

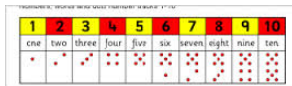
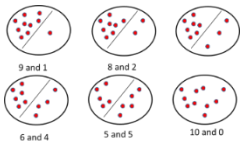
# Addition

Mental

YrR

- One more, one less
- Counting up/ counting down
- Using quantities and objects, add and subtract 2 single digit numbers and count on or back the answer.

- Number bonds to 5
- Number bonds to 10

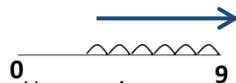


Recognise/ use numicon



Yr1

- Count forwards/ backwards in 1s, 2s, 10s, 1ps, 2ps
- Add 1 digit numbers within/ to 20 including 0:  
 $12 + 8 = \square$   
 $\square = 9 + 6$
- Add 10 to a number
- Add 0 to a number
- Represent on number line:  
eg.  $3 + 6$



- Use numicon
- Use and understand addition to 20 grid
- Use number square – identify patterns.
- Represent numbers as jottings  $|||$

Yr2

- Count forwards/ backwards in 2s, 3s, 5s, 10s
- Add 2 digit and 1 digit numbers:  
 $25 + 4 = \square$
- Partition eg  $27 + 8$
- 2 digits add 10's:  
 $27 + 40 = \square$
- Bridge through 10s  
 $16 + 8, 26 + 8$
- Doubles & near doubles/Compensating  
e.g.  $8 + 7 = 8 + 8 - 1$
- Missing numbers  
e.g.  $4 + \square = 11$
- Use number lines/ square

Yr3

- Count forwards/ backwards in 10s, 20s, 50s, 100s, 15s
- Add 3 digit numbers to 1 digit using empty number line:  
 $432 + 7 = \square$
- 3 digit add 10's using number line.  
e.g.  $72 + 50$
- Bridge through 100s
- **2 digit add 2 digit using partitioning**  
 $46 + 78 = \square$   
 $40 + 6$   
 $70 + 8 +$
- Number bonds: multiples of 5/ 10 to 50/ 100  
e.g.  $65 + \square = 100$

Yr4

- Count forwards/ backwards in 20s, 50s, 25s, 75s, 0.1s, 10p, 20p, 5p, 50p
- Continue to **use number line** to support mental methods.
- Bridge through 100s/ 100s
- Add several numbers/ 2 or more sums of money
- Number bonds: multiples of 5/ 10 to 50/ 100
- Add multiples of 10/50 up to 1000

Yr5

- Count forwards/ backwards in 0.25s/ fractions/ negative numbers
- Use empty number line to add negative numbers and time
- Add increasingly large numbers.

Yr6

- Count forwards/ backwards up to 1,000,000 and in 0.25s/ fractions/ negative numbers
- Order of operations (BIDMAS)
- Use most efficient mental methods of addition.**

Written

(All supported by visuals and manipulatives)

- Number formation
- Begin to write number sentences alongside the visual.
- Use pictures to record calculations

(All supported by visuals and manipulatives)

- Number formation
- Write 2 digit numbers and partition using Diennes
- Write number sentences alongside the visual/ with jottings
- Use number lines. Starting from largest number, adding on
- Use number squares to add on.

- 2 digit add 2 digit – use manipulatives e.g. numicon to partition:  
e.g.  $43 + 36 =$
- Support with jottings  
 $43 + 36 =$   
 $||| + |||$
- Use empty number line
- Missing numbers  
 $24 + \square = 51$  (jottings -draw total, remove what we already have)

- Identify appropriate method e.g. formal v informal, number line/ jottings v column.
- Empty number line/ jottings.
- Add 3 digit and 2 digit numbers
- Add 3 digit and 3 digit numbers
- Use expanded method  
 $200 + 70 + 4$   
 $100 + 80 + 7$
- Use the column method:  
 $274$   
 $+187$   

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 $461$   
11

- Add up to 4 digits using formal written methods of column addition  
 $2734$   
 $+3496$   






