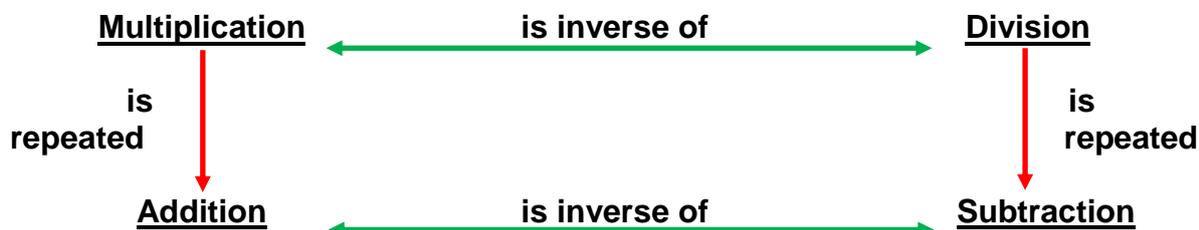


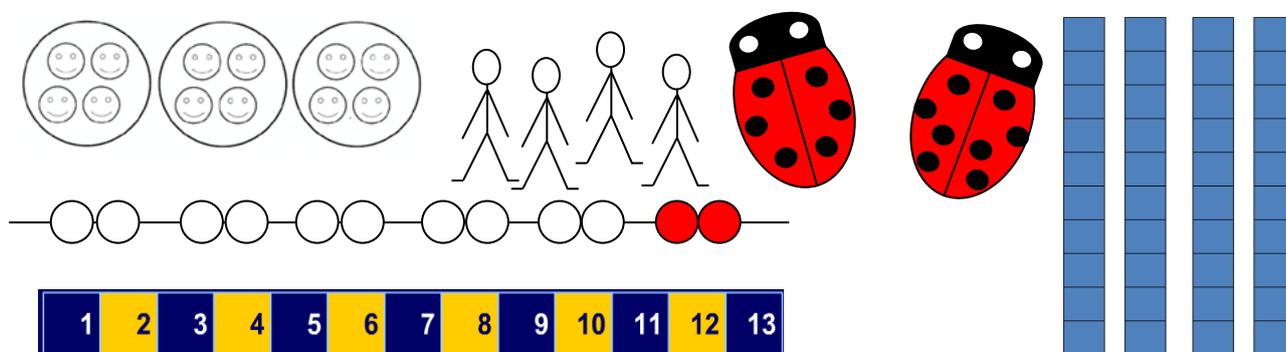
## Year 1 – Progression in Mental Calculation Skills / Strategies for Division

### Children understand that:

- Division is sharing or grouping (repeated subtraction);
- Division is the inverse of multiplication;
- Division is **not** commutative unlike multiplication i.e  
 $3 \times 5 = 5 \times 3$  but  $15 \div 3 \neq 3 \div 15$



### Practical equipment, models and images to support children with mental division



Grouping ITP

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

Number grid ITP

### Vocabulary

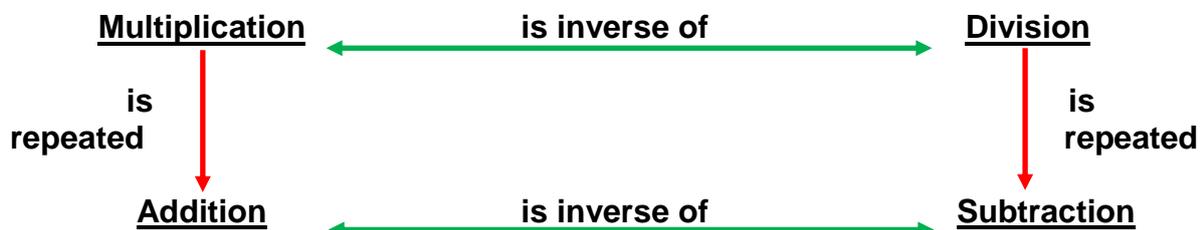
count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even, half, halve, share

