



WESTONZOYLAND

Community Primary School and Pre-school

Calculation Policy

February 2024



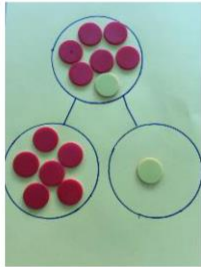
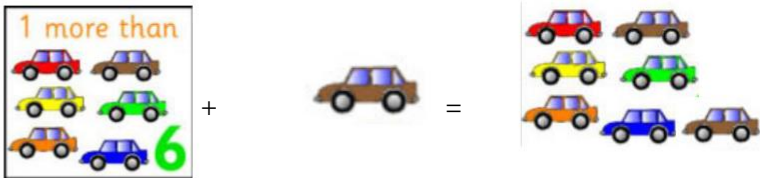
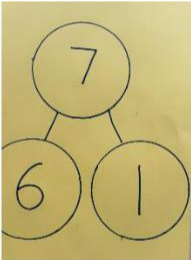
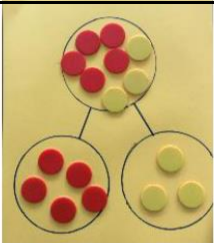
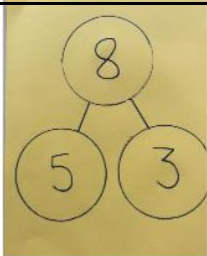
WESTONZOYLAND

Community Primary School and Pre-school

Addition

Foundation Stage

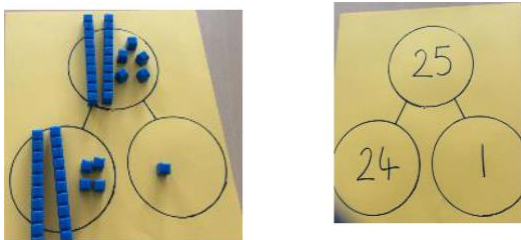
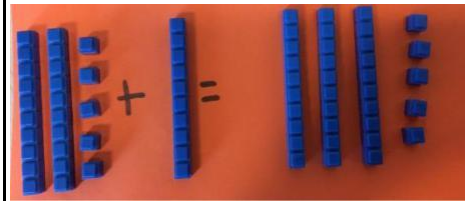
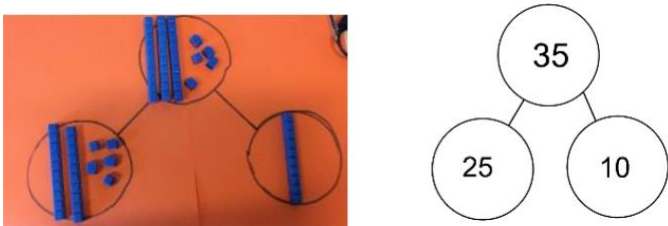
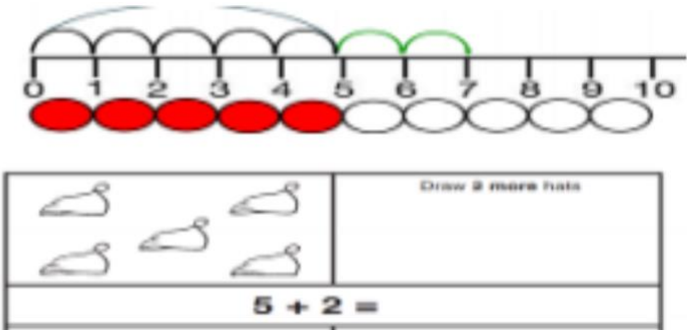
Key Vocabulary: add, more, sum, make, total, How much more is...? one more, altogether **Counting fluency:** To count forwards and backwards in steps of 1s, 2s, 5s and 10s.

Objective & Strategy	Concrete	Pictorial	Abstract
To find one more than a given number up to 20.	<p>Use physical objects to add one object to find the whole.</p> <p>One more than 6 is 7</p>  <p><u>Modelled using counters for the Part Whole Method.</u></p> 	<p>Use pictorial representations to add one object to find the whole.</p> <p>One more than 6 is 7</p>  <p><u>Modelled using Part- Whole with numbers recorded.</u></p> 	<p>Record as a written calculation.</p> <p>$6+1=7$ $1+6=7$</p> <p>$7=6+1$ $7=1+6$</p>
To use objects to add two single-digit numbers.	<p>Use physical objects to add two single objects to find the whole.</p> <p>5+3=8</p>  <p><u>Modelled using counters for the Part Whole Method.</u></p>  <p><u>Modelled using a Bead String</u></p> 	<p>Use pictorial representations to add two single digits to find the whole.</p> <p><u>Modelled using the Part Whole Method with numbers</u></p>  <p><u>Modelled using a Number Line</u></p> 	<p>Record as a written calculation.</p> <p>$5+3=8$ $3+5=8$</p> <p>$8=5+3$ $8=3+5$</p>

Year 1

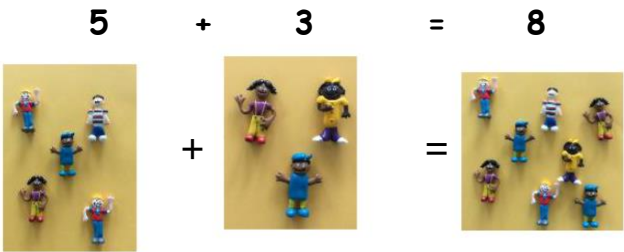
Key Vocabulary: addition, add, more, and, makes, sum, total, altogether, count on, one more, two more...ten more..., how many more to make? How many more is...than...?
How much more is...?

Counting fluency: To count forwards and backwards in steps of 2s, 5s and 10s.

Objective & Strategy	Concrete	Pictorial	Abstract
<p>To find one more than a given number up to 100.</p>	<p>Use physical objects to find one or ten more than a given number.</p> <p>1 more than 25 is 26 <u>Modelled Using Base 10</u></p> 	<p>Use pictorial representations to add.</p> <p>1 more than 25 is 26 <u>Modelled using the Part-Whole method with Base 10 then numbers</u></p> 	<p>Record as a written calculation</p> <p>24+1=25 1+24=25</p> <p>25=24+1 25=1+24</p>
<p>To find 10 more than a given number up to 100.</p>	<p>10 more than 25 is 35 <u>Modelled using Base 10</u></p> 	<p>10 more than 25 is 35 <u>Modelled using the Part-Whole method with Base 10 then numbers</u></p> 	<p>Record as a written calculation</p> <p>25+10=35 10+25=35</p> <p>35=25+10 35=10+25</p>
<p>To represent & use number bonds and related subtraction facts within 20.</p>	<p>Use physical objects to find related number facts.</p> <p><u>Number beads</u></p> <p>2 more than 5 5+2=7</p> 	<p>Use pictorial representations to show related number facts</p> <p>2 more than 5 5+2=7</p> 	<p>Emphasis should be on the language</p> <p><i>'1 more than 5 is equal to 6.'</i></p> <p><i>'2 more than 5 is 7.'</i></p> <p><i>'8 is 3 more than 5.'</i></p>

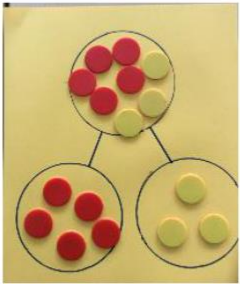
To add two single-digit numbers.

Use physical objects to add two single objects to find the whole.



Modelled using counters for the Part Whole Method.

$5+3=8$



Modelled using a Bead String

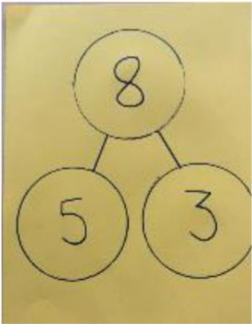
$5+3=8$



Use pictorial representations to add two single digits to find the whole.

Modelled using the Part Whole Method with numbers

$5+3=8$



Modelled using a Number Line



Record as a written calculation.

$5+3=8$

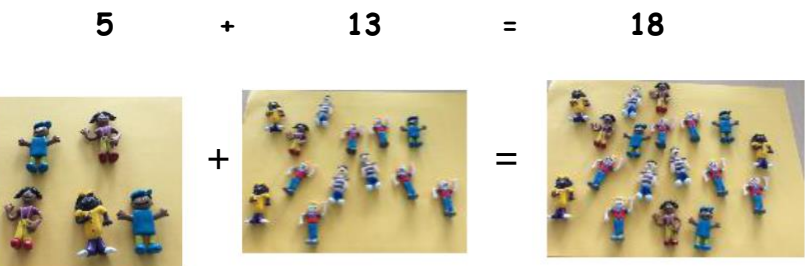
$3+5=8$

$8=5+3$

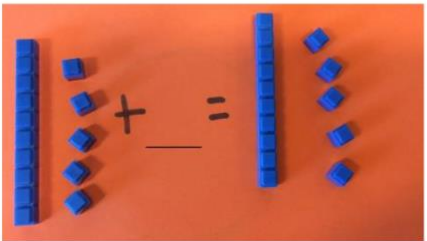
$8=3+5$

To add a one digit and two-digit number to 20, including zero.

Use physical objects to add one-digit and two-digit numbers to find a whole.



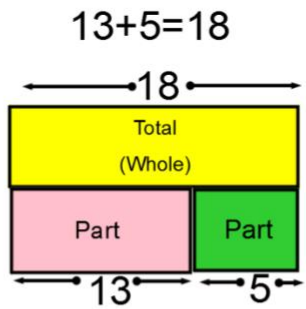
$15+0=15$



Use pictorial representations to add one-digit and two-digit numbers to find the whole.

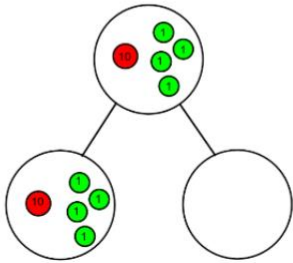
Modelled using the Bar Model

Children will represent the problem in a bar model. They will then use their knowledge of addition to help solve the problem.



Part-Whole method with counters

$15+0=15$



Record as a written calculation

$13+5=18$

$5+13=18$

$18=5+13$

$18=13+5$

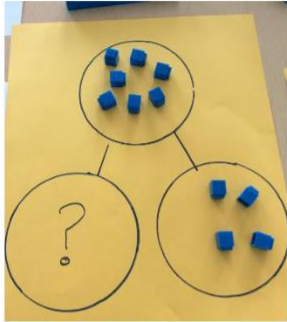
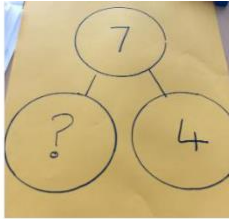
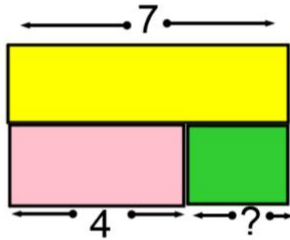
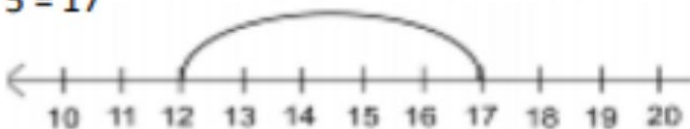
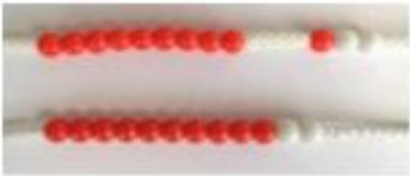
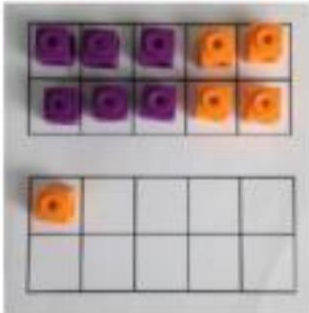
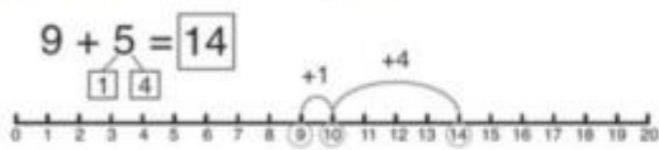
Record as a written calculation

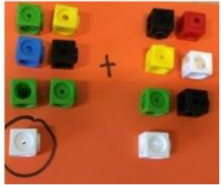
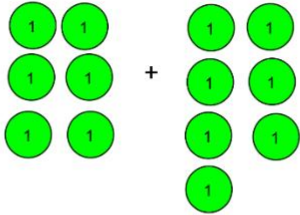
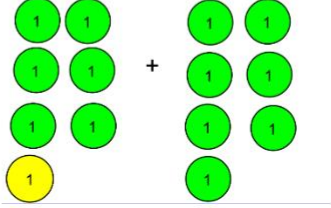
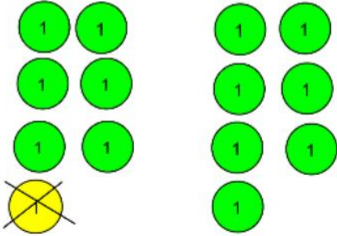
$15+0=15$

$0+15=15$

$15=0+15$

$15=15+0$

<p>To solve one step problems that include addition.</p>	<p>Use physical objects to solve one step problems.</p> <p><u>Modelled using Part Whole with Base 10</u></p> <p>$7 = ? + 4$</p> 	<p>Use pictorial representations to solve one step problems.</p> <p><u>Modelled using Part-Whole with numbers</u></p> <p>$7 = ? + 4$</p>  <p><u>Modelled using the Bar Model.</u></p> <p>Children would then go on to solve it using their knowledge of addition.</p> 	<p>Record as a written calculation</p> <p>$7 = _ + 4$</p>
<p>To start at the bigger number and count on.</p>	<p>Use physical objects to count on from a number.</p> <p>$12 + 5 = 17$</p> <p><u>Modelled using a bead string</u></p>  <p>Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.</p>	<p>Use pictorial representations, begin to count on from a given number.</p> <p><u>Modelled using a number line</u></p> <p>$12 + 5 = 17$</p>  <p>Start at the larger number on the number line and count on in ones or in one jump to find the answer.</p>	<p>Record as a written calculation</p> <p>$12 + 5 = 17$</p> <p>$5 + 12 = 17$</p> <p>Put the larger number in your head and count on the smaller number to find your answer.</p>
<p>To regroup to make 10.</p> <p><i>This is an essential skill for column addition in Year 2.</i></p>	<p>Use physical objects to regroup to make 10.</p> <p>$6 + 5 = 11$</p>   <p>Start with the bigger number and use the smaller number to make 10.</p> <p>Use ten frames.</p>	<p>Use pictorial representations, begin to count on from a given number.</p> <p>$3 + 9 =$</p>  <p>Use pictures or a number line. Regroup or partition the smaller number using the part whole model to make 10.</p> <p>$9 + 5 = 14$</p> 	<p>Record as a written calculation.</p> <p>$7 + 4 = 11$</p> <p><i>If I am at seven, how many more do I need to make 10?</i></p> <p><i>How many more do I need now to make it to 11?</i></p>

<p>To add near doubles.</p>	<p><u>Modelled using concrete resources</u></p> <p>6 + 7</p>  <p>Step 1- Make the calculation.</p>  <p>Step 2- Adjust the 6 to a 7 by adding 1.</p>  <p>Step 3- Add them to find the total.</p>  <p>Step 4- Subtract the 1, which was previously added, from the total to find the final answer.</p>	<p><u>Modelled using pictorial representations</u></p> <p>6+7=</p>  <p>Adjust 6 by adding 1 to make it 7.</p>  <p>Find the answer to double 7 = 14</p> <p>Remember to subtract the 1 that was added to find the final answer, 14-1= 13</p> 	<p>Record as a written calculation.</p> <p>6+7=13 7+6=13</p> <p>13=7+6 13=6+7</p>
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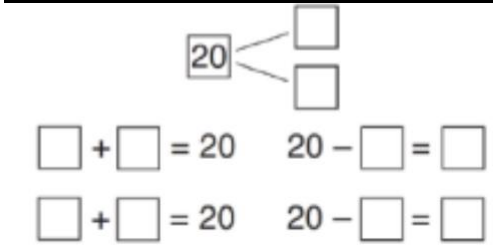
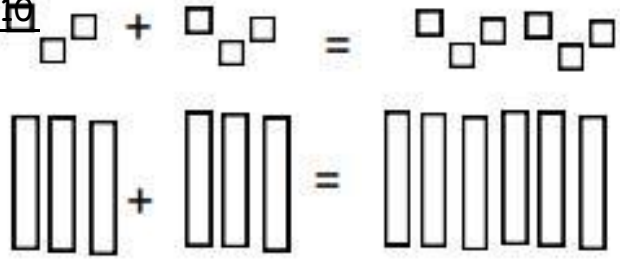
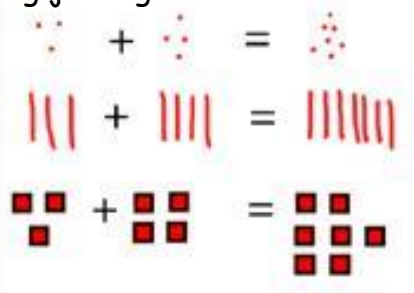
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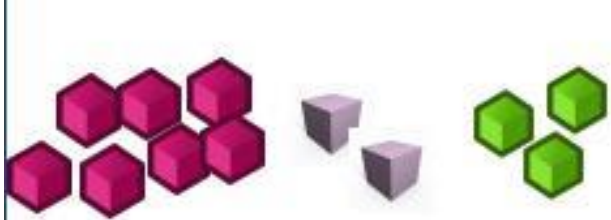
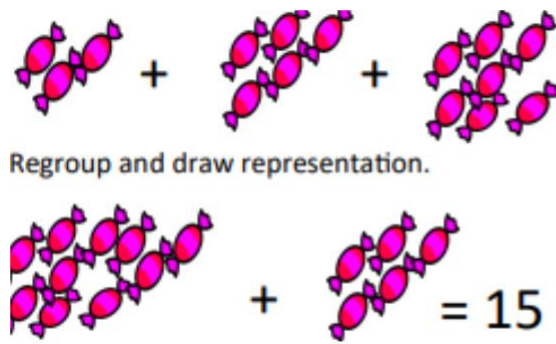
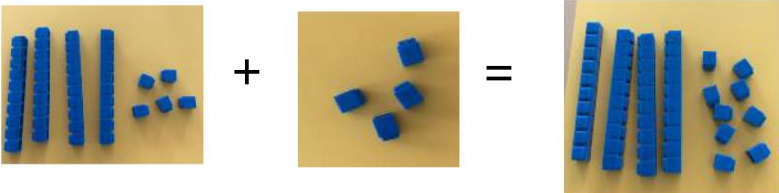
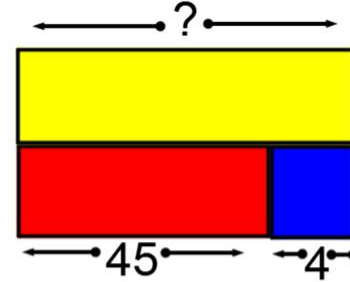
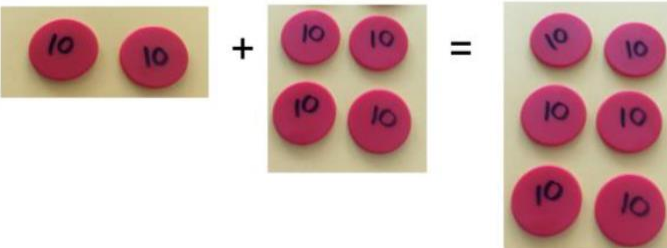
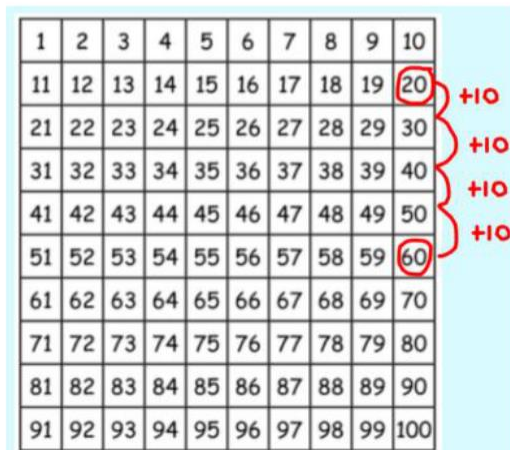
Key Vocabulary: addition, add, more, and, makes, sum, total, altogether, double, count on, one more, two more...ten more..., one hundred more, how many more to make?
How many more is...than...? How much more is...? **Counting fluency:** To count forwards and backwards in steps of 2s, 3s, 4s, 5s and 10s.

