Stage 3 – Division

Dividing by 10, 100, 1000

Children tend to find this concept tricky so it is really important that we ensure children understand this method and can verbally explain it. Always use a place value grid when teaching this method.

M	Hth	Tth	Th	H	T	O	t	h
						•		
						•		

Begin with ÷10 with simple two and three digit numbers. 30 ÷ 10 = Ask children to write down the starting number and then the answer when ÷10. What happens to the digits? Continue with this step using simple two and three digit numbers. Children will most likely say 'when you ÷10 you just take away the zero' – this should **never** be accepted as correct. Explain the misconception – if you take away zero, you take nothing away. Therefore, the answer does not change. We are making the number ten times smaller so the number moves one column to the right. If the zero is no longer needed to act as a place holder then we can remove it. It is also necessary to discuss what happens when you divide a one digit number as you will then need to use place holders. Children need to practice dividing a range of numbers by 10 including one digit numbers and decimals. These should include; one, two, and three digit numbers already containing a place holder eg. 304 ÷ 10.

When children are confident with ÷10 and can explain how they work it out using the appropriate vocabulary, they can be introduced to ÷100 and ÷1000. Again, start with one and two digit numbers. Explain that the number is getting 100/1000 times smaller so the numbers move two/three columns to the right. Why do they move to the right? Discuss how the columns have a smaller value to the right and a larger value to the left. It is really important when decimals are introduced that children know that the decimal point **never** moves. Always move the numbers and use place holders.
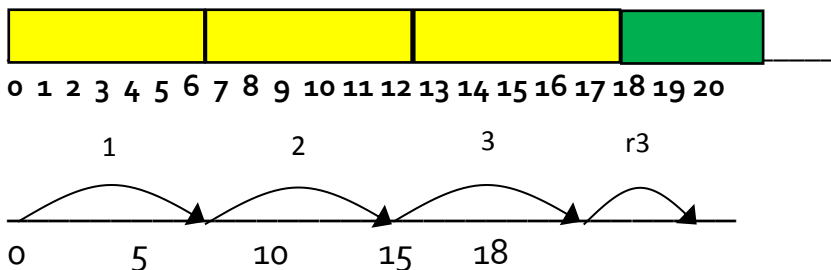
Cuisenaire Rods

Children should continue using the number rods as in stage 2 however remainders will be introduced and recorded using the method below. Again, this should be supported using the concrete resources.

18 ÷ 5 = 3 r 3

Step 1: Draw an empty number line. Decide which rods you will need to use/what groups you are counting in.

Step 2: What are you grouping to? What is your target number? Start to place the rods on the number line making sure you are accurate. Can you reach your target number using rods of the same size? If yes, go to step 4. If no, go to step 3.

Step 3: How many more ones do you need to reach your target number? Find the rod of that size and place on the number line.

Step 4: Record the rods you have placed down. Remember the answer is how many groups you have made. If you have remainders, use an r to show how many as above.

Short Method using Place Value Counters

When children are confident with remainders and division using the Cuisenaire rods they can move onto short method.

HTO

$$\begin{array}{r} 1 \\ 3\overline{)363} \end{array}$$

Step 1: Children need to represent the number using the place value counters.

Step 2: They then need to group the counters according to the divisor. They should always start with the largest column, every time a column has been grouped they should write how many groups before moving on to the next column.

HTO

$$\begin{array}{r} 1\,2\,1 \\ 3\overline{)363} \end{array}$$

Step 3: Continue to group the counters according to the divisor. Don't forget to record how many groups you have made.

HTO

$$\begin{array}{r} \\ 4\overline{)468} \end{array}$$
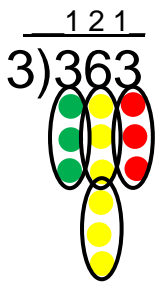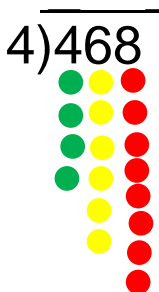
Children will need to know how to divide numbers where the groups need to be decomposed. It is crucial for children to use concrete resources with this method until they choose to no longer rely on them.

Step 1: Make the dividend using place value counters. Look at the divisor, you are making groups of this amount.

Step 2: Start with the largest column, can you make a group? If you can, make the group and write it down. If you can't, you need to decompose the counters for the next column to the right. Remember, you are going to need ten counters for each one you need to decompose. When there aren't any counters left to group in the column, you can move to the next one.

HTO

$$\begin{array}{r} 1 \\ 4\overline{)468} \end{array}$$

HTO
1 1
4)468
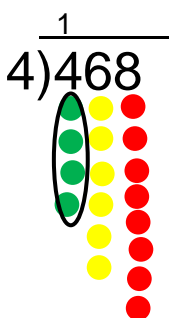
Step 3: Continue to group the dividend by the divisor. If you have any left over which you can't group, then you will need to decompose them. Remember, you are going to need ten counters for each one you need to decompose. When there aren't any counters left to group in the column, you can move to the next one.
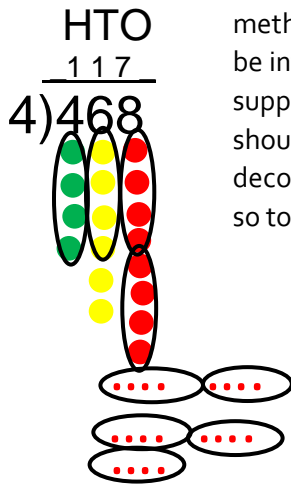
Step 4: Continue to group, don't forget to record. If you have any ones left over and you are unable to group them, then these become your remainders.

As the children build confidence using the practical method, the move to formal short written method should be introduced. Children should still use the counters to support this transition but during this stage, children should make note of the counters that have been decomposed. They should draw the counters pictorially so to further the move to formal written.

HTO
1 1 7
4)468