



# Spire Junior School

## Calculation Policy: Division

Key vocabulary: share, group, divide, divided by, half.

Concrete	Pictorial	Abstract		
<p><b>Sharing</b> using a range of objects.  <math>6 \div 2</math></p>	<p>Represent the sharing pictorially.</p>	<p><math>6 \div 2 = 3</math></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center; width: 40px;">3</td> <td style="text-align: center; width: 40px;">3</td> </tr> </table> <p>Children should also be encouraged to use their 2 times tables facts.</p>	3	3
3	3			
<p><b>Repeated subtraction</b> using Cuisenaire rods above a ruler.  <math>6 \div 2</math></p>	<p>Children to represent repeated subtraction pictorially.</p>	<p>Abstract number line to represent the equal groups that have been subtracted.</p>		



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## Calculation Policy: Division

**2d + 1d with remainders** using lollipop sticks. Cuisenaire rods, above a ruler can also be used.

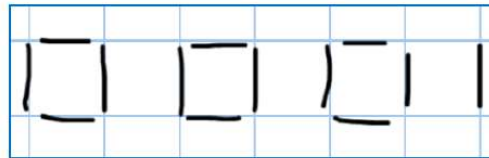
$$13 \div 4$$

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.

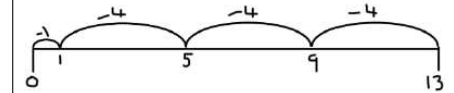


There are 3 whole squares, with 1 left over.

$$13 \div 4 = 3 \text{ remainder } 1$$

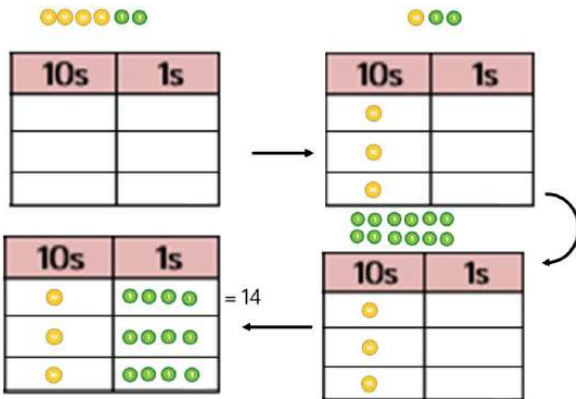
Children should be encouraged to use their times table facts; they could also represent repeated addition on a number line.

'3 groups of 4, with 1 left over'

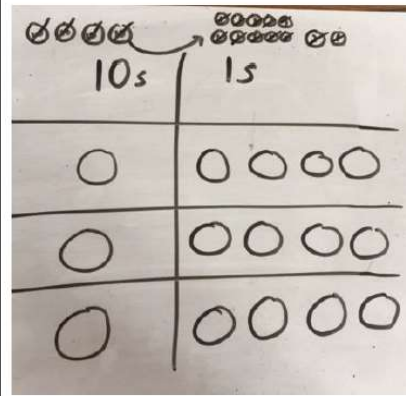


**Sharing using place value counters.**

$$42 \div 3 = 14$$



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.

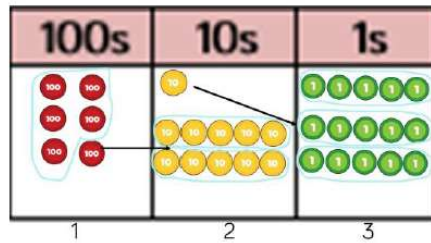
$$\begin{aligned} 42 \div 3 \\ 42 &= 30 + 12 \\ 30 \div 3 &= 10 \\ 12 \div 3 &= 4 \\ 10 + 4 &= 14 \end{aligned}$$



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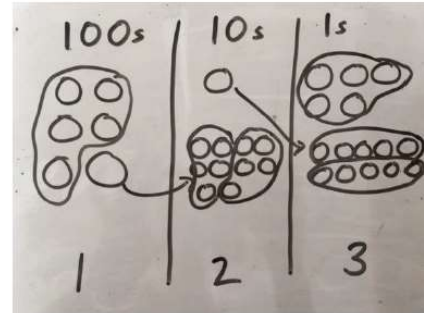
## Calculation Policy: Division

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

Represent the place value counters pictorially.



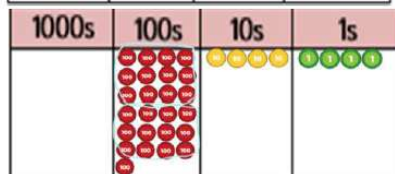
Children to the calculation using the short division scaffold.

$$\begin{array}{r}
 123 \\
 5 \overline{) 615} \\
 \underline{5 \phantom{00}} \\
 11 \phantom{0} \\
 \underline{10 \phantom{0}} \\
 15 \\
 \underline{15} \\
 0
 \end{array}$$

Long division using place value counters  
 $2544 \div 12$



We can't group 2 thousands into groups of 12 so will exchange them.



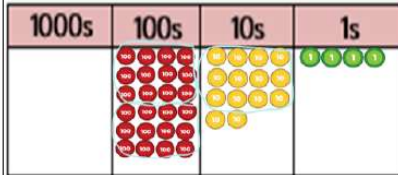
We can group 24 hundreds into groups of 12 which leaves with 1 hundred.

$$\begin{array}{r}
 0212 \\
 12 \overline{) 2544} \\
 \underline{24 \phantom{00}} \\
 14 \phantom{0} \\
 \underline{12 \phantom{00}} \\
 24 \\
 \underline{24} \\
 0
 \end{array}$$

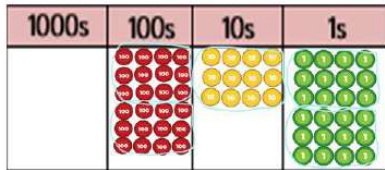


# Spire Junior School

## Calculation Policy: Division



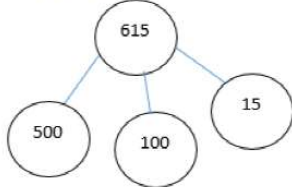
After exchanging the hundred, we have 14 tens. We can group 12 tens into a group of 12, which leaves 2 tens.



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

### Conceptual variation; different ways to ask children to solve $615 \div 5$

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



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?

$$5 \overline{)615}$$

$$615 \div 5 =$$

$$\square = 615 \div 5$$

What is the calculation?  
What is the answer?