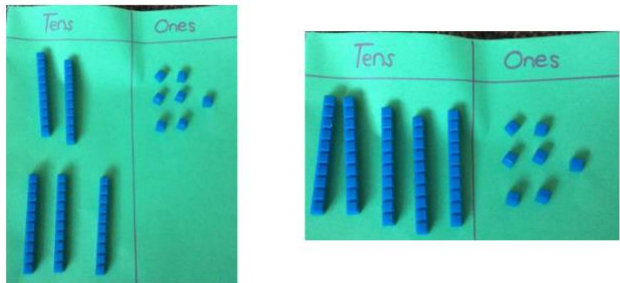
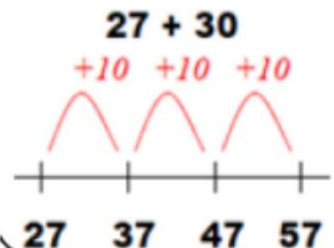
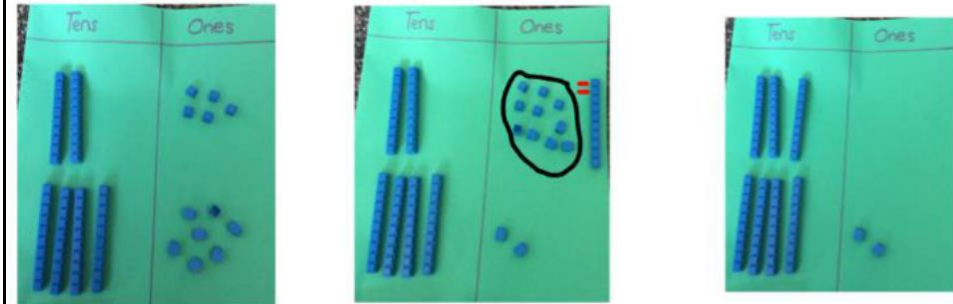
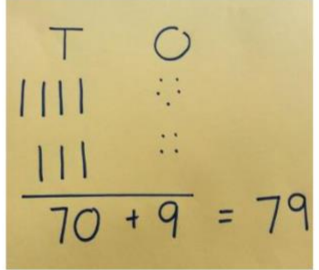
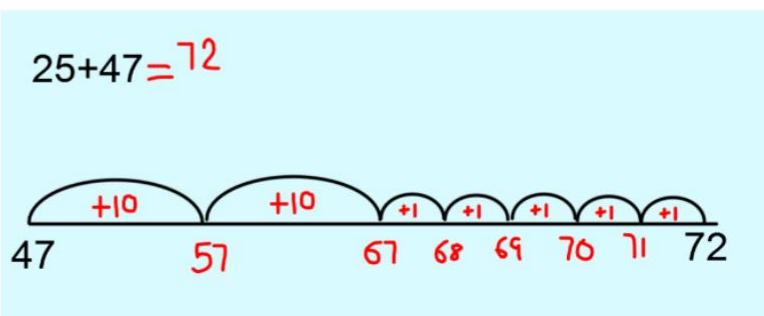
Mental Strategies

Skill	Strategy
To add 9 to a 2-digit number by adjusting.	34+9 Make the number with base ten equipment, then add 10. You then need to subtract 1 because 10 is actually one more than 9. Children will begin to do this mentally without equipment. For 34+9 you would first add 10 34+10 = 44 then subtract 1, 44-1=43 so 34+9=43.
To add near doubles	13+14 When numbers are very close in value, adjust one of numbers to make it the same then use knowledge of portioning to double then subtract 1 For 13+14 = Make 13 into 14 by adding 1, double 14 by doubling 10 (20) and doubling 4 (8) and recombine (28). Then subtract the one that you added at the beginning (28-7) sp 13+14= 27.

Calculation Methods

Objective	Concrete	Pictorial	Abstract
To recall and use addition facts to 20 fluently.	Use physical objects to represent each part of calculation. Then use this to show related addition facts. <u>Modelled using part whole method.</u> Children explore ways of making number bonds by moving the concrete objects around. 20=7+13 	Use pictorial representatives to explore addition facts to 20. Children begin to showing their understanding by representing using numbers. <u>Modelled using the part whole method with structured number sentences to show relation facts.</u> 	Record as a written calculation ?+1=20 1+?=20 20-1=? 20-?=1
To derive and use related facts up to 100.	Use physical objects to show mathematical facts up to 100. <u>Modelled using Base 10</u> e.g. 3+3=6 so... 30+30=60 	Use pictorial representations to show mathematical related facts. Children show their thinking using jottings to record their mathematical calculations. 3+3=6 30+30=60 	Record as a written calculation 3+4=7 leads to... 30+40=70 leads to... 300 + 400 = 700
		300+300 = 600	

<p>To add three 1 digit numbers to 100.</p>	<p>Use physical objects to add three single digit numbers to 100.</p> <p>Children to use concrete resources to add three 1 digit numbers. 7+2+3</p>  <p>Combine to make 10 first if possible, or bridge 10 then add third digit</p>	<p>Use pictorial representations to add three single digit number to 100.</p> <p><u>Modelled using images</u></p> <p>Children find the numbers that make 10 to aid the adding skills.</p>  <p>Regroup and draw representation.</p>	<p>Record as a written calculation</p> <p>Children are encouraged to add the numbers that make ten before adding the final number.</p> $\begin{array}{r} 4 + 7 + 6 = 10 + 7 \\ \quad \quad \quad 10 \quad \quad \quad = 17 \end{array}$ <p>Combine the two numbers that make/ bridge ten then add on the third.</p>
<p>To add a two digit number and ones up to 100.</p>	<p>Use physical objects to add two-digit number and ones.</p> <p>Children would use equipment for example, Base 10 to help them show their mathematical thinking.</p> $45 + 4 = 49$ 	<p>Use pictorial representatives to add two-digit number and ones to 100.</p> <p>Use the Bar Model method to show number correspondence in order to find the whole.</p> <p><u>Using the Bar Model to add 45+4=?</u></p> 	<p>Record as a written calculation</p> <p>45+4=49</p> <p>Explore related facts</p> <p>45+4=49</p> <p>4+45=49</p> <p>49-45=4</p> <p>49-4=45</p>
<p>To add multiples of 10.</p>	<p>Use physical objects to add multiples of 10.</p> <p><u>Using place value counters to add</u></p> <p>Children use concrete apparatus to show number sentences. Children then combine to find their answer.</p> $20 + 40 = 60$ 	<p>Use pictorial representatives to add multiples of 10.</p> <p><u>Using a Hundred Square</u></p> <p>Children circle the smallest number on the 100 square. They then add the larger multiple of 10 by jumping down in steps of 10.</p> <p>20+40=60</p> 	<p>Record as a written calculation, including missing box questions.</p> <p>40+20=60</p> <p>20+40=60</p> <p>60=40+20</p> <p>60=20+40</p> <p>40+??=60</p> <p>??+20=60</p>

<p>To add a two digit number and tens to 100.</p>	<p>Use physical objects to add two-digit number and tens.</p> <p>Children represent the calculation using base 10 or place value grids and counters. When finding totals, they add the ones first, then the tens to find the whole.</p> <p><u>Modelled using Base 10</u></p>  <p>27+30=57</p>	<p>Use pictorial representations to add two-digit number and tens.</p> <p><u>Using a 100 Square</u></p> <p>Children circle the non-multiple of 10 then add the multiples of 10 by jumping down the hundred square.</p>  <p><u>Modelled using a number line</u></p> <p>Start with the non-multiple of 10 and jump in tens.</p> <p>27+30=57</p> 	<p>Record as a written calculation, including missing box questions.</p> <p>27+10=37 27+20=47 27+?=57</p>
<p>To add two 2 digit numbers to 100 (including bridging through 10)</p>	<p>Children will continue to organise calculations using concrete resources to make sense of the problem.</p> <p><u>Modelled using Base 10</u></p> <p>45+34=79</p>  <p>25+47=72</p>  <p>Children will need to exchange 10(1s) for 1 (10).</p> <p>25+47=72</p> <p>When children bridge through 10, they will need to exchange 10 ones for 1 ten.</p>	<p>Use pictorial representations to add two 2-digit number to 100.</p> <p>45+34=79</p>  <p><u>Modelled using a number line</u></p> <p>Start with the largest number and partition the second. Add the tens first then the ones. It is important that the children record their workings underneath. To find the answer, children count the numbers inside each jump.</p> 	<p>Record as a written calculation.</p> <p>45 + 34 9 (5+4) 70 (40+30) 79</p> <p>Begin to use more condensed method of column addition.</p> <p>25 + 47 72 1</p>

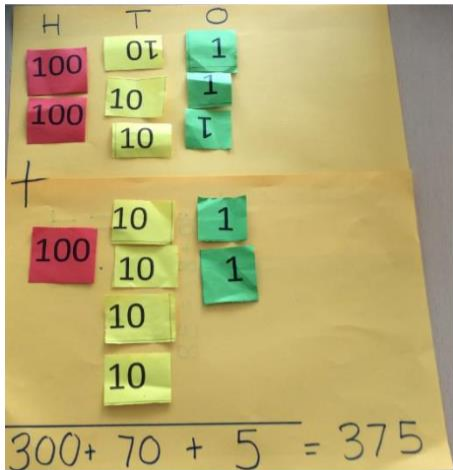
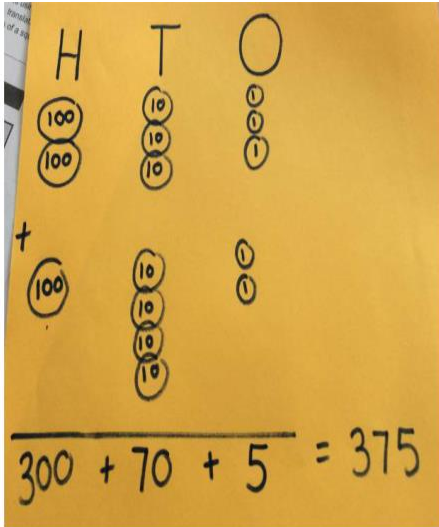
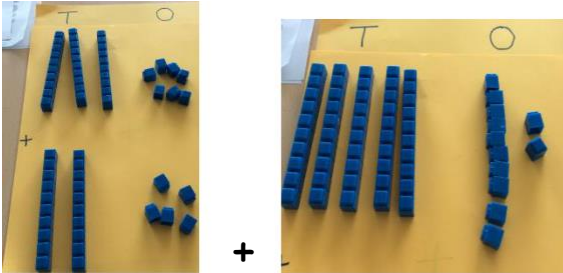
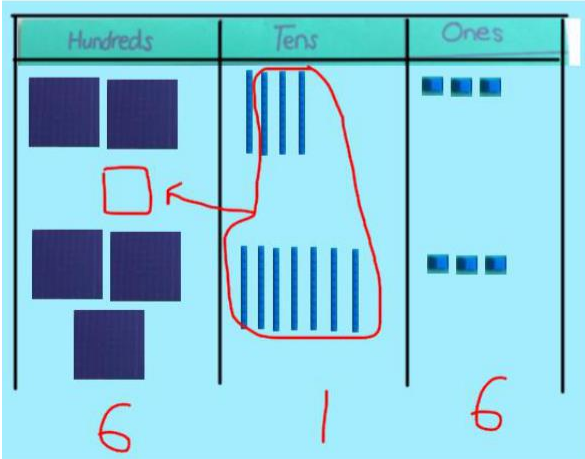
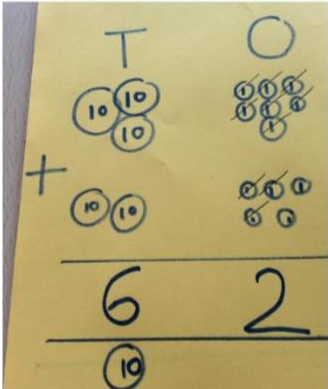
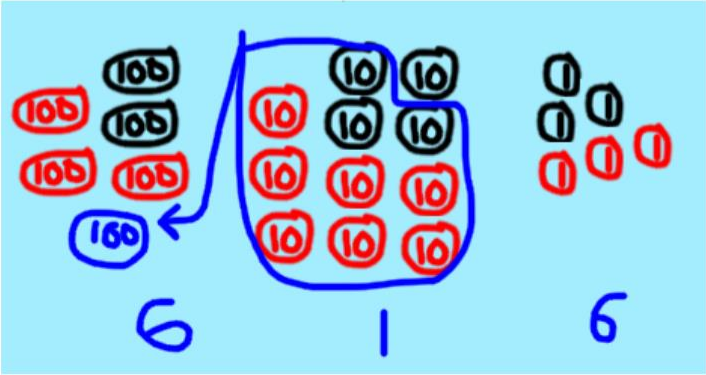
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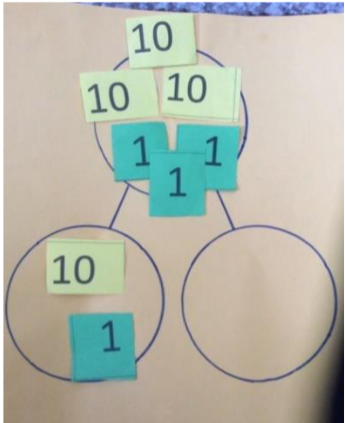
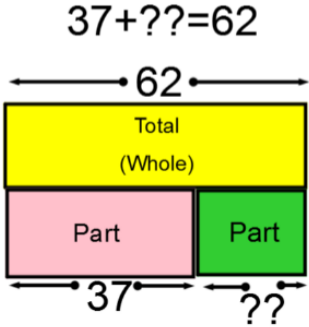
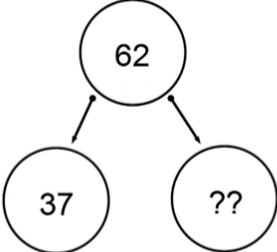
Key Vocabulary: addition, columnar addition. add, more, and, makes, sum, total (of), count on, altogether, increased by, double, near double, one more, two more...ten more..., one hundred more, inverse, commutative law, how many more to make? How many more is...than...? How much more is...?**Counting fluency:** To count forwards and backwards in steps of 2s, 3s, 4s, 5s, 6s, 8s, 10s and 100s from any given number.