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
<b>Count back to zero in ones, twos, fives or tens</b>	<p>Count back in ones from 14 to 0.</p> <p>Now try counting back in twos from 14 to 0. How many numbers did you say?</p> <p>Count back in tens from 90 to 0.</p>	<ul style="list-style-type: none"> <li>• Count on from 0 in ones, twos, fives and tens</li> <li>• Cross tens boundaries when counting in ones and twos by understanding the base 10 number system</li> <li>• Know the number names up to 100 in order, in symbols (using numerals) and words (spoken)</li> <li>• Understand the amounts the symbols and words represent</li> <li>• Place value – understand what each digit represents in a two-digit number</li> <li>• Recognise number patterns, in numeric symbols and spoken words</li> </ul>
Enhanced strategies		
There are no enhanced strategies for Year 1		

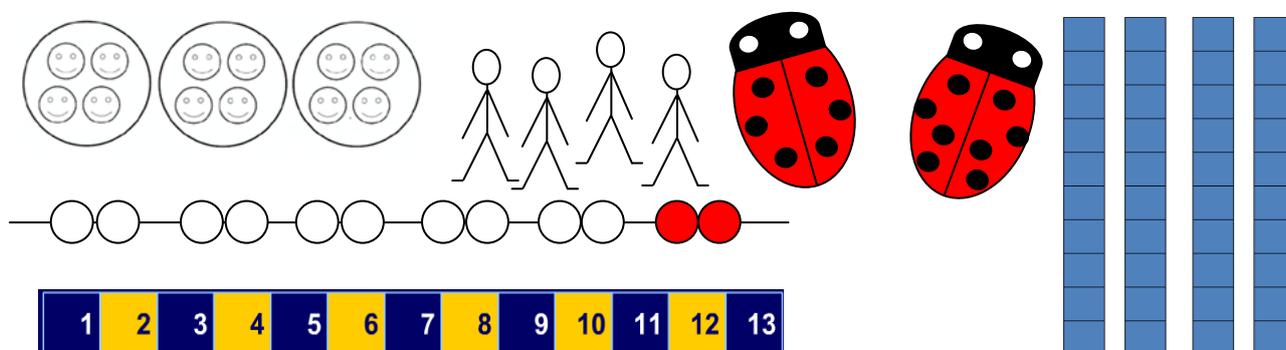
## Year 2 – Progression in Mental Calculation Skills / Strategies for Division

### Children understand that:

- Division is sharing or grouping (repeated subtraction);
- Division is the inverse of multiplication;
- Division is **not** commutative unlike multiplication i.e  
 $3 \times 5 = 5 \times 3$  but  $15 \div 3 \neq 3 \div 15$



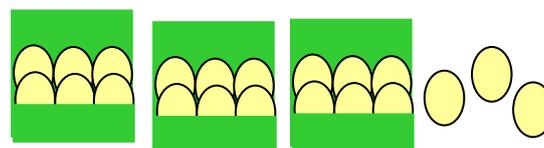
### Practical equipment, models and images to support children with mental division



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

Number grid ITP

Grouping ITP



### Vocabulary

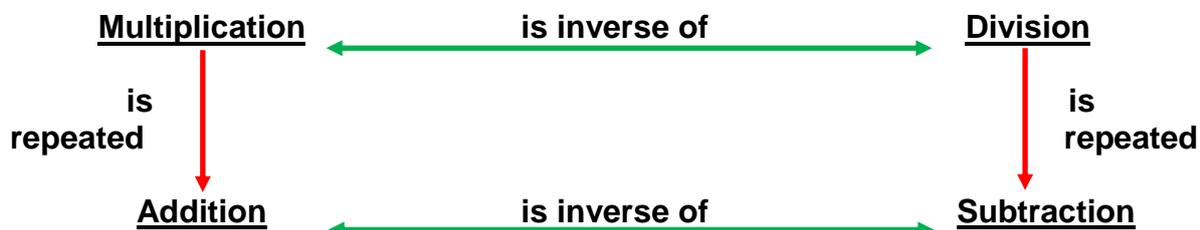
count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even, half, halve, share, share equally, one each, two each, three each..., group in pairs, threes... tens, equal groups of, divide, divided by, divided into, equal parts, remainder, one half, two halves, one quarter, two quarters, three quarters, four quarters, one whole

