

## Y6 SATS calculation

The Key Stage 2 SATS assess fluency through calculation alongside other things. This means that children must develop speed and accuracy when working with the four operations. They need to be equipped with efficient methods and show confidence in these.

Pupils will be expected to use formal methods when responding to questions presented in the arithmetic paper. They will even be awarded one out of two marks if a correct formal method is used but the final answer is incorrect.

Here is an explanation of the main formal methods that pupils are expected to know and use.

<p><u>Addition</u></p> <p>Digits lined up in correct place value columns.</p> <p>Columns added vertically starting with the smallest column.</p> <p>If any exchange is needed, this can be recorded underneath the line or above the above the line.</p> <p>Children can label columns to start with to help with setting out.</p> <div style="text-align: center;"> <p>Th H T O</p> <math display="block">\begin{array}{r} 7261 \\ 2165 \\ \hline 9426 \\ 1 \end{array}</math> </div>	<p><u>Subtraction</u></p> <p>Digits lined up in correct place value columns.</p> <p>Columns subtracted vertically starting with the smallest column.</p> <p>If any exchange is needed, cross out the column exchanging from, replacing it with what is left and write the exchanged digits</p> <div style="text-align: center;"> <p>Th H T O</p> <math display="block">\begin{array}{r} 5 \\ 36127 \\ 1231 \\ \hline 2396 \end{array}</math> </div>																																			
<p><u>Short Multiplication</u></p> <p>Set out in place value columns.</p> <p>The one digit number is multiplied by each digit in turn starting with the smallest and recorded below the line.</p> <p>Anything being carried into the next column can be recorded below or above the line and added on to that column afterwards.</p> <div style="text-align: center;"> <p>2741 × 6 becomes</p> <math display="block">\begin{array}{r} 2741 \\ \times 6 \\ \hline 16446 \\ 42 \end{array}</math> <p>Answer: 16 446</p> </div>	<p><u>Short Division</u></p> <p>Set out like so. Work down the digits starting with the biggest and recording above the line. Any remainders carried into the next column.</p> <p>Overall remainder may need recording as a fraction or a decimal also.</p> <div style="text-align: center;"> <p>432 ÷ 5 becomes</p> <math display="block">\begin{array}{r} 86 \text{ r } 2 \\ 5 \overline{) 432} \\ \underline{40} \phantom{2} \\ 32 \\ \underline{30} \\ 2 \end{array}</math> <p>Answer: 86 remainder 2</p> </div>																																			
<p><u>Long Multiplication</u></p> <p>Set out as short multiplication.</p> <p>When multiplying each digit by the tens digit, place a zero in the ones column.</p> <p>Add the two up afterwards.</p> <div style="text-align: center;"> <p>124 × 26 becomes</p> <math display="block">\begin{array}{r} 12 \\ 124 \\ \times 26 \\ \hline 744 \\ 2480 \\ \hline 3224 \\ 11 \end{array}</math> <p>Answer: 3224</p> </div>	<p><u>Long Division</u></p> <p>Set out like so. List the multiples of the number diving by down the side.</p> <p>Take chunks of that number away and record at the side how many chunks.</p> <p>Subtract the chunk taken and carry on until no more chunks can be taken and a remainder is left. Overall remainder may need recording as a fraction or a decimal also.</p> <div style="text-align: center;"> <p>432 ÷ 15 becomes</p> <table style="border-collapse: collapse;"> <tr><td></td><td></td><td style="text-align: center;">2</td><td style="text-align: center;">8</td><td></td></tr> <tr><td></td><td></td><td style="text-align: center;">4</td><td style="text-align: center;">3</td><td style="text-align: center;">2</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">5</td><td style="border-right: 1px solid black; padding-right: 5px;">4</td><td style="border-right: 1px solid black; padding-right: 5px;">3</td><td style="border-right: 1px solid black; padding-right: 5px;">2</td><td></td></tr> <tr><td></td><td></td><td style="text-align: center;">3</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td></tr> <tr><td></td><td></td><td style="text-align: center;">1</td><td style="text-align: center;">3</td><td style="text-align: center;">2</td></tr> <tr><td></td><td></td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">0</td></tr> <tr><td></td><td></td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td></td></tr> </table> <p>Answer: 28 r 12</p> <p>Remainder as a fraction:</p> <math display="block">\frac{12}{15} = \frac{4}{5}</math> </div>			2	8				4	3	2	5	4	3	2				3	0	0			1	3	2			1	2	0			1	2	
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