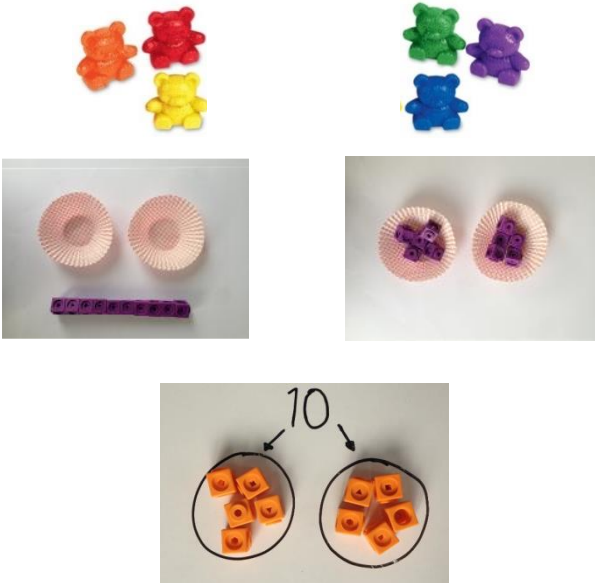## Calculation policy: Division
Key language: halve, half, share, group, divide, divided by, groups of, dividend (the amount to be divided), divisor (what you are dividing by)

EYFS

- They solve problems including halving and sharing

Concrete	Pictorial	Abstract
Children to share a range of objects equally – teddies, treasure, cubes, numicon	Children to draw pictures or shapes to show what they have done pictorially.	There are apples shared between two baskets. How many apples in each? Children to solve this problem using concrete objects or draw pictures.

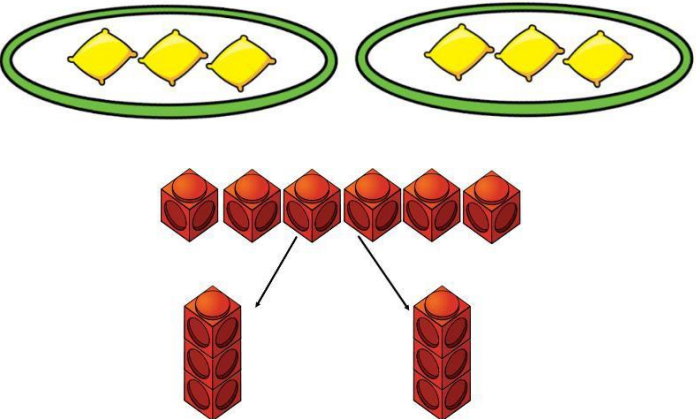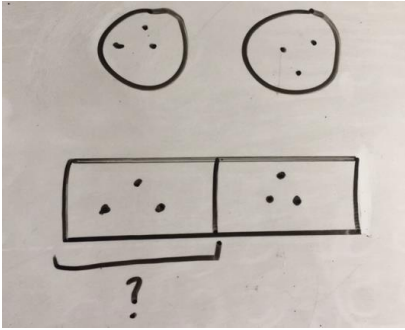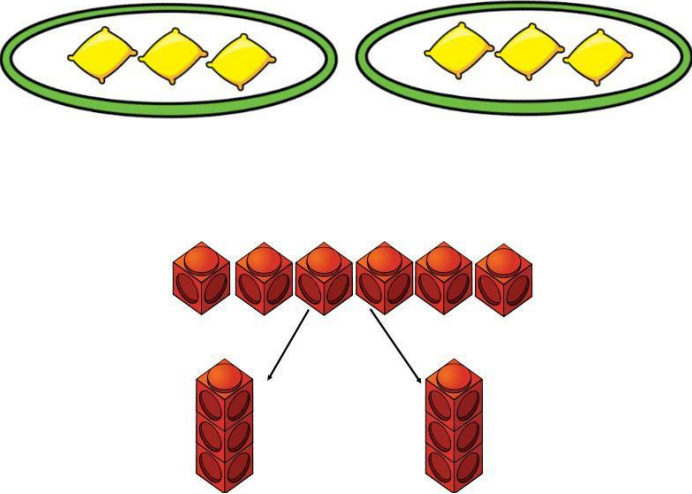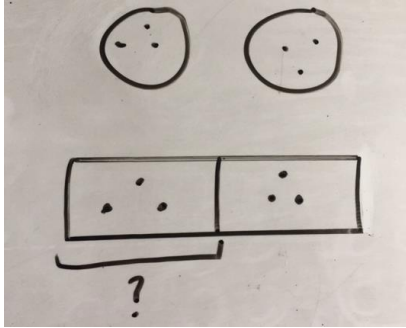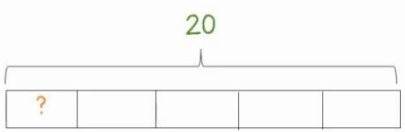|		
Children to split objects into half – e.g. cutting fruit 	Children to draw pictures or shapes to show what they have done pictorially. 	
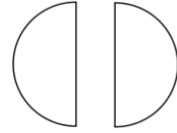
Band 1