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
<b>Halve any multiple of 10 up to 100</b>	$40 \div 2$  Use these bundles of straws to help you halve 90	<ul style="list-style-type: none"> <li>• Know multiples of 10</li> <li>• Partition multiples of 10 into pairs of multiples of 10 e.g. <math>90 = 80 + 10</math></li> <li>• Halve even numbers to 20</li> <li>• Understand that halving is dividing by 2 and half as one of two equal parts</li> <li>• Understand and use knowledge of base 10 number system to relate <math>8 \div 2</math> to <math>80 \div 2</math></li> </ul>
<b>Find half of even numbers to 40</b>	Halve 24  $32 \div 2$  $?? \times 2 = 20$  $28 = ?? \times 2$	<ul style="list-style-type: none"> <li>• As above plus</li> <li>• Know even numbers</li> <li>• Partition numbers in different ways e.g. when finding half of 36 partitioning 36 into 20 + 16</li> </ul>
Enhanced strategies		
There are no enhanced strategies for Year 2		

## Year 3 – Progression in Mental Calculation Skills / Strategies for Division

### Children understand that:

- Division is sharing or grouping (repeated subtraction);
- Division is the inverse of multiplication;
- Division is **not** commutative unlike multiplication i.e  
 $3 \times 5 = 5 \times 3$  but  $15 \div 3 \neq 3 \div 15$



### Practical equipment, models and images to support children with mental division

1 2 3 4 5 6 7 8 9 10 11 12 13

$16 \div 2 = 8$       Grouping ITP

$\frac{1}{3}$  of 15 is 5

Number grid ITP

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

### Vocabulary

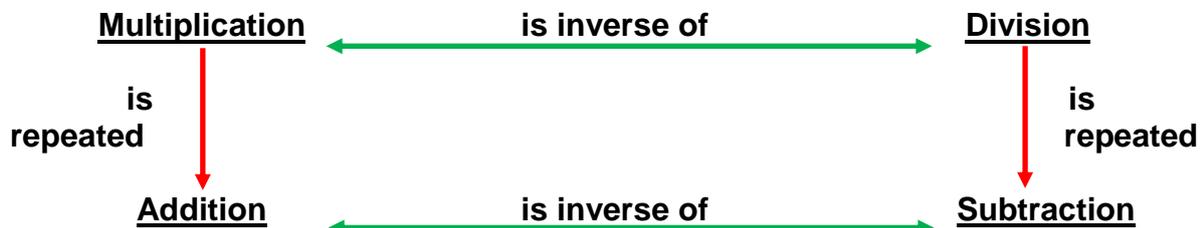
count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even,  
 half, halve, share, share equally, one each, two each, three each..., group in pairs,  
 threes... tens, equal groups of, divide, divided by, divided into, equal parts,  
 remainder, **one third, two thirds, one tenth**

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
<b>Halve any multiple of 10 up to 200</b>	Halve 170 $150 \div 2$ $?? \times 2 = 140$ $130 = 2 \times ??$ $\frac{1}{2}$ of 110	<ul style="list-style-type: none"> <li>• Know multiples of 10 up to 200</li> <li>• Partition multiples of 10 into pairs of multiples of 10 e.g. <math>170 = 160 + 10</math></li> <li>• Halve even numbers to 20</li> <li>• Understand that halving is dividing by 2 and half as one of two equal parts</li> <li>• Understand and use knowledge of base 10 number system to relate <math>8 \div 2</math> to <math>80 \div 2</math></li> </ul>
<b>Find unit fractions of numbers and quantities involving halves, thirds, quarters, fifths and tenths</b>	Find $\frac{1}{4}$ of 24 One third of a number is 5. What is the number? What is a fifth of 20ml?	<ul style="list-style-type: none"> <li>• Understand fractions as equal parts of a whole</li> <li>• Understand what the numerator and denominator represent in fractions</li> <li>• Understand that finding a fraction of an amount is related to sharing equally (division)</li> <li>• Know multiplication facts and related division facts for 2, 3, 4, 5 and 10x tables</li> <li>• Counting in equal steps (groups)</li> <li>• Understand fractions of shapes</li> </ul>
Enhanced strategies		
There are no enhanced strategies for Year 3		