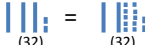
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 $6230$   
111
- Add decimals e.g. money  
 $38p + 37p$   
 $£0.38 + £0.37$

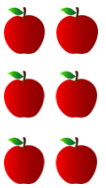
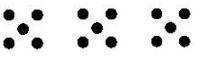
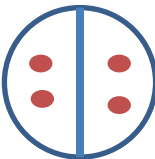
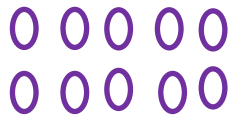
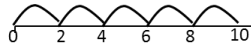

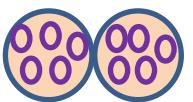
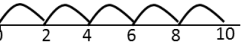
- Add whole numbers with more than 4 digits
- Use column addition
- Use informal methods as appropriate

**Use most efficient formal/ informal written method for addition**

# Subtraction

	YrR	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6	
Mental	<p>One more, one less</p> <p>Using quantities and objects, add and subtract 2 single digit numbers and count on or back to find the answer.</p>  <p>Recognise/ use numicon</p>  <p>Use number line to count back -5</p> 	<p>Count forwards/backwards in 1s, 2s, 10s</p> <p>Subtract 1 and 2 digit numbers to 20, incl. 0.</p> <p>Inverses of number bonds to 10/ 20</p> $9 - 5 = \square$	<p>Count forwards/backwards in 2s, 3s, 5s, 10s</p> <p>Inverses of number bonds (incl. for checking)</p> <p>Subtract 2 digit numbers and ones.</p> $24 - 6 = \square$	<p>Count forwards/backwards in 10s, 20s, 50s, 100s, 15s</p> <p>Inverses of number bonds</p> <p>Subtract 3 digits and 1's</p> $437 - 5 = \square$	<p>Count forwards/backwards in 10s, 20s, 50s, 100s, 15s</p> <p>Inverses of number bonds</p> <p>Subtract 3 digits and 10's</p> $273 - 30 = \square$	<p>Count forwards/backwards in 20s, 50s, 25s, 75s, 0.1s, 10p, 20p, 5p, 50p</p> <p>Continue to use number line to support mental methods.</p> <p>Bridging through 100s/ 1000s.</p> <p>Subtract several numbers</p> <p>Subtract multiples of 100/ 10 from 4 digit number</p> <p>Subtracting involving negative numbers representing on number line</p> <p>e.g. <math>3^{\circ}\text{C} - 9^{\circ}\text{C}</math> (vertical number line)</p> <p>Find a difference by adding on: incl. decimals and money.</p>	<p>Count forwards/backwards in 0.25s/ fractions/ negative numbers</p> <p>Subtract mentally with increasingly large numbers</p> $12462 - 2300 = 10162$ (Using place value) <p>Find differences of time (number line)</p> <p>Subtract fractions</p>	<p>Count forwards/backwards in 0.25s/ fractions/ negative numbers</p> <p>Order of operations (BIDMAS)</p> <p>Subtract negative numbers</p> <p>e.g. <math>-4 - 6 = 2</math>, <math>4 - 6 = 10</math></p> <p>Use most efficient mental method of subtraction.</p>
	Written	<p>(All supported by visuals and manipulatives)</p> <ul style="list-style-type: none"> <li>Number formation</li> <li>Begin to write number sentences alongside the visual.</li> <li>Use pictures to record calculations</li> </ul>	<p>(All supported by visuals and manipulatives)</p> <p>Correct number formation</p> <p>Write numbers sentences (1 number, 1 symbol per square)</p> <p>Visual support: Numicon and pegs</p> <p>Used marked number line, number square</p> <p>Physical/ pictorial representations</p> <p>Jottings: <math>9 - 5 =</math></p> 	<p>Use of number lines</p> <p>Bridging through 10s</p> <p>Partitioning</p> <p>Draw jottings and cross out. <math>32 - 11</math></p>  <p>For confident ch: (exchange using jottings/ manipulatives)</p> $32 - 17 =$  <p>Then remove</p>	<p>Expanded column method (with exchanging)</p> $\begin{array}{r} 400 \\ 200 \\ \hline 30 \\ 10 \\ \hline 20 \\ 12 \\ 7 \end{array}$ <p>Compact column subtraction with exchange</p> $\begin{array}{r} 432 \\ - 217 \\ \hline 215 \end{array}$ <p>Cont. use empty number lines</p>	<p>Compact column subtraction up to 4 digits (with exchange)</p> $\begin{array}{r} 689 \\ - 492 \\ \hline 2097 \end{array}$ <p>Use efficient informal methods if appropriate</p> <p>e.g. <math>3003 - 2998</math> using number line.</p>	<p>Subtract whole numbers and decimals with more than 4 digits</p> <p>Choose most appropriate formal/ informal method.</p>	<p>Use most efficient written method of subtraction.</p> <p>Use mental method if appropriate.</p>

