

Cheadle Heath Primary School

CARING HAPPY



PUPILS SUCCEED

Whole School Calculation Policy

About this Calculations Policy

The following calculation policy has been devised to meet requirements of the National Curriculum 2014, and in accordance with the 'Big Maths' document, for the teaching and learning of mathematics, and is also designed to give pupils a consistent and smooth progression of learning in calculations across the school. Please note that early learning in number and calculation in Reception follows the statutory EYFS document, and this calculation policy is designed to build on progressively from the content and methods established in the Early Years Foundation Stage.

Age stage expectations

The calculation policy is organised according to age stage expectations as set out in the National Curriculum 2014, however it is vital that pupils are taught according to the stage that they are currently working at promoting a real depth of learning, before being moved on when they are secure.

Providing a context for calculation:

It is important that any type of calculation is given a real life context or problem solving approach to help build children's understanding of the purpose of calculation, and to help them recognise when to use certain operations and methods when faced with problems. This must be a priority within calculation lessons.

Choosing a calculation method:

Before carrying out a calculation, children will be encouraged to consider:

1

Can I do it in my head using a mental strategy?

2

Can I use some jottings to help me?

3

Which written method should I use to help me?

When are children ready for written calculations?

Addition and subtraction:

- Do they know addition and subtraction facts to 20?
- Do they understand place value and can they partition numbers?
- Can they add three single digit numbers mentally?
- Can they add and subtract any pair of two digit numbers mentally?
- Can they explain their mental strategies orally and record them using informal jottings?

Multiplication and Division:

- Do they know the 2,3,4,5 and 10 times tables?
- Do they know the result of multiplying by 1 and 0?
- Do they understand 0 as a place holder?
- Can they multiply two and three digit numbers by 10 and 100?
- Can they use multiplication facts they know to derive mentally other multiplication facts that they do not know?
- Can they explain their mental strategies orally and record them using informal jottings?

These lists are not exhaustive but are a guide for the teacher to judge when a child is ready to move from informal to formal methods of calculation.

Addition – Early Years

Big Maths Steps: 1 - 5

National Curriculum 2014 reference(s):



Using quantities and objects, they add two single-digit numbers and count on to find the answer.

Finds the total number of items in two groups by counting all of them.

Says the number that is one more than a given number.

Finds one more from a group of up to five objects, then ten objects.

In practical activities and discussion, beginning to use the vocabulary involved in adding.

$2 + 5 =$  Count out each set then find the total	$2 + 5 =$  Count on from first number (Cover first number or display as numeral)
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Bead strings or bead bars can be used to illustrate addition including bridging ten by counting on 2 then 3.



It is important that children have a clear understanding of the concept of equality, before using the '=' sign. Calculations should be on either side of the '=' to that children don't misunderstand '=' as to mean 'the answer'.

Additional notes:

Numicon resources are weighted and can be used to check answers on a balance scale.

Big Math's

Aggregation=combining 2 sets

Augmentation = adding on from a given number.

Addition – Year 1

Big Maths Steps: 5 - 12

National Curriculum 2014 reference(s):

Read, write and interpret maths statements including +, -, =.


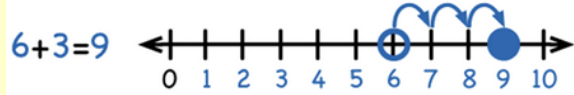
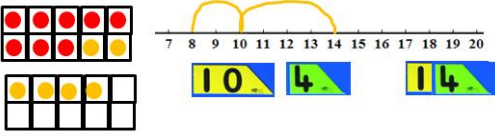
Represent and use number facts with 20.

Recall and use addition facts to 10.

Solve one step problems that involve using concrete objects, pictorial representations and missing number problems.

Add 1 digit and 2 digit numbers to 20, including 0, e.g. (16+7=23).

Given a number, identify one more.

<p>2 + 5</p> <p>5 + </p> <p>5 + 2 (without counters)</p> <p>Recognise the biggest number in the calculation and count on from it (using objects for smaller number if necessary)</p>	<p>2 + 5 5 + 8 4 + 13 11 + 7</p> <p>$6 + 3 = 9$ </p> <p>Recognise the biggest number in the calculation and count on from it mentally or using number line</p>	<p>6 + 8 becomes 8 + 2 + 4</p> <p></p> <p>Partitioning the smaller number and use the tens number to bridge calculation</p> <p>5 + 17 becomes 17 + 3 + 2</p>
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It is important to that children have a clear understanding of the concept of equality, before using the '=' sign.

Calculations should be on either side of the '=' to that children don't misunderstand '=' as to mean 'the answer'.

To support this, when solving calculations, missing numbers should be placed in all possible places:

$$3 + 4 = \square \quad \square + 4 = 7 \quad 3 + \square = 7 \quad 7 = \square + 4 \quad 7 = \square + 3 \quad \square = 3 + 4$$

Additional notes:

Could use 'Where's Mully?' from Big Maths or 'n' to represent an unknown number.

Addition – Year 2

Big Maths Steps: 13 - 24

National Curriculum 2014 reference(s):

Solve problems that involve using concrete objects, pictorial representations, including numbers, quantities and measures.

Recall and use + facts to 20, derive and use related facts to 100.

Add numbers using concrete objects, pictorial representations, and mentally, including:

2 digit numbers and ones, e.g. (23+6=29); 2 digit numbers and tens, e.g. (23+20=43); two 2 digit numbers, e.g. (23+45=68); three 1 digit numbers, e.g. (5+6+3=14).


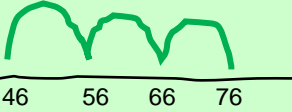


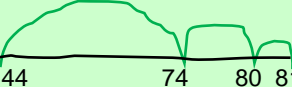

Show that + of 2 numbers can be done in any order.

Use inverse operation (-) to check and solve missing number problems.

Find combinations of coins that equal the same amounts of money.

Combine amounts in £ and p to make a particular value.

Solve simple problems in a particular context involving addition and subtraction of money of the same unit, including giving change.

<p>6 + 18 By counting on from the largest number</p>  <p>30 + 46 By counting on in tens</p> 	<p>6 + 58 By partitioning the smaller number through the multiple of 10 58 + 2 + 4</p>  <p>22 + 50 By counting in groups of ten and one from largest number</p> 	<p>TU + TU within 100</p> <p>37 + 44</p>  <p>or 40 + 30 = 70 7 + 4 = 11 70 + 11 = 81</p> <p>Or 44 + 40 - 3 = 81</p> <p>Recall of facts to 20 and by recall of adding multiples of 10 will support this thinking</p>	<p>Addition of three single digits – look for bonds you know and doubles</p> <p>6 + 9 + 3</p> <p>6 + 3 = 9</p> <p>Double 9 = 18</p>	<p>Special cases + 9</p> <p>9 + 33</p>  <p>33 42 43</p> <p>Using Doubles 29 + 30 is the same as 30 + 30 - 1</p>
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Move on to **partitioned column method**.

Step 1: Only solve calculations that **do not** cross the tens boundary, until they are secure with the method

$$\begin{array}{r}
 20 + 3 \\
 + 30 + 4 \\
 \hline
 50 + 7 \\
 = \underline{\underline{57}}
 \end{array}$$

Step 2: Solve calculations that **do** cross the tens boundary. The children need to be proficient in mentally adding multiples of ten to a digit number to move on to this step. At this stage use base 10 (diennes) to support the understanding of 'carrying' and the value of 'digits'.

$$28 + 13$$



T	U
20	+ 8
10	+ 3
<hr/>	
40	+ 1
<hr/>	
50	

Addition – Year 3

Big Maths Steps: 25 - 28

National Curriculum 2014 reference(s):

Add numbers mentally, including:

3 digit numbers and ones, e.g. (243+6=249); 3 digit numbers and tens, e.g. (213+20=233); 3 digit number and hundreds, e.g. (215+200=415).

Add numbers with up to 3 digits, using formal written methods of columnar addition.

Solve problems, including missing number problems, using number facts, place value, and more complex +.

Estimate the answer to a calculation and use the inverse (-) to check answers.

Add fractions with the same denominator within one whole.

Add amounts of money, using both £ and p in practical contexts (mixed units: recording £ and p separately – decimal recording introduced in Y4).

Solve measure and money + problems involving numbers up to one decimal place.

Given a number, identify 10 or 100 more.