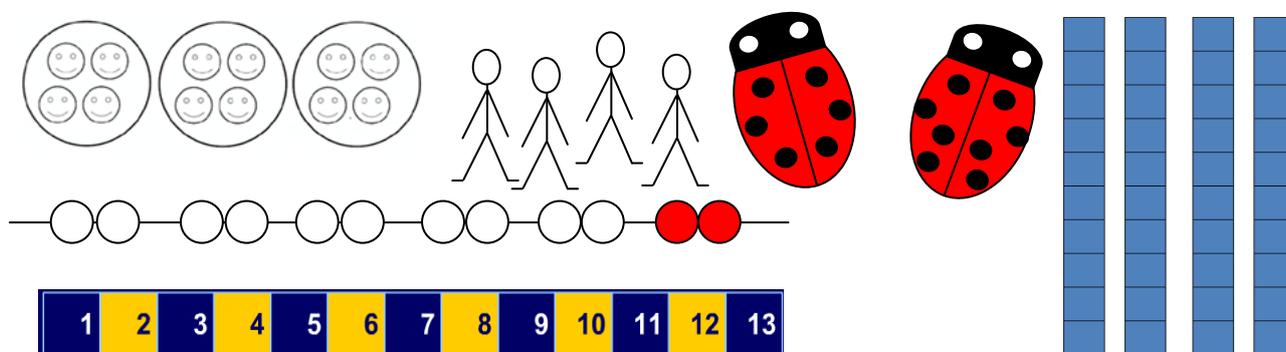
# Year 4 – Progression in Mental Calculation Skills / Strategies for Division

## Children understand that:

- Division is sharing or grouping (repeated subtraction);
- Division is the inverse of multiplication;
- Division is **not** commutative unlike multiplication i.e.  
 $3 \times 5 = 5 \times 3$  but  $15 \div 3 \neq 3 \div 15$



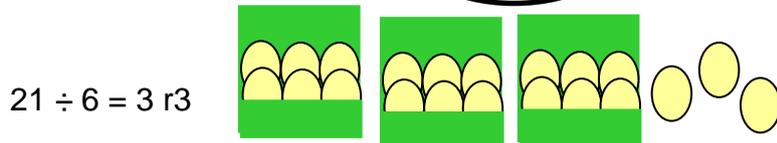
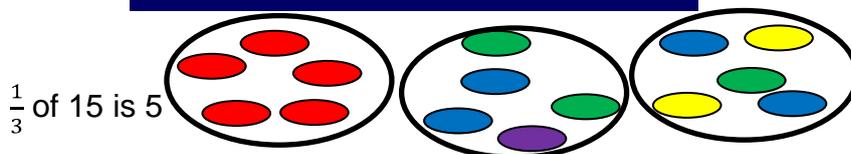
## Practical equipment, models and images to support children with mental division



Grouping ITP

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

Number grid ITP



H	T	U
3	4	0
	3	4

## Vocabulary

count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even, half, halve, share, share equally, one each, two each, three each..., group in pairs, threes... tens, equal groups of, divide, divided by, divided into, equal parts, remainder, one third, two thirds, one tenth, **sixth, eighth, fifth, twentieth, inverse, divisible by, factor, quotient**

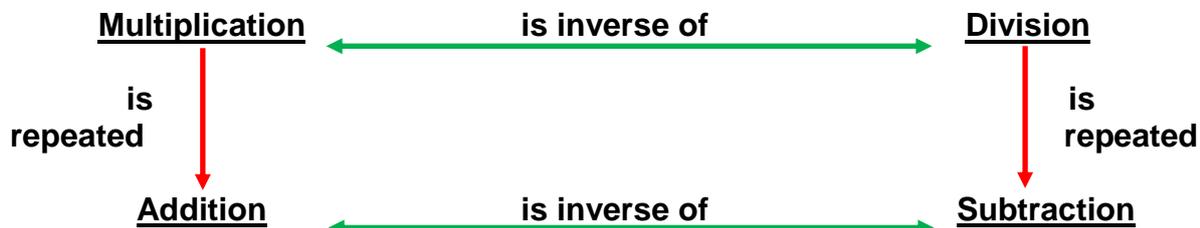
Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
<b>Halve any multiple of 10 and 100</b>	$\frac{1}{2}$ of 500 Halve 470 $\square \times 2 = 240$ $360 = \square \times 2$	<ul style="list-style-type: none"> <li>• Know multiples of 10 up to 200</li> <li>• Partition multiples of 10 into pairs of multiples of 10 e.g. <math>170 = 160 + 10</math></li> <li>• Partition multiples of 100 into pairs of multiples of 100 e.g. <math>700 = 600 + 100</math></li> <li>• Halve even numbers to 20</li> <li>• Understand that halving is dividing by 2 and half as one of two equal parts</li> <li>• Understand and use knowledge of base 10 number system to relate <math>8 \div 2</math> to <math>80 \div 2</math> to <math>800 \div 2</math></li> </ul>
<b>Halve any even number to 200</b>	$\frac{1}{2}$ of 146 Halve 108	As above plus <ul style="list-style-type: none"> <li>• Partition three-digit numbers into H T and U</li> <li>• Recognise odd and even numbers</li> </ul>
<b>Find unit fractions and simple non-unit fractions of numbers and quantities</b>	Find $\frac{3}{8}$ of 24 Find a quarter of 28 cm	<ul style="list-style-type: none"> <li>• Know multiplication facts to <math>10 \times 10</math> and related division facts</li> <li>• Understand fractions of shapes</li> <li>• Understand fractions as equal parts of a whole</li> <li>• Understand what the numerator and</li> </ul>

