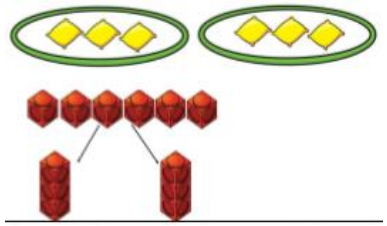
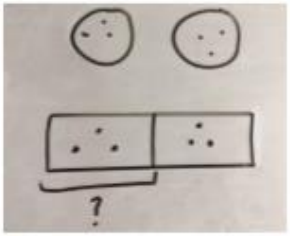
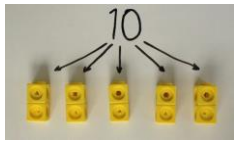
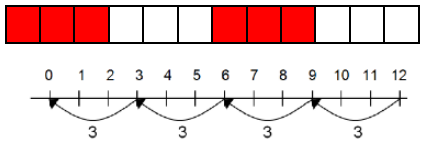
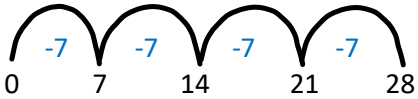
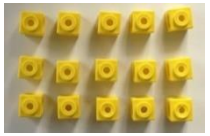
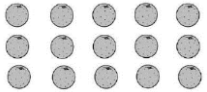
Sunnyside Primary Academy Division Calculation Policy

Use NCETM Sentence Stems to support
https://nottinghamacademy.sharepoint.com/:b:/r/sites/spa_primary/Shared%20Documents/a4.%20CURRICULUM%20DOCUMENTS/Maths/Planning%20and%20Resources/NCETM%20Sentence%20Stems%20Multiplication%20and%20Division.pdf?csf=1&web=1&e=KOCkdY

Skills	Concrete	Pictorial	Abstract
1.Sharing into equal groups each, share, equally, equal, same, group	6 ÷ 2  Sharing six into two groups. Each group needs to be equal.	 Draw two groups (circles or bar model), share the whole (6) into the two groups one at a time. Check both groups are equal (same value). How many is in each group? (3)	 Using the number 3 to show the value of each of the two equal groups through a bar model. Children may pictorially share first then record the numerical value.
2.Division as grouping groups of, divide, number line, array, number of groups	10÷2= 5 Divide 10 into equal groups of 2. Use cubes, counters or objects to aid understanding. How many needs to be in each group? How many groups are there? 	12÷3= 4 Use a bar model to build groups of 3. Then use a number line to show jumps in groups of 3, starting from 12 backwards to 0. The number  of jumps equals the number of groups.	Divide 28 into 7 groups. How many are in each group? 28 ÷ 7 = 4 Abstract number line to show the jumps in groups of 7 from 28 to zero. 
3.Division within arrays array, groups of, number of groups, rows, columns	Link multiplication to division by creating an array and considering the different number sentences.  15 ÷ 5 = 3 15 ÷ 3 = 5 There are 5 groups of 3. There are 3 groups of 5.	Draw arrays and use lines as necessary to split into groups. Can you record the related division calculations to match? 	Find the inverse of multiplication and division sentences by creating four linking number sentences. 3 x 5 = 15 5 x 3 = 15 15 ÷ 5 = 3 15 ÷ 3 = 5