- 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.

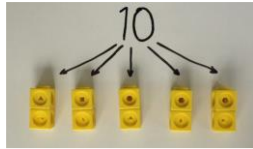| Concrete	Pictorial	Abstract
Sharing using a range of objects. Share 6 objects between 2. 	Represent the sharing pictorially. 	$6 \div 2 = 3$ Children should also be encouraged to use their 2 times tables facts.

Band 2

- 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 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.

Concrete	Pictorial	Abstract
Sharing - Make equal groups Using a range of objects 6 ÷ 2 	Represent the sharing pictorially. Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group. $20 ÷ 5 = ?$ $5 × ? = 20$	$6 ÷ 2 = 3$ Children should also be encouraged to use their 2 times tables facts.
Grouping – Make equal groups How many lots of 3 go into 15?	Use a number line to show jumps in groups. The number of jumps equals the number of groups.	$28 ÷ 4 = 7$

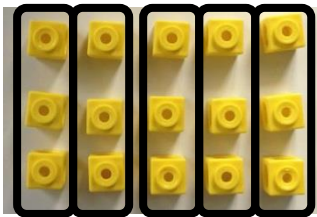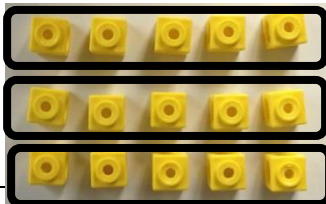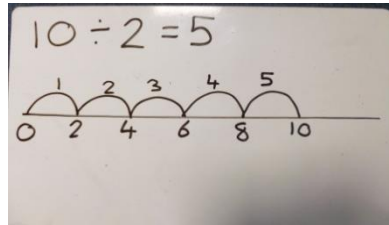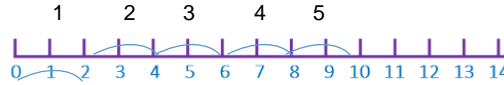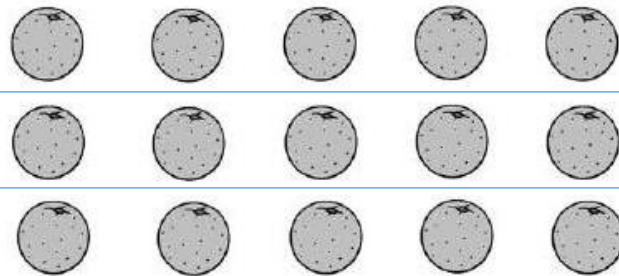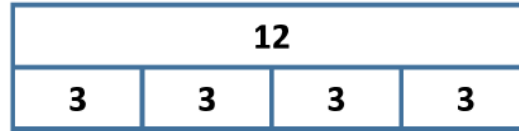|		
Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding. $10 \div 2 = 5$ $20 \div 5 = 4$ How many 5s in 20? $35 \div 5 = 7$ 	$10 \div 2 = 5$ 	How many groups of 4 in 28?