		<p>denominator represent in fractions</p> <ul style="list-style-type: none"> <li>Counting in equal steps (groups)</li> <li>Understand that finding a fraction of an amount is related to sharing equally (division)</li> <li>Find simple unit fractions of numbers</li> </ul>
<p><b>Divide numbers to 1000 by 10 and then 100 (whole number answers)</b></p>	<p><math>340 \div 10 =</math></p> <p><math>\square \times 100 = 440</math></p> <p>How many metres are in 900 cm?</p>	<ul style="list-style-type: none"> <li>Understand base 10 number system i.e. 10 ones / units = 1 ten and vice versa and 10 tens = 1 hundred and vice versa</li> <li>Understand that zero can be used as a place holder</li> </ul>
<p><b>Identify the remainder when dividing by 2, 5 or 10</b></p>	<p><math>26 \div 5 =</math></p> <p><math>17 \div 2 =</math></p> <p>How many teams of 5 can be made from 28 children? How many children will be left over?</p>	<ul style="list-style-type: none"> <li>Know multiplication and related division facts for 2, 5 and 10x tables</li> <li>Count in equal steps of 2, 5 and 10 from non-multiples of those tables</li> </ul>
<b>Enhanced strategies</b>		
There are no enhanced strategies for Year 4		

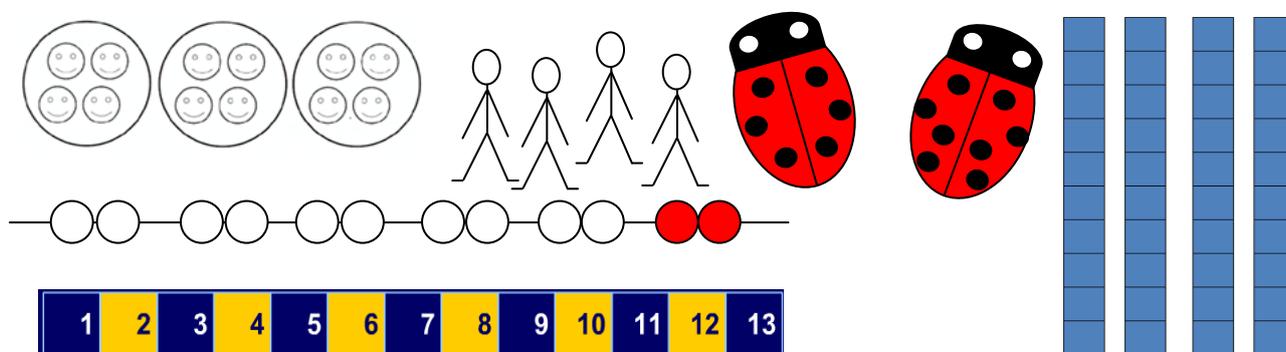
# Year 5 – Progression in Mental Calculation Skills / Strategies for Division

## Children understand that:

- Division is sharing or grouping (repeated subtraction);
- Division is the inverse of multiplication;
- Division is **not** commutative unlike multiplication i.e.  
 $3 \times 5 = 5 \times 3$  but  $15 \div 3 \neq 3 \div 15$