Mental Strategies

Skill		Strategy
* Add three small numbers.	$6+14+5$	Look for any number bonds e.g $14+6=20$ then add 5 Add two number, find the total then add the final number.
*add a 3-digit number and ones, including crossing boundaries.	$432+ \underline{6}$ $654+ \underline{8}$	If the ones do not cross into the tens column then add the ones only $432 + 6 = 438$ If the ones cross into the tens column then use knowledge of number bond to solve. For $654 + 8$ you would partition 8 into <u>6</u> and 2 then $654 + 6 = 660 + 2 = 662$.
*add a 3- digit number and tens including crossing boundaries	$534+40$ $543+70$	If the tens do not cross into the hundreds column then add the tens only $534+40= 574$ If the tens cross into the hundreds column then use knowledge of number bonds to solve. For $543+70$ you would partition 70 into <u>60</u> and 10 and then $543 + 60 =$
*Add a 3-digit number and hundreds including crossing boundaries.	$524+300$ $654+500$	If the hundreds do not cross into the thousands column then add the hundreds only $524+300= 824$. If the hundreds cross into the thousands column then use knowledge of number bonds to solve. For $654+500$ you would partition 500 into <u>400</u> and 100 then do
* Add a 2-digit number to a 3-digit tens number including crossing boundaries.	$540+34$ $620+92$	If the tens do not cross into the hundreds column then add the tens only $540+ 34= 574$. If the tens cross into the hundreds column then use knowledge of number bonds. For $620+92$ you would partition 92 into <u>80</u> , 10 and 2. Then do $620+ 80=700 +10 +2= 712$
Add pairs of 2-digit numbers including crossing boundaries.	$33+65$ $28+63$	If the tens do not cross into the hundreds column then add the tens and ones separately. For $33 + 65$ first add the tens $30+60=90$ then add the ones $90+3+2= 95$ If the ones cross into the tens column add the tens then the ones and recombine. For $28 + 63$ add the tens $20+60= 80$ then the ones $8+3 = 11$ then recombine
*Add to any 3-digit number to make the next ten or hundred.	$254+?= 260$ $543+ ?=600$	Look for any number bonds e.g. $4 + 6 = 10$ so $254+6=260$ Look for the nearest multiple of 10 using knowledge of number bonds $543+7= 550$. Then add on in steps of 10 until you reach the multiple of 100. $550+50 = 600$. The solution to $243+57=600$
*Add near doubles.	$18+16$ $60+70$	Adjust one number so they are the same e.g. 16 to make it 18 by adding 2. They then use their doubling facts to double 18 then subtract 2. $18 + 18 = 36 -2=34$ Adjust one number so they are the same e.g. 60 to make it 70 by adding 10. They then use using their doubling facts to double 70 and then subtract 10.
*Add near multiples of 10 and 100 and adjust.	$34+9$ $543+ 99$	When adding 9 you would add 10 then subtract 1 because 10 is actually one more than 9. For $34+9$ you would do $34+10=44 - 1 =43$. When adding 99 you would add 100 then subtract 1 because 100 is actually one more than 99. For $543+99$ you would do $543+100=643 - 1 =642$.

Calculation Methods

Objective	Concrete	Pictorial	Abstract
<p>To add numbers up to 3 digits, using formal written methods- no regrouping.</p>	<p>Use physical objects to add numbers up to 3 digits using a formal method.</p> <p>Modelled using Base 10 and place value counters-</p> <p>Add the ones first then the tens.</p> <p>233+142=375</p> 	<p>Use pictorial representations e.g. jottings.</p> <p>233+142=375</p> 	<p>Written method (expanded form)</p> <p>233 +142 5 (3+2) 70 (30+40) 300 (200+100) 375</p> <p>Condensed columnar addition</p> <p>233 + 142 375</p>
<p>To add numbers up to 3 digits, using formal written methods, with regrouping.</p>	<p>Use physical objects to add numbers up to 3 digits.</p> <p>Modelled using Base 10 and place value counters-</p> <p>Add the ones together first then the tens.</p> <p>37+25=62</p>  <p>Modelled using Base 10</p> <p>Children to understand that the highest amount in each column is 9 so sometimes exchange into the next column is necessary.</p> <p>Children know to exchange ten 1s for a ten and ten 10s for a hundred.</p> <p>243+ 373 = 616</p> 	<p>Use pictorial representations to add numbers up to 3 digits.</p> <p>37+25</p>  <p>243 +373= 616</p> 	<p>Continue to use the expanded method until secure in understanding.</p> <p>Condensed columnar addition</p> <p>Carry below the line when bridging.</p> <p>37 +25 62 1</p> <p>2 4 3 +373 6 1 6 1</p>

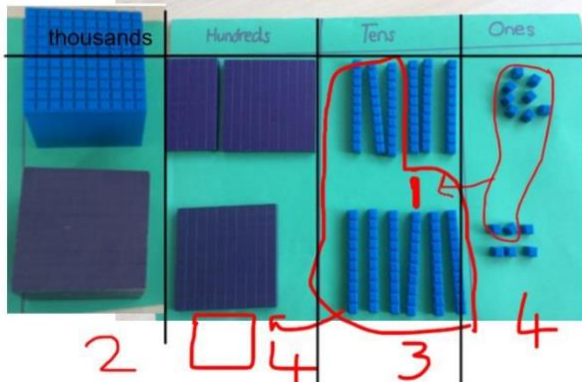
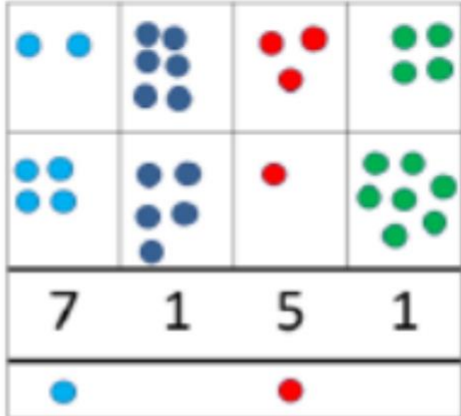
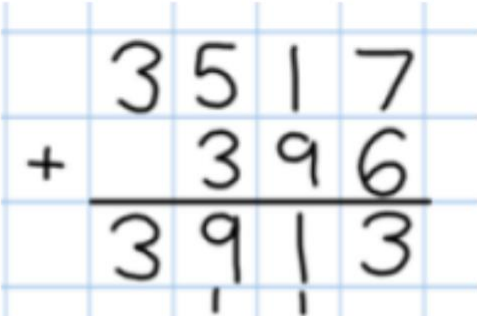
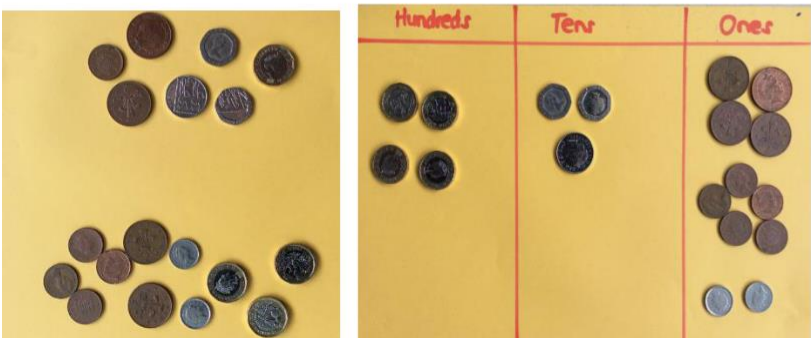
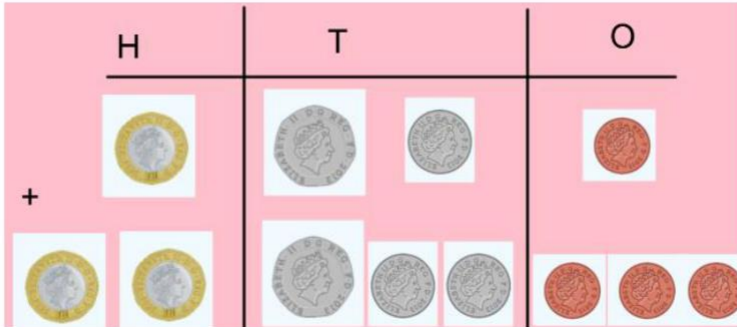
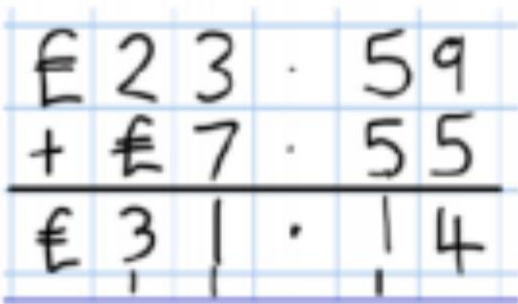
<p>To solve addition problems, including missing numbers.</p>	<p>Use physical objects to solve addition problems, including missing numbers.</p> <p>Children will need to solve problems that are incomplete using their knowledge of inverse operations.</p> <p>$33 = ? + 11$ $11 + ? = 33$ $? + 11 = 33$</p> <p>The missing number can be presented in multiple places.</p> <p><u>Modelled using the Part Whole Method</u></p> 	<p>Use pictorial representations to solve addition problems, including missing numbers.</p> <p><u>Modelled using the Bar Model</u></p> <p>Use the bar model, children will make sense of the problem before solving it.</p>  <p><u>Modelled using the Part Whole method</u></p> <p>Children use their knowledge of inverse operations to solve missing number problems effectively.</p> 	<p>Record as a written calculation</p> <p>$37 + ?? = 62$</p>
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Year 4

Key Vocabulary: addition, columnar addition, add, more, and, makes, sum, total (of), count on, altogether, extra, in all, combined, increased by, double, near double, one more, two more...ten more..., inverse, commutative law, one hundred more, how many more to make? How many more is...than...? How much more is...? **Counting Fluency:** To count backwards and forwards in steps of 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s, 11s, 12s, 100s and 1000s from any given starting number.

Mental Strategies

Skill		Strategy
*add a 4-digit number to ones including crossing boundaries.	$5432 + 6$ $7654 + 8$	If the ones do not cross into the tens column then add the ones only $5432 + 6 = 5438$ If the ones cross into the tens column then use knowledge of number bonds to solve. For $7654 + 8$ you would partition 8 into <u>6</u> and 2 then $7654 + 6 = 7660 + 2 = 7662$.
*add a 4-digit number to tens including crossing boundaries.	$6527+30$ $4256 +90$	If the tens do not cross into the hundreds column then add the tens only $6527+30= 6557$. If the tens cross into the hundreds column then use knowledge of number bonds to solve. For $4256 +90$ you would partition 90 into <u>50</u> and 40 and then $4256 + 50 = 4306 + 40 = 4346$.
*add a 4-digit number to hundreds including crossing boundaries.	$2378+400$ $6527+700$	If the hundreds do not cross into the thousands column then add the hundreds only $2378+400= 2778$. If the hundreds cross into the thousands column then use knowledge of number bonds to solve. For $6527+700$ you would partition 700 into <u>500</u> and 200 then $6527 + 500 = 7027+200 = 7227$.
*add a 4-digit number to thousands including crossing boundaries.	$5267 + 3000$ $5267 + 7000$	If the thousands do not cross into the ten thousand column then add the thousands only $5267 + 3000= 8267$. If the thousands cross into the ten thousand column then use knowledge of number bonds to solve. For $5267 + 7000$ you would partition 7000 into <u>5000</u> and 2000 then $5267 + 5000 = 10,267+2000 = 12,267$.
*Add any pair of 3-digit multiples of ten including crossing boundaries.	$430+520$ $650+270$	If the numbers do not cross into others columns then use partitioning to add $430+520 = 950$. If the tens cross into the hundreds column then use knowledge of number bonds to solve . For $650+270$ you partition 270 into 200 and <u>50</u> and <u>20</u> . Then you would do $650+200= 850$ then $850 + 50 = 900$ to make the next multiple of 100 then add <u>20</u> $900+20= 920$.
*add near multiples of 10, 100 or 1000 then adjust.	$2335+59$ $2345+199$ $5423+2999$	Add the nearest multiple of 10 (60) then subtract 1 because 60 is actually 1 more than 59. $2335+60= 2395-1= 2394$. Add the nearest multiple of 100 (200) then subtract 1 because 200 is actually 1 more than 199. $2345+200= 2545-1= 2544$. Add the nearest multiple of 1000 (3000) then subtract 1 because 3000 is actually 1 more than 2999 . $5423+3000= 8423-1= 8422$.
*add near doubles of 2 or 3- digit numbers.	$38+37$	If the numbers are near doubles, adjust so that they are the same number. Then use the portioning method for doubling and adjust. For $38+37$, <u>double 38</u> then <u>take away 1</u> to make 75.
*Add to a decimal fraction with units and tenths to make the next whole number.	$0.4+ 0.6$	Use knowledge of number bonds to solve. For $0.4 + ? = 1$, you would use your knowledge of $4+6 = 10$ so you would know $0.4 + 0.6 = 1.0$.

Objective & Strategy	Concrete	Pictorial	Abstract
<p>To add numbers with up to 4 digits.</p>	<p>Modelled using Base 10</p> <p>Children to understand that the highest amount in each column is 9 so sometimes exchange into the next column is necessary. Children understand that they can exchange ten 1s for a ten and ten 10s for a hundred and ten 100s for a thousand.</p> <p>Children begin to understand multi exchange where exchange is needed in more than one column.</p> <p>1268+ 1166 = 2434</p> 	<p>Use pictorial representations to add numbers up to 4 digits.</p> <p>Children will use images to represent the place value. If exchanging is needed, this will be shown below the line. This leads to greater understanding when using the formal written method as the children know what the digit below the line represents.</p> <p>2634 + 4517 = 7151</p>  <p>The blue dot represents 1000 and the red dot represents 100.</p>	<p>Record as a written calculation</p> <p><u>Condensed columnar addition</u></p> <p>Carry below the line</p> <p>3517 + 396 = 3913</p> 
<p>To solve simple measure and money problems up to two decimal places.</p>	<p>Use physical objects to solve simple measure and money problems.</p> <p>Children will gather then organise the amount required. Using the place value chart, children will then solve the calculation.</p> <p>£1.55 + £3.18=£4.73</p> 	<p>Use pictorial representations to solve simple measure and money problems.</p> <p>Using pictorial representations of money, children to solve up additions involving numbers with up to two decimal places.</p> <p>£1.31 + £2.43= £3.74</p> 	<p>Record as a written calculation</p> <p><u>Condensed columnar addition</u></p> <p>Children should line the decimals correctly under one another, considering place value.</p> 

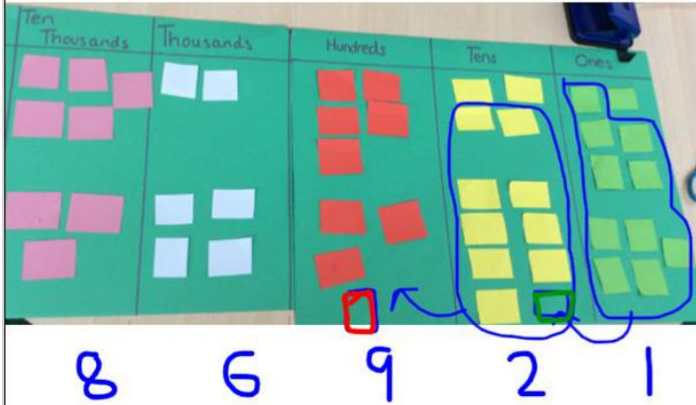
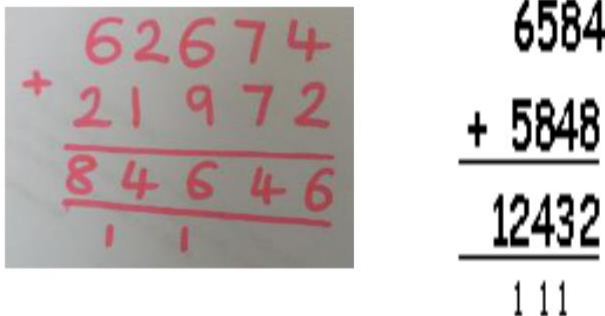
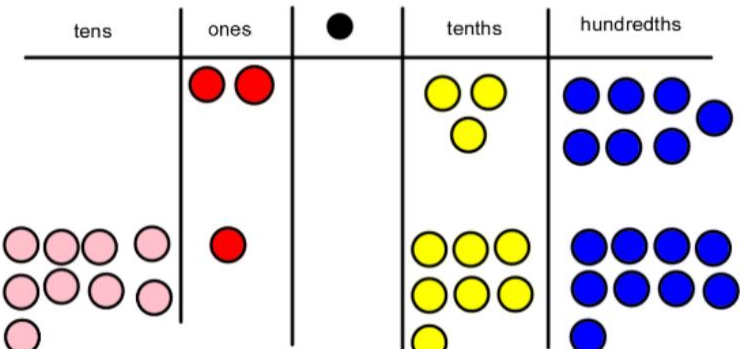
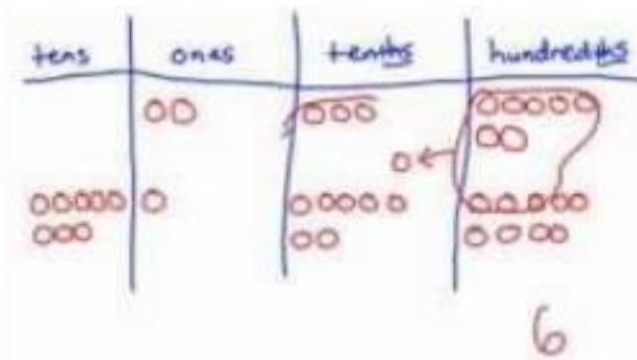
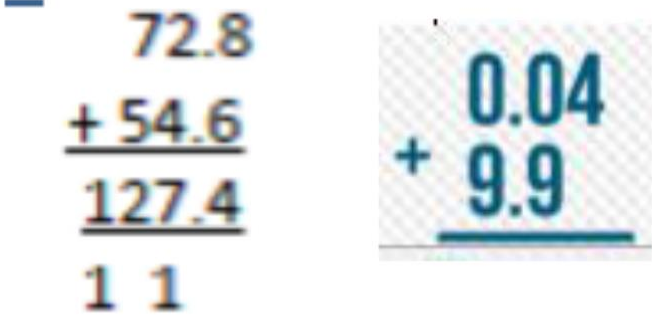
Year 5