Partitioning the numbers for TU + TU across 100	Special cases	Partitioning Adding ones and tens to a 3digit number	Expanded Column Method Addition of three digit + 2 digit numbers and 3-digit + 3 digit	Addition of numbers with decimal places
55 + 78 70 + 50 = 120 8 + 5 = 13 120 + 13 = 133 55 + 78 78 + 50 = 128 128 + 2 + 3 = 133 Recall of facts to 20 and by adding multiples of 10 will support this thinking	66 + 79 80 + 66 – 1 = 145 Using doubles 76 + 78 Double 70 + double 6 + 2 Double 70 + double 8 – 2 Recall of facts to 20 and by adding multiples of 10 will support this thinking	356 + 8 356 + 4 + 4 = 364 356 + 70 350 + 70 + 6 = 420 356 + 600 300 + 600 + 56 = 956	$\begin{array}{r} 268 \\ -79 \\ \hline 200 \\ 130 \\ -17 \\ \hline 347 \end{array}$ $\begin{array}{r} 268 \\ +179 \\ \hline 17 \\ 130 \\ 300 \\ \hline 447 \end{array}$	1.5 + 1.5 Double 1 and double 0.5 1.6 + 1.7 1.7 + 0.3 + 1.3 = 3.3

More able children, once competent in the **expanded column method**, can move on to **compact column method**:

Children should always add the 'units' or 'ones' first.

Numbers should be 'carried' above the top line.

Emphasis should be placed on reminding the children to include in mental addition any 'carried' numbers

$$\begin{array}{r} \text{H T U} \\ 236 \\ +173 \\ \hline 309 \end{array}$$

Addition – Year 4

Big Maths Steps: 28 - 31

National Curriculum 2014 reference(s):

Practise mental methods.

Add numbers with up to 4 digits, using formal written methods of columnar addition.

Estimate and use the inverse (-) to check answers.

Solve two step problems in context, deciding which operations and methods to use and why.

Add fractions with the same denominator.

Solve measure and money + problems involving numbers up to two decimal places (using decimal notation).

Given a number, identify 1000 more.

Using mental strategy where appropriate	Use compact column method Addition of three digit + 3-digit and four digit + four digit	Extend use of compact column method Addition of numbers to 2 decimal places																																																	
<p>1460 + 499</p> <p>1460 + 500 – 1 = 1959</p> <p>2560 + 3570</p> <p>6000 + 130 = 6130</p>	<div data-bbox="954 751 1285 1007" style="border: 1px solid black; padding: 10px; text-align: center;"><table style="margin: auto;"><tr><td></td><td>Th</td><td>H</td><td>T</td><td>U</td></tr><tr><td></td><td>3</td><td>5</td><td>1</td><td>7</td></tr><tr><td>+</td><td>3</td><td>9</td><td>6</td><td>1</td></tr><tr><td></td><td><u>1</u></td><td></td><td></td><td></td></tr><tr><td></td><td>7</td><td>4</td><td>7</td><td>8</td></tr></table></div>		Th	H	T	U		3	5	1	7	+	3	9	6	1		<u>1</u>					7	4	7	8	<div data-bbox="1576 735 1908 991" style="border: 1px solid black; padding: 10px; text-align: center;"><table style="margin: auto;"><tr><td>£</td><td>2</td><td>3</td><td>.</td><td>5</td><td>9</td></tr><tr><td>£</td><td></td><td>7</td><td>.</td><td>5</td><td>5</td></tr><tr><td></td><td></td><td><u>1</u></td><td></td><td><u>1</u></td><td></td></tr><tr><td>£</td><td>3</td><td>1</td><td>.</td><td>1</td><td>4</td></tr></table></div>	£	2	3	.	5	9	£		7	.	5	5			<u>1</u>		<u>1</u>		£	3	1	.	1	4
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Addition – Year 5

Big Maths Steps: 32 - 38

National Curriculum 2014 reference(s):

Practise mental methods using increasingly large numbers.

Add numbers whole numbers with more than 4 digits, using formal written methods of columnar addition.

Use rounding to check answers and determine levels of accuracy.

Solve multistep problems in context, deciding which operations and methods to use and why.

Add fractions and mixed numbers with the same denominator and denominators that are multiples of the same number.

Solve + problems involving numbers with up to three decimal places.

Solve comparison, sum and difference problems using information in tables, including timetables.

Using mental calculation by counting on

$$45678 + 3500 = 49178$$

$$45678 + 3000 = 48678$$

$$42678 + 500 = 49178$$

$$5.78 + 2.45 = 8.23$$

$$5.78 + 2 = 7.78$$

$$5.73 + 0.4 = 8.18$$

$$5.33 + 0.05 = 8.23$$

Extend use of compact column method to numbers with more than 4 digits

HTh	Th	H	T	U
5	8	7	6	5
+ 2	9	6	4	8
<hr/>				
1	1	1	1	
<hr/>				
8	8	4	1	3
<hr/>				

Numbers should be 'carried' above the top line.

Extend the use of compact column method to mixed decimals

$$57.89 + 46.6 + 23.785$$

2	3	.	7	8	5
5	7	.	8	9	
4	6	.	6		
<hr/>					
1	2	.	2	7	5
<hr/>					

Addition – Year 6

Big Maths Steps: 39 - 41

National Curriculum 2014 reference(s):

Add numbers mentally, including:

3 digit numbers and ones, e.g. (243+6=249); 3 digit numbers and tens, e.g. (213+20=233); 3 digit number and hundreds, e.g. (215+200=415).

Add numbers with up to 3 digits, using formal written methods of columnar addition.

Solve problems, including missing number problems, using number facts, place value, and more complex +.

Estimate the answer to a calculation and use the inverse (-) to check answers.

Add fractions with the same denominator within one whole.

Add amounts of money, using both £ and p in practical contexts (mixed units: recording £ and p separately – decimal recording introduced in Y4).

Solve measure and money + problems involving numbers up to one decimal place.

Given a number, identify 10 or 100 more.

Partitioning

$$4.578 + 0.008 = 4.586$$

$$6.568 + 0.079 = 6.647$$

$$6.568 + 0.07 = 6.638$$

$$6.638 + 0.009 = 6.647$$

Extend use of compact column method to numbers with 5 or 6 digits

HTh	Th	H	T	U
5	8	7	6	5
+ 2	9	6	4	8
<hr/>				
1	1	1	1	
<hr/>				
8	8	4	1	3
<hr/>				

Numbers should be 'carried' above the top line.

Using all 4 operations

$$6 + 7 \times 8 = 62$$

because multiplication first then addition when there are no brackets

$$2780 - 910 + 1220 \text{ can be reordered to } 2780 + 1220 - 910 = 3090$$

as long as the symbol moves with the number

Addition Vocabulary (new vocabulary in red)	
EYFS to Year One	add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line
Year Two	add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, addition, column, tens boundary
Year Three	add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, addition, column, tens boundary, hundreds boundary, increase, vertical, carry, expanded, compact
Year Four	add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, addition, column, tens boundary, hundreds boundary, increase, vertical, carry, expanded, compact, thousands, hundreds, digits, inverse
Year Five	add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, addition, column, tens boundary, hundreds boundary, increase, vertical, carry, expanded, compact, thousands, hundreds, digits, inverse, decimal places, decimal point, tenths, hundredths, thousandths
Year Six	add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, addition, column, tens boundary, hundreds boundary, increase, vertical, carry, expanded, compact, thousands, hundreds, digits, inverse, decimal places, decimal point, tenths, hundredths, thousandths

Subtraction – Early Years

Big Maths Steps: 1 - 5

National Curriculum 2014 reference(s):

Using quantities and objects, they subtract two single-digit numbers and count back to find the answer.

Finds one less from a group of up to five objects, then ten objects.

In practical activities and discussion, beginning to use the vocabulary involved in subtracting.

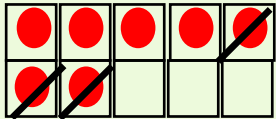
$5 - 2$

Count out 5 and remove 2 to find the answer



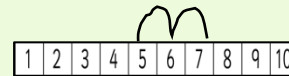
$7 - 3$

Using a 10 frame to subtract - The children may subitise how many are remaining without having to count them all.



$7 - 2$

Count back on the number line by saying start on 7, count back 1, 2, what number are you on?



Subtraction – Year 1

Big Maths Steps: 5 - 12

National Curriculum 2014 reference(s):

Read, write and interpret maths statements including +, -, =.

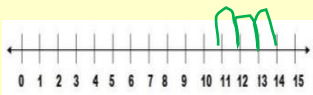
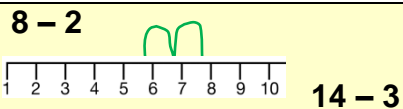
Represent and use number facts with 20.

Recall and use subtraction facts to 10.

Solve one step problems that involve using concrete objects, pictorial representations and missing number problems.

Subtract 1 digit and 2 digit numbers to 20, including 0, e.g. $(27-5=22)$.

