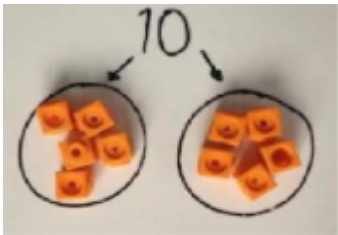
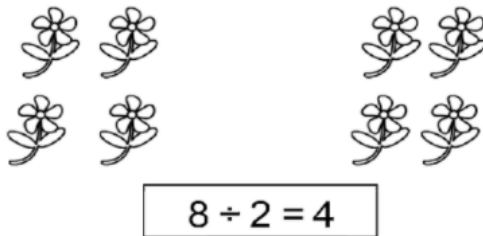
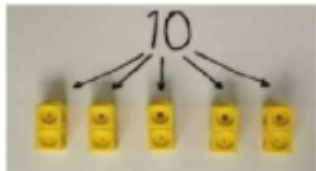
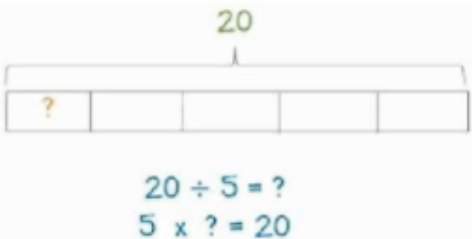
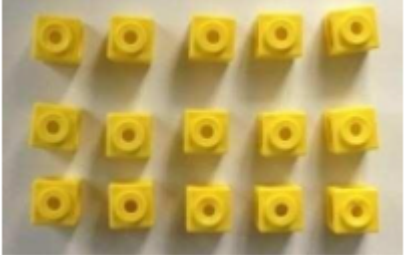
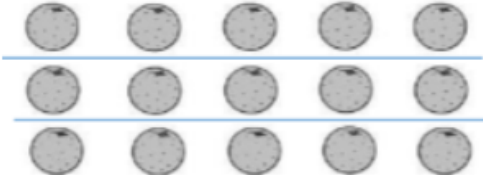
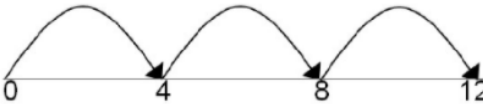
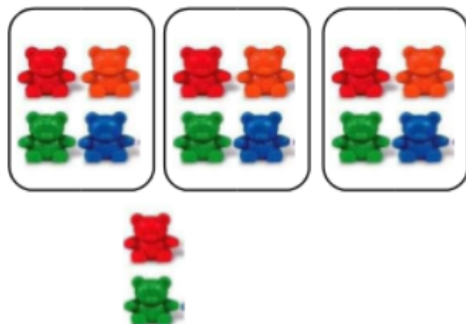


Calculation guidance to develop Division

Progression in the Teaching of Calculations			
DIVIDE IT!			
Objective/ strategies	Concrete - build it/ use it!	Pictorial - draw it!	Abstract - solve it!
Sharing objects into groups	 Share a set of real life objects into equal groups.	Use pictures to share into equal groups. 	One half of 14 = 7. $14 \div 2 = 7$
Division as grouping	Count groups of objects from a given set. How many groups of 2 can you find? 	Use a number line to show jumps in groups. The number of jumps is the number of groups.  Think of the bar as the whole. Split it into the equal number of groups you are dividing by and work out how many would be within each group.	$28 \div 7 = 4$ Divide 28 into 7 groups. How many are in each group?

	$96 \div 3 = 32$  Use place value counters when working with amounts that do not link to multiplication knowledge.		
Division with arrays	 Link facts to multiplication using arrays to show the division facts. $15 \div 3 = 5 \quad 5 \times 3 = 15$ $15 \div 5 = 3 \quad 3 \times 5 = 15$	Draw an array and use lines to split the counters into groups.  $15 \div 3 = 5$	Find fact families for arrays linking division and multiplication. $7 \times 4 = 28$ $4 \times 7 = 28$ $28 \div 7 = 4$ $28 \div 4 = 7$
Division with a remainder	Share or group objects and see what is left over using real life objects.	Jump forward in equal jumps and see how many more you would need to reach the target.  Draw dots in groups and show the remainder outside the group.	$29 \div 8 = 3 \text{ REMAINDER } 5$ ↑ ↑ ↑ ↑ dividend divisor quotient remainder See below for short division with remainders.