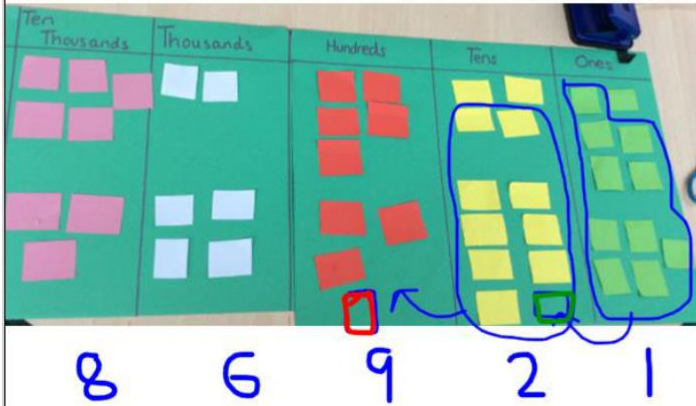
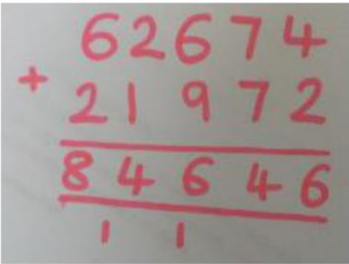
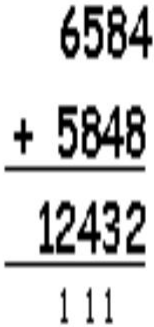
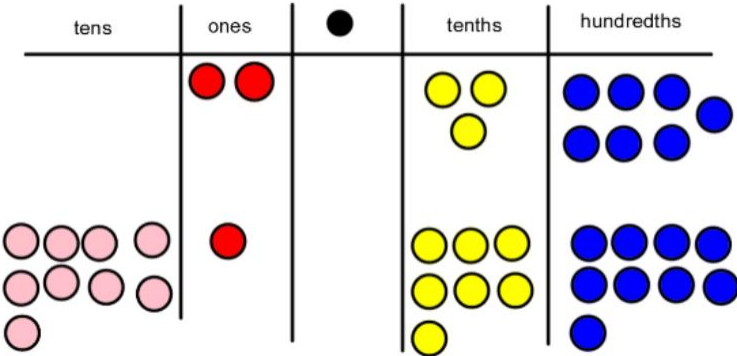
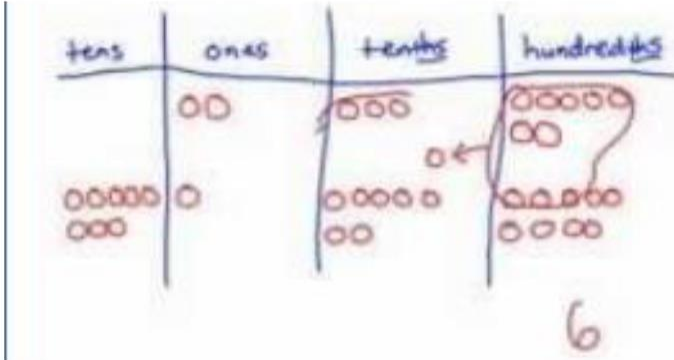
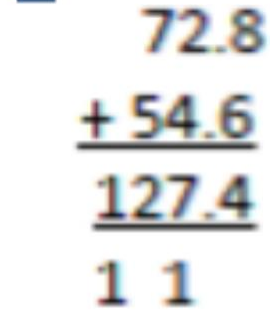
Key Vocabulary: addition, columnar addition. add, more, and, makes, sum, total (of), count on, altogether, extra, in all, combined, increased by, double, near double, one more, two more...ten more..., one hundred more, inverse, commutative law how many more to make? How many more is...than...? How much more is...?

Counting Fluency: To count backwards and forwards in steps of 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s, 11s, 12s, 100s and 1000s from any given starting number.

Mental Strategies

Skill	Strategy
* Add any pairs of 4-digit multiples of 100.	$4500 + 3200$ If the hundreds and thousands column do not cross into other columns then partition to add $4500 + 3200 = 7700$. $5400 + 7900$ If the hundreds and thousands column cross then use knowledge of number bonds to solve. For $5400 + 7900$ you add $5000+7000=12,000$ and $900+400=1300$ and recombine $12,000+ 1300 = 13,300$.
*add near multiples of 10, 100, 1000, 10,000 then adjust, including crossing boundaries.	$2335+58$ Add the nearest multiple of 10 (60) then subtract 2 because 60 is two more than 58 $2335+60= 2395-2= 2393$. $2345+297$ Add the nearest multiple of 100 (300) then subtract 3 because 300 is three more than 297 $2345+300= 2645-3= 2642$. $5438 +3995$ Add the nearest multiple of 1000 (4000) then subtract 5 because 4000 is five more than 3995 $5438+4000= 9438-5= 9433$.
*Add tenths to a 1-digit whole number and tenths.	$4.3+0.4$ If the tenths do not cross into ones column then add the tenths and ones separately $4.3 +0.4= 4.7$ $2.4 + 0.8$ If the tenths cross into the ones column then use your knowledge of number bonds to partition. For $2.4 + 0.8$, use your knowledge that $4+6= 10$ to partition the 0.8 into 0.6 and 0.2 so $2.4 + 0.6 = 3 +0.2 = 3.2$
*Add two 1-digit whole numbers and tenths.	$4.3+3.4$ If the tenths do not cross into ones then add the tenths and ones separately e.g. $4.3+3.4= 7.7$ $6.7 + 1.5$ If the tenths cross into the ones column then use your knowledge of place value to solve. Make both numbers <u>ten times bigger</u> then calculate $67+15= 82$. To adjust make your answer <u>10 times smaller</u> $82 \div 10 = 8.2$ so $6.7+1.5= 8.2$
*Add 2-digit numbers with tenths and hundredths.	$0.46+0.21$ If the tenths and hundredths do not cross into ones then use partitioning to solve e.g. $0.46+0.21= 0.67$ $0.36 + 0.84$ If the tenths and/or hundredths cross into another column then use your knowledge of place value to solve. Make both numbers <u>100 times bigger</u> then calculate $36 + 84 = 120$. To adjust make your answer <u>100 times smaller</u> $120 \div 100 = 1.2$ so $0.36+0.84 = 1.20$
*Add to a decimal fraction with units and tenths to make the next whole number.	$4.4+?=5$ Use knowledge of number bonds to solve. For $4.4 + ? = 5$, you would use your knowledge of $4+6 = 10$ so know $0.4 + 0.6 = 1.0$ so $4.4 + 0.6 =5$.
*Add near doubles of decimals.	$3.8+3.7$ If numbers are near doubles adjust to make them the same number. Then use the portioning method for doubling and adjust. For $3.8+3.7$, double 3.8 by doubling 3 (6), doubling 0.8 (1.6) then combine to make 7.6 then <u>take away 0.1</u> to make 7.5.

Objective & Strategy	Concrete	Pictorial	Abstract
<p>To add numbers with more than 4 digits.</p>	<p>Modelled using place value counters</p> <p>Children to understand that the highest amount in each column is 9 so sometimes exchange into the next column is necessary. Children understand that they can exchange ten 1s for a ten, ten 10s for a hundred, ten 100s for a thousand, ten 1000s for a ten thousand.</p> <p>Children understand multi exchange where exchange is needed in more than one column.</p> <p>$52,546 + 34,375 = 86,921$</p> 	<p>Using different pictorial representations for the values, the children show exchanges and understand the place value. This leads to greater understanding when using the formal written method as the children know what the digit below the line represents.</p> <p>$52,546 + 34,375 = 86,921$</p> 	<p>Record as a written calculation</p> <p><u>Condensed columnar addition</u></p> <p>Carry below the line.</p> <p>Children to solve calculation involving multiple exchanges.</p> 
<p>To add numbers with up to two decimal places.</p>	<p>Use physical objects to add numbers with up to two decimal places.</p> <p>Modelled using place value charts and counters</p> <p>$2.37 + 91.79 = 94.16$</p> 	<p>Use pictorial representations to add numbers with up to two decimal places.</p> <p>Children will use jottings to help them represent the calculation. They add each column starting first from the furthest column to the right and carry below the line when needed.</p> <p>$2.37 + 91.79 = 94.16$</p> 	<p>Record as a written calculation</p> <p><u>Condensed columnar addition</u></p> <p>Children should line decimals up correctly, including examples when there are different number of decimal places.</p> 

Objective & Strategy	Concrete	Pictorial	Abstract
<p>To add numbers with more than 4 digits.</p>	<p>Modelled using place value counters</p> <p>Children to understand that the highest amount in each column is 9 so sometimes exchange into the next column is necessary. Children understand that they can exchange ten 1s for a ten, ten 10s for a hundred, ten 100s for a thousand, ten 1000s for a ten thousand.</p> <p>Children understand multi exchange where exchange is needed in more than one column.</p> <p>$52,546 + 34,375 = 86,921$</p> 	<p>Using different pictorial representations for the values, the children show exchanges and understand the place value. This leads to greater understanding when using the formal written method as the children know what the digit below the line represents.</p> <p>$52,546 + 34,375 = 86,921$</p> 	<p>Record as a written calculation</p> <p><u>Condensed columnar addition</u> Carry below the line.</p> <p>Children to solve calculation involving multiple exchanges.</p>  
<p>To add numbers with up to two decimal places.</p>	<p>Use physical objects to add numbers with up to two decimal places.</p> <p>Modelled using place value charts and counters</p> <p>$2.37 + 91.79 = 94.16$</p> 	<p>Use pictorial representations to add numbers with up to two decimal places.</p> <p>Children will use jottings to help them represent the calculation. They add each column starting first from the furthest column to the right and carry below the line when needed.</p> <p>$2.37 + 81.79 = 84.16$</p> 	<p>Record as a written calculation</p> <p><u>Condensed columnar addition</u> Children should line decimals up correctly, including examples when there are different number of decimal places.</p>  

Year 6

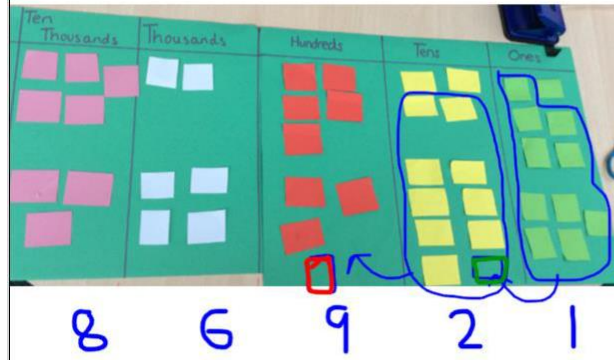
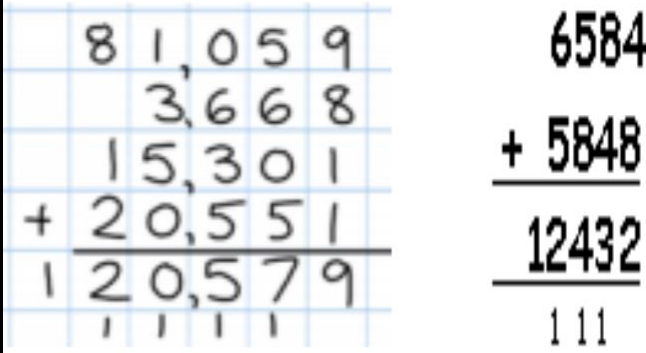
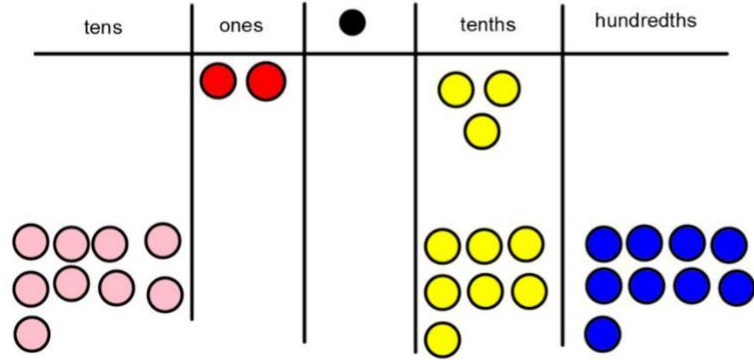
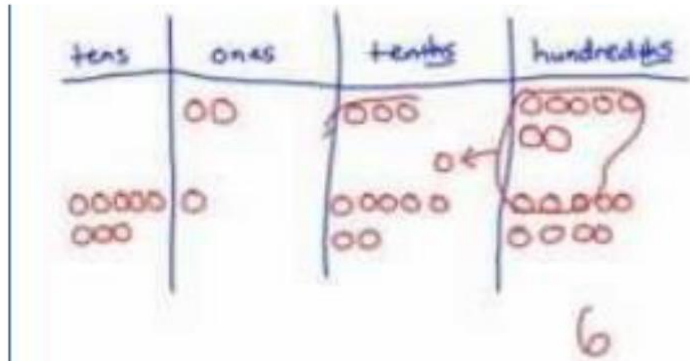
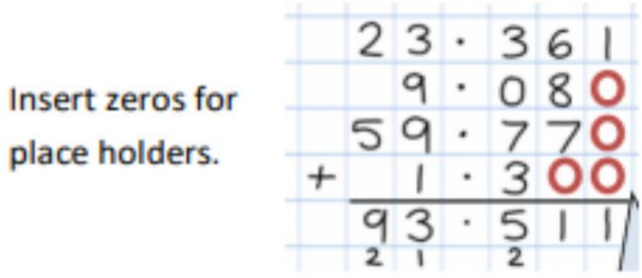
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Counting Fluency: To consolidate counting backwards and forwards in steps of 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s, 11s, 12s, 100s, 1000s and 10,000s from any starting number.

Mental Strategies

Skill	Strategy	
Reconsolidate all strategies from Y4 and 5.		
*Add a 4-digit multiple of 100 to a 4-digit number.	6365 + 3400 5432+1800	If the hundreds do not cross into the thousands column then add the hundreds only $6365 + 3400 = 9765$. If the hundreds cross into the thousands column then use knowledge of place value to partition. For $5432+1800$ you partition 1800 into 1000 and <u>600</u> and 200. Then you would do $5432+1000= 6432$ then $6432 +\underline{600} = 7032 + 200 = 7232$.
*Add large numbers.	455,000 + 324,000 543,000 + 387,000	If the hundreds and thousands do not cross into the thousands column then use partitioning to solve $455,000 + 324,000 = 879,000$ If the hundreds, thousands or ten thousands cross into another column then use knowledge of place value to partition. For $543,000 + 387,000$ you would do $500,000+300,000= 800,000$ then $40,000+80,000= 120,000$ and $3,000 +7,000 =10,000$ and recombine $800,000 + 120,000+ 10,000 = 930,000$
*add near multiples of 0.01, 0.1, 10, 100, 1000 then adjust, including crossing boundaries.	<u>3.9</u> + 4.4 <u>2.56</u> + <u>4.98</u>	Add the nearest whole number (4) then subtract <u>0.1</u> because 4 is actually 0.1 more than 3.9 so $4.4 +\underline{4}= 8.4 - \underline{0.1} = 8.3$ Add the nearest whole number (5) then subtract 0.02 because 5 is actually 0.02 more than 4.98 so $2.56 +\underline{5} = 7.56 - \underline{0.02}= 7.54$
*Add several 1-digit whole numbers and tenth.	3.4 + 2.8 + 3.5	Use knowledge of place value and partitioning to solve. Make each decimal fractions <u>10 times bigger</u> and do $34 + 28 + 35 = 97$ Then adjust to make your answer <u>10 times smaller</u> $97\div 10 = 9.7$ so $3.4 + 2.8 + 3.5 = 9.7$
*Add decimals with different numbers of places.	0.45 + 2.3	Add by partitioning using your knowledge of place value. First add the ones $0 + 2 = 2$, then the tenths $0.4 + 0.3 = 0.7$ then the hundredths $0.05 + 0 = 0.05$ and recombine $2+ 0.7 + 0.05= 2.75$
*Add to any number with two decimal places to make the next tenth or whole number.	2.<u>34</u> + ? = 2.4 6.<u>35</u>+?=7	Use knowledge of number bonds to 10. $34+\underline{6}=40$ so $2.\underline{34}+ \underline{0.6} = 2.4$ Use knowledge of number bonds to 100. $35+\underline{65}=100$ so $6.\underline{35}+ \underline{0.65}= 7$
*Add to any number with three decimal places to make the next tenth or whole.	4.<u>245</u>+?=5 3.<u>256</u> + ? = 3.3	Use knowledge of place value to help $\underline{245}+ \underline{755}= 1000$ so $4.245+ 0.755= 5$ Use knowledge of place value $\underline{256} + \underline{44}= 300$ so $3.256+ 0.044 = 3.3$

Calculation Methods

Objective	Concrete	Pictorial	Abstract
To add several numbers of increasing complexity.	<p>Modelled using Base 10</p> <p>Children to understand that the highest amount in each column is 9 so sometimes exchange into the next column is necessary. Children understand that they can exchange ten 1s for a ten, ten 10s for a hundred, ten 100s for a thousand, ten 1000s for a ten thousand.</p> <p>Children understand multi exchange where exchange is needed in more than one column.</p> <p>52,546 + 34,375 = 86,921</p> 	<p>Using different pictorial representations for the values, the children show exchanges and understand the place value. This leads to greater understanding when using the formal written method as the children know what the digit below the line represents.</p> <p>52,546 + 34,375 = 86,921</p> 	<p>Record as a written calculation</p> <p><u>Condensed columnar addition</u></p> <p>Children to solve calculation involving multiple exchanges and numbers with different numbers of digits.</p> 
	<p>To add numbers with increasing complexity, including adding money, measure.</p> <p>Use physical objects to add numbers with increasing complexity, including adding money, measure</p> <p><u>Using counters and a place value chart</u></p> <p>1.30 + 80.79 = 82.09</p> 	<p>Use pictorial representations to add numbers with increasing complexity, including adding money, measure</p> <p><u>Using jottings and place value chart.</u></p> <p>Children will use jottings to help them represent the calculation. They add each column starting first from the furthest column to the right and carry below the line when needed.</p> <p>2.37 + 81.79 = 84.16</p> 	<p>Children add several decimals with different numbers of decimal places by lining up digits and inserting zeros as place holders.</p> <p><u>Insert zeros for place holders.</u></p> 



WESTONZOYLAND

Community Primary School and Pre-school

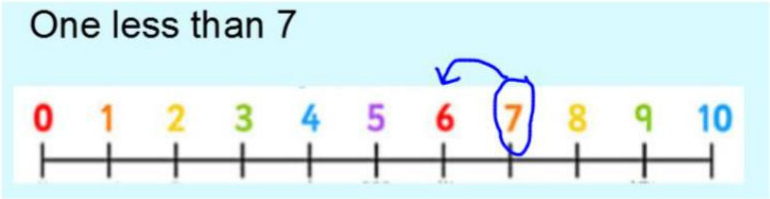
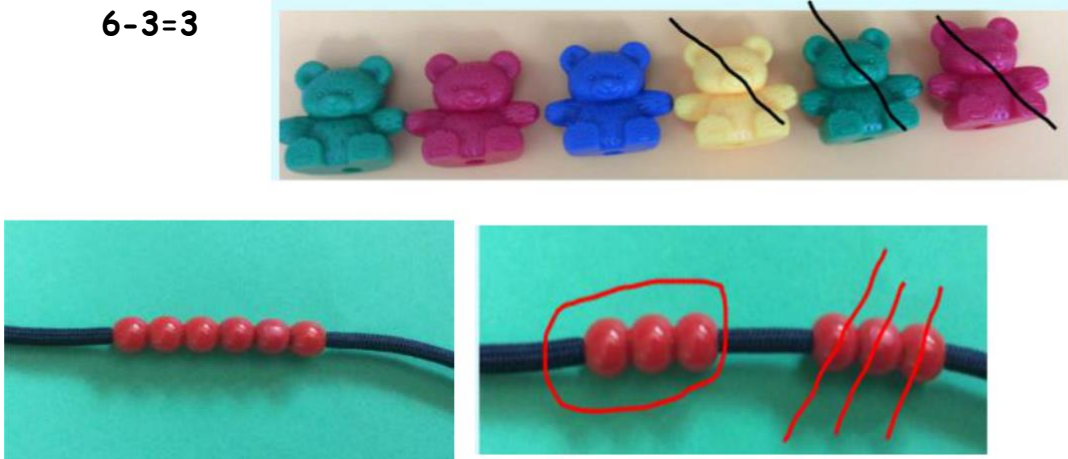
Subtraction

Foundation Stage

Key Vocabulary: take away, difference between, how many are left/ left over? How many are gone?, one less, two less, ten less. How many fewer is...than...? How much less is...? minuend, subtrahend, difference.