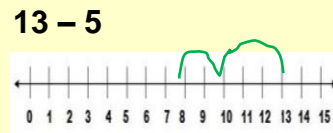
Given a number, identify one less.



Count backwards mentally or using a number line.

$15 - 5$

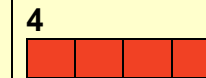
Use tens and ones when the calculation doesn't bridge 10



becomes $13 - 3 - 2$

Partitioning the number being subtracted through the multiple of 10 mentally or using a number line

Finding the Difference
(Use practical equipment such as numicon on Cuisenaire rods)



'The difference between 7 and 4 is 3' or '7 is 3 more than 4'.

Subtraction – Year 2

Big Maths Steps: 13 - 27

National Curriculum 2014 reference(s):

Solve problems that involve using concrete objects, pictorial representations, including numbers, quantities and measures.


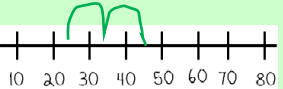

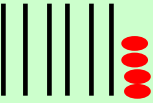
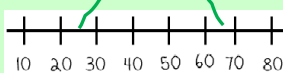
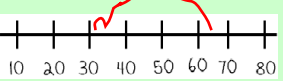
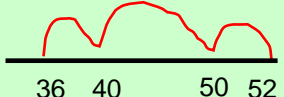
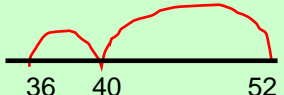
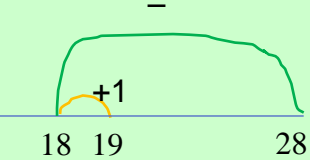
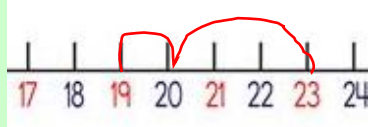
Recall and use + facts to 20, derive and use related facts to 100.

Subtract numbers using concrete objects, pictorial representations, and mentally, including:

2 digit numbers and ones, e.g. (23-6=17); 2 digit numbers and tens, e.g. (23-10=13); Two 2 digit numbers, e.g. (23-15=8).

Use inverse operation (+) to check and solve missing number problems.

Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.

<p>Subtracting by counting backwards in tens or ones</p> <p>28 – 4</p>  <p>45 – 20 Use tens and ones when the calculation doesn't bridge 10</p>  <p>Partitioning 28 – 8 = 20 76 – 70 = 6</p>	<p>Subtracting in groups of ten (rather than counting in tens) or groups of ones (by partitioning number being subtracted through multiple of 10)</p> <p>32 – 7 32 – 2 – 5</p>  <p>64 – 40 Use a number line or manipulatives</p>  	<p>65 – 32</p>  <p>52 – 16 This calculation bridges through 10 so we need to partition the 16 into 2/4/10 or 12/4 and subtract</p>  	<p>Special cases</p> <p>When subtracting 9 or 19</p> <p>28 – 9</p>  <p>Or $28 - 10 + 1$</p>	<p>Difference</p> <p>23 – 19</p>  <p>When numbers are close together, count on from the smallest number through the multiple of ten or count back from the largest to the smallest through the multiple of ten.</p>
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Additional notes:

Encourage the use of inverse operation to reinforce addition skills.

Subtraction – Year 3

Big Maths Steps: 28 - 29

National Curriculum 2014 reference(s):

Subtract numbers mentally, including: 3 digit numbers and ones, e.g. (248-6=242); 3 digit numbers and tens, e.g. (213-20=193); 3 digit number and hundreds, e.g. (215-200=215).

Subtract numbers with up to 3 digits, using formal written methods of columnar subtraction.

Solve problems, including missing number problems, using number facts, place value, and more complex -.

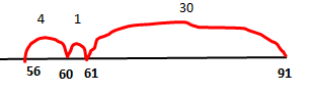
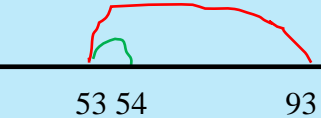

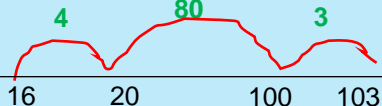
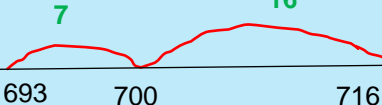
Estimate the answer to a calculation and use the inverse (+) to check answers.

Subtract fractions with the same denominator within one whole.

Subtract amounts of money, using both £ and p in practical contexts (mixed units: recording £ and p separately. Decimal recording introduced in Y4).

Solve measure and money - problems involving numbers up to one decimal place.

Given a number, identify 10 or 100 less.

<p>Partitioning Subtracting ones and tens from a 3digit number</p> <p>567 – 60 = 507 745 – 700 = 45 832 – 2 = 830</p> <p>364 – 8 364 – 4 – 4 = 356</p> <p>356 – 70 356 – 50 – 20 = 286</p> <p>956 – 600 956 – 600 = 356</p>	<p>TU – TU By counting back in tens and ones</p> <p>91 – 35 91 – 30 – 1 – 4</p>  <p>Special cases</p> <p>93 – 39 as 93 – 40 + 1</p> 	<p>Subtraction up to three digits</p> <p>123 – 86 = 37</p>  <p>86 90 100 123</p> <p>£5.67 – £2.20</p> <p>£5.67 – £2.00 = £3.67 £3.67 – 20p = £3.47</p>	<p>Partitioned Column Method</p> <p>46 – 22 = 24 40 + 6 - 20 + 2 ----- 20 + 4</p> <p>347 – 165 = 182</p> <table border="1" data-bbox="1312 1002 1592 1198"> <tbody> <tr> <td>200</td> <td>140</td> </tr> <tr> <td>300</td> <td>40 7</td> </tr> <tr> <td>- 100</td> <td>60 5</td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>100</td> <td>80 2</td> </tr> </tbody> </table>	200	140	300	40 7	- 100	60 5	-----		100	80 2	<p>Difference (see also subtraction up to three digits)</p> <p>103 – 87 = 16</p> <p>When numbers are close together, count on from the smallest number through the multiple of ten or count back from the largest to the smallest through the multiple of ten.</p>  <p>16 20 100 103</p> <p>716 – 693 = 23</p>  <p>693 700 716</p>
200	140													
300	40 7													
- 100	60 5													

100	80 2													

Subtraction – Year 4

Big Maths Steps: 29 - 30

National Curriculum 2014 reference(s):

Practise mental methods.

Subtract numbers with up to 4 digits, using formal written methods of columnar subtraction.


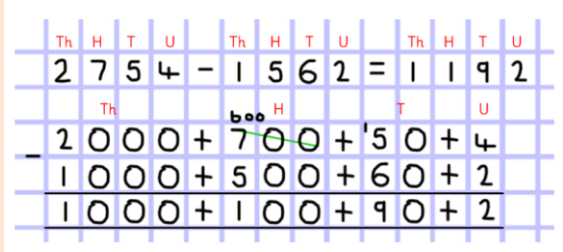
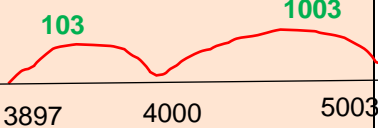
Estimate and use the inverse (+) to check answers.

Solve two step problems in context, deciding which operations and methods to use and why.

Subtract fractions with the same denominator.

Solve measure and money - problems involving numbers up to two decimal places (using decimal notation).

Given a number, identify 1000 less.

Partitioning	Using mental calculation when appropriate by counting back	Subtraction up to four digits	Partitioned Column Method	Difference
$1678 - 600 = 1078$ $2689 - 80 = 2609$ $6839 - 9 = 6830$ $7484 - 1100 = 6384$	$5678 - 2342 =$ $5678 - 2000 = 3678$ $3678 - 300 = 3378$ $3378 - 40 = 3338$ $3338 - 2 = 3336$	$£50 - £28.25 = £21.75$ 	<p>With three digit numbers as Y3 and 4-digit numbers</p> 	$5003 - 3897 = 1106$ 
	<p>See difference too</p>		<p>Moving to compact decomposition as Year 5</p>	

Subtraction – Year 5

Big Maths Steps: 31 - 36

National Curriculum 2014 reference(s):

Practise mental methods using increasingly large numbers.

Subtract numbers whole numbers with more than 4 digits, using formal written methods of columnar subtraction.

Use rounding to check answers and determine levels of accuracy.

Solve multistep problems in context, deciding which operations and methods to use and why.

Subtract fractions and mixed numbers with the same denominator and denominators that are multiples of the same number.

Solve - problems involving numbers with up to three decimal places.

Solve comparison, sum and difference problems using information in tables, including timetables.

