Division

For each of the following progressive stages of division calculation it is recommended to use concrete, pictorial and abstract to aid understanding.

Reception pupils should be taught to: • . solve problems, including doubling, halving and sharing.		**Vocabulary** share halve
Children will take part in lots of practical activities, and an adult will record their verbal explanations of their use of numbers.		While sharing the counters into two groups, Claire realised her 10 counters had been shared equally between the characters; having 5 each. "Each person has the same amount. They both have 5."

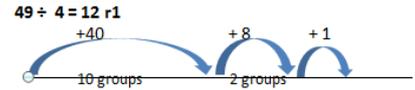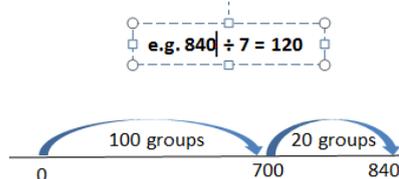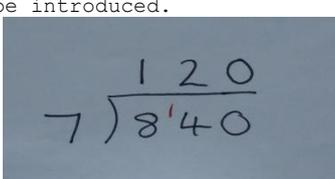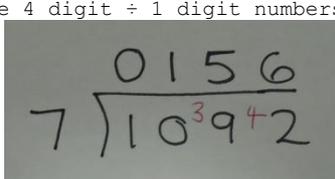| Year One pupils should be taught to: • count on in steps of 2s, 5s and 10s. • solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher		**New vocabulary** double, halve share, left, left over
Sharing using a range of objects. 6 ÷ 2 = 	Children to represent the sharing pictorially 	6 ÷ 2 = 3 | 3 | 3 | Children should also be encouraged to use their 2 times table facts.
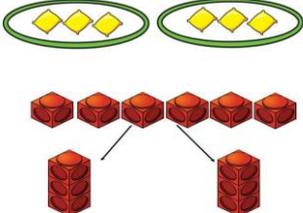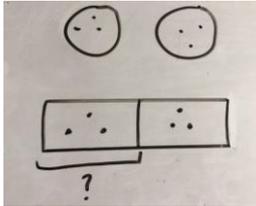
Year Two pupils should be taught to: • recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs • show that multiplication of 2 numbers can be done in any order (commutative) and division of 1 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		**New Vocabulary** share equally one each, two each, three each... group in pairs, threes... tens equal groups of... divide divided by divided into
Repeated subtraction using apparatus above a ruler / number line. 6 ÷ 2 = 3 groups of 2	Children to represent repeated subtraction pictorially. 	Abstract number line to represent the equal groups that have been subtracted.
Children to solve 2digit ÷ 1 digit with remainders using apparatus. Eg. lollipop sticks could be used to form wholes – squares are made because we are dividing by 4. 	Children to represent the lollipop sticks pictorially. There are 3 whole squares, with stick left over.	13 ÷ 4 = 3 remainder 1 Children should be encouraged to use their times table facts; they could also represent repeated addition on a number line. '3 groups of 4, with 1 left over.'
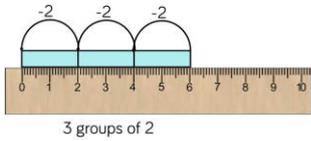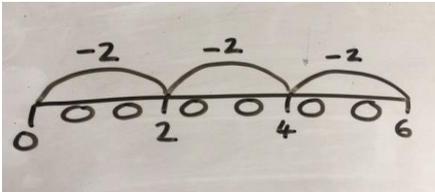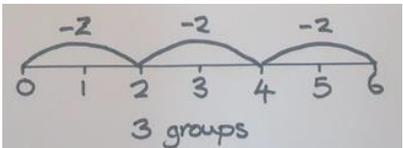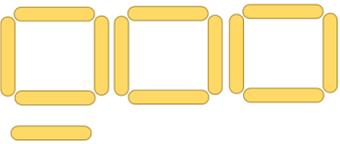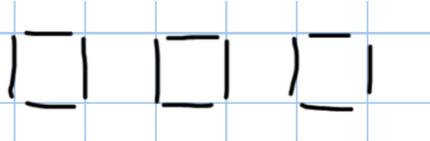
There are 3 whole squares, with stick left over.		

Year Three 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 - 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	**New Vocabulary** divisor dividend

Children to use grouping to carry out division, by using a number line. Apparatus can be used along side times table charts to help. How many 6s in 30?	Children need to become more efficient using a number line to partition the dividend different ways. $48 \div 4 = 12$	Children to continue using the number line to carry out division of 2 digit ÷ 1 digit, with remainders too.
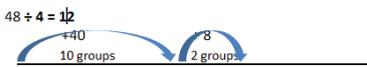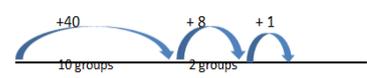
Year Four pupils should be taught to: - recall corresponding division facts for multiplication tables up to 12 × 12 - use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers - recognise and use factor pairs and commutativity in mental calculations - divide two-digit numbers by a one-digit number using a formal method	**New Vocabulary** factor quotient divisible by inverse

Children to reinforce their use of the number line to divide two digit numbers by one digit, with a remainder. Remainders $49 \div 4 = 12 \ r1$	Move on to 3 digit numbers. e.g. $840 \div 7 = 120$	Use the groupings of multiplication to then move to a <u>vertical</u> 'chunking method. 7) 840 −700 (x100) so = 120 140 140 (x20) 00

Year Five pupils should be taught to: - identify factors, including finding all factor pairs of a number, and common factors of 2 numbers   - divide numbers mentally, drawing upon known facts   - divide numbers up to 4 digits by a 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 and 1,000   - 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

When children have a good understanding of division, its links with multiplication and the idea of chunking short division is to be introduced.	Children should use the efficient formal method of short division, to solve 4 digit ÷ 1 digit numbers.	Children begin to practically develop their understanding of how express the remainder as a decimal or a fraction. Ensure practical understanding allows children to work through this (e.g. what could I do with this remaining 1? How could I share this between 6?

$$7 \overline{)13^6 8^5 4} \quad \frac{0197r5}{} = 197^{5}/_{7}$$

Year Six pupils should be taught to:

- 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
- solve problems involving addition, subtraction, multiplication and division
- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

Children will continue developing their understanding of short division, then move on to long division. 	They can then use the formal method to solve 4 digit ÷2 digit. Children could revise chunking first to help them. 	
Children can then use long division to solve 4 digit ÷ 2 digit with remainders. 	Quotients should be expressed as decimals and fractions. 	Children need to work with decimal numbers and also solve division questions in the context of word problems. During word problems, children need to know when to round a remainder up or down.