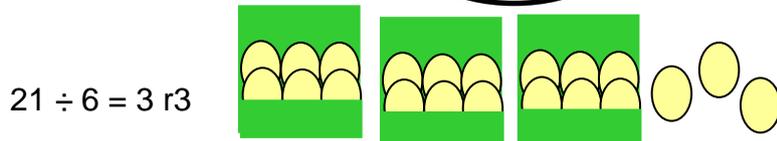
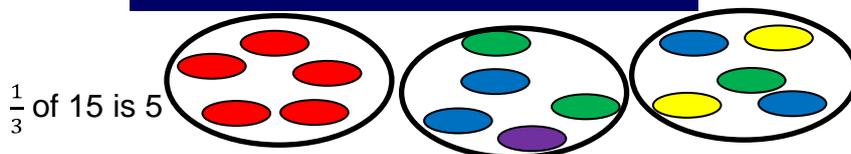
## Practical equipment, models and images to support children with mental division



Grouping ITP

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

Number grid ITP



H	T	U
3	4	0
	3	4

## Vocabulary

count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even, half, halve, share, share equally, one each, two each, three each..., group in pairs, threes... tens, equal groups of, divide, divided by, divided into, equal parts, remainder, one third, two thirds, one tenth, sixth, eighth, fifth, twentieth, inverse, divisible by, factor, quotient, **ninth, twelfth, hundredth, divisibility, percent, %**

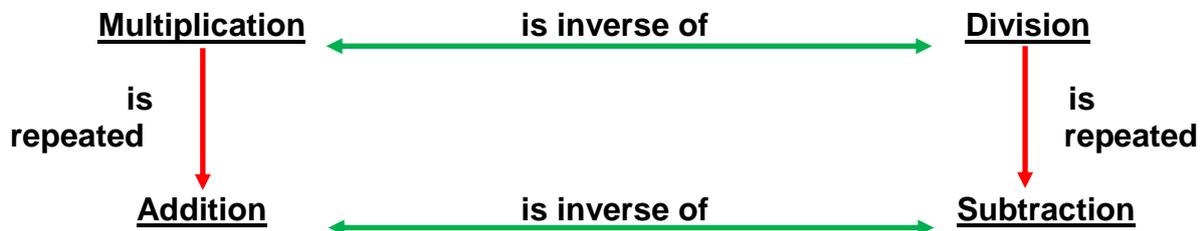
Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
<b>Halve three-digit multiples of 10 to 1000</b>	$760 \div 2$ Halve 770 Find $\frac{1}{2}$ of 440 $\square \times 2 = 290$	<ul style="list-style-type: none"> <li>• Know multiples of 10 up to 1000</li> <li>• Partition multiples of 10 into pairs of multiples of 10 e.g. <math>170 = 160 + 10</math></li> <li>• Partition multiples of 100 into pairs of multiples of 100 e.g. <math>700 = 600 + 100</math></li> <li>• Halve even numbers to 100</li> <li>• Understand that halving is dividing by 2 and half as one of two equal parts</li> <li>• Understand and use knowledge of base 10 number system to relate <math>8 \div 2</math> to <math>80 \div 2</math> to <math>800 \div 2</math></li> </ul>
<b>Find the remainder after dividing a two-digit number by a single-digit number</b>	$27 \div 4$	<ul style="list-style-type: none"> <li>• Know multiplication facts to <math>10 \times 10</math> and related division facts</li> <li>• Count in equal steps of 2, 3, 4, 5, 6, 7, 8, 9 and 10 from non-multiples of those numbers e.g. count back in sixes from 43</li> </ul>
<b>Divide whole numbers by 10, 100 or 1000, where answers involve decimals</b>	$25 \div 10$ $673 \div 100$ $74 \div 100$ How many metres are there in 456cm?	<ul style="list-style-type: none"> <li>• Understand base 10 number system i.e. 10 ones / units = 1 ten and vice versa and 10 tens = 1 hundred and vice versa</li> <li>• Understand base 10 decimal number system i.e. 1 unit = 10 tenths, 1 tenth = 10 hundredths</li> </ul>