Counting fluency: To count forwards and backwards in steps of 1s, 2s, 5s and 10s.

Calculation Methods

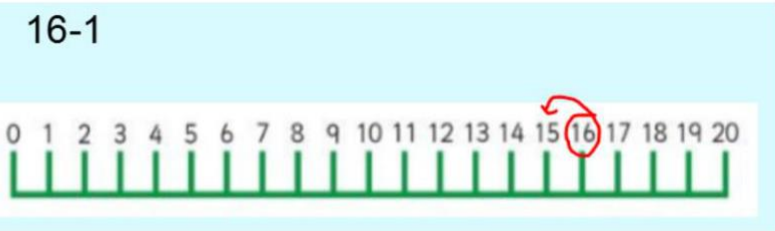
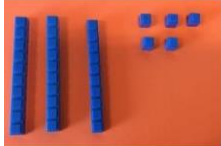
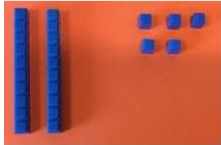
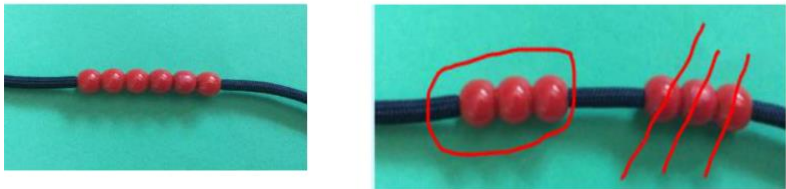
Objective & Strategy	Concrete	Pictorial	Abstract
To find one less than a number.	<p>Use physical objects to find the solution by taking away one object from the whole.</p> <p>Can you find one less than the number?</p> 	<p>Can you find one less than the number?</p> <p><u>Modelled on a number line</u></p> <p>Circle the biggest number in the number sentence and count back one on the number line to find the solution.</p> 	<p>Record as a written calculation.</p> <p>$7-1=6$</p>
Subtract two single digit numbers.	<p>Use a range of physical objects, including number beads. Children will find the solution by making the number first then removing several objects from the whole.</p> <p>$6-3=3$</p> 	<p><u>Modelled on a number line</u></p> <p>Circle the biggest number in the number sentence and count back in ones on the number line to find the solution.</p> 	<p>Record as a written calculation.</p> <p>$6-3=3$</p>

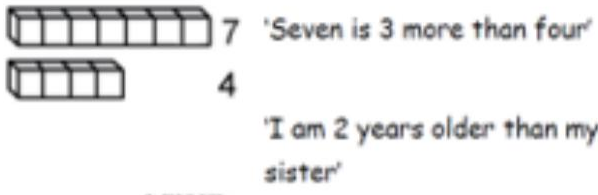
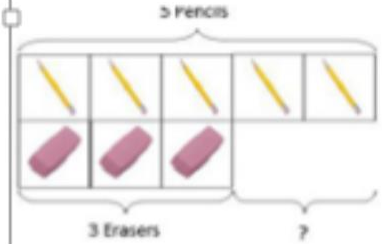
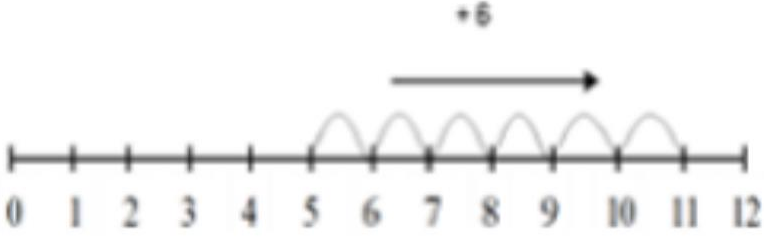
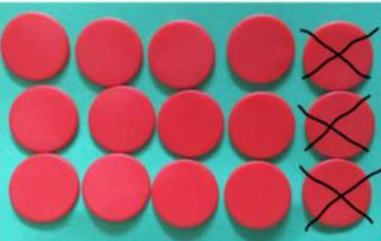
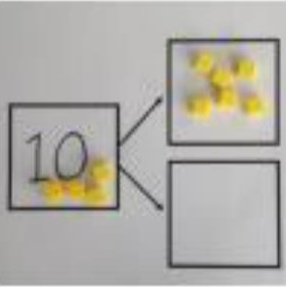
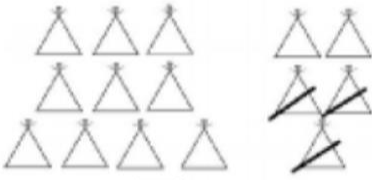
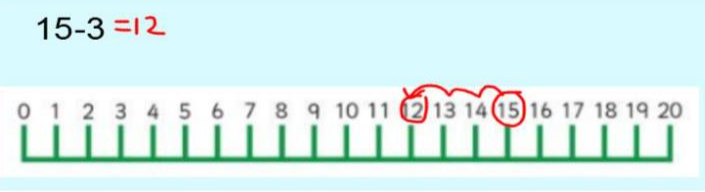
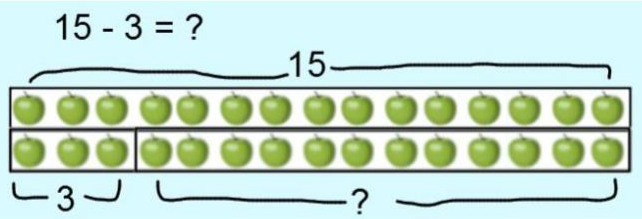
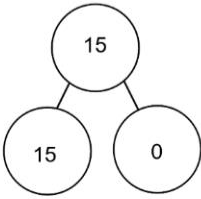
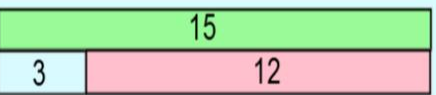
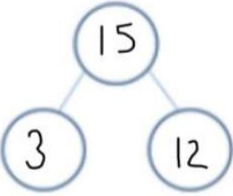
Year 1

Key Vocabulary: subtract, take away, difference between, how many are left/ left over? How many are gone? One less, two less, ten less. How many fewer is...than...? How much less is...? minuend, subtrahend, difference.

Counting fluency: To count forwards and backwards in steps of 1s, 2s, 5s and 10s.

Calculation Methods

Objective & Strategy	Concrete	Pictorial	Abstract
<p>To find one less than a number.</p>	<p>Modelled using counters</p> <p>One less than 16</p> <p>Use physical objects and find the solution (difference) by taking away one object from the group (minuend), counting backwards.</p> 	<p>Number line</p> <p>Circle the biggest number (minuend) in the number sentence and count back one (subtrahend) on the number line to find the solution (difference).</p> <p>16-1</p> 	<p>Record as a written calculation.</p> <p>16-1=15</p>
<p>To find ten less than a number.</p>	<p>Modelled using Base 10</p> <p>Ten less than 35</p> <p> Step 1- Make the number (minuend) using base 10 or concrete resources.</p> <p> Step 2- Take 10 (subtrahend) away.</p> <p>Step 3- Calculate the final answer by counting how many are left (difference).</p>	 <p>Modelled using 100 square</p> <p>35-10=25</p> <p>Step 1- Circle the number you are starting at (minuend) e.g. 35</p> <p>Step 2- Count back 10 (subtrahend).</p> <p>Step 3- The tenth number you land on is your answer (difference) e.g. 25</p>	<p>35-10=25</p>
<p>Subtract two single digit numbers.</p>	<p>Use a range of physical objects, including number beads.</p> <p>Children will find the solution (difference) by making the number (minuend) first then removing several objects from the whole.</p> <p>6-3=3</p>  	<p>Modelled on a number line</p> <p>Circle the biggest number (minuend) in the number sentence and count back in ones (subtrahend) on the number line to find the solution (difference).</p> <p>6-3=3</p> 	<p>Record as a written calculation.</p> <p>6-3=3</p>

<p>To find the difference between two numbers</p>	<p>Children begin to compare amounts by representing with objects.</p>  <p>Children use objects to represent problems using the bar model.</p> 	<p>Number line- counting on</p> <p>Find the difference by counting on from the smaller number (subtrahend) to the bigger number (minuend).</p> <p>$11-5=6$</p> 	<p>Children apply to word problems.</p> <p>Hannah has 12 sweets and her sister has 5 sweets. How many more sweets does Hannah have than her sister?</p>
<p>To subtract one digit and two digits numbers to 20, including zero</p>	<p>Use a range of physical objects (counters, bead strings) and find a solution (difference) by removing several objects from the group (minuend), counting backwards.</p> <p>$15-3=12$</p>  <p>Use of physical objects to subtract numbers using the part whole model to model.</p> <p>$10-6=4$</p>  <p>$15-0=15$</p> 	<p>$15-3=12$</p> <p>Children represent pictorially by drawing objects and crossing out to show what has been taken away.</p>  <p>Number line- counting back</p> <p>Circle the biggest number (minuend) in the number sentence and count back in ones on the number line to find the difference.</p>  <p>Bar model</p> <p>Use the bar model to represent the model pictorially.</p> <p>$15-3=?$</p>  <p>Part-Whole Model</p> <p>$15-0=15$</p> 	<p>Record as a written calculation.</p> <p>$15-3=12$</p> <p>Understand subtraction verbally.</p> <p>Put 15 in your head, count back 3, what number are you at?</p> <p>Use the bar model or part whole model to find all related addition and subtraction facts</p>   <p>Record as a written calculation.</p> <p>$15-0=15$</p>

To subtract ones from 10 or 20

Modelled using uni-fix cubes

10-3=7



Step 1- Make the bigger number (minuend).

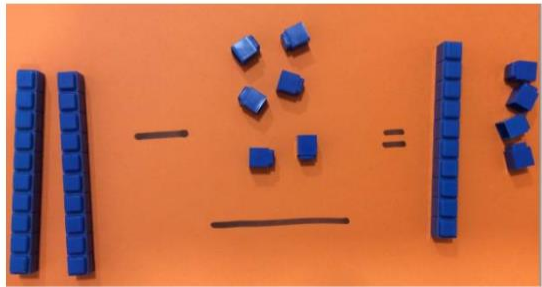
Step 2- take away the smaller number (subtrahend).



Step 3- count how many are left to find out the difference.

Modelled using Base 10

20-6= 14

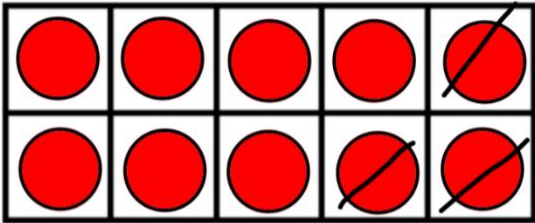


Make the number sentence using Base 10. To find the difference, exchange one ten for 10 ones and subtract the smaller number (subtrahend). Add up how much is left to find the difference.

Modelled using the tens frame

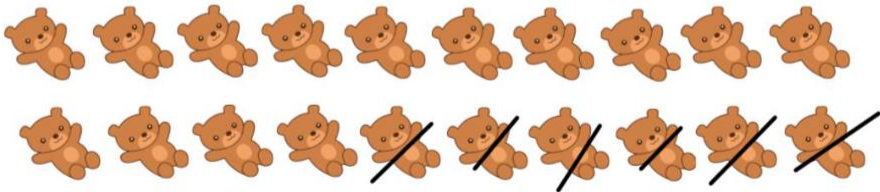
Using a tens frame or pictorial representations, children will count out 10 or 20 counters/pictorial representations and either take them away or cross them out.

10-3=7



Modelled using a pixctorial representation

20-6=14



Record as a written calculation.

10-3=7

20-6=14

Year 2

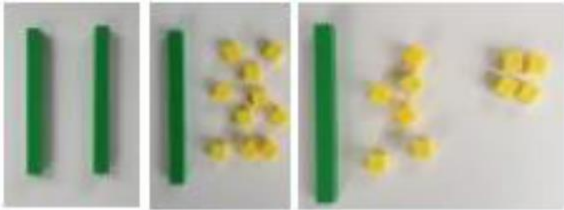
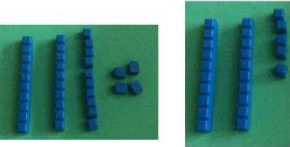
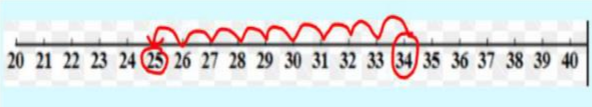
Key Vocabulary: subtract, take away, difference between, how many are left/ left over? How many are gone? one less, two less, ten less, hundred less. How many fewer is...than...? How much less is...? tens boundary, minuend, subtrahend, difference.

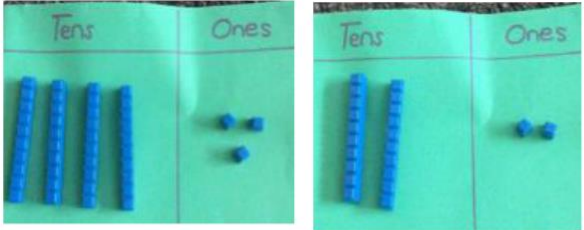
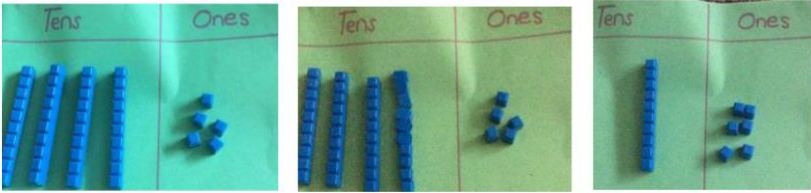
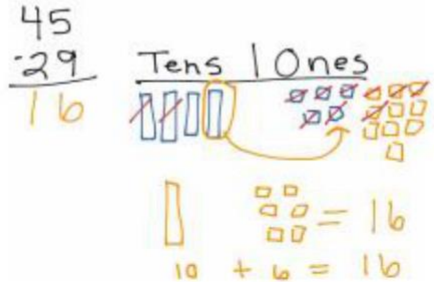
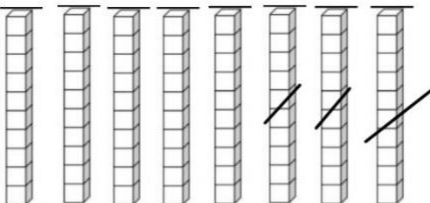
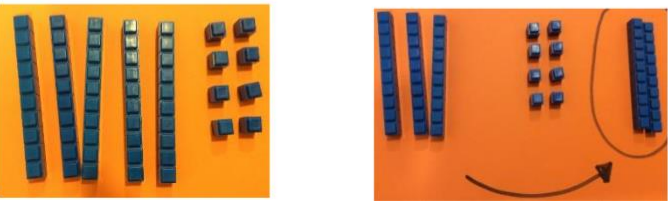
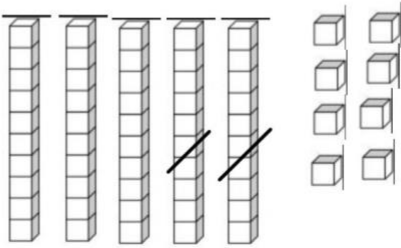
Counting fluency: To count forwards and backwards in steps of 2s, 3s, 4s, 5s and 10s.