# Multiplication

	YrR	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6																																												
<b>Mental</b>	<p>Count forwards/backwards in 2s, 5s, 10s</p> <p>Using concrete objects solve problems using doubling, and grouping.</p>  <p>Two 2 Four 4 Six 6</p> <p>Use numicon for doubling halving</p>	<p>Count forwards/backwards in 2s, 5s, 10s</p> <p>Concrete objects to show grouping.</p> <p>Use numicon for doubling halving</p> <p>Spot number patterns on a 100 square or groups of</p> <p>Recognising odds and evens</p>	<p>Count forwards/backwards in 2s, 3s, 5s, 10s</p> <p>2, 3, 5, 10 times tables.</p> <p>Use concrete objects and jottings</p> <p>Repeated addition</p> <p>Make links e.g.  <math>3 \times 2 = 6</math>  <math>6 \div 3 = 2</math>  <math>2 = 6 \div 3</math>  <math>30 \times 2 = 60</math>                      (use numicon and balances)</p> <p>Dice pattern jottings:</p> 	<ul style="list-style-type: none"> <li>Count forwards/backwards in 10s, 20s, 50s, 100s, 15s</li> <li>3, 4, 8 times tables (use 'Multiplication in a flash')</li> <li><math>\times 10, \times 100</math> (incl decimals)</li> <li>Instant recall of <math>\times</math> facts</li> <li>square numbers</li> <li><math>\times</math> by 0/1</li> </ul> <p>1 digit <math>\times</math> 1 digit <math>\times</math> 1 digit</p> <p>2 digit <math>\times</math> 1 digit.</p> <p>Partition:  <math>24 \times 3</math>  <math>20 \times 3 = 60</math>  <math>4 \times 3 = 12</math>  <math>60 + 12 = 72</math></p>	<p>Count forwards/backwards in 20s, 50s, 25s, 75s, 0.1s, 10p, 20p, 5p, 50p</p> <p>6, 7, 9, 11, 12 times tables (use 'Multiplication in a flash')</p> <p><math>\times 10, \times 100, 1000</math> (incl decimals)</p> <p><math>3 \times 15 = 3 \times 3 \times 5 = 9 \times 5 = 45</math></p> <p>Using factor &amp; multiple pairs                      Square/prime numbers</p> <p>Partitioning <math>39 \times 7 = 30 \times 7 + 9 \times 7</math></p> <p><math>(2 \times 3) \times 4 = 2 \times (3 \times 4)</math>                      Distribution law                      Associative law</p> <p>1 digit <math>\times</math> 1 digit <math>\times</math> 1 digit</p> <p>Use lang. of multiplication</p>	<p>Count forwards/backwards in 0.25s/ fractions/ negative numbers</p> <p>Reinforce times tables ('Multiplication in a flash')</p> <p>Use knowledge of factors  <math>\times 10, \times 100, 1000</math>                      Including decimals.</p> <p>Using factor &amp; multiple pairs                      Square/prime numbers</p> <p>Round number and estimate to check written answers</p>	<p>Count forwards/backwards up to 1,000,000 and in 0.25s/ fractions/ negative numbers</p> <p>Reinforce times tables ('Multiplication in a flash')</p> <p>Order of operations (BIDMAS)</p> <p>Perform mental calculations including mixed operations and large numbers.</p>																																												