Recognising the relationship between division and multiplication Link division to multiplication by creating an array and thinking about the number sentences that can be created. $15 \div 3 = 5$ $5 \times 3 = 15$ $15 \div 5 = 3$ $3 \times 5 = 15$ 	 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. $7 \times 4 = 28$ $4 \times 7 = 28$ $28 \div 7 = 4$ $28 \div 4 = 7$
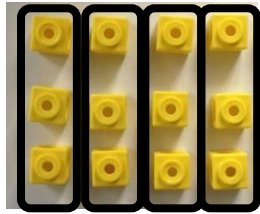
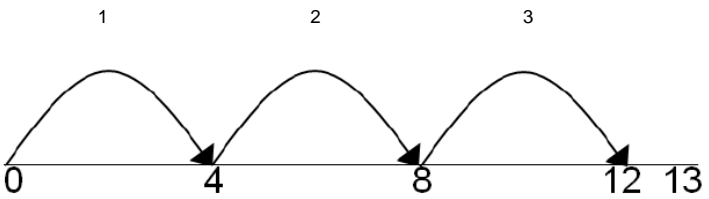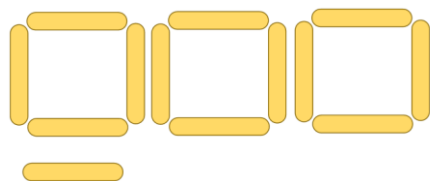|		
4 x 3 = 12 12 ÷ 3 = 4 12 ÷ 4 = 3 *[image of yellow cubes]*	Use bar model to show relationship between whole/ parts for multiplication and makes links to division. *[bar model showing 12 split into 3, 3, 3, 3]* 4 x 3 = 12 12 ÷ 3 = 4 12 ÷ 4 = 3	Use of the triangle to identify the 4 linked number sentences. 4 x 3 = 12 3 x 4 = 12 12 ÷ 3 = 4 12 ÷ 4 = 3 *[triangle with 12, 4, 3]*
Division with remainders Children to be introduced to the concept of remainders using pairs of socks. How many pairs of socks can you make? 7 socks put into pairs is 3 pairs with 1 left over 7 ÷ 2 = 3 r 1 *[image of 7 red socks]*	11 ÷ 2 = 5 r 1 *[number line diagram with dots in circles, +3 jumps, 10 ÷ 3 = 3 r 1]*	Use known facts 11 ÷ 2 I know 5 x 2 = 10, so 11 ÷ 2 must be 5 with a remainder 1.
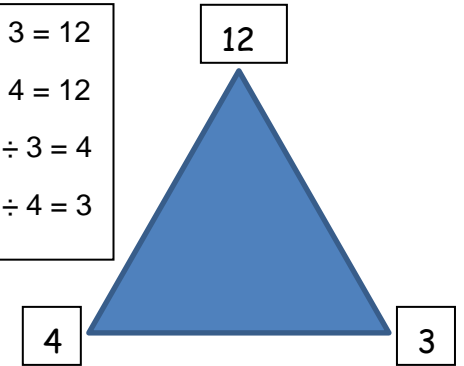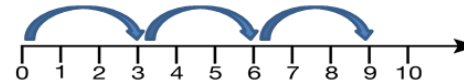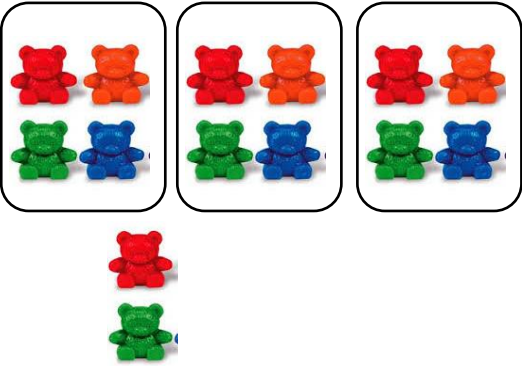
Band 3

- recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
- write and calculate mathematical statements for multiplication and 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 multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