Partitioning	Using mental calculation by counting back	Difference Use bonds to 100 to support	Column subtraction
$6.76 - 0.06 = 6.7$ $7.47 - 0.4 = 7.07$	$45678 - 3500 = 42178$ $45678 - 3000 = 42678$ $42678 - 500 = 42178$ $5.78 - 2.45 = 3.33$ $5.78 - 0.05 = 5.73$ $5.73 - 0.4 = 5.33$ $5.33 - 2 = 3.33$	$£10 - £7.71 = £2.29$ Use a number line or jottings $£7.71 \quad £8.00 = 29p$ $£8.00 \rightarrow £10.00 = £2$ $7 - 2.45 = 4.55$ $2.45 \rightarrow 3 = 0.55$ $3 \rightarrow 7 = 4$	$\begin{array}{r} 2 \cancel{7} 1 8 7 5 6 \cancel{5} \\ 1 9 2 4 8 \\ \hline 1 9 5 1 7 \end{array}$

Subtraction – Year 6

Big Maths Steps: 37

National Curriculum 2014 reference(s):

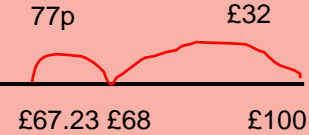
Perform mental calculations, including with mixed operations and large numbers.

Subtract whole numbers with more than 4 digits, using formal written methods of columnar subtraction.

Use estimation to check answers and determine levels of accuracy.

Solve multistep problems in context, deciding which operations and methods to use and why.

Subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.

<p>Partitioning</p> <p>$4.578 - 0.008 = 4.57$ $6.378 - 0.07 = 6.308$</p>	<p>Difference using larger numbers and number facts</p> <p>$£100 - 67.23 = £32.77$</p>  <p>£67.23 £68 £100</p>	<p>Difference (use mixed decimals)</p> <p>$6.45 - 1.7 = 4.75$</p> <p>$1.7 \rightarrow 2 = 0.3$ $2 \rightarrow 6.45 = 4.45$</p>	<p>As above with 5 or 6 digits</p>
-----------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------

Subtraction Vocabulary (new vocabulary in red)	
EYFS to Year One	equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back, how many left, how much less is ... ?
Year Two	equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back, how many left, how much less is ... ?, difference, count on, strategy, partition, tens, units
Year Three	equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back, how many left, how much less is ... ?, difference, count on, strategy, partition, tens, units, exchange, decrease, hundreds, value, digit
Year Four	equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back, how many left, how much less is ... ?, difference, count on, strategy, partition, tens, units, exchange, decrease, hundreds, value, digit, inverse
Year Five	equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back, how many left, how much less is ... ?, difference, count on, strategy, partition, tens, units, exchange, decrease, hundreds, value, digit, inverse, tenths, hundredths, decimal point, decimal
Year Six	equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back, how many left, how much less is ... ?, difference, count on, strategy, partition, tens, units, exchange, decrease, hundreds, value, digit, inverse, tenths, hundredths, decimal point, decimal

Multiplication – Early Years

Big Maths Steps: 1 - 2

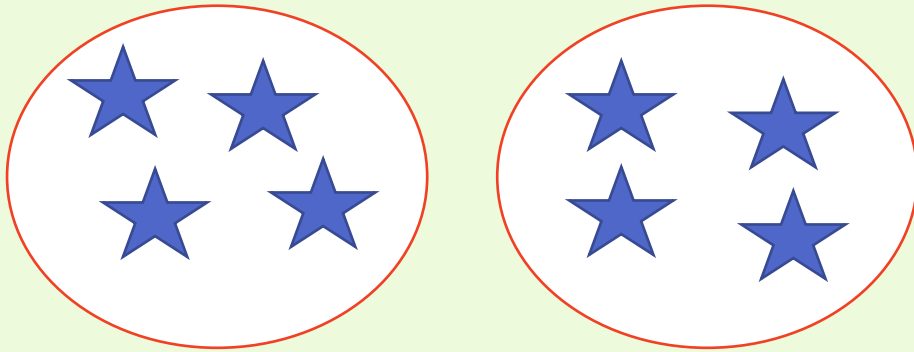
National Curriculum 2014 reference(s):

Children count reliably with numbers from one to 20.

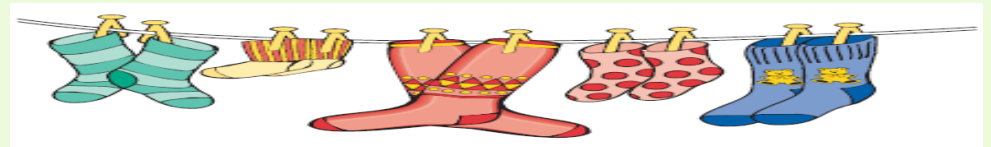
They solve problems, including doubling.

They solve practical problems that involve combining groups of 2, 5 or 10.

'Double 4 is 8'



Count in 2's from zero



2

4

6

8

10

Count in 5's from zero



5

10

15

20

25

Count in 10's from zero



10

20

30

40

50

Multiplication – Year 1

Big Maths Steps: 3 - 6

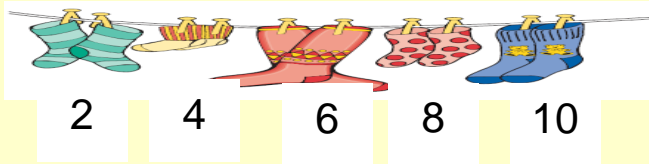
National Curriculum 2014 reference(s):

Count in different multiples including 2s, 5s, and 10s.

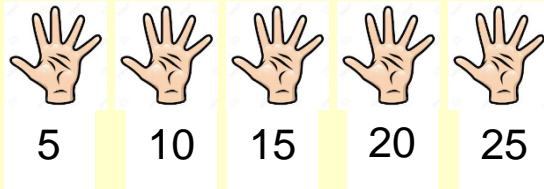
Begin to recall and use multiplication facts for the 2, 5, 10 tables.

Solve one-step problems, involving multiplication and division, calculating the answer using concrete objects, pictorial representations and arrays with the support of a teacher.

Count in 2's from zero



Count in 5's from zero



Count in 10's from zero



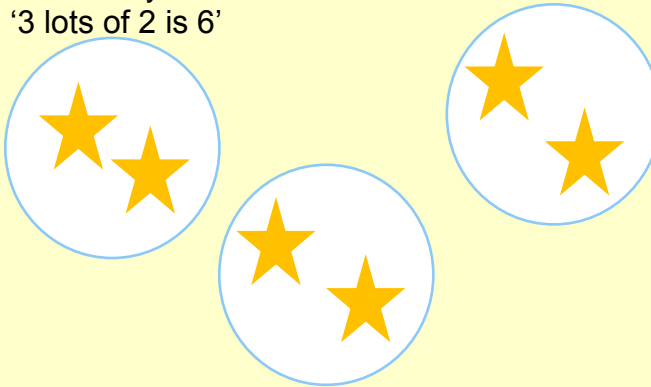
Practically combine groups of objects.

There are 3 plates.

Each plate has 2 star biscuits on.

How many biscuits are there?

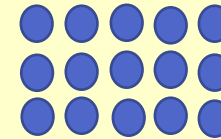
'3 lots of 2 is 6'



Use and become familiar with arrays

$$5 + 5 + 5 = 15 - 3 \times 5$$

$$3 + 3 + 3 + 3 + 3 = 15 - 5 \times 3$$



Moving on to repeated addition when children are confident.

2 add 2 add 2 equals 6

$$2 + 2 + 2 = 6$$

Multiplication – Year 2

Big Maths Steps: 7 - 9

National Curriculum 2014 reference(s):

Count in different steps including 2, 3, and 5 from 0.

Count in tens from any number, forward and backwards.

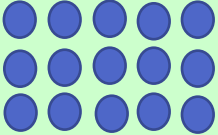
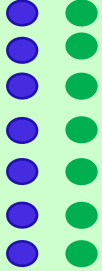
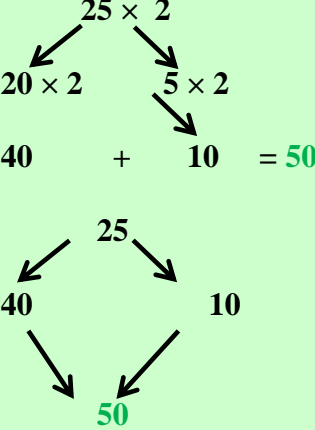
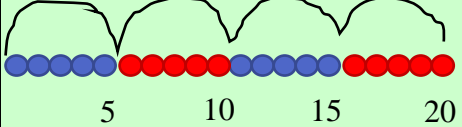
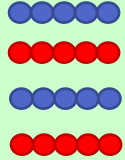
Recall and use multiplication and division facts for the 2, 5, 10 tables.