		<p>hundredths</p> <ul style="list-style-type: none"> <li>Understand that zero can be used as a place holder</li> </ul>
<b>Divide a multiple of 10 by a single-digit number (whole number answers)</b>	$80 \div 4$ $270 \div 3$	<ul style="list-style-type: none"> <li>Know multiplication facts to <math>10 \times 10</math> and related division facts</li> <li>Understand and use knowledge of base 10 number system to relate <math>8 \div 4</math> to <math>80 \div 4</math> to <math>800 \div 4</math></li> </ul>
<b>Find fractions of whole numbers or quantities</b>	$\frac{2}{3}$ of 27 $\frac{4}{5}$ of 70 kg	<ul style="list-style-type: none"> <li>Know multiplication facts to <math>10 \times 10</math> and related division facts</li> <li>Understand fractions of shapes</li> <li>Understand fractions as equal parts of a whole</li> <li>Understand what the numerator and denominator represent in fractions</li> <li>Counting in equal steps (groups)</li> <li>Understand that finding a fraction of an amount is related to sharing equally (division)</li> <li>Find simple unit fractions of numbers</li> </ul>
<b>Find 50%, 25% or 10% of whole numbers or quantities</b>	25% of 20 kg 10% of £80	<ul style="list-style-type: none"> <li>As above plus</li> <li>Know percentage equivalences for <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math> and <math>\frac{1}{10}</math> and vice versa</li> </ul>
<b>Enhanced strategies</b>		
<b>Divide two-digit numbers by 4 or 8</b>	$72 \div 4$ $96 \div 8$	<ul style="list-style-type: none"> <li>Understand the relationship between <math>\div 2</math>, <math>\div 4</math> and <math>\div 8</math></li> <li>Halve two-digit numbers</li> </ul>

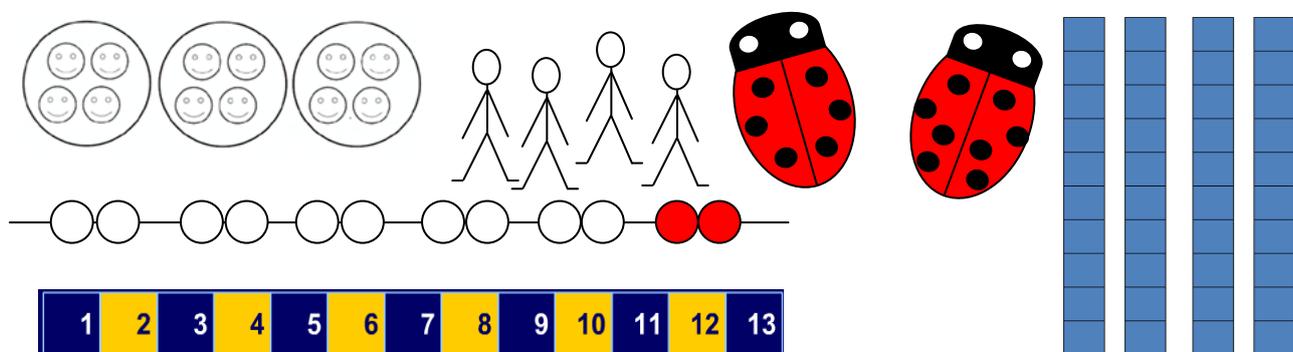
# Year 6 – Progression in Mental Calculation Skills / Strategies for Division

## Children understand that:

- Division is sharing or grouping (repeated subtraction);
- Division is the inverse of multiplication;
- Division is **not** commutative unlike multiplication i.e.  
 $3 \times 5 = 5 \times 3$  but  $15 \div 3 \neq 3 \div 15$



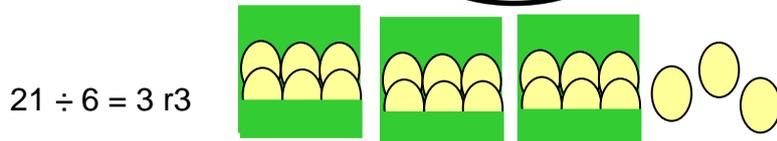
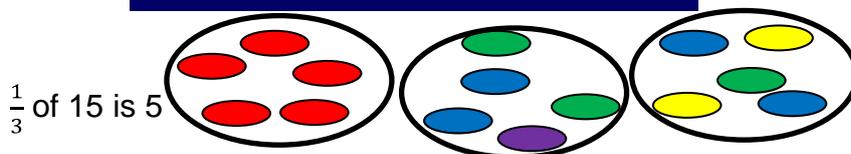
## Practical equipment, models and images to support children with mental division