Concrete	Pictorial	Abstract
Dvision with remainders $14 \div 3 = 4 \text{ r } 2$ Divide objects between groups and see how much is left over $20 \div 3 = 6 \text{ r } 2$ How many 3s in 20? 	Draw dots and group them to divide an amount and clearly show a remainder. $14 \div 3 = 4 \text{ r } 2$ Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder. $13 \div 4 = 3 \text{ r } 1$ 	Complete written divisions and show the remainder using r. $29 \div 8 = 3$ REMAINDER 5 ↑ ↑ ↑ ↑ dividend divisor quotient remainder

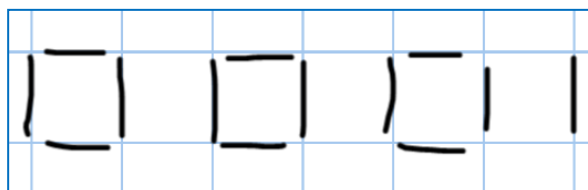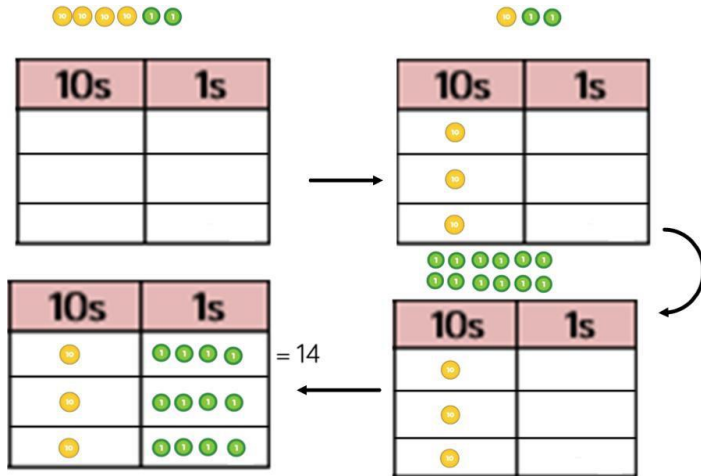| **TO ÷ O with remainders** using lollipop sticks. Cuisenaire rods, above a ruler can also be used. 13 ÷ 4 Use of lollipop sticks to form wholes-squares are made because we are dividing by 4. There are 3 whole squares, with 1 left over.	Children to represent the lollipop sticks pictorially. There are 3 whole squares, with 1 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. I know 3 x 4 is 12, so 13 ÷ 4 is 3 groups of 4, with 1 left over.
	60 15 15 15 15	
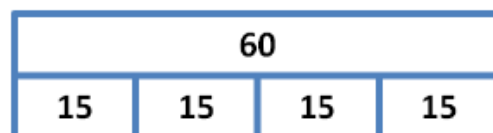
Band 4

- recall multiplication and 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 three numbers
- 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 and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.
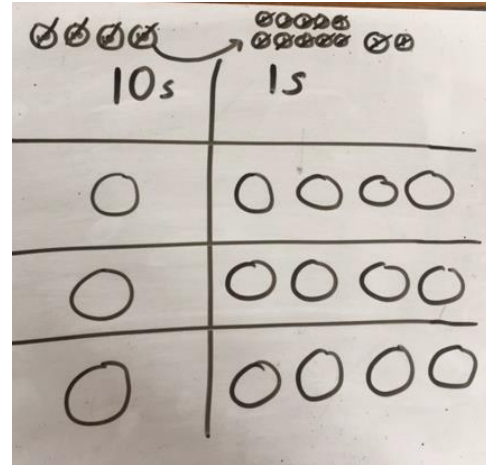
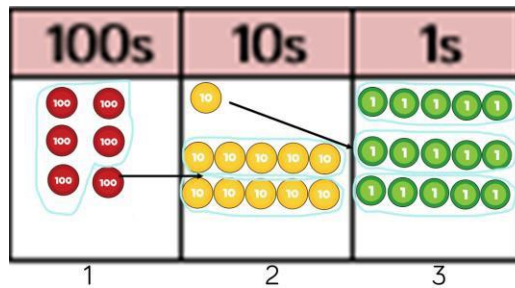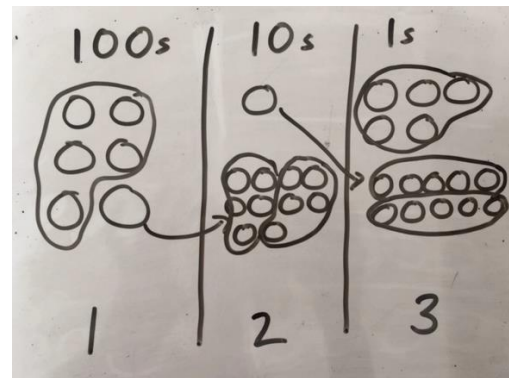| Concrete	Pictorial	Abstract
Sharing using place value counters. $42 \div 3 = 14$	Children to represent the place value counters pictorially.	Children to be able to make sense of the place value counters and write calculations to show the process. $42 \div 3$ $42 = 30 + 12$ $30 \div 3 = 10$ $12 \div 3 = 4$ $10 + 4 = 14$
Short division using place value counters to group. $615 \div 5$ 1. Make 615 with place value counters. 2. How many groups of 5 hundreds can you make with 6 hundred counters? 3. Exchange 1 hundred for 10 tens. 4. How many groups of 5 tens can you make with 11 ten counters?	Represent the place value counters pictorially.	Children to the calculation using the short division scaffold.

