Division

About our Calculation Policy

The following calculation policy has been devised to meet requirements of the National Curriculum 2014 for the teaching and learning of mathematics It is also designed to give pupils a consistent progression of learning calculation methods across the school. Please note that early learning in number and calculation in Reception follows the 'Development Matters' EYFS document, and this calculation policy is designed to build on progressively from the content and methods established in the Early Years Foundation Stage.

Age stage expectations

The calculation policy is organised according to age stage expectations as set out in the National Curriculum 2014. It is vital that pupils are taught according to the stage that they are currently working at, being moved onto the next level when they are ready or working at a lower stage until they are secure enough to move on.

Providing a context for calculation

A problem solving approach helps to build children's understanding of the purpose of calculation, and to help them recognise when to use certain operations and methods when faced with problems. It is important that any type of calculation is given a real life context. This must be a priority within calculation lessons.

Choosing a calculation method

Children need to be taught and encouraged to use the following processes in deciding what approach they will take to a calculation, to ensure they select the most appropriate method for the numbers involved...

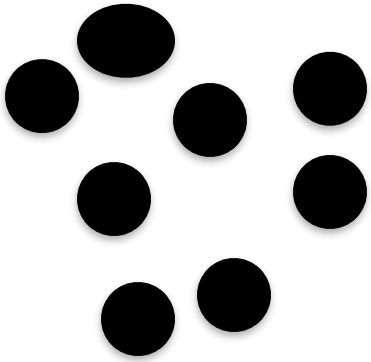
Can I do it in my head?

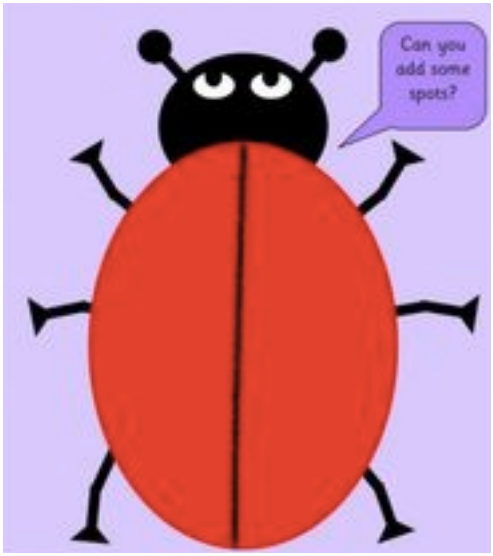
Could I use some jottings to help me?

Should I use a written method to work it out?

Division

Early Years Group and share small quantities





Key skills for division in Early Years:

- Recognise numerals 1 to 20 and place them in order.
- Count actions or objects which cannot be moved.
- Record using marks that they can interpret and explain.
- Estimate how many objects they can see and check by counting.
- Record, using marks and pictures that they can interpret and explain.
- Help children to recognise that when a group of objects is separated in different ways the total is the same.
- Provide a wide range of number resources and encourage children to be creative in identifying and devising problems and solutions in all areas of learning.
- Encourage children to extend problems, e.g. "Suppose there were three people to share the bricks between instead of two".

Vocabulary: share, share equally, one each, two each…, group, groups of, lots of

Division

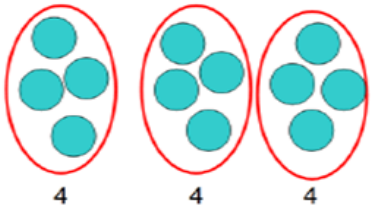
Year 1 Group and share small quantities

Grouping

How many groups of 4 can be made with 12 stars?

Sharing

There are 3 children on this table and there are 12 pieces of fruit to share between us. If we share them equally, how many will we each get?



12 shared between 3 is 4

Pupils should:

- Use lots of practical apparatus, arrays and picture representations
- Be taught to understand the difference between **grouping** objects (How many groups of 2 can you make?) and **sharing**
- Be able to count in multiples of 2s, 5s and 10s.
- Find half of a group of objects by sharing into 2 equal groups, and ¼ of a group of objects by sharing into 4 equal groups.

