remainders

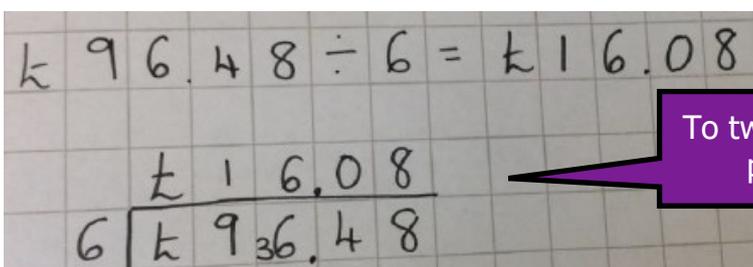


Expressed as a decimal



Expressed as a fraction

Write decimal point first and keep in line like any place value column



To two decimal places

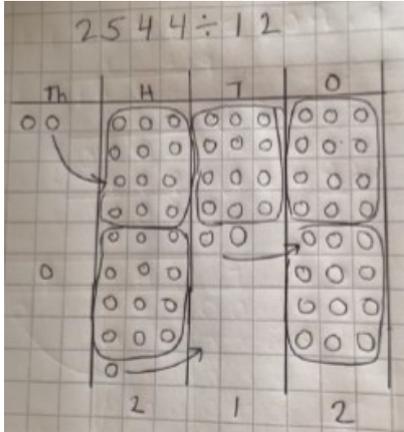
Vocabulary divisor, dividend, quotient, sharing, groups of, lots of

Long Division

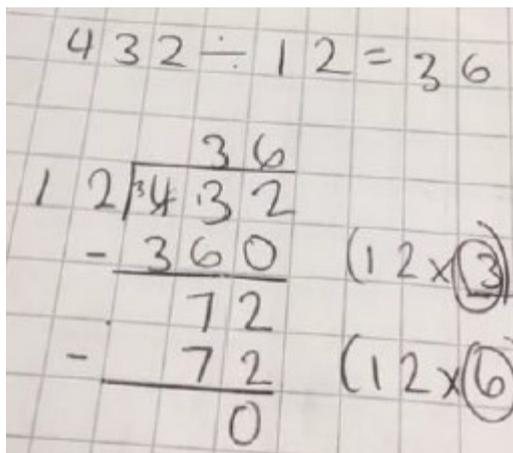
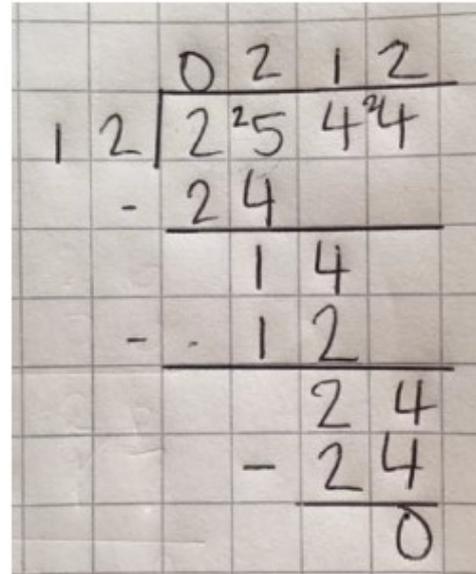
Children can use pictorial methods to support understanding of long division.

Expose this method quickly as inefficient

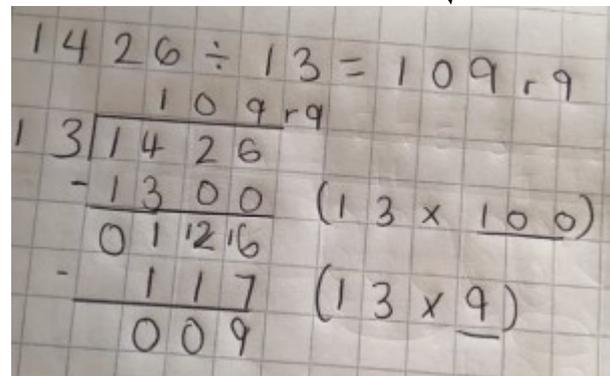
$$2544 \div 12 = 212$$



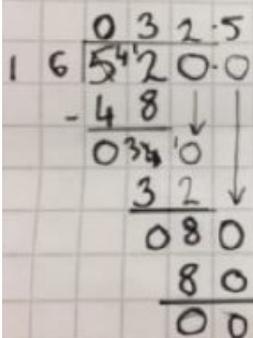
$$2544 \div 12 = 212$$



With remainders



$$520 \div 16 = 32.5$$



Remainder expressed as a decimal

Vocabulary divisor, dividend, quotient, sharing, groups of, lots of