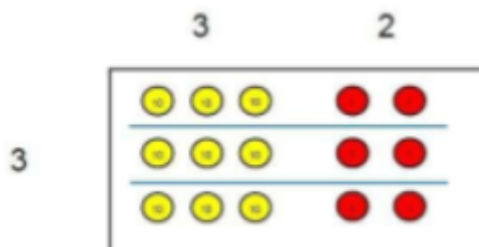
$$14 \div 3 = 4 \text{ remainder } 2$$



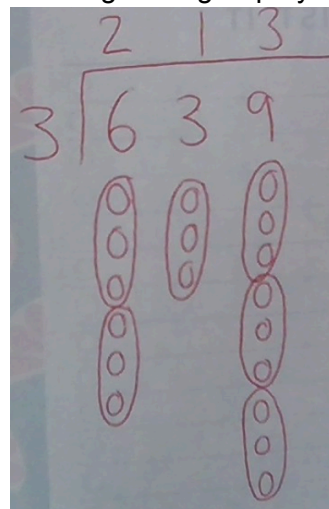
$$\begin{array}{r} 86 \text{ r } 2 \\ 3 \overline{) 432} \\ 5 \end{array}$$

Short division

Use place value counters to show groups of the divisor in each place value column.



Draw the place value counters under each digit and group by the divisor.



Start without regrouping. Then, move on to regrouping digits within.

$$\begin{array}{r} 218 \\ 3 \overline{) 432} \\ 4 \end{array}$$

Then, show remainders at the end.

$$\begin{array}{r} 86 \text{ r } 2 \\ 3 \overline{) 432} \\ 5 \end{array}$$

Then, show remainders as decimals.

$$\begin{array}{r} 14.6 \\ 35 \overline{) 511.0} \\ \underline{35} \\ 16 \\ \underline{15} \\ 1 \\ \underline{0} \\ 10 \end{array}$$

Then, show remainders as fractions.
There are 4 ones remaining which we divide by 5 = $\frac{4}{5}$

$$\begin{array}{r} 14\frac{4}{5} \\ 35 \overline{) 511.0} \\ \underline{35} \\ 16 \\ \underline{15} \\ 1 \\ \underline{0} \\ 10 \end{array}$$

Long division

Long division should only be followed by concrete and pictorial strategies for short division.

$\begin{array}{r} 2 \\ 15 \overline{) 3640} \\ \underline{-30} \\ 6 \end{array}$	15 into 3 doesn't go, so look at the next digit. 15 goes into 36 two times, so put a 2 above the 6. $15 \times 2 = 30$ Take that 30 away from the 36 to get your remainder. $36 - 30 = 6$
$\begin{array}{r} 24 \\ 15 \overline{) 3640} \\ \underline{-30} \\ 64 \\ \underline{-60} \\ 4 \end{array}$	Next, carry the 4 down to make 64. 15 goes into 64 four times, so put a 4 above the 4. $15 \times 4 = 60$ Take 60 from the 64 to get your remainder. $64 - 60 = 4$
$\begin{array}{r} 242 \\ 15 \overline{) 3640} \\ \underline{-30} \\ 64 \\ \underline{-60} \\ 40 \\ \underline{-30} \\ 10 \end{array}$	Carry the 0 down to make 40. 15 goes into 40 two times, so put a 2 above the 0. $15 \times 2 = 30$ Take 30 from the 40 to get your remainder. $40 - 30 = 10$

Then, use long division with

remainders.

$$\begin{array}{r} 11 \text{ r } 3 \\ 25 \overline{) 278} \\ \underline{- 25} \\ 028 \\ \underline{- 25} \\ 3 \end{array}$$

Division of fractions

Use real life objects to share fractions into smaller amounts.

$$\frac{1}{2} \div 3 = \frac{1}{6}$$



Draw bar models showing the original fraction and then divide it into smaller equal parts below.



Half of the bar split into three equal parts.

'KFC' - keep it, flip it, change it.

$$\frac{1}{2} \div 3 =$$

$$\frac{1}{2} \div \frac{3}{1} =$$

$$\frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$$

Keep the first fraction, flip the second and change the division operation to multiplication.

$$\frac{3}{4} \div \frac{1}{3} \longrightarrow \frac{3}{4} \times \frac{3}{1}$$

Keep
Change
Flip