5. Exchange 1 ten for 10 ones. 6. How many groups of 5 ones can you make with 15 ones?		

Band 5

- identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers

- multiply and 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

- multiply and divide whole numbers and those involving decimals by 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.

Concrete	Pictorial	Abstract
Short division Use place value counters as seen above with Year 4 short division	Represent the place value counters pictorially (see Year 4 for reference)	$2544 \div 12$ $$\begin{array}{r} 0\,2\,1\,2 \\ 12\,\overline{)2544} \end{array}$$ Children can write a times table fact box, prior to solving the question, to support them. E.g: 1 x 12 = 12 2 x 12 = 24 3 x 12 = 36 etc

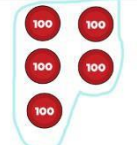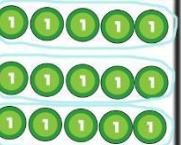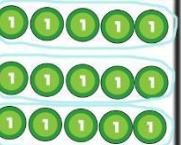| Solve division problems using known facts (chunking division)		$336 \div 16$
		$16 \times 20 = 320 \Rightarrow \boxed{16}$
		$16 \times 1 = 16 \Rightarrow \boxed{0}$
		Answer: 21
		$536 \div 16$
		$16 \times 20 = 320 \Rightarrow \boxed{216}$
		$16 \times 10 = 160 \Rightarrow \boxed{56}$
		$16 \times 2 = 32 \Rightarrow \boxed{24}$
		$16 \times 1 = 16 \Rightarrow \boxed{8}$
		Answer: 33 r 8
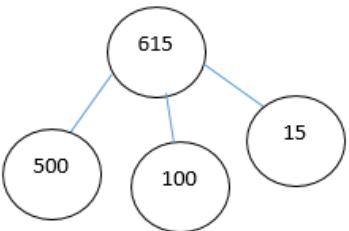
Band 6

- 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

Concrete	Pictorial	Abstract
Long division using place value counters 2544 ÷ 12		

1000s	100s	10s	1s

After exchanging the 2 tens, we have 24 ones. We can group 24 ones into 2 group of 12, which leaves no remainder.

```
        0 2 1 2
  12 ) 2544
        24
        14
        12
        24
        24
         0
```

See earlier bands for strategies to use.

Conceptual variation; different ways to ask children to solve 615 ÷ 5

Using the part whole model below, how can you divide 615 by 5 without using short division?

615
500   100   15

I have £615 and share it equally between 5 bank accounts. How much will be in each account?

615 pupils need to be put into 5 groups. How many will be in each group?

$5 \overline{)615}$

615 ÷ 5 =

[   ] = 615 ÷ 5

What is the calculation?
What is the answer?

100s	10s	1s