Recognise odd and even numbers.

Calculate the mathematical statements for multiplication and division within the multiplication tables and write them using \times \div = 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.

<p>Continue to use arrays</p> <p>$5 + 5 + 5 = 15 - 3 \times 5$</p> <p>$3 + 3 + 3 + 3 + 3 = 15 - 5 \times 3$</p> 	 <p>Recall and Derive doubles</p> <p>$7 + 7 = 14$</p> <p>$7 \times 2 = 14$</p>	<p>Recall and derive doubles</p>  <p>25×2</p> <p>20×2 5×2</p> <p>$40 + 10 = 50$</p> <p>25</p> <p>40 10</p> <p>50</p>	<p>Use numberlines to support teaching of repeated addition</p>  <p>5 10 15 20</p>  <p>$5 + 5 + 5 + 5 = 20$</p> <p>$5 \times 4 = 20$</p>
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Additional Notes: Coin Multiplication (Steps 1 and 2) to be introduced during the Summer term of Year 2. Children should be able to use known facts to complete a 1, 2, 5, 10 coin card.

Multiplication – Year 3

Big Maths Steps: 9 - 11

National Curriculum 2014 reference(s):

Count from 0 in multiples of 4, 8, 50 and 100.

Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10.

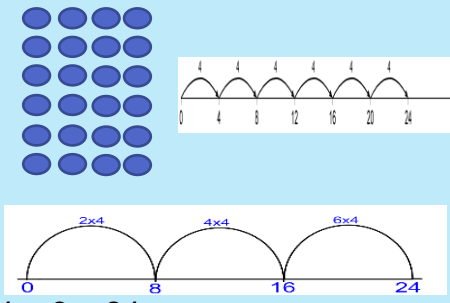
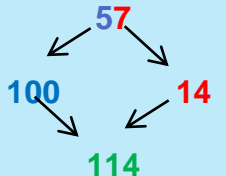

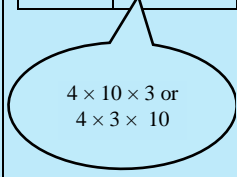
Recall and use multiplication and division facts for the 3, 4, 8 tables.

Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including 2 digit x 1 digit, using mental and progressing to formal written methods.

Pupils develop reliable written methods for multiplication and division, starting with calculations of two-digit numbers by one-digit numbers and progressing to the formal written methods of short multiplication and division.

Solve problems including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects.

Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.

 <p>$4 \times 6 = 24$ Use arrays and number lines to count in multiples</p>	<h3>Using partitioning to multiply</h3> $57 \times 2 = 114$ $50 \times 2 \quad 7 \times 2$ $100 \quad + \quad 14 = 114$ 	<h3>Scaling</h3> <p>Making a 5cm line 4 times longer</p> $5\text{cm} \times 4 = 20\text{cm}$ 	<h3>$48 \times 3 = 144$ (Partitioning)</h3> <table border="1" data-bbox="1601 774 1937 941"> <tbody> <tr> <td>x</td> <td>40</td> <td>8</td> </tr> <tr> <td>3</td> <td>120</td> <td>24</td> </tr> </tbody> </table> <p>$120 + 24 = 144$</p> 	x	40	8	3	120	24
x	40	8							
3	120	24							

*Additional Notes: Smile Multiplication (steps 1 and 2) introduced to Year 3 in the Spring term, moving on to step 3 in the Summer term.
Coin Multiplication- Step 3 – Spring term*

Multiplication – Year 4

Big Maths Steps: 12 - 14

National Curriculum 2014 reference(s):

Count from 0 in multiples of 6, 7, 9, 25 and 1000.

Recall and use multiplication and division facts for the tables up to 12 x 12 (6, 7, 9, 11 and 12 not learnt previously).

Use place value, known and derived facts to multiply and divide mentally, including multiplying by 0 and 1; dividing by 1; multiplying three number together.

Recognise and use factor pairs and commutativity in mental calculations.

Multiply 2 digit and 3 digit numbers by a 1 digit number using formal written layout.

Practice to become fluent in the formal written method of short multiplication for multiplying using multi-digit numbers.

Solve problems involving multiplying and adding, including the distributive law to multiply 2 digit numbers by 1 digit, integer scaling problems and harder multiplication problems such as n objects are connected to m objects.

Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.

Solve simple measure and money problems involving fractions and decimals to 2 decimal places.

Convert between units of measure.

Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.

<p>Mental</p> <p>Multiplying by 10 and 100 Eg. 24×100</p> <table border="1" data-bbox="96 976 481 1161"> <thead> <tr> <th>Th</th> <th>H</th> <th>T</th> <th>U</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>2</td> <td>4</td> </tr> <tr> <td>2</td> <td>4</td> <td>0</td> <td>0</td> </tr> </tbody> </table> <p>Partitioning 267×2 $200 \times 2 = 400$ $400 + 120 + 14 = 534$ $60 \times 2 = 120$ $7 \times 2 = 14$</p>	Th	H	T	U			2	4	2	4	0	0	<p>67×9</p> <table border="1" data-bbox="766 874 1200 1034"> <tbody> <tr> <td>x</td> <td>60</td> <td>7</td> </tr> <tr> <td>9</td> <td>540</td> <td>63</td> </tr> </tbody> </table> <p>437×6</p> <table border="1" data-bbox="766 1117 1348 1276"> <tbody> <tr> <td>x</td> <td>400</td> <td>30</td> <td>7</td> </tr> <tr> <td>6</td> <td>2400</td> <td>180</td> <td>42</td> </tr> </tbody> </table> <p>$2400 + 180 + 42 = 2622$</p>	x	60	7	9	540	63	x	400	30	7	6	2400	180	42	<p>Partitioning grid multiplication leading to formal compact methods</p> <p>$67 \times 9 =$</p> <table border="0" data-bbox="1438 997 1568 1101"> <tr> <td></td> <td>6</td> <td>7</td> </tr> <tr> <td></td> <td>6</td> <td>9</td> </tr> <tr> <td>—</td> <td>6</td> <td>0</td> </tr> <tr> <td></td> <td>3</td> <td></td> </tr> </table>		6	7		6	9	—	6	0		3	
Th	H	T	U																																					
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6	2400	180	42																																					
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Additional Notes: Coin Multiplication- Step 4 – Spring term

Multiplication – Year 5

Big Maths Steps: 14 - 16

National Curriculum 2014 reference(s):

Identify all multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.

Solve problems involving multiplication and division where larger numbers are used by decomposing them into their factors.

Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.

Establish where a number up to 100 is prime and recall prime numbers to 19.

Multiply numbers mentally drawing upon known facts.

Multiply numbers up to 4 digits by a 1 digit or 2 digit number using a formal written layout, including long multiplication for 2 digit numbers.

Multiply whole numbers and those involving decimals by 10, 100 and 1000.

Recognise and use square numbers and cube numbers, and the notation for squared and cubed.

Solve problems involving all 4 operations, including combinations of these.

Solve problems involving \times and \div , including scaling by simple fractions and problems involving simple rates.

Convert between different units of metric measure.

Calculate and compare the area of squares and rectangles, including using standard units.

Solve problems involving converting between units of time.

Use all 4 operations to solve problems involving measure using decimal notation and scaling.

Mental calculation	TU \times TU by partitioning	Leading to multiplication using a compact method	Compact for TU \times TU																		
<p>Partitioning</p> <p>407×4</p> <p>407×2</p> <p>$400 \times 4 = 1600$</p> <p>$0 \times 4 = 0$</p> <p>$7 \times 4 = 28$</p> <p>$1600 + 28 = 1628$</p> <p>Rounding and adjusting</p> <p>$\text{£}3.99 \times 6$</p> <p>$\text{£}4 \times 6 = \text{£}24$</p> <p>$\text{£}24.00 - \text{£}0.06 = \text{£}23.94$</p>	<p>47×58</p> <table border="1" data-bbox="600 938 1039 1353"> <tr> <td></td> <td>40</td> <td>7</td> </tr> <tr> <td>50</td> <td>2000</td> <td>350</td> </tr> <tr> <td></td> <td>(4 x 10 x 5 x 10)</td> <td>(5 x 10 x 7)</td> </tr> <tr> <td></td> <td>Or 4 x 5 x 100</td> <td></td> </tr> <tr> <td>8</td> <td>320</td> <td>56</td> </tr> <tr> <td></td> <td>(8 x 4 x 10)</td> <td></td> </tr> </table>		40	7	50	2000	350		(4 x 10 x 5 x 10)	(5 x 10 x 7)		Or 4 x 5 x 100		8	320	56		(8 x 4 x 10)		<p>$378 \times$</p> <p>$\underline{557}$</p> <p>2646</p> <p>$4569 \times$</p> <p>$\underline{4578}$</p> <p>38552</p>	<p>28×39</p> <p>$28 \times$</p> <p>$\underline{239}$</p> <p>252</p> <p>840</p> <p>$\underline{1092}$</p> <p>567×86</p> <p>567</p> <p>$\underline{4846}$</p> <p>3402</p> <p>$\underline{45360}$</p> <p>48762</p>
	40	7																			
50	2000	350																			
	(4 x 10 x 5 x 10)	(5 x 10 x 7)																			
	Or 4 x 5 x 100																				
8	320	56																			
	(8 x 4 x 10)																				

Additional Notes: Smile Multiplication – Step 4 – Autumn Term, Step 5 – Spring Term
Coin Multiplication - Step 5 – Spring term

Multiplication – Year 6

Big Maths Steps: 17 - 18

National Curriculum 2014 reference(s):

Identify common factors, common multiples and prime numbers.