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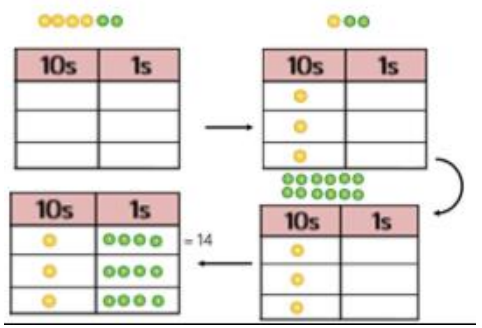
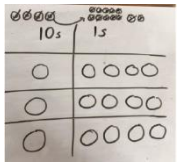
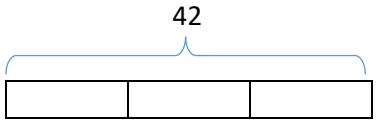
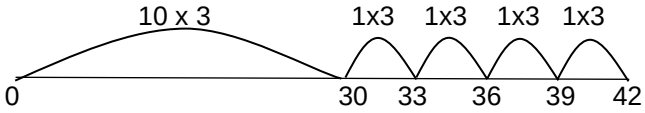
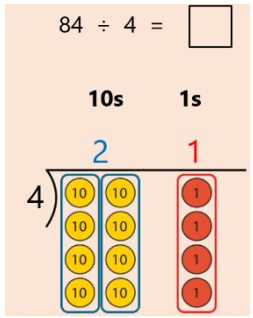
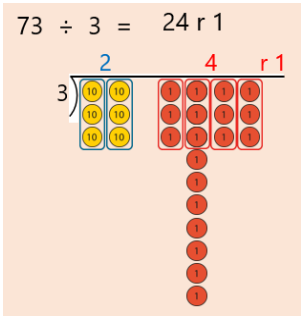
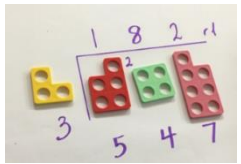
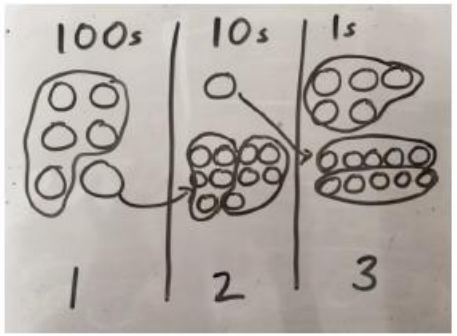
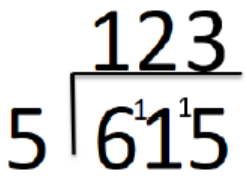
https://nottinghamacademy.sharepoint.com/:b:/r/sites/spa_primary/Shared%20Documents/a4.%20CURRICULUM%20DOCUMENTS/Maths/Planning%20and%20Resources/NCETM%20Sentence%20Stems%20Multiplication%20and%20Division.pdf?csf=1&web=1&e=KOCkdY

4.Sharing using place value counters (two digit ÷ one digit) **place value, counters, exchange, remain, remainder, multiple,**	42 ÷ 3= 14  Represent 42, share 10s into 3 groups, share 1s into three groups. 1. No exchange. 2. 2. Exchange one 10 for ten ones and share.	Convert from physical manipulation of place value counters to drawing in the grid  Refine bar model to show groups. 	Division through chunking applying times table knowledge. 42 ÷3  Progress to efficent ‘chunks’. 
5.Short division **inverse, divisible by, carry, short division, factor, how many groups of __ in __, remainder as fraction**	Counters then Numicon, no remainder, then remainder, then remainder in context.   	Represent the counters pictorally. 	Children can now use the short division method and carry remainders numerically to complete the calculation. Include zeros.  **See Progression in Written Methods for Year 3-6. Use these examples for CPA.**

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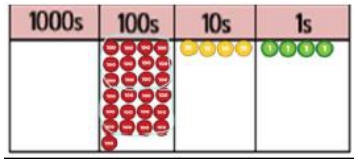
6.Long division

long division, common factor, remainder as decimal, rounded

2544 ÷ 12

We can't sort two thousands into twelve groups, so we exchange them into thousands.



2 groups of 12 hundred makes 24 hundred. Once subtracted, 1 hundred remains and forms 14 tens. One group of 12 tens can be made, leaving 2 tens to from 24 ones, which makes 2 groups.

```
  212
12|2544
 -24
  14
 -12
  24
 -24
   0
```

Children apply their learning of short division, and write the groups underneath to use column subtraction to calculate a remainder. The next digit then meets the remainder rather than carrying the remainder over.