Key skills for division at Y1:

- Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects with the support of the teacher.
- Through grouping and sharing small quantities, children begin to understand, division, and finding simple fractions of objects, numbers and quantities.
- Make connections between arrays, number patterns.
- Vocabulary: share, share equally, one each, two each…, group, groups of, lots of

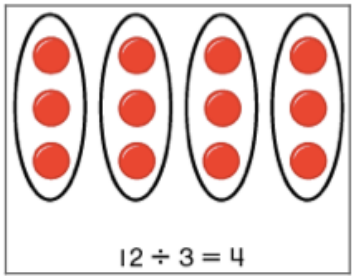
Division

Year 2 Group and share, using the ÷ and = sign

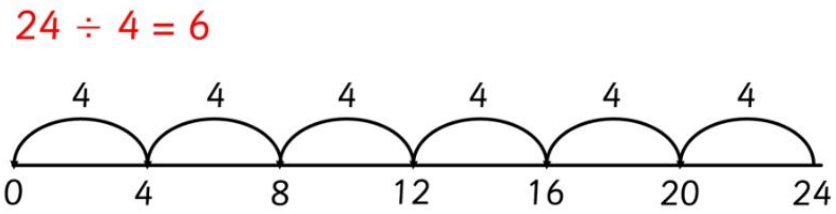
Use objects, arrays, diagrams and pictorial representations, and grouping on a number line.

Arrays This represents 12 ÷ 3, posed as how many groups of 3 are in 12?

Pupils should also show that the same array can represent 12 ÷ 4 = 3 if grouped horizontally.



Grouping using a numberline



Key skills for division at Y2:

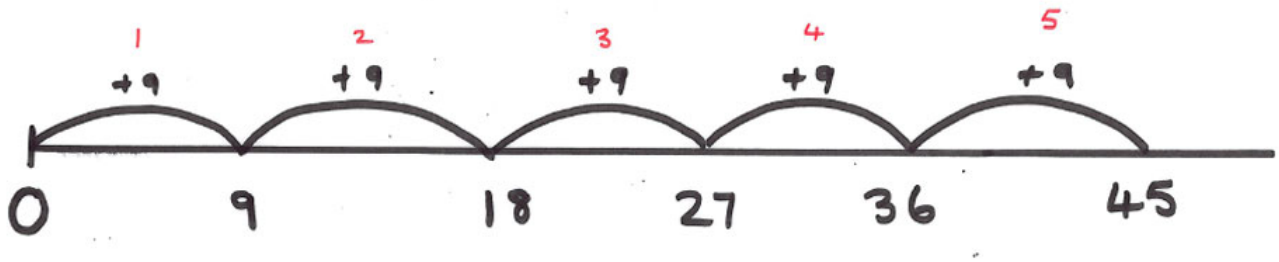
- Count in steps of 2, 3, and 5 from 0
- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.
- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the x, ÷ and = signs.
- Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.
- Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Key vocabulary: share, share equally, one each, two each…, group, equal groups of, lots of

Division

Year 3 Divide 2-digit numbers by a single digit (where there is no remainder in the final answer)

Grouping on a numberline 45÷9 = 5



Key skills for division at Y3:

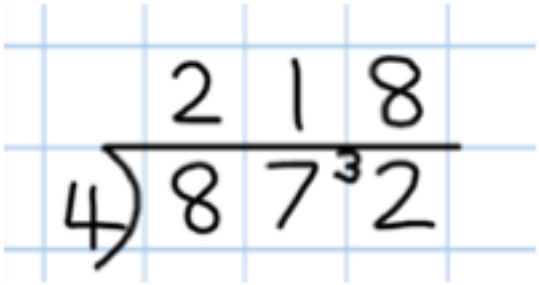
- Recall and use multiplication and division facts for the 2, 3, 4, 5, 8 and 10 multiplication tables (through doubling, connect the 2, 4 and 8s).
- Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know using mental and progressing to formal written methods.
- Solve problems, in contexts, and including missing number problems, involving multiplication and division.
- Pupils develop efficient mental methods, for example, using multiplication and division facts (e.g. using 3 × 2 = 6, 6 ÷ 3 = 2 and 2 = 6 ÷ 3) to derive related facts (30 × 2 = 60, so 60 ÷ 3 = 20 and 20 = 60 ÷ 3).
- Pupils develop reliable written methods for division, starting with calculations of 2-digit numbers by 1-digit numbers and progressing to the formal written method of short division.