Grouping ITP

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

Number grid ITP



H	T	U
3	4	0
3	4	

## Vocabulary

count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even, half, halve, share, share equally, one each, two each, three each..., group in pairs, threes... tens, equal groups of, divide, divided by, divided into, equal parts, remainder, one third, two thirds, one tenth, sixth, eighth, fifth, twentieth, inverse, divisible by, factor, quotient, ninth, twelfth, hundredth, divisibility, percent, %, **simplify, reduce**

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
<b>Divide a two-digit number by a single-digit number</b>	$88 \div 3$ $68 \div 4$	<ul style="list-style-type: none"> <li>• Know multiplication facts to 10 x 10 and related division facts</li> <li>• Partition numbers in different ways e.g. when finding <math>84 \div 7</math>, recognising 84 as 70 + 14</li> </ul>
<b>Halve decimals with tens, units and tenths</b>	Halve 72.7 Find $\frac{1}{2}$ of 15.2 $13.1\text{kg} \div 2$	<ul style="list-style-type: none"> <li>• Halve whole numbers to 100</li> <li>• Understand that halving is dividing by 2 and half as one of two equal parts</li> <li>• Understand base 10 decimal number system i.e. 1 unit = 10 tenths, 1 tenth = 10 hundredths</li> <li>• Understand and use knowledge of base 10 number system to relate <math>8 \div 2</math> to <math>80 \div 2</math> and <math>0.8 \div 2</math></li> </ul>
<b>Divide multiples of 100 by a multiple of 10 or 100 (whole number answers)</b>	$400 \div 20$ $4000 \div 200$ How many 20p coins in £20?	<ul style="list-style-type: none"> <li>• Know multiplication facts to 10 x 10 and related division facts</li> <li>• Understand base 10 number system i.e. 10 ones / units = 1 ten and vice versa and 10 tens = 1 hundred and vice versa</li> <li>• Understand and use knowledge of base 10 number system to relate <math>8 \div 4</math> to <math>80 \div 40</math> to <math>800 \div 40</math> to <math>800 \div 400</math></li> </ul>
<b>Divide two-digit decimals</b>	$4.8 \div 6$	<ul style="list-style-type: none"> <li>• Know multiplication facts to 10 x 10 and</li> </ul>

		<p>related division facts</p> <ul style="list-style-type: none"> <li>Understand and use knowledge of base 10 number system to relate <math>18 \div 6</math> to <math>180 \div 6</math> and <math>1.8 \div 6</math></li> </ul>
<b>Find 10% or multiples of 10% of whole numbers or quantities</b>	<p>Find 30% of 50ml</p> <p>What is 70% of 200g?</p> <p>How much would you pay for an item worth £30 with 40% off?</p>	<ul style="list-style-type: none"> <li>Know multiplication facts to <math>10 \times 10</math> and related division facts</li> <li>Know equivalence between <math>\frac{1}{10}</math> and 10% and related fractions e.g. <math>\frac{3}{10} = 30\%</math>, <math>\frac{9}{10} = 90\%</math></li> <li>Divide whole numbers or quantities by 10</li> </ul>
<b>Enhanced strategies</b>		
<b>Simplify fractions by cancelling</b>	<p>What is <math>\frac{14}{35}</math> in its simplest form?</p> <p>Reduce <math>\frac{56}{100}</math> to its simplest form.</p>	<ul style="list-style-type: none"> <li>Know multiplication facts to <math>10 \times 10</math> and related division facts</li> <li>Identify all factors of numbers to 100</li> </ul>
<b>Scale up or down using known facts</b>	Given that 3 oranges cost 24p, find the cost of 4 oranges.	<ul style="list-style-type: none"> <li>Know multiplication facts to <math>10 \times 10</math>, including related division facts</li> </ul>
<b>Divide by 25 or 50</b>	<p><math>480 \div 25</math></p> <p><math>3200 \div 50</math></p>	<ul style="list-style-type: none"> <li>Divide numbers by 100</li> <li>Double numbers</li> </ul>