Perform mental calculations, including mixed operations and large numbers.

Multiply multi-digit numbers up to 4 digits by a 2 digit whole number using the efficient written method of long multiplication.

Multiply numbers by 10, 100 and 1000 where answers are up to three decimal places.

Multiply one-digit numbers with up to two decimal places by whole numbers.

Use knowledge of the order of operations to carry out calculations involving four operations.

Solve problems involving the calculation and conversion of unit of measure, using decimal notation up to three decimal places where appropriate.

Multiply simple pairs of proper fractions, writing the answer in its simplest form.

Calculate the area of parallelograms and triangles.

Calculate volume of cubes and cuboids using standard units.

Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.

Solve problems involving the calculation of percentages.

Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Mental calculation

Partitioning

$$5.7 \times 6$$

$$5 \times 6 = 30$$

$$0.7 \times 7 = 4.2$$

$$30 + 4.2 = 34.2$$

$$5.3 \times 19$$

$$5.3 \times 10 \times 2 = 106$$

$$106 - 5.3 = 100.7$$

$$3749 \times 38$$

$$\begin{array}{r} 3749 \times \\ 53 \quad 378 \\ \hline 29922 \\ 112470 \\ \hline 142392 \end{array}$$

Multiplication Vocabulary (new vocabulary in red)	
Year One	groups of, lots of, times, array, altogether, multiply, count
Year Two	groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times, as big as, once, twice, three times ...
Year Three	groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times, as big as, once, twice, three times ... , partition, grid method, total, multiple, product, tens, units, value,
Year Four	groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times, as big as, once, twice, three times ... , partition, grid method, total, multiple, product, tens, units, value, inverse
Year Five	groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times, as big as, once, twice, three times ... , partition, grid method, total, multiple, product, tens, units, value, inverse, square, factor, integer, decimal, short / long multiplication, carry
Year Six	groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times, as big as, once, twice, three times ... , partition, grid method, total, multiple, product, tens, units, value, inverse, square, factor, integer, decimal, short / long multiplication, carry, tenths, hundredths, decimal

Division – Early Years

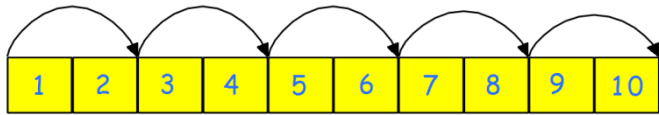
Big Maths Steps: 1 - 5

National Curriculum 2014 reference(s):

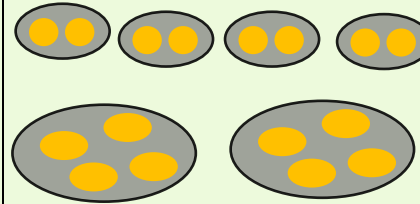
Children count reliably with numbers from one to 20.

They solve problems, including halving and sharing.

They solve practical problems that involve sharing into equal groups.



There are eight oranges.
Can you share them equally?



Division – Year 1

Big Maths Steps: 5 - 11

National Curriculum 2014 reference(s):

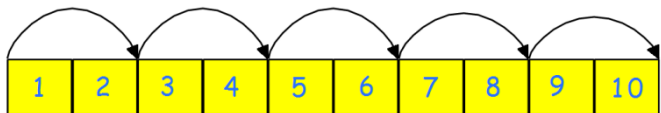
Count in different multiples including 2s, 5s, and 10s.

Begin to recall and use multiplication facts for the 2, 5, 10 tables.

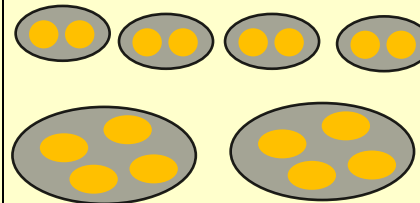
Solve one-step problems, involving multiplication and division, calculating the answer using concrete objects, pictorial representations and arrays with the support of a teacher.

Recognise, find and name a half as one of two equal; parts of an object, shape or quantity.

Recognise, find and name a quarter as one of four equal; parts of an object, shape or quantity.



There are eight oranges.
Can you share them equally?



Division – Year 2

Big Maths Steps: 12 - 17

National Curriculum 2014 reference(s):

Count in different steps including 2, 3, and 5 from 0.

Count in tens from any number, forward and backwards.

Recall and use multiplication and division facts for the 2, 5, 10 tables.

Recognise odd and even numbers.

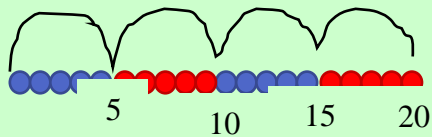
Calculate the mathematical statements for multiplication and division within the multiplication tables and write them using \times \div = signs.

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.

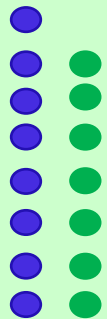
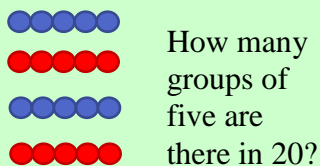
Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity.

Counting



Relate division to counting and multiplication facts.

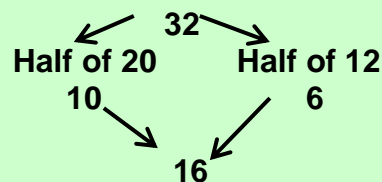
Count in 5s to see that there are 4 5s in 20.



Recall and Derive Halves

Look at doubles of even numbers and seeing half of odd numbers as one left over or $\frac{1}{2}$

Halving by partitioning



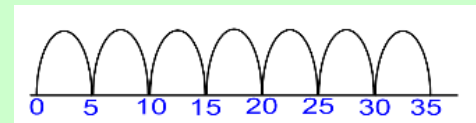
Division by sharing

$$10 \div 5 =$$



Division by grouping

$$35 \div 5 =$$



Division – Year 3

Big Maths Steps: 17 - 19

National Curriculum 2014 reference(s):

Count from 0 in multiples of 4, 8, 50 and 100.

Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10.

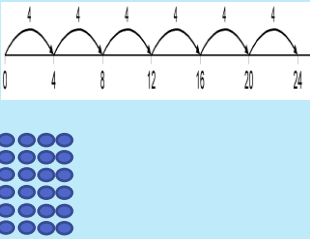
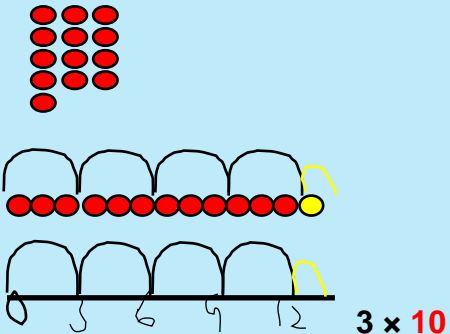
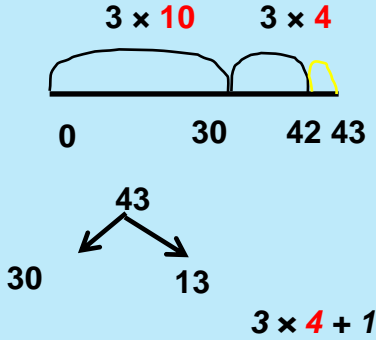
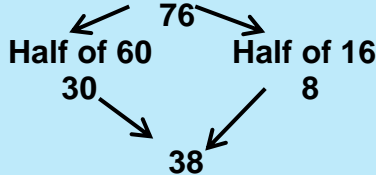
Recall and use multiplication and division facts for the 3, 4, 8 tables.

Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including 2 digit x 1 digit, using mental and progressing to formal written methods.

Pupils develop reliable written methods for multiplication and division, starting with calculations of two-digit numbers by one-digit numbers and progressing to the formal written methods of short multiplication and division.

Solve problems including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects.

Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.

<p>Counting Relate division to counting and multiplication facts. Count in 4s to see that there are 6 4s in 24</p>  <p>Arrays show 6 groups of 4 so $24 \div 4 = 6$</p>	<p>Division as grouping $13 \div 3 = 4 \text{ r}1$</p>  <p>3×10</p>	<p>Division as grouping $43 \div 3$</p>  <p>3×10 3×4</p> <p>$3 \times 4 + 1$</p>	<p>Halving by partitioning</p>  <p>Half of 60 Half of 16</p> <p>30 8</p> <p>38</p>
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Division – Year 4

Big Maths Steps: 19 - 23

National Curriculum 2014 reference(s):

Recall and use multiplication and division facts for the tables up to 12×12 (6, 7, 9, 11 and 12 not learnt previously).

Use place value, known and derived facts to multiply and divide mentally, including multiplying by 0 and 1; dividing by 1; multiplying three number together.

Recognise and use factor pairs and commutatively in mental calculations.

Practice to become fluent in the formal written method of short division with exact answers when dividing by a one-digit number.


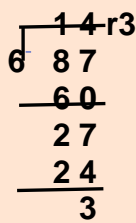
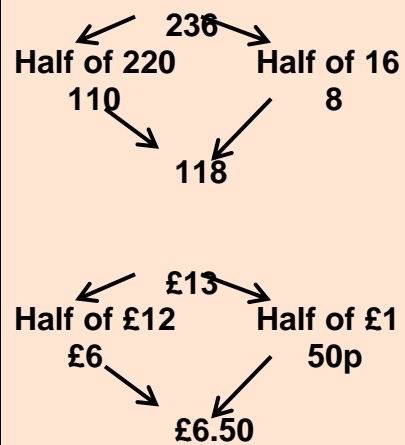
Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.

Find the effect of dividing a one or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths.

Solve simple measure and money problems involving fractions and decimals to 2 decimal places.

Convert between units of measure.

Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.

<p>Division facts for multiplication tables up to 12×12</p> <p>Use facts for numbers up to 10 times the divisor</p> <p>Eg $75 \div 9$ This is between</p> <p>$72 \div 9 = 8$ and $81 \div 9 = 9$ So 8 remainder 3</p>	<p>Division as grouping Combine multiples of the divisor to support you</p> <p>$87 \div 6 =$</p> <p>6×10 6×4</p>  <p>0 6 84</p> <p style="text-align: center;">87</p> <p style="text-align: center;">↙ ↘</p> <p style="text-align: center;">60 27</p> <p style="text-align: center;">6×10 $6 \times 4 + 3$</p>	<p>Division by grouping leading to formal division</p> <p>$87 \div 6$</p> 	<p>Halving by partitioning</p> 
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Division – Year 5

Big Maths Steps: 24 - 31

National Curriculum 2014 reference(s):

Identify all multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.

Solve problems involving multiplication and division where larger numbers are used by decomposing them into their factors.

Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.

Establish where a number up to 100 is prime and recall prime numbers to 19.

Divide numbers mentally drawing upon known facts.

Divide numbers up to 4 digits by a 1 digit number using the formal written method of short division and interpret remainders appropriately for the context.

Divide whole numbers and those involving decimals by 10, 100 and 1000.

Recognise and use square numbers and cube numbers, and the notation for squared and cubed.

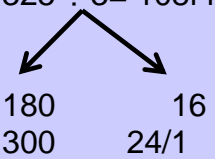
Solve problems involving all 4 operations, including combinations of these.

Solve problems involving \times and \div , including scaling by simple fractions and problems involving simple rates.

Convert between different units of metric measure.

Solve problems involving converting between units of time.

Use all 4 operations to solve problems involving measure using decimal notation and scaling.

<p>multiply and divide numbers mentally drawing upon known facts</p> <p>Divide numbers by 10 and 100</p> <table border="1" data-bbox="100 989 448 1109"> <thead> <tr> <th>H</th> <th>T</th> <th>U</th> <th>1/10</th> <th>1/100</th> </tr> </thead> <tbody> <tr> <td></td> <td>2</td> <td>7</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>2</td> <td>7</td> </tr> </tbody> </table>	H	T	U	1/10	1/100		2	7						2	7	<p>Division as grouping drawing on known facts</p> <p>Use partitioning and known facts</p> <p>$196 \div 6 = 32r4$ $325 \div 3 = 108r1$</p>  <p>180 16 300 $24/1$</p> <p>(6×30) $(6 \times 2 + 4)$ (3×100) $(3 \times 8 + 1)$</p>	<p>Division leading to formal division</p> <p>$578 \div 7$</p> $\begin{array}{r} 82r4 \\ 7 \overline{) 578} \\ \underline{560} \\ 18 \\ \underline{14} \\ 4 \end{array}$	<p>Formal (short) Division</p> <p>$638 \div 8$</p> $\begin{array}{r} 79r4 \\ 8 \overline{) 638} \\ \underline{56} \\ 78 \\ \underline{72} \\ 6 \end{array}$ <p>$6725 \div 7$</p> $\begin{array}{r} 0960r5 \\ 7 \overline{) 6725} \\ \underline{63} \\ 42 \\ \underline{42} \\ 5 \end{array}$
H	T	U	1/10	1/100														
	2	7																
			2	7														

Division – Year 6

Big Maths Steps: 32 - 33

National Curriculum 2014 reference(s):

Divide numbers up to 4 digits by a 1 digit number using the formal written method of short division and interpret remainders appropriately for the context.

Use written division methods in cases where the answer has up to two decimal places.

Identify common factors, common multiples and prime numbers.

Perform mental calculations, including mixed operations and large numbers.

Divide proper fractions by whole numbers.

Divide numbers by 10, 100 and 1000 where answers are up to three decimal places.

Use knowledge of the order of operations to carry out calculations involving four operations.

Multiply simple pairs of proper fractions, writing the answer in its simplest form.

Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.

Solve problems involving the calculation of percentages.

Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Solve problems involving the calculation and conversion of unit of measure, using decimal notation up to three decimal places where appropriate.

Use known facts	Short Division	Long Division drawing on known facts	Use tests of divisibility	Use place value and division facts
<p>Know 378 is a multiple of 3 because 300/60 and 18 are all multiples of 3</p> <p>Know 385 is a multiple of 7 because 350 and 35 are multiples of 7</p>	<p>$638 \div 8$</p> $\begin{array}{r} 79r4 \\ 8 \overline{)6378} \\ \underline{56} \\ 77 \\ \underline{72} \\ 50 \\ \underline{40} \\ 10 \\ \underline{8} \\ 2 \end{array}$ <p>$6725 \div 7$</p> $\begin{array}{r} 0960r5 \\ 7 \overline{)67425} \\ \underline{63} \\ 42 \\ \underline{28} \\ 14 \\ \underline{14} \\ 5 \end{array}$	<p>$493 \div 15$</p> $\begin{array}{r} 32r13/15 \\ 15 \overline{)493} \\ \underline{45} \\ 43 \\ \underline{30} \\ 13 \end{array}$	<p>Multiple of 3, digits in the number add to 3, 6 or 9</p> <p>Multiple of 4, tens and ones in the number are a multiple of 4</p> <p>Multiple of 6, the number is even and digits in the number add to 3, 6 or 9</p> <p>Multiple of 9, digits in the number add to 9</p>	<p>$1.32 \div 3 = 1/100$ of $132 \div 3$</p> <p>$132 \div 3 = 44$ $44 \div 100 = 0.44$ So $1.32 \div 3 = 0.4$</p>

Division Vocabulary (new vocabulary in red)	
Year One	share, share equally, one each, two each, group, equal groups of, lots of, array
Year Two	share, share equally, one each, two each, group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over
Year Three	share, share equally, one each, two each, group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, carry, remainder, multiple
Year Four	share, share equally, one each, two each, group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, carry, remainder, multiple, divisible by, factor,
Year Five	share, share equally, one each, two each, group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, carry, remainder, multiple, divisible by, factor, quotient, prime number, prime factors, composite number (non prime),
Year Six	share, share equally, one each, two each, group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, carry, remainder, multiple, divisible by, factor, quotient, prime number, prime factors, composite number (non prime), common factor

Additional Information as to where each Big Maths step introduced.
 ✓ indicates progress drive has been completed.