Key vocabulary: share, share equally, one each, two each…, group, equal groups of, lots of, **array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, carry, remainder, multiple**

Division

Year 4 Divide up to 3-digit numbers by a single digit (without remainders initially)

Continue to develop short division



Key skills for division at Y4:

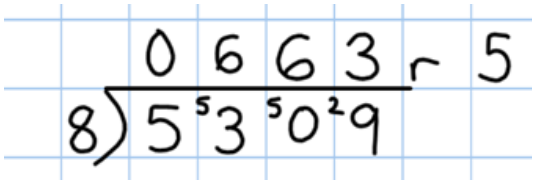
- Recall multiplication and division facts for all numbers up to 12 x 12.
- Use place value, known and derived facts to multiply and divide mentally, including: multiplying and dividing by 10 and 100 and 1.
- Pupils practice to become fluent in the formal written method of short division with exact answers when dividing by a one-digit number
- Pupils practice mental methods and extend this to three-digit numbers to derive facts, for example 200 × 3 = 600 so 600 ÷ 3 = 200
- Pupils solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers. This should include correspondence questions such as three cakes shared equally between 10 children.

Key vocabulary: share, share equally, one each, two each…, group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, carry, remainder, multiple, **divisible by, factor**

Division

Year 5 Divide up to 4 digits by a single digit, including those with remainders.

Short division, including remainder answers



The answer to 5309 ÷ 8 could be expressed as 663 and five eighths, 663 r 5, as a decimal, or rounded as appropriate to the problem involved.

Key skills for division at Y5:

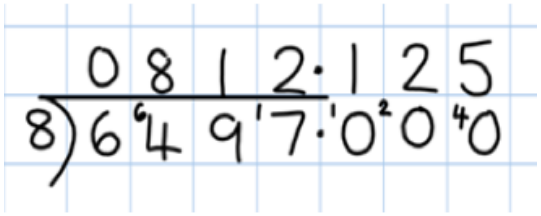
- Recall multiplication and division facts for all numbers up to 12 x 12 drawing upon known facts.
- Identify multiples and factors, including finding all factor pairs of a number, and common factors of two number.
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.
- Use the vocabulary: prime numbers & factors and composite number and recall prime numbers to 19.
- Divide numbers up to 4 digits by a one-digit number using the formal written method of short division with remainders in context
- Solve problems involving combinations of all four operations using multiplication and division as inverses.
- Express results in different ways including with remainders, as fractions, as decimals or by rounding (98÷4 = 24r2 = 24.5 = 25).

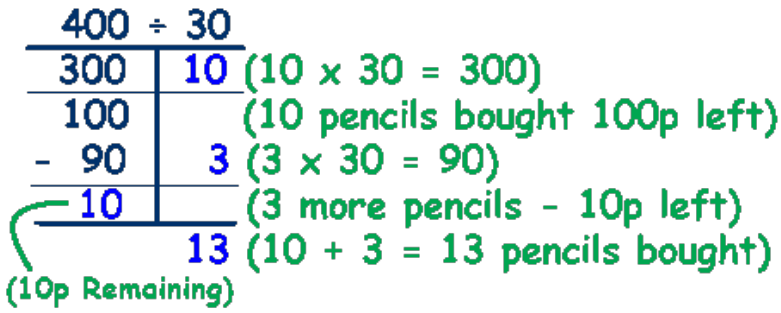
Key vocabulary: share, share equally, one each, two each…, group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, carry, remainder, multiple, divisible by, factor, inverse, **quotient, prime number, prime factors, composite number (non-prime)**

Division

Year 6 Divide at least 4 digits by both single-digit and 2-digit numbers (including decimal numbers and quantities)

Short division, for dividing by a single digit e.g. 6497 ÷ 8





Introduce long division by chunking for dividing by 2 digits

Key skills for division at Y6:

- Recall and use multiplication and division facts for all numbers to 12 x 12 for more complex calculations
- Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as appropriate for the context.
- Perform mental calculations, including with mixed operations and large numbers.
- Identify common factors, common multiples and prime numbers.
- Solve problems involving all 4 operations using estimation to check answers to calculations and determine accuracy.
- Use written division methods to solve to two decimal places.
- Solve problems, which require answers to be rounded to specified degrees of accuracy.

Key vocabulary: As previously, & common factor