



Key Vocabulary
add
total
make
plus
sum
more
altogether
difference between
leave
subtract
less
minus
take away
mentally, orally
column addition
column subtraction
estimate
inverse operation
solve problems
number facts
complex

Add and Subtract Whole Numbers																																															
<p style="text-align: center;">Column Method</p> <table style="display: inline-table; border-collapse: collapse; margin-right: 20px;"> <tr><td style="border: 1px solid black; width: 20px; height: 20px;"></td><td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">4</td><td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">5</td><td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">8</td><td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">6</td><td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">4</td></tr> <tr><td style="border: 1px solid black; text-align: center;">+</td><td style="border: 1px solid black; text-align: center;">2</td><td style="border: 1px solid black; text-align: center;">3</td><td style="border: 1px solid black; text-align: center;">4</td><td style="border: 1px solid black; text-align: center;">9</td><td style="border: 1px solid black; text-align: center;">7</td></tr> <tr><td style="border: 1px solid black;"></td><td style="border: 1px solid black; text-align: center;">6</td><td style="border: 1px solid black; text-align: center;">9</td><td style="border: 1px solid black; text-align: center;">3</td><td style="border: 1px solid black; text-align: center;">6</td><td style="border: 1px solid black; text-align: center;">1</td></tr> <tr><td style="border: 1px solid black;"></td><td style="border: 1px solid black;"></td><td style="border: 1px solid black; text-align: center;">1</td><td style="border: 1px solid black; text-align: center;">1</td><td style="border: 1px solid black; text-align: center;">1</td><td style="border: 1px solid black;"></td></tr> </table> <p>Starting with the ones, add each column in turn. Regroup tens, hundreds, thousands, ten thousands as required.</p>		4	5	8	6	4	+	2	3	4	9	7		6	9	3	6	1			1	1	1		<table style="display: inline-table; border-collapse: collapse; margin-right: 20px;"> <tr><td style="border: 1px solid black; width: 20px; height: 20px;"></td><td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">3</td><td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">5</td><td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">7¹³</td><td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">4¹²</td><td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">7¹</td></tr> <tr><td style="border: 1px solid black; text-align: center;">-</td><td style="border: 1px solid black;"></td><td style="border: 1px solid black; text-align: center;">3</td><td style="border: 1px solid black; text-align: center;">4</td><td style="border: 1px solid black; text-align: center;">7</td><td style="border: 1px solid black; text-align: center;">6</td></tr> <tr><td style="border: 1px solid black;"></td><td style="border: 1px solid black; text-align: center;">3</td><td style="border: 1px solid black; text-align: center;">2</td><td style="border: 1px solid black; text-align: center;">2</td><td style="border: 1px solid black; text-align: center;">6</td><td style="border: 1px solid black; text-align: center;">6</td></tr> </table> <p>Starting with the ones, subtract each column in turn. Exchange tens, hundreds, thousands and/or ten thousands as required.</p>		3	5	7 ¹³	4 ¹²	7 ¹	-		3	4	7	6		3	2	2	6	6				
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<h3>Short Division</h3> <p style="text-align: center;">Start from the left.</p> <table style="border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">4</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">4</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">0</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">5</td> <td rowspan="2" style="padding-left: 5px; vertical-align: middle;"> $5 \div 12 = 0 \text{ r}5$ $52 \div 12 = 4 \text{ r}4$ $48 \div 12 = 4$ $6 \div 12 = 0 \text{ r}6$ </td> </tr> <tr> <td style="border: 1px solid black; text-align: center;">12</td> <td style="border: 1px solid black; text-align: center;">5</td> <td style="border: 1px solid black; text-align: center;">⁵2</td> <td style="border: 1px solid black; text-align: center;">⁴8</td> <td style="border: 1px solid black; text-align: center;">⁶0</td> <td style="border: 1px solid black; text-align: center;">0</td> </tr> </table>			4	4	0	5	$5 \div 12 = 0 \text{ r}5$ $52 \div 12 = 4 \text{ r}4$ $48 \div 12 = 4$ $6 \div 12 = 0 \text{ r}6$	12	5	⁵ 2	⁴ 8	⁶ 0	0	<h3>Common Factors</h3> <p>Factors of 48</p> <table style="border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">1</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">2</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">3</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">4</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">6</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">8</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">12</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">16</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">24</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">48</td> </tr> </table> <p>Factors of 30</p> <table style="border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">1</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">2</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">3</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">5</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">6</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">10</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">15</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">30</td> </tr> </table> <p>Common factors: 1, 2, 3, 6</p>	1	2	3	4	6	8	12	16	24	48	1	2	3	5	6	10	15	30	<h3>Common Multiples</h3> <p>Multiples of 3</p> <table style="border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">3</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">...</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">18</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">21</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">24</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">...</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">39</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">42</td> </tr> </table> <p>Multiples of 7</p> <table style="border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">7</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">14</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">21</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">28</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">35</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">42</td> </tr> </table> <p>Common multiples: 21, 42...</p>	3	...	18	21	24	...	39	42	7	14	21	28	35	42
		4	4	0	5	$5 \div 12 = 0 \text{ r}5$ $52 \div 12 = 4 \text{ r}4$ $48 \div 12 = 4$ $6 \div 12 = 0 \text{ r}6$																																									
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		1	2	0	r	3																																									
14	1	6	8	3																																											
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	<h3>Mental Calculations and Estimation</h3> <p>Order of calculations: $50 \times 34 \times 2 = 50 \times 2 \times 34 = 100 \times 34 = 3400$ Money: $\pounds 8.99 + \pounds 3.49 = \pounds 12.48$ Use $\pounds 9 + \pounds 3.50 = \pounds 12.50$ and subtract 2p Estimate on a number line</p> <div style="text-align: center; margin-bottom: 10px;"> <table style="margin: auto;"> <tr> <td style="text-align: center;">-8</td> <td style="text-align: center;">0</td> <td style="text-align: center;">8</td> <td style="text-align: center;">16</td> <td style="text-align: center;">20</td> <td style="text-align: center;">24</td> </tr> <tr> <td colspan="6" style="text-align: center;"> </td> </tr> </table> </div> <p>Subdivide line to estimate: 17</p>	-8	0	8	16	20	24							<h3>Reason from Known Facts</h3> <p>$90 \div 10 = 9$ so $90 \div 20 = 4.5$ and $90 \div 5 = 18$</p> <p>$16 \times 9 = 144$ so $1.6 \times 9 = 14.4$</p> <p>$4352 \div 17 = 256$ so $256 \times 18 = 4352 + 256 = 4608$</p> <p>$3786 + 2850 = 6636$ so $4786 + 2850 = 7636$ and $2786 + 3850 = 6636$ and $8636 - 3786 = 4850$</p>																																	
-8	0	8	16	20	24																																										

Which other division methods could you help solve a problem?
 How does knowing your 6 times tables help with your 60 times tables? What is the same and what is different?