

Useful Websites and Resources

www.problempictures.co.uk/themes

www.topmarks.co.uk

www.woodlandsjunior.kent.sch.uk/maths/

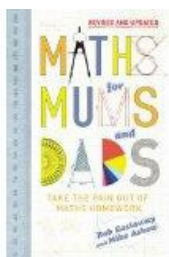
www.bbc.co.uk/schools

<http://www.mathsisfun.com>

<http://www.mathletics.co.uk/> (pupil subscription needed)

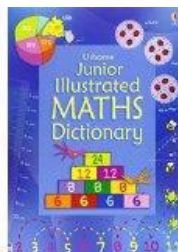
<http://www.educationcity.com> (pupil subscription needed)

Help Books



Maths for Mums and Dads by
Rob Eastway and Mike Askew

Usborne Junior Illustrated Maths Dictionary



Study guides: aim for ones that specify new curriculum 2014 onwards and show an example of how to do it followed by practice questions. (available on Amazon, or from W H Smith and Waterstones).

Resources: wherever possible use objects such as marbles, counters, buttons, straws, pebbles, shells to move around in the early stages of trying to understand calculations such as addition, subtraction, multiplication, division and fractions.



Heathfield Schools' Partnership

Maths

Calculation

Methods


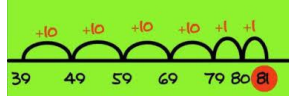

This booklet has been produced to outline the main methods of calculation that the children are taught as they progress through Key Stage 1 and 2.

We hope it will be useful to you.

If you have any other concerns about your child's maths work please do not hesitate to contact us.

July 2015

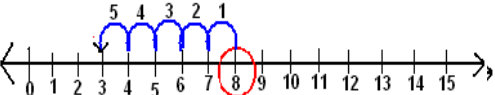
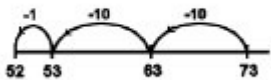
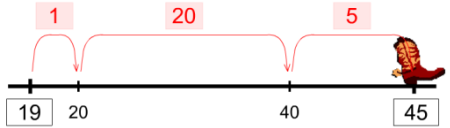
Addition

End of Reception: Early Learning Goal																															
<p>Number: Children count reliably with numbers from 1 to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single digit numbers and count on or back to find the answer. They solve problems including doubling, halving and sharing.</p>																															
Year 1	Year 2																														
<p>Number lines to count on, putting the largest number first $6 + 3 = 9$</p>  <p>100 square to count on. Counting across in ones. Counting down in tens. $4 + 5 = 9$ $12 + 10 = 22$</p> <table border="1" style="margin-left: auto; margin-right: auto; text-align: center; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> </table>	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	<p>Draw their own number line to add in jumps of tens and ones $39 + 42 = 81$</p>  <p>Partition and add: $26 + 32 =$</p>  <p>Partition: 20 6 30 2</p> <p>Add tens: $20 + 30 = 50$ Add units: $6 + 2 = 8$ Add altogether: $50 + 8 = 58$</p>
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																						
Year 3	Year 4																														
<p>Extended column method (up to 3 digit numbers). Starting with the digit with the highest value e.g. 10, 100 or 1000</p> $\begin{array}{r} 47 \\ + 76 \\ \hline 110 \\ \quad 13 \\ \hline 123 \end{array}$	<p>Formal column method (up to 4 digit numbers)</p> $\begin{array}{r} 789 \\ +642 \\ \hline 1431 \\ \quad 11 \end{array} \qquad \begin{array}{r} 2809 \\ +3642 \\ \hline 6451 \\ \quad 11 \end{array}$																														

Year 5	Year 6
<p>Formal column method, using numbers with more than four digits.</p> <p>Solve addition multi-step problems in contexts, deciding which operations and methods to use and why.</p>	<p>Formal column method, using numbers with more than four digits.</p> <p>Solve addition multi-step problems in contexts, deciding which operations and methods to use and why.</p> <p>At the end of Year 6 the children will be tested on their formal written methods in a nationally administered 30 minute test.</p> <p><u>Sample question</u> *</p> $\begin{array}{r} 2555 \\ +8656 \\ \hline 11211 \\ \hline 1 \quad 1 \quad 1 \end{array}$

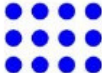

* These questions are adapted from the brief sample materials published by the government in 2014.

Subtraction

Year 1	Year 2																				
<p>Number lines to count backwards.</p> $8 - 5 = 3$  <p>100 square to count back. Counting across to the left in ones. Counting up in tens</p> <table border="1" data-bbox="1209 566 1601 646"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td> </tr> <tr> <td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td> </tr> </table> $6 - 4 = 2 \qquad 19 - 10 = 9$	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	<p>Consolidate the counting back method by drawing their own number line and jumping back in tens and ones</p> $73 - 21 = 52$  <p>Introduce the counting on method from the smallest number.</p> $45 - 19 = 26 \text{ (add the jumps).}$ 
1	2	3	4	5	6	7	8	9	10												
11	12	13	14	15	16	17	18	19	20												
Year 3	Year 4																				
<p>Consolidate the counting on method with 3 digit numbers.</p> <p>Introduce expanded column method. Partition each number and then subtract each column starting with the units. Recombine for the final answer.</p> $968 - 545 = 423$ <table border="1" data-bbox="1265 1244 1512 1412"> <tr> <td></td> <td>H</td> <td>T</td> <td>U</td> </tr> <tr> <td>-</td> <td>900</td> <td>60</td> <td>8</td> </tr> <tr> <td></td> <td>500</td> <td>40</td> <td>5</td> </tr> <tr> <td></td> <td><hr/></td> <td><hr/></td> <td><hr/></td> </tr> <tr> <td></td> <td>400</td> <td>20</td> <td>3</td> </tr> </table>		H	T	U	-	900	60	8		500	40	5		<hr/>	<hr/>	<hr/>		400	20	3	<p>Embed column method, using the compact method of recording, exchanging tens into units and hundreds into tens where required.</p> $\begin{array}{r} 874 \\ - 523 \\ \hline 8 \quad 12 \quad 1 \\ 932 \\ - 457 \\ \hline 475 \end{array}$
	H	T	U																		
-	900	60	8																		
	500	40	5																		
	<hr/>	<hr/>	<hr/>																		
	400	20	3																		