See Progression in Written Methods for Year 4-6. Use these examples for CPA.

Mental Strategies

- Count using times tables
- Make links with halving and quartering; use scaling for larger numbers
- Use arrays
- Use known times tables facts and place value
- Use related facts
- Use relationship between x and ÷
- Partition in different ways to divide
- Use factors pairs to simplify original division sum
- Use distributive law to divide (98 ÷7 = ((70÷7) + (28 ÷ 7)
- Counting in steps of powers of 10

Conceptual variation

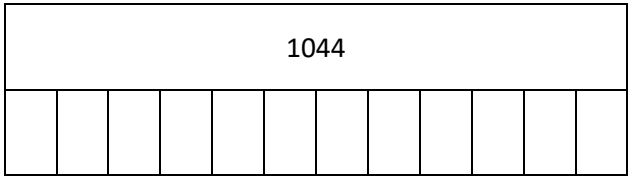
1044 ÷ 12

? = 1044 ÷ 12

Biscuits are packed into boxes of 12. How many boxes are needed to pack 1044 biscuits?

12 | 1044

Prove that 1044 candles can be shared equally amongst 12 boxes.



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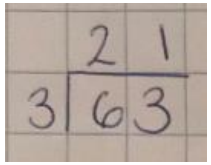
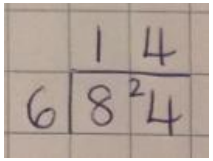
Written Methods of Division

Times table recall should be secure by the end of Year 4, if not intervention is needed.

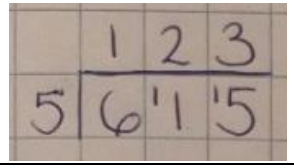
1. Short division (no carrying)
63 ÷ 3



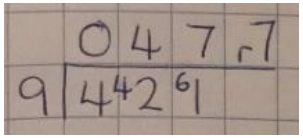
2. Short division (carrying remainders)
84 ÷ 6



615÷ 5



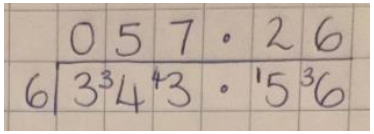
3. Short division with remainders
421 ÷ 9



Teaching Point

Ensure that children are taught how to represent remainders – see progression below.

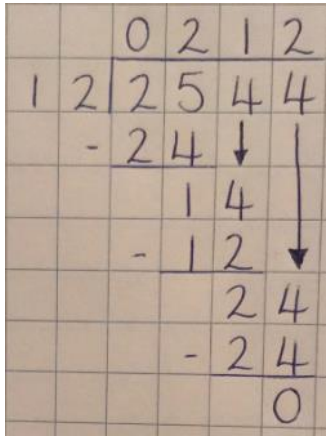
4. Short division with decimal points
343.56 ÷ 6



Teaching Point

Ensure children record the decimal point clearly.

5. Long division
2544 ÷ 12

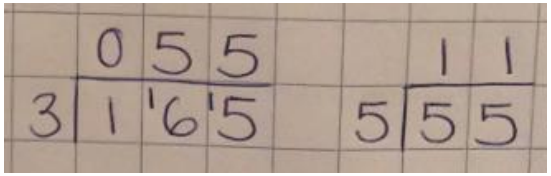


Teaching Point

Children apply their learning of short division, and write the groups underneath to use column subtraction to calculate a remainder. The next digit then meets the remainder rather than carrying the remainder over.

For decimal long division, include the decimal point before solving the calculation.

5a. Alternative method: factor pairs (Double bus stop)
165 ÷ 15



Teaching point

Children record a factor pair of the two digit divisor and complete two short division calculation in place of long division.

N.B. This does not work if the divisor is prime.

Progression for remainders

1. No remainder
2. Remainder as a number
3. Remainder as a fraction
4. Remainder as a decimal