<b>Written</b>	<p>Use practical/ pictorial resources to begin to write simple number sentences using repeated addition.</p>  <p><math>2 + 2 = 4</math>  <math>4 = 2 + 2</math></p>	<p>Use concrete objects to write arrays</p>  <p>2, 4, 6, 8, 10</p> <p>2 lots of 5, 5 groups of 2 etc</p> <p>Write as repeat addition</p>  <p>Counting in 2's 5's and 10's on a number line with the support of teacher.</p>	<p>Write multiplication number sentences</p> <p>Write arrays with multiplication symbol</p>  <p><math>2 \times 5 = 10</math> lots of/ sets of  <math>5 \times 2 = 10</math> groups of</p>  <p>Write as repeat addition</p>  <p>Switches: <math>3 \times 2 = 6</math>,  <math>2 \times 3 = 6</math> (commutative law)</p>	<p>Grid method:  <math>24 \times 3 = 72</math></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td style="border: none;">x</td><td style="border: none;">20</td><td style="border: none;">4</td><td style="border: none;"></td></tr> <tr><td style="border: none;">3</td><td style="border: none;">60</td><td style="border: none;">12</td><td style="border: none;"></td></tr> <tr><td colspan="2" style="border: none;"></td><td style="border: none;"></td><td style="border: none;"><math>60 + 12 = 72</math></td></tr> </table> <p>Expanded method:  <math>20 + 4</math>  <math>\times 3</math>  <math>12</math> (<math>4 \times 3</math>)  <math>60</math> (<math>20 \times 3</math>)  <math>72</math></p> <p>Find missing values using inverse</p>	x	20	4		3	60	12					$60 + 12 = 72$	<p>Grid method:  <math>26 \times 25 =</math></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td style="border: none;">x</td><td style="border: none;">20</td><td style="border: none;">6</td><td style="border: none;">400</td><td style="border: none;"></td></tr> <tr><td style="border: none;">20</td><td style="border: none;">400</td><td style="border: none;">120</td><td style="border: none;">+ 100</td><td style="border: none;"></td></tr> <tr><td style="border: none;">5</td><td style="border: none;">100</td><td style="border: none;">30</td><td style="border: none;">30</td><td style="border: none;"></td></tr> <tr><td colspan="2" style="border: none;"></td><td style="border: none;"></td><td style="border: none;"></td><td style="border: none;"><math>650</math></td></tr> </table> <p>Expanded method:  <math>276</math>  <math>\times 6</math>  <math>36</math> (<math>6 \times 6</math>)  <math>420</math> (<math>70 \times 6</math>)  <math>1200</math> (<math>200 \times 6</math>)  <math>1656</math></p> <p>Standard method:  <math>276</math>  <math>\times 6</math>  <math>1656</math>  <math>43</math></p> <p>Find missing values using inverse</p>	x	20	6	400		20	400	120	+ 100		5	100	30	30						$650$	<p>Standard method</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td style="border: none;"></td><td style="border: none;">276</td><td style="border: none;"></td></tr> <tr><td style="border: none;"></td><td style="border: none;">x 6</td><td style="border: none;"></td></tr> <tr><td style="border: none;"></td><td style="border: none;">1656</td><td style="border: none;"></td></tr> <tr><td style="border: none;"></td><td style="border: none;">43</td><td style="border: none;"></td></tr> </table> <p>Long multiplication  <math>2754</math>  <math>\times 28</math>  <math>22032</math>  <math>+ 55080</math>  <math>77112</math></p> <p>2 x 2 digits                      2 x 3 digit                      2 x 4 digit</p> <p>Incl decimals e.g  <math>2.63 \times 3</math> money/ measures</p> <p>2/3 step problems</p>		276			x 6			1656			43		<p>Multiplying fractions</p> <p>Multiplying 2 decimals</p> <p>Multiplying 2 decimals less than 1 e.g. <math>0.4 \times 0.5</math></p>
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# Division

Mental

Written