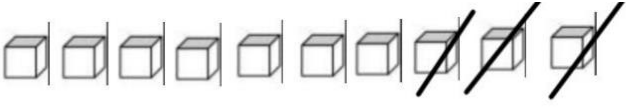
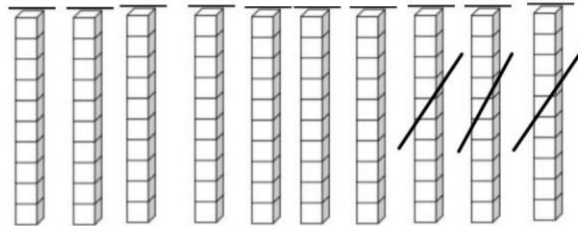
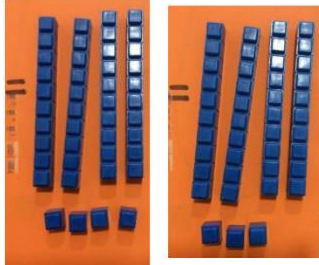
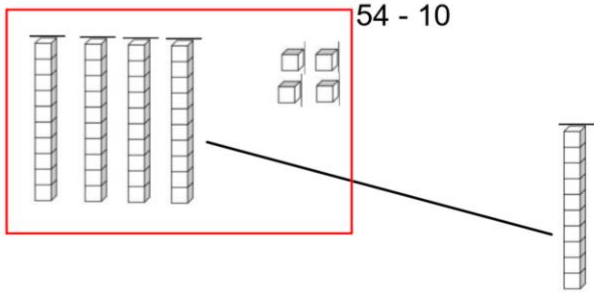
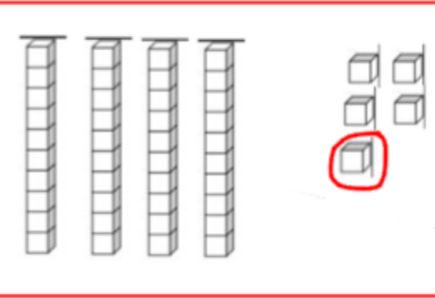
Mental Strategies

Skill	Strategy
To subtract 9 to a 2-digit number by adjusting.	54-9 Make the number with base ten equipment, then subtract 10. You then need to add 1 because 9 is actually one less than 10. Children will begin to do this mentally without equipment. For 54-9 you would first subtract 10 $54-10 = 44$ then add 1, $44+1=45$ so $54-9=45$.

Calculation Methods

Objective & Strategy	Concrete	Pictorial	Abstract
To regroup a ten in to ten ones.	Use base 10 to show how to exchange a ten into ten ones in order to subtract the ones. 20-4=16 	Children represent pictorially by drawing objects in groups of ten and crossing out to show what has been taken away. 20-4=16 	Record as a written calculation. 20-4=16
To subtract numbers using objects, pictures and mentally including: -a 2-digit number and ones -a 2-digit number and tens -two 2-digit numbers	Use the base ten to represent the numbers (minuend) then use knowledge of exchanging tens for ten ones to subtract the subtrahend. 34-9= 25  45-20= 25  93-76= 17 	Modelled using a number line or 100 square Count back from largest (minuend) to smallest (subtrahend) number to find the difference. 34-9=25  45-20=25  93-76=17 	Use of a written method Record by drawing their own number line. Children count up from the smallest (subtrahend) to largest (minuend) number. Children would first count on to the next ten and then the rest. 34 - 9 = 25  45 - 20 = 25  93-76 = 17 

<p>To use partitioning to subtract two digit numbers.</p>	<p>Use base 10 to make the number (minuend). Take away the ones then the tens to find the difference.</p> <p>43-21=22</p> 	<p>Children draw pictorial representations and cross off the ones then the tens.</p> <p>43-21 = 22</p> 	<p><u>Formal Written Method</u> Partition each number then subtract the bottom number (subtrahend) from the top number (minuend), starting with the ones.</p> $\begin{array}{r} 43 = 40 + 3 \\ 21 = 20 + 1 \\ \hline 20 + 2 = 22 \end{array}$
<p>To use partitioning to subtract two digit numbers with regrouping.</p>	<p>Use base 10 to make the number (minuend) then regroup by exchanging a ten for ten ones where necessary so that you can subtract the subtrahend.</p> <p>45-29= 16</p> 	<p>Children draw pictorial representations to show the regrouping in order to find how many are left.</p> <p>45-29=16</p> 	<p><u>Formal Written Method</u> Partition each number then subtract the bottom number (subtrahend) from the top number (minuend), starting with the ones. Exchange tens for ones then recombine to find the solution.</p> $\begin{array}{r} 45 = 30 + 15 \\ 29 = 20 + 9 \\ \hline 10 + 6 = 16 \end{array}$
<p>To subtract tens from the tens number up to 100.</p>	<p><u>Modelled using Base 10</u></p>  <p>80-30=50</p> <p>Use Base 10 to make the number (minuend). Then take away the number of tens (subtrahend) required and regroup to find the difference.</p>	<p><u>Modelled using pictorial representations of Base 10</u></p> <p>80-30=50</p>  <p>Children would cross out how many tens they are subtracting and count how many they have left to find the difference.</p>	<p>Record as a written calculation.</p> <p>80-30=50</p>
<p>To subtract tens from a 2-digit number</p>	<p><u>Modelled using Base 10</u></p> <p>58-20=28</p> 	<p><u>Modelled using pictorial representations of Base 10</u></p> <p>58-20=28</p> 	<p>Record as a written calculation.</p> <p>58-20=28</p>

	Use Base 10 to make the number (minuend). Then take away the number of tens (subtrahend) required and regroup to find the difference.	Children would cross out how many tens they are subtracting and count how many they have left to find the difference.	
To derive related facts up to 100.	<p>Modelled using Base 10</p> <p>10-3=7</p>  <p>100-30=70</p> 	<p>Modelled using pictorial representations of Base 10</p> <p>10-3=7</p>  <p>100 - 30 = 70.</p> 	<p>Record as a written calculation.</p> <p>10-3=7</p> <p>10-30=70.</p>
To subtract 9 from a 2-digit number by adjusting	<p>Modelled using Base 10</p> <p>54-9=63</p> <p>Step 1: Make the number sentence</p> <p>Step 2: If the number needed to subtract is 9, make this a ten by adding one more. This will be exchanged for 1 ten.</p>  <p>Step 3: Subtract 10 from the number (minuend), because the original number was 9, 1 will need to be subtracted from the difference.</p> 	<p>Modelled using pictorial representations of Base 10</p> <p>54-9=45</p> <p>Step 1- Add 1 to the 9 to make 10.</p>  <p>Step 2- Subtract 10 from the minuend.</p>  <p>Step 3- Now add the 1 back odd to find the difference.</p>	<p>Record as a written calculation.</p> <p>54-9=45</p>
		 <p>54</p>	

Year 3

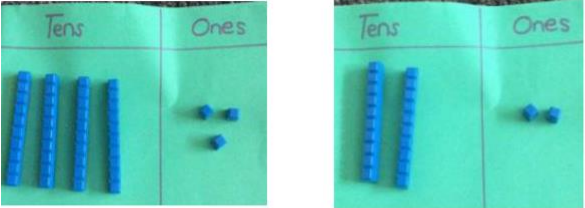
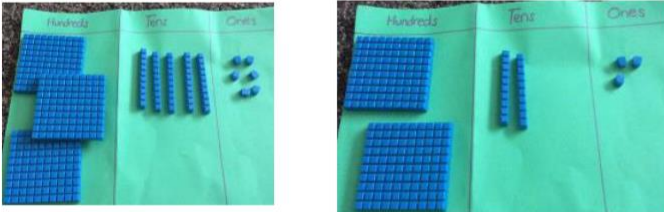
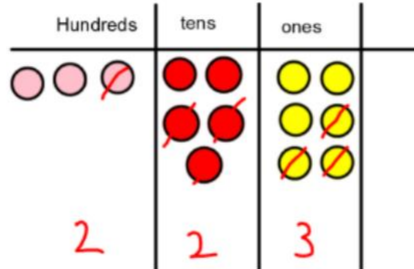
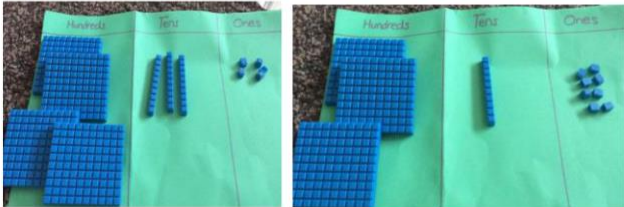
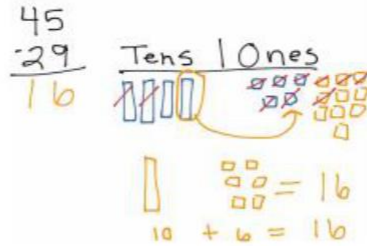
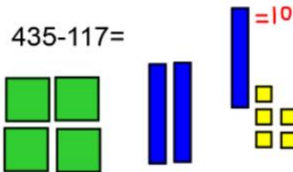
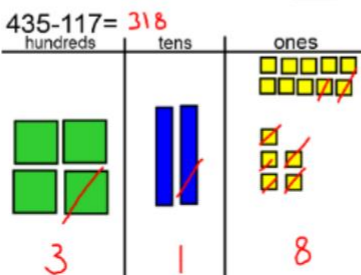
Key Vocabulary: subtract, take away, difference between, how many are left/ left over? How many are gone?, one less, two less, ten less, hundred less. How many fewer is...than...? How much less is...? tens boundary, hundreds boundary, minuend, subtrahend, difference.

Counting fluency: To count forwards and backwards in steps of 2s, 3s, 4s, 5s, 6s, 8s, 10s and 100s from any given number.

Mental Strategies

Skill	Strategy
*Subtract a 3-digit number and ones, including crossing boundaries.	<p>345-3 If the ones in the second number (subtrahend) can be taken from the first number (minuend) then subtract the ones only $345-3= 342$.</p> <p>432-8 If the ones in the subtrahend are more than the minuend then use partitioning to solve. For $432-8$ you would partition 8 into 2 and 6 then $432 - 2= 430-6 = 424$.</p>
*Subtract a 3- digit number and tens including crossing boundaries.	<p>554-40 If the tens in the second number (subtrahend) can be taken from the first number (minuend) then subtract the tens $554-40= 514$</p> <p>543-70 If the tens in the subtrahend are more than the minuend then use partitioning to solve. For $543-70$ you would partition 70 into 40 and 30 and then $543 - 40 = 503 -30 =473$. Alternatively you could count back in steps of ten from the minuend.</p>
*Subtract a 3-digit number and hundreds including crossing boundaries.	<p>754-400 If the hundreds in the second number (subtrahend) can be taken from the first number (minuend) then subtract the hundreds $754-400= 354$ Alternatively you could count back in steps of one hundred from the minuend.</p>
*Subtract ones from a 3-digit tens number.	<p>340-7 Use knowledge of place value to solve. $10-3= 7$ so $40-7= 33$ then add on the 300. $340-7=333$</p>
* Subtract a 2-digit number from a multiple of 10 including crossing boundaries	<p>90-27 Use knowledge of place value and partitioning to solve. Partition 27 into <u>20</u> and <u>7</u> and subtract each part from 90. $90-20= 70$ and use knowledge of number bonds that $10-7= 3$ so $70-7= 63$ Or use the counting on method to find the difference. If I start with 27 and add 3 I get to 30 then I need to add <u>60</u> more to get to 90 so</p> <p>3</p>
Subtract a 2-digit number from a 2-digit number, including crossing boundaries.	<p>56-32 If the ones and tens can be subtracted without exchange then subtract by partitioning. $56-32$ would be $50-30 = 20$ and $6 - 2 = 4$ then recombine 20 and 4 to make 24 so $56-32=24$.</p> <p>45-27 If the ones in the second number (subtrahend) is more than the first number (minuend) then use partitioning to solve. For $45-27$ you could partition 27 into <u>20</u> and <u>7</u> first. Then subtract from the minuend. $45-20= 25$ then $25-7=18$ so $45-27=18$ Or use the counting on method to find the difference. If I start with 27 and add <u>3</u> I get to 30 then I need to add 10 more to get to 40 then another <u>5</u> more to get to 45. I then recombine <u>3</u> with <u>10</u> with <u>5</u> so $45-27= 18$</p>
*Subtract near multiples of 10 and 100 and adjust .	<p>43-9 When subtracting 9 you would <u>subtract 10</u> (1 more than 9) from the minuend then <u>add 1</u> because 10 is actually one more than 9. For $43-9$, you would do</p> <p>543- 99 When subtracting 99 you would <u>subtract 100</u> (1 more than 99) from the minuend then <u>add 1</u> because 100 is actually one more than 99. For $543-99$, you would do $543-100=443 +1 = 444$.</p>

Year 3 Calculation Methods

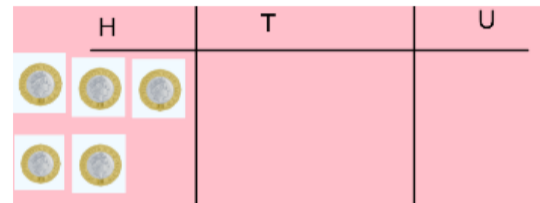
Objective & Strategy	Concrete	Pictorial	Abstract
To subtract 2 and 3 digit numbers without exchange.	Use base 10 to make the number (minuend) then take away the ones, tens then the hundreds to find the difference. 43-21=22  356 - 133 = 223 	Children draw pictorial representations to show the regrouping in order to find how many are left. 43-21=22  56 - 133= 223 	<u>Written Method (expanded method)</u> Partition each number then subtract the bottom number (minuend) from the top number (subtrahend), starting with the ones. <div style="display: flex; justify-content: space-around;"> $\begin{array}{r} 43 - 21 = 22 \\ 43 = 40 + 3 \\ 21 = 20 + 1 \\ \hline 20 + 2 = 22 \end{array}$ $\begin{array}{r} 356 - 133 = 223 \\ 356 = 300 + 50 + 6 \\ 133 = 100 + 30 + 3 \\ \hline 200 + 20 + 3 = 223 \end{array}$ </div> <u>Formal Written Method (condensed method)</u> Children begin to use a condensed columnar method of subtraction. <div style="display: flex; justify-content: space-around;"> $\begin{array}{r} 43 \\ - 21 \\ \hline 22 \end{array}$ $\begin{array}{r} 365 \\ - 133 \\ \hline 232 \end{array}$ </div>
To subtract 2 and 3 digit numbers with exchange.	Use base 10 to make the number (minuend) then regroup by exchanging a ten for ten ones and a hundred for ten tens where necessary so that you can subtract the subtrahend. 45-29=16 Step 1: Make the minuend Step 2: Exchange 1 ten for 10 ones. Step 3: Subtract two tens and 9 ones. 435 - 117 = 318 	Children draw pictorial representations to show the regrouping in order to find the difference. 45-29=16  435-117= 318 Step 1:  Step 2:  Step 3: 	<u>Written Method (expanded)</u> Partition each number then subtract the bottom number from the top, starting with the ones. Exchange tens for ones then recombine to find the solution. <div style="display: flex; justify-content: space-around;"> $\begin{array}{r} 45 - 29 = 16 \\ 45 = 40 + 5 \\ 29 = 20 + 9 \\ \hline 10 + 6 = 16 \end{array}$ $\begin{array}{r} 435 - 117 = 318 \\ 435 = 400 + 30 + 5 \\ 117 = 100 + 10 + 7 \\ \hline 300 + 10 + 8 = 318 \end{array}$ </div> <u>Formal Written Method (condensed method)</u> Children begin to use a condensed columnar method of subtraction with exchange in one column. <div style="display: flex; justify-content: space-around;"> $\begin{array}{r} 45 \\ - 29 \\ \hline 16 \end{array}$ $\begin{array}{r} 435 \\ - 117 \\ \hline 318 \end{array}$ </div>

To subtract amounts of money to give change.

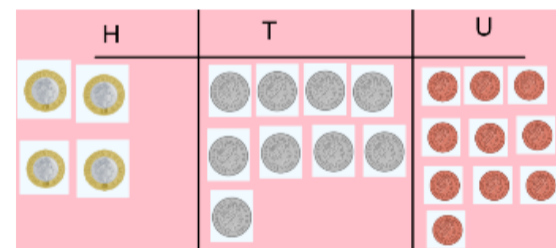
Use base money to make the number (minuend) then regroup by exchanging a ten for ten ones and a hundred for ten tens where necessary so that you can subtract to find the difference.

£5-2.72

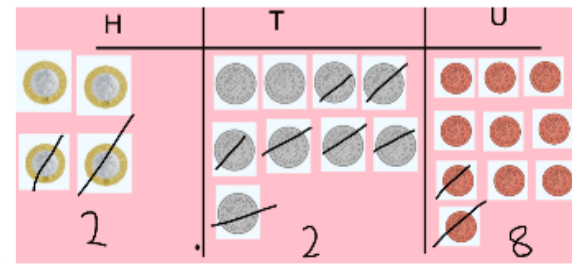
Step 1: Make the Number



Step 2: Exchange



Step 3: Subtract to solve



Children draw pictorial representations to show the regrouping in order to find how many are left, this can be in the form of a number line.

Modelled using a number line. Children start with the smallest number (subtrahend) and add to the nearest tenth, then nearest 1, until you reach the biggest number (minuend). Children will then need to add the jumps to calculate the change.



Formal written method

Children complete subtractions involving decimals which are presented in word problem format. They use zeros for place holders and know that decimal points should line up under each other.

I go to the shop with £5.00

I spend £2.72 - how much change do I get?



Year 4

Key Vocabulary: subtract, take away, difference between, how many are left/ left over? How many are gone? One less, two less, ten less, hundred less. How many fewer is...than...? How much less is...? tens boundary, hundreds boundary, inverse, minuend, subtrahend, difference.

Counting fluency: To count backwards and forwards in steps of 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s, 11s, 12s, 100s and 1000s from any given starting number.

Mental Strategies

Skill	Strategy
*Subtract a 4-digit number and ones, including crossing boundaries.	<p>3345-3 If the ones in the second number (subtrahend) can be taken from the first number (minuend) then subtract the ones only $3345-3= 3342$.</p> <p>2432-8 If the ones in the subtrahend are more than the minuend then use partitioning to solve. For $2432-8$ you would partition 8 into 2 and 6 then $2432 - 2= 430-6 = 2424$.</p>
*Subtract a 4- digit number and tens including crossing boundaries.	<p>5554-40 If the tens in the second number (subtrahend) can be taken from the first number (minuend) then subtract the tens $5554-40= 5514$</p> <p>2543-70 If the tens in the subtrahend are more than the minuend then use partitioning to solve. For $2543-70$ you would partition 70 into 40 and 30 and then $2543 - 40 = 2503 -30 =2473$.</p> <p>Alternatively you could count back in steps of ten from the minuend.</p>
*Subtract a 4-digit number and hundreds including crossing boundaries.	<p>8754-400 If the hundreds in the second number (subtrahend) can be taken from the first number (minuend) then subtract the hundreds $8754-400= 8354$</p> <p>2543-700 If the hundreds in the subtrahend are more than the minuend then use partitioning to solve. For $2543-700$ you would partition 700 into 500 and 200 and then $2543 - 500 = 2043 -200 =1843$.</p> <p>Alternatively you could count back in steps of one hundred from the minuend.</p>
*Subtract a 4-digit number and thousands including crossing boundaries.	<p>4527- 2000 If the thousands in the second number (subtrahend) can be taken from the first number (minuend) then subtract the thousands $4527-2000=2527$</p> <p>Alternatively you could count back in steps of one thousand from the minuend.</p>
*Subtract a 3-digit multiple of 10 from a 3-digit number.	<p>345-130 If all the digits on the second number (subtrahend) can be subtracted then solve by portioning. For $345-130$, you would do $300-100=200$, $40-30=10$ and $5-0=5$ then recombine $200+10+5=215$</p> <p>546-270 If all or some of the digits in the subtrahend are more than the minuend then use partitioning to solve. For $546-270$, you would partition 270 in <u>200</u> and <u>70</u> and so $546- 200= 346$ then subtract 70 to get 276.</p> <p>OR using the counting up method. For $546-270$, start with 270, <u>add 30</u> to get to 300 then <u>add 200</u> to get to 500 then <u>add 46</u> to get to 546. Then recombine $30+200+46= 276$.</p>
*Subtract a 3-digit multiple of 10 from a 4 or 4-digit number e.g. $4000-340$.	<p>200-27 Use knowledge of place value and partitioning to solve. Partition 27 into <u>20</u> and 7 and subtract each part from 200. $200- 20= 180$ and use knowledge of number bonds that $10-7= 3$ so $180-7= 173$.</p> <p>Or use the counting on method to find the difference. If I start with 27 and <u>add 3</u>, I get to 30 then I need to <u>add 70</u> more to get to 100 then another <u>100</u> more to get to 200. I then recombine 3 and 70 and 100 so $200-27=173$.</p>
* Subtract a 2/3-digit number from a 3/2-digit number, including crossing boundaries.	<p>237-24 If the ones and tens can be subtracted without exchange then subtract by partitioning. $237-24$ would be $237-20=217$ and then subtract 4 = 213.</p> <p>432-171 If the ones or tens in the second number (subtrahend) is more than the first number (minuend) then use partitioning to solve. For $432-171$ you could partition 171 into 100, 70 and 1 first. Then subtract from the minuend. $432-100= 332$ then $332-70=262$ then $262-1=261$ so $432-171=261$</p> <p>Or use the counting on method to find the difference. If I start with 171 and <u>add 29</u> I get to 200 then I need to add 200 more to get to 400 then another <u>32</u> more to get to 432. I then recombine 29 with 200 with 32 to get 261 so $432-171=261$</p>
*Subtract near multiples of 10, 100 and 100 then adjust.	<p>543-29 When subtracting 29 you would <u>subtract 30</u> (1 more than 29) from the minuend then <u>add 1</u> because 30 is actually one more than 29. For $543-29$, you would do $543-30=513+1 = 514$</p> <p>543- 299 When subtracting 299 you would subtract <u>300</u> (1 more than 299) from the minuend then <u>add 1</u> because 300 is actually one more than 299. For $543-299$, you would do $543-300=243 +1 = 244$.</p> <p>5437- 3999 When subtracting 3999 you would subtract <u>4000</u> (1 more than 3999) from the minuend then <u>add 1</u> because 4000 is <u>actually</u> one more than 3999. For $5437-3999$, you would do $5437-4000=1437+1= 1438$</p>

Calculation Methods

Objective & Strategy	Concrete	Pictorial	Abstract
<p>To subtract numbers with up to 4 digits using a formal written method.</p>	<p>Use base 10 to make the number (minuend) then regroup by exchanging a ten for ten ones, a hundred for ten tens or a thousands for ten hundreds where necessary so that you can subtract the subtrahend.</p> <p>2754-1568=1186</p> <div><div><div>thousands</div><div>hundreds</div><div>tens</div><div>ones</div></div><div><div>●</div><div>●●●●</div><div>●●●●</div><div>●●●●</div></div></div> <p>Step 1: Make the minuend.</p> <div><div><div>thousands</div><div>hundreds</div><div>tens</div><div>ones</div></div><div><div>●</div><div>●●●●</div><div>●●●●●●●●</div><div>●●●●</div></div></div> <p>Step 2: Exchange 1 ten for 10 ones.</p> <div><div><div>thousands</div><div>hundreds</div><div>tens</div><div>ones</div></div><div><div>●</div><div>●●●●</div><div>●●●●●●●●</div><div>●●●●</div></div></div> <p>Step 3: Subtract one hundred,1 ten and 7 ones.</p>	<p>Children draw pictorial representations to show the regrouping in order to find the difference.</p> <p>2754 - 1568= 1186</p> <div><div>TH</div><div>H</div><div>T</div><div>O</div></div> <div><div>●</div><div>●●●●</div><div>●●●●</div><div>●●●●</div></div> <div><div>1000 + 100 + 80 + 6 = 1186</div></div>	<p><u>Formal written method</u></p> <p>Children use a condensed method of subtraction, including examples with multiples exchanges.</p> <p>2754 - 1568 = 1186</p> <div><div>6'4'1</div><div>2754</div><div>-</div><div>1568</div><div>1186</div></div>
<p>To subtract numbers with up to 4 digits using a formal written method, including decimals to two decimal places.</p> <p>To subtract amounts of money to give change- adapted from year 3</p>	<p>Use the place value counters to make the number (minuend) then regroup by exchanging, where necessary: a thousand for ten hundreds, a hundred for ten tens, a ten for ten ones, a one for ten tenths and ten tenths for a hundredth so that you can subtract.</p> <p>£1.45-28p=£1.17</p> <p>Step 1: Make the number</p> <div><div>TH</div><div>H</div><div>T</div><div>O</div></div> <div><div>ones</div><div>tenths</div><div>hundredths</div></div> <div><div>●</div><div>●●●●</div><div>●●●●</div></div> <p>Step 2: Exchange *because you can't subtract 8 from 5. Children will need to exchange 10p for 10x1p.</p> <div><div>TH</div><div>H</div><div>T</div><div>O</div></div> <div><div>ones</div><div>tenths</div><div>hundredths</div></div> <div><div>●</div><div>●●●●</div><div>●●●●</div></div> <p>Step 3: Subtract to solve</p> <div><div>ones</div><div>tenths</div><div>hundredths</div></div> <div><div>●</div><div>●●●●</div><div>●●●●</div></div>	<p>Children draw pictorial representations to show the regrouping in order to find the difference.</p> <p>£1.45-28p=£1.17</p> <div><div>0</div><div>Tenths</div><div>Hundredths</div></div> <div><div>●</div><div>●●●●</div><div>●●●●</div></div> <div><div>1</div><div>1</div><div>7</div></div> <div><div>1 + 0.10 + 0.07 = 1.17</div></div>	<p><u>Formal written method</u></p> <p>Children complete subtractions involving decimals which are presented in word problem format. They use zeros for place holders and know that decimal points should line up under each other.</p> <p>Bella spends 28p in the shop. She spends £1.45 of her pocket money. How much change will she receive?</p> <p>£1.45 - 28p</p> <div><div>£ 1.45</div><div>-</div><div>28</div><div>£ 1.17</div></div>

Year 5

Key Vocabulary: subtract, take away, difference between, how many are left/ left over? How many are gone? One less, two less, ten less, hundred less. How many fewer is...than...? How much less is...? tens boundary, hundreds boundary, one boundary, tenths boundary, inverse, minuend, subtrahend, difference.

Counting Fluency: To count backwards and forwards in steps of 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s, 11s, 12s, 100s and 1000s from any given starting number.

Mental Strategies

Skill	Strategy
*Subtract a 4/5-digit multiple of 100.	5400-3900 For large numbers use knowledge of place value to solve. For 5400-3900, make each number <u>100 times smaller</u> and do $54-39=15$ then make the solution <u>100 times bigger</u> . $15 \times 100 = 1500$ so $5400-3900=1500$. Or use the counting on method. For 5400-3900, start with 3900, add 100 to get to 4000 the another 1000 to get to 5000 then another 400 to get to 5400. Next recombine $100+1000+400= 1500$ so $5400-3900=1500$
*Subtract near multiples of 10, 100, 1000, 10,000 then adjust, including crossing boundaries.	2335-58 Subtract the nearest multiple of 10 (60) then <u>add 2</u> because 58 is two more than 60 $2335-60= 2275-+2= 2277$ 2345-297 Subtract the nearest multiple of 100 (300) then <u>add 3</u> because 300 is three more than 297 $2345-300= 2045+3= 2048$ 5438- 3995 Add the nearest multiple of 1000 (4000) then <u>add 5</u> because 4000 is five more than 3995 $5438-4000= 1438+5= 1443$
*Subtract tenths from a 1-digit whole number and tenths.	5.7-0.4 If the tenths in the second number (subtrahend) are smaller than the tenths in the first number (minuend) then subtract the tenths and ones separately $5.7 - 0.4= 5.3$ 6.5-0.7 If the tenths in the second number (subtrahend) are larger than the tenths in the first number (minuend) then use your knowledge of number bonds to partition. For 6.5- 0.7, partition 0.7 into <u>0.5</u> and <u>0.2</u> . Then subtract <u>0.5</u> from 6.5 to get 6 then subtract <u>0.2</u> = 5.8 so $6.5-0.7= 5.8$
*Subtract two 1-digit whole numbers and tenths.	4.7- 2.5 If the ones and tenths in the second number (subtrahend) are smaller than the ones and tenths in the first number (minuend) then subtract the tenths and ones separately. For 4.7-2.5, subtract the ones $4-2= 2$ and then the tenths $0.7-0.5=0.2$ then recombine. $4.7-2.5=2.2$ 6.4 - 3.7 If the tenths in the second number (subtrahend) are larger than the tenths in the first number (minuend) use your knowledge of place value to solve. Make both numbers <u>ten times bigger</u> then calculate $64-37= 27$. To adjust make your answer <u>10 times smaller</u> $27 \div 10 = 2.7$ so
*Subtract 2-digit numbers with tenths and hundredths.	0.46-0.23 If the ones, tenths and hundredths in the second number (subtrahend) are smaller than the ones and tenths in the first number (minuend) then subtract the hundredths, tenths and ones separately. For 0.46-0.23 subtract the ones $0-0=0$, subtract the tenths $0.4-0.2=0.2$ then subtract the hundredths $0.06-0.03=0.03$ then recombine $0+0.2+0.03= 0.23$ 0.76-0.59 If the tenths/ hundredths in the second number (subtrahend) are larger than the tenths/ hundredths in the first number (minuend) use your knowledge of place value to solve. Make both numbers <u>100 times bigger</u> then calculate $76-59=17$ To adjust make your answer <u>100 times smaller</u> $17 \div 100 = 0.17$ so $0.76-0.59=0.17$
*Subtract a 1-digit whole number and tenths from a whole number.	8-5.6 Use the counting on method to find the difference. If I start with 5.6 and <u>add 0.4</u> , I get to 6 then I need to <u>add 2</u> more to get to 8. I then recombine 0.4 and 2 so $8-5.6=2.4$

Calculation Methods

Objective & Strategy	Concrete	Pictorial	Abstract																																																			
<p>To subtract numbers with more than 4 digits.</p>	<p>Use the place value counters to make the number (minuend) then regroup by exchanging, where necessary: a thousand for ten hundreds, a hundred for ten tens, a ten for ten ones, a one for ten tenths and ten tenths for a hundredth so that you can subtract.</p> <p>31056 - 2128 = 28,928</p> <div><div><table><tr><td>hundred thousands</td><td>ten thousands</td><td>thousands</td><td>hundreds</td><td>tens</td><td>ones</td></tr><tr><td></td><td>3</td><td>1</td><td>0</td><td>5</td><td>6</td></tr></table><p>Step 1- Make the number</p></div><div><table><tr><td>ten thousands</td><td>thousands</td><td>hundreds</td><td>tens</td><td>ones</td></tr><tr><td>3</td><td>1</td><td>0</td><td>5</td><td>6</td></tr></table><p>Step 2- Exchange.</p></div><div><table><tr><td>ten thousands</td><td>thousands</td><td>hundreds</td><td>tens</td><td>ones</td></tr><tr><td></td><td>2</td><td>8</td><td>9</td><td>2</td><td>8</td></tr></table><p>Step 3- Subtract to solve.</p></div></div>	hundred thousands	ten thousands	thousands	hundreds	tens	ones		3	1	0	5	6	ten thousands	thousands	hundreds	tens	ones	3	1	0	5	6	ten thousands	thousands	hundreds	tens	ones		2	8	9	2	8	<p>Children draw pictorial representations to show the regrouping in order to find how many are left.</p> <p>31056 - 2128 = 28,928</p>	<p><u>Formal written method</u></p> <p>Children use a condensed method of subtraction including those with different numbers of digits.</p> <p>31056 - 2128 = 28,928</p> <table><tr><td></td><td>2</td><td>8</td><td>9</td><td>2</td><td>8</td></tr><tr><td>-</td><td></td><td>2</td><td>1</td><td>2</td><td>8</td></tr><tr><td></td><td>2</td><td>8</td><td>9</td><td>2</td><td>8</td></tr></table>		2	8	9	2	8	-		2	1	2	8		2	8	9	2	8
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<p>To solve problems involving measure using decimal notation up to three decimal places.</p>	<p>Use the place value counters to make the number then regroup by exchanging, where necessary: a thousand for ten hundreds, a hundred for ten tens, a ten for ten ones, a one for ten tenths, a hundredths for ten tenths and a thousandth for ten hundredths.</p> <p>105.419kg - 36.080kg</p> <div><div><table><tr><td>hundreds</td><td>tens</td><td>ones</td><td>tenths</td><td>hundredths</td><td>thousandths</td></tr><tr><td>1</td><td>0</td><td>5</td><td>4</td><td>1</td><td>9</td></tr></table><p>Step one- Make the number.</p></div><div><table><tr><td>hundreds</td><td>tens</td><td>ones</td><td>tenths</td><td>hundredths</td><td>thousandths</td></tr><tr><td></td><td>3</td><td>6</td><td>0</td><td>8</td><td>0</td></tr></table><p>Step 2- Exchange.</p></div><div><table><tr><td>hundreds</td><td>tens</td><td>ones</td><td>tenths</td><td>hundredths</td><td>thousandths</td></tr><tr><td></td><td>6</td><td>6</td><td>4</td><td>3</td><td>9</td></tr></table><p>Step 3- Subtract to solve.</p></div></div>	hundreds	tens	ones	tenths	hundredths	thousandths	1	0	5	4	1	9	hundreds	tens	ones	tenths	hundredths	thousandths		3	6	0	8	0	hundreds	tens	ones	tenths	hundredths	thousandths		6	6	4	3	9	<p>Children draw pictorial representations to show the regrouping in order to find the difference.</p> <p>105.419kg - 36.080kg</p> <div></div>	<p><u>Formal written method</u></p> <p>Children complete subtractions involving decimals which are presented in word problem format. They use zeros for place holders and know that decimal points should line up under each other.</p> <p>105.419kg - 36.080kg</p> <div></div>															
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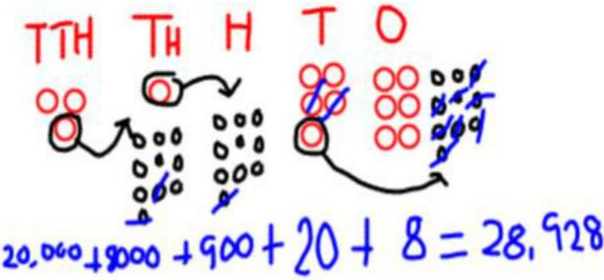
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Step 3- Subtract to solve.

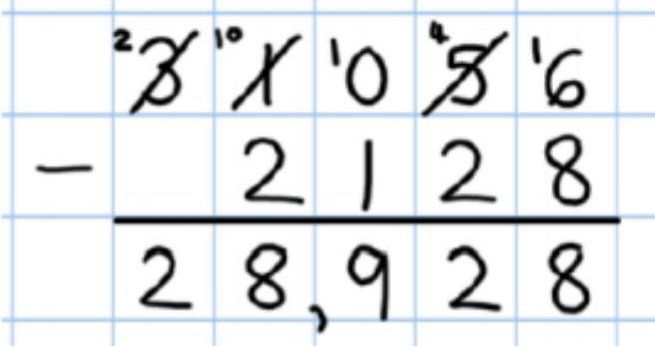
Children draw pictorial representations to show the regrouping in order to find how many are left.

31056 - 2128 = 28,928



Formal written method
Children use a condensed method of subtraction including those with different numbers of digits.

31056 - 2128 = 28,928



Year 6

Key Vocabulary: subtract, take away, difference between, how many are left/ left over? How many are gone?, one less, two less, ten less, hundred less. How many fewer is...than...? How much less is...? tens boundary, hundreds boundary, one boundary, tenths boundary, inverse, minuend, subtrahend, difference.

Counting Fluency: To consolidate counting backwards and forwards in steps of 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s, 11s, 12s, 100s, 1000s and 10,000s from any starting number.

Mental Strategies

Skill		Strategy
Reconsolidate all strategies from Y4 and 5.		
*Subtract large numbers.	53,765-3330	For large numbers use partitioning to solve. For 53,765-3330, partition the subtrahend into 3000 and 300 and 30 and subtract each part. 53,765-3000=50,765 then subtract 300 = 50, 465 the subtract 30= 50,435
*Subtract near multiples of 0.01, 0.1, 10, 100, 1000 then adjust, including crossing boundaries.	6.7 - 3.8 4.92- 2.96	Subtract the nearest whole number (4) then <u>add 0.2</u> because 4 is actually 0.2 more than 3.8 so $6.7 - 4 = 2.7 + 0.2 = 2.9$ Subtract the nearest whole number (3) then <u>add 0.04</u> because 3 is actually 0.04 more than 2.96 so $4.92 - 3 = 1.92 + 0.04 = 1.96$
*Subtract decimals with different numbers of places.	0.45-0.3	Subtract by partitioning using your knowledge of place value. First subtract the ones $0 - 0 = 0$, then the tenths $0.4 - 0.3 = 0.1$ then the hundredths $0.05 - 0.00 = 0.05$ Then recombine $0 + 0.1 + 0.05 = 0.15$ or use knowledge of place value to solve. Make each number <u>100 times bigger</u> and subtract. $45 - 30 = 15$ then make the solution <u>100 times smaller</u> . $15 \div 100 = 1.5$ so $0.45 - 0.3 = 1.5$
*Subtract any number with up to three decimal places from a whole number.	4-0.34 14-0.432	Use the counting on method and knowledge of place value to find the difference. If I start with 0.34 and <u>add 0.66</u> , I get to 1 then I need to <u>add 3</u> more to get to 4. I then recombine 0.66 and 3 so $4 - 0.34 = 3.66$ Use the counting on method and knowledge of place value to find the difference. If I start with 0.432 and <u>add 0.568</u> , I get to 1 then need to <u>add 13</u> more to get to 14. I then recombine 0.568 and 13 so $14 - 0.432 = 13.568$

Calculation Methods

Objective & Strategy	Concrete	Pictorial	Abstract
To subtract numbers with increasingly large and complex numbers.	<p>Use the place value counters to make the number (minuend) then regroup by exchanging, where necessary: a thousand for ten hundreds, a hundred for ten tens, a ten for ten ones, a one for ten tenths and ten tenths for a hundredth so that you can subtract.</p> <p>31056 - 2128 = 28,928</p> <div><div><div>hundred thousands</div><div>ten thousands</div><div>thousands</div><div>hundreds</div><div>tens</div><div>ones</div></div><div><div></div><div><div>ten thousands</div><div>thousands</div><div>hundreds</div><div>tens</div><div>ones</div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <p>Step 1- Make the number</p> <div><div><div>ten thousands</div><div>thousands</div><div>hundreds</div><div>tens</div><div>ones</div></div><div><div></div><div><div>ten thousands</div><div>thousands</div><div>hundreds</div><div>tens</div><div>ones</div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <p>Step 2- Exchange.</p> <div><div><div>ten thousands</div><div>thousands</div><div>hundreds</div><div>tens</div><div>ones</div></div><div><div></div><div><div>ten thousands</div><div>thousands</div><div>hundreds</div><div>tens</div><div>ones</div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <p>Step 3- Subtract to solve.</p>	<p>Children draw pictorial representations to show the regrouping in order to find how many are left.</p> <p>31056 - 2128 = 28,928</p>	<p><u>Formal written method</u></p> <p>Children use a condensed method of subtraction including those with different numbers of digits.</p> <p>31056 - 2128 = 28,928</p>
	To solve problems involving the conversion of units of measure, using decimal notation up to 3 decimal places.	<p>Use the place value counters to make the number then regroup by exchanging, where necessary: a thousand for ten hundreds, a hundred for ten tens, a ten for ten ones, a one for ten tenths, a hundredths for ten tenths and a thousandth for ten hundredths.</p> <p>105.419 kg - 36080g As this is a mixed measure problem, children would first convert so they are working with the same unit.</p> <p>105.419kg - 36.080kg</p> <div><div>hundreds</div><div>tens</div><div>ones</div><div>tenths</div><div>hundredths</div><div>thousandths</div></div> <div><div></div><div></div><div><div>ones</div><div>tenths</div><div>hundredths</div><div>thousandths</div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div></div> <p>Step one- Make the number.</p> <div><div><div>hundreds</div><div>tens</div><div>ones</div><div>tenths</div><div>hundredths</div><div>thousandths</div></div><div><div></div><div><div>ones</div><div>tenths</div><div>hundredths</div><div>thousandths</div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <p>Step 2- Exchange.</p> <div><div><div>hundreds</div><div>tens</div><div>ones</div><div>tenths</div><div>hundredths</div><div>thousandths</div></div><div><div></div><div><div>ones</div><div>tenths</div><div>hundredths</div><div>thousandths</div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <p>Step 3- Subtract to solve.</p>	<p>Children draw pictorial representations to show the regrouping in order to find the difference.</p> <p>105.419kg - 36.080kg</p> <div></div>

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WESTONZOYLAND

Community Primary School and Pre-school

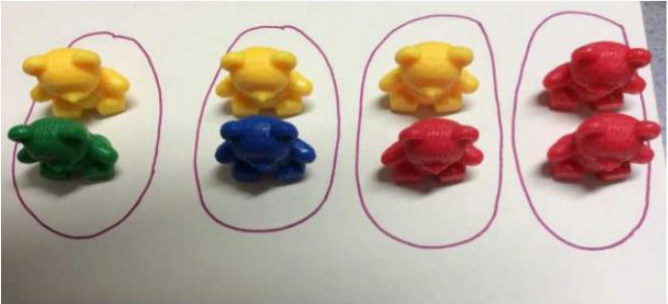
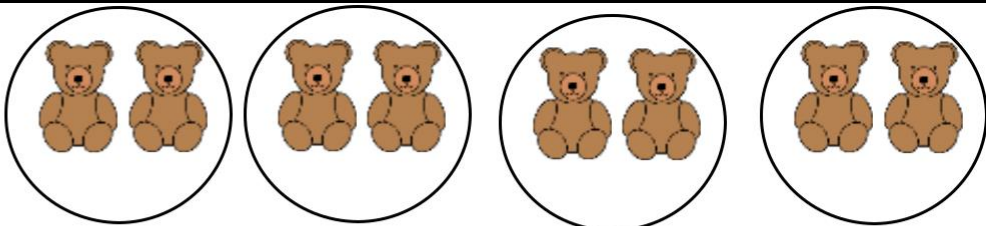
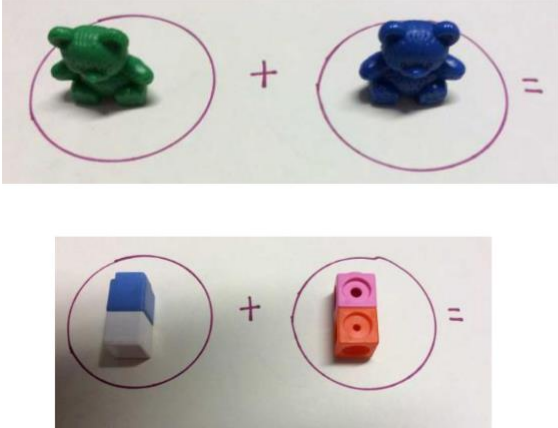
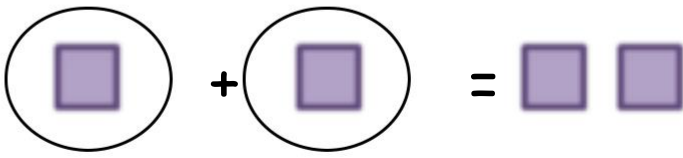
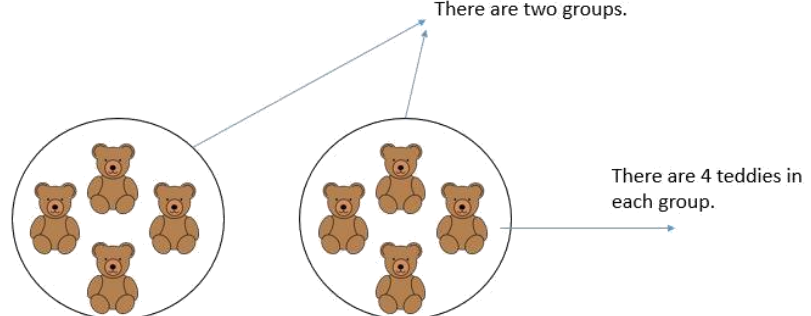
Multiplication

Foundation Stage

Foundation Stage

Key Vocabulary: multiplication, multiply, multiplied by, multiple, grouping, doubling, array

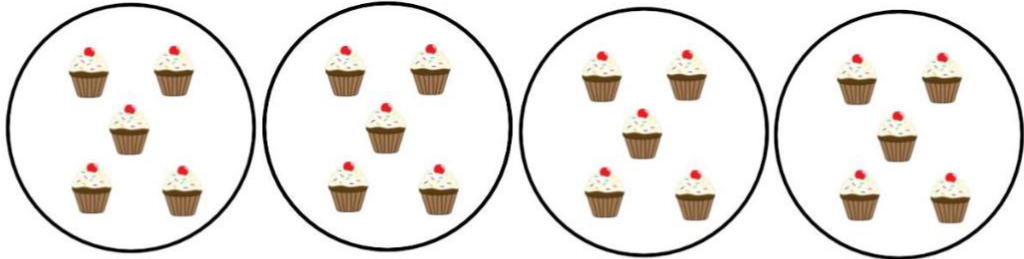
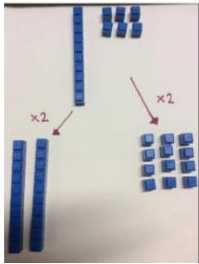
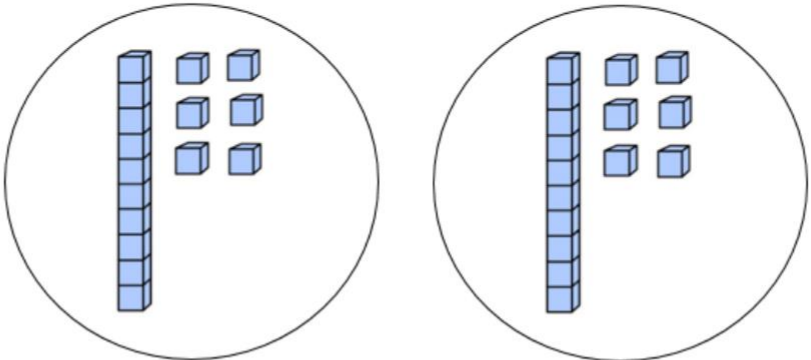
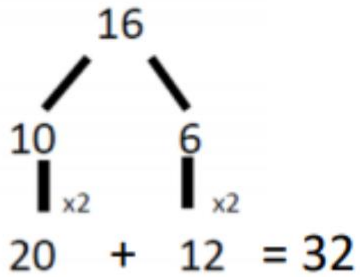
Times Tables: To count in steps of 2s and 10s and begin to count in 5s.

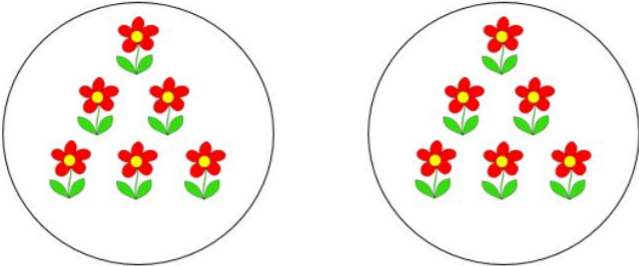
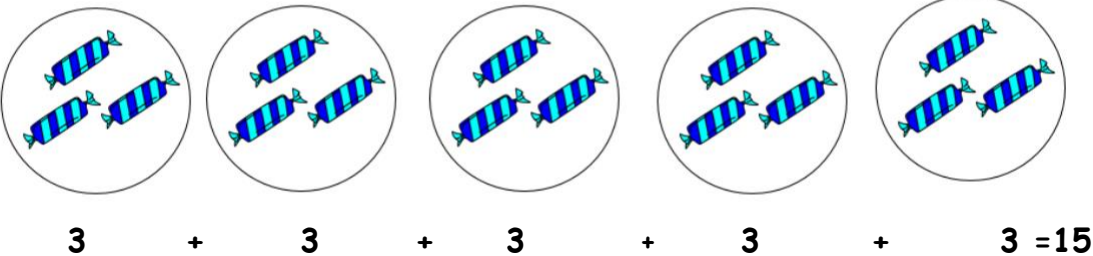
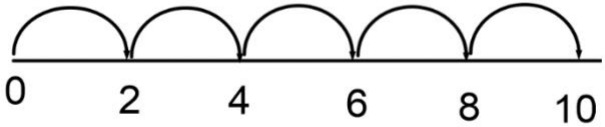
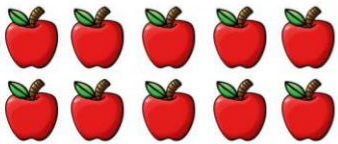
Objective & Strategy	Concrete	Pictorial	Abstract
To count in steps of 2s and 10s and begin to count in steps of 5.	<p>Children will count in steps of 2s and 10s. They will begin to count in 5s.</p> 	 <p>Children will verbally say their number sequence aloud to demonstrate their understanding.</p>	<p>2, 4, 6, 8...</p> <p>10, 20, 30, 40...</p> <p>5, 10, 15, 20, 25, 30...</p>
To be able to double numbers.	<p>Using practical activities using manipulative including uni-fix cubes to demonstrate doubling.</p> 	<p>Children will begin to draw pictures to demonstrate doubling.</p> <p>Double 1 equals 2.</p> 	<p>1+1=2</p> <p>Stem Sentence: Double <u>1</u> equals <u>2</u></p>
To experience equal groups of objects.	<p>Children will experience equal groups of objects. Children will be encouraged to count the groups, then count how many objects are in a group. E.g. 2 x 4=</p> 	<p>Children will have images of equal groups to solve multiplication sentences by counting how many are in each equal group.</p> 	<p>2 x 4 = 8</p> <p>Stem Sentence: I know there are <u>2</u> groups with <u>4</u> in each group.</p>

Year 1

Key Vocabulary: multiplication, multiply, multiplied by multiple, grouping, doubling, array

Times Tables: Children in Year 1 need to count in steps of 2, 5 and 10.

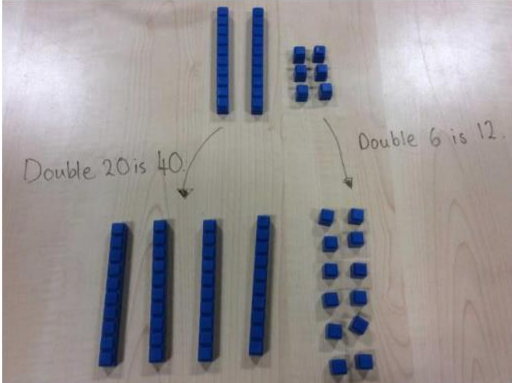
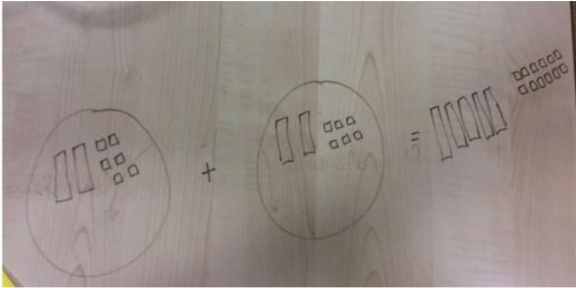
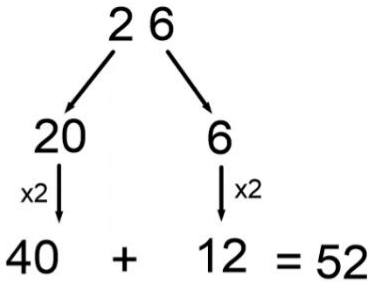
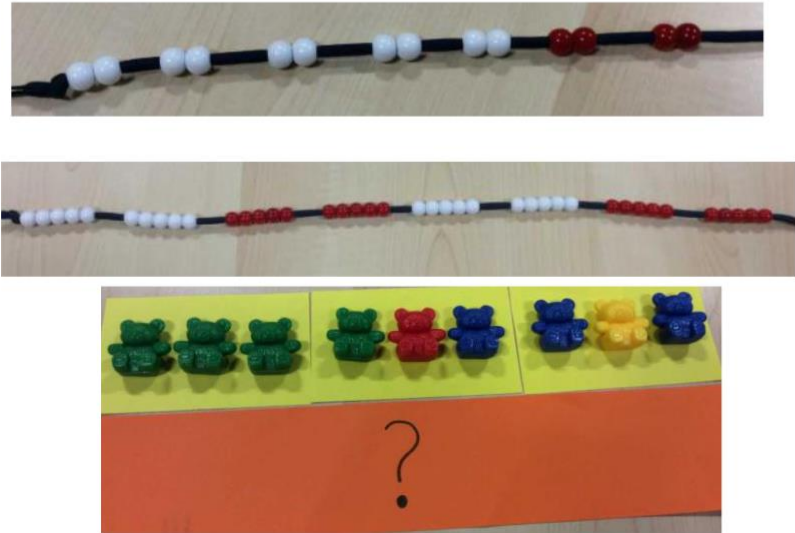