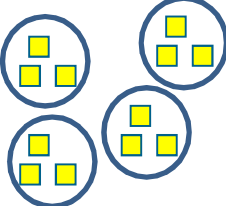
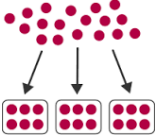
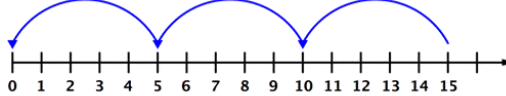
Year 5	Year 6
<p>Formal column method, using numbers with four or more digits.</p> <p>Solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p>	<p>Formal column method, using numbers with four or more digits.</p> <p>Solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p> <p>At the end of Year 6 the children will be tested on their formal written methods in a nationally administered 30 minute test. <u>Sample question</u>*</p> $\begin{array}{r} \overset{7}{8} \overset{9}{0} \overset{9}{0} \overset{1}{6} \\ - 4658 \\ \hline 3348 \end{array}$

Multiplication

Year 1	Year 2
<p>Showing multiplication as repeated addition.</p> <p>e.g.</p> <p style="text-align: center;">5 lots of 2</p> <p style="text-align: center;">$2 + 2 + 2 + 2 + 2 = 10$</p>	<p>Record multiplication facts using arrays</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>3 lots of 4 $3 \times 4 = 12$</p> </div> <div style="text-align: center;">  <p>4 lots of 3 $4 \times 3 = 12$</p> </div> </div> <p>Children at the end of Year 2 are expected to know their 2, 3, 4, 5 and 10 times tables facts off by heart.</p>
Year 3	Year 4
<p>Partition and multiply:</p> $\begin{array}{r} 23 \times 5 = \\ \swarrow \searrow \\ 20 \quad 3 \end{array}$ <p>Multiply tens: $20 \times 5 = 100$ Multiply units: $3 \times 5 = 15$ Add altogether: $100 + 15 = 115$</p> <p>Moving onto the grid method for recording:</p> $\begin{array}{c c c} \times & 30 & 7 \\ \hline 5 & 150 & 35 \\ \hline \end{array}$ <p style="text-align: center;">$150 + 35 = 185$</p> <p>Children at the end of Year 3 are expected to know their 6, 7 and 8 times tables facts off by heart.</p>	<p>Short multiplication method introduced for multiplying 2, 3 and 4 digit numbers by a single digit.</p> $\begin{array}{r} 342 \\ \times 7 \\ \hline 2394 \\ 21 \end{array}$ <p>Children at the end of Year 4 are expected to know <u>all their times tables facts up to 12 x 12</u>. Regular practice at home of these facts is important to ensure they develop the instant recall necessary to attain a secure level of development in maths by the end of Year 4.</p>

Year 5	Year 6
<p>Introduce long multiplication: multiplying 2 digit numbers by 2 digit numbers, starting with the units.</p> $\begin{array}{r} 24 \times 16 = \\ 2 \\ 24 \\ \times 16 \\ \hline 144 \\ 240 \\ \hline 384 \end{array}$	<p>Long multiplication HTU and ThHTU multiplied by 2 digit numbers.</p> $\begin{array}{r} 124 \times 26 = \\ 12 \\ 124 \\ \times 26 \\ \hline 744 \\ 2480 \\ \hline 3224 \\ 11 \end{array}$
<p>Solve multiplication multi-step problems in contexts, deciding which operations and methods to use and why.</p>	<p>Solve multiplication multi-step problems in contexts, deciding which operations and methods to use and why.</p> <p>Sample question *</p> $\begin{array}{r} 2376 \\ \times 15 \\ \hline 11880 \\ 23760 \\ \hline 35640 \\ 11 \end{array}$

Division

Year 1 and Year 2	
<p>Grouping</p> $12 \div 3$ <p>How many groups of 3 in 12</p> 	<p>Sharing</p> $18 \div 3$ <p>Share 18 counters between 3 people</p>  <p>Make links to subtraction: $18 - 6 - 6 - 6$</p>
Year 3	Year 4
<p>Jumping groups on a number line</p> $15 \div 5 = 3$ <p>+5 +5 +5 = 3 jumps</p> 	<p>Short division method</p> $\begin{array}{r} 045 \\ 8 \overline{) 360} \\ \underline{36} \\ 0 \end{array}$
Year 5	Year 6
<p>Embed the short method including remainders represented as numbers, or a fraction or a decimal</p> $7 \overline{) 964} \begin{array}{l} 137 \\ \underline{70} \\ 26 \\ \underline{21} \\ 5 \end{array} \text{ r}5$	<p>Long division method (the end of Year 6 test will include this)</p> $\begin{array}{r} 017 \text{ r} 10 \\ 25 \overline{) 435} \\ \underline{50} \\ 43 \\ \underline{25} \\ 185 \\ \underline{175} \\ 010 \end{array}$