Reception

	Progress Drive	Autumn	Spring	Summer
C	Saying Numbers	1	1	2
	Reading Numbers		1	2
	Squiggleworth			
	CORE Numbers		1	1
	Counting Skills	✓	✓	✓
	Actual Counting	1	2,3,4,5	6
	Counting On		1	2,3,4,5
	Counting Multiples			1
	Count Fourways			
	Counting Along			
L	Learn It's	1	2	3
I	Pim the Alien			1
	Adding with Pim			
	Doubling and Halving		1	1
	Jigsaw Numbers			
	x10 & ÷ 10			
	Smile Multiplication			
	Coin Multiplication			
	Where's Mully			
	Pom's Words			
	Fact Families			
C	Addition		1,2	3,4,5
	Subtraction		1,2	3,4,5
	Multiplication			1,2
	Division		1	2,3,4,5
	Addition			
	Subtraction			
	Multiplication			
	Division			

Additional Information as to where each Big Maths step introduced.
 √ indicates progress drive has been completed.

Year 1

	Progress Drive	Autumn	Spring	Summer
C	Saying Numbers	3,4	4	5
	Reading Numbers	3,4	5	5
	Squiggleworth			1
	CORE Numbers	1	1	2
	Counting Skills	√	√	√
	Actual Counting	√	√	√
	Counting On	√	√	√
	Counting Multiples	2	2	3
	Count Fourways			1s, 10s, 2s, 5s
	Counting Along			
L	Learn It's	4	5	6
I	Pim the Alien	1	1	1
	Adding with Pim			
	Doubling and Halving	1	2	2 1 1
	Jigsaw Numbers	1	1	1
	x10 & ÷ 10			
	Smile Multiplication			
	Coin Multiplication			
	Where's Mully			
	Pom's Words			
	Fact Families			1
C	Addition	5	6,7,8,9	10,11,12
	Subtraction	5	6,7,8,9	10,11,12
	Multiplication	3,4	4	5,6
	Division	5	6	7,8,9,10,11
	Addition			
	Subtraction			
	Multiplication			
	Division			

Additional Information as to where each Big Maths step introduced.
 ✓ indicates progress drive has been completed.

Year 2

	Progress Drive	Autumn	Spring	Summer
C	Saying Numbers	✓	✓	✓
	Reading Numbers	5	6	6
	Squiggleworth	1	1	1
	CORE Numbers	2	2	3
	Counting Skills	✓	✓	✓
	Actual Counting	✓	✓	✓
	Counting On	✓	✓	✓
	Counting Multiples	3	4	4
	Count Fourways	100s	50s 500s 5000s 1/2s	20s 200s 2000s 1/4s
	Counting Along			
L	Learn It's	7	8	9
I	Pim the Alien	1	1	1
	Adding with Pim	1	2	3
	Doubling and Halving	3 2 2	3 2 2	3 3 3
	Jigsaw Numbers	1	2	3
	x10 & ÷10			1 1
	Smile Multiplication			
	Coin Multiplication			1,2
	Where's Mully		1	1
	Pom's Words			
	Fact Families	2	2	3,4
C	Addition	13,14,15	16,17,18,19	20 - 24
	Subtraction	13,14,15	16,17,18,19	20 - 27
	Multiplication	7,8	8	9
	Division	12	13,14,15	16,17
	Addition			1
	Subtraction			1
	Multiplication			
	Division			

Additional Information as to where each Big Maths step introduced.
 ✓ indicates progress drive has been completed.

Year 3

	Progress Drive	Autumn	Spring	Summer
C	Saying Numbers	✓	✓	✓
	Reading Numbers	6	6	6
	Squiggleworth	2 (i)	2 (i)	2 (ii), 3
	CORE Numbers	3	3	4
	Counting Skills	✓	✓	✓
	Actual Counting	✓	✓	✓
	Counting On	✓	✓	✓
	Counting Multiples	4	5	6
	Count Fourways	20s 200s 2000s 1/4s	1000s	1/10s 0.1s
	Counting Along	1	2	2
L	Learn It's	10	11	12
I	Pim the Alien	1	1	2,3
	Adding with Pim	3	3	3
	Doubling and Halving	3 3 3	4 4 3	5 5 3
	Jigsaw Numbers	3	3	3
	x10 & ÷10	1 1	1 1	1 1
	Smile Multiplication		1,2	3
	Coin Multiplication	2	3	3
	Where's Mully	1	2	2
	Pom's Words			
	Fact Families	4	4	5
C	Addition	25	26, 27	28
	Subtraction	28	28	29
	Multiplication	9	10	11
	Division	17	17	18,79
	Addition	2	3	4,5,6
	Subtraction	2	3,4	5
	Multiplication			1
	Division			1

Additional Information as to where each Big Maths step introduced.
 √ indicates progress drive has been completed.

Year 4

	Progress Drive	Autumn	Spring	Summer
C	Saying Numbers	√	√	√
	Reading Numbers	6	6	6
	Squiggleworth	4	4	4
	CORE Numbers	5	6	7
	Counting Skills	√	√	√
	Actual Counting	√	√	√
	Counting On	√	√	√
	Counting Multiples	7,8,9	√	√
	Count Fourways	25s 250s 2500s	0.2s 0.5s 0.25s	1/5s
	Counting Along	3	4	4
L	Learn It's	13	14	15
I	Pim the Alien	√	√	√
	Adding with Pim	3	4	4
	Doubling and Halving	√ √ 3	√ √ 4	√ √ 5,6
	Jigsaw Numbers	4	4	4
	x10 & ÷ 10	2 1	2 2	2 2
	Smile Multiplication	3	3	3
	Coin Multiplication	3	4	4
	Where's Mully	2	2	3
	Pom's Words			1,2
	Fact Families	√	√	√
C	Addition	28	29	30,31
	Subtraction	29	29	30
	Multiplication	12,13	14	14
	Division	19	19	20,21,22,23
	Addition	6	7	8
	Subtraction	6	6	7
	Multiplication	1	2	3
	Division	2	2	3,4,5

Additional Information as to where each Big Maths step introduced.
 ✓ indicates progress drive has been completed.

Year 5

	Progress Drive	Autumn	Spring	Summer
C	Saying Numbers	✓	✓	✓
	Reading Numbers	7,8,9	10,11	✓
	Squiggleworth	4	4	5
	CORE Numbers	7	7	8,9
	Counting Skills	✓	✓	✓
	Actual Counting	✓	✓	✓
	Counting On	✓	✓	✓
	Counting Multiples	✓	✓	✓
	Count Fourways	-1s	-2s -5s	-25s
	Counting Along	4	5	6
L	Learn It's	✓	✓	✓
I	Pim the Alien	✓	✓	✓
	Adding with Pim	5	✓	✓
	Doubling and Halving	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓
	Jigsaw Numbers	5	✓	✓
	x10 & ÷ 10	3 3	4 4	5 5
	Smile Multiplication	4	5	✓
	Coin Multiplication	4	5	✓
	Where's Mully	4	5	✓
	Pom's Words	2	3	4
	Fact Families	✓	✓	✓
C	Addition	32,33	34,35	36,37,38
	Subtraction	31	32,33	34,35,36
	Multiplication	14	15,16	16
	Division	24,25	26,27	28,29,30,31
	Addition	8	9	10
	Subtraction	7	8	8
	Multiplication	4	5	6
	Division	5	6	7

Additional Information as to where each Big Maths step introduced.
 ✓ indicates progress drive has been completed.

Year 6

	Progress Drive	Autumn	Spring	Summer
C	Saying Numbers	✓	✓	✓
	Reading Numbers	✓	✓	✓
	Squiggleworth	✓	✓	✓
	CORE Numbers	10	✓	✓
	Counting Skills	✓	✓	✓
	Actual Counting	✓	✓	✓
	Counting On	✓	✓	✓
	Counting Multiples	✓	✓	✓
	Count Fourways	✓	✓	✓
	Counting Along	7	✓	✓
L	Learn It's	✓	✓	✓
I	Pim the Alien	✓	✓	✓
	Adding with Pim	✓	✓	✓
	Doubling and Halving	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓
	Jigsaw Numbers	✓	✓	✓
	x10 & ÷ 10	✓ ✓	✓ ✓	✓ ✓
	Smile Multiplication	✓	✓	✓
	Coin Multiplication	✓	✓	✓
	Where's Mully	✓	✓	✓
	Pom's Words	✓	✓	✓
	Fact Families	✓	✓	✓
C	Addition	39,40,41	✓	✓
	Subtraction	37	✓	✓
	Multiplication	17,18	✓	✓
	Division	32,33	✓	✓
	Addition	11,12,13,14	✓	✓
	Subtraction	9,10,11,12	✓	✓
	Multiplication	7,8,9,10,11	✓	✓
	Division	8,9,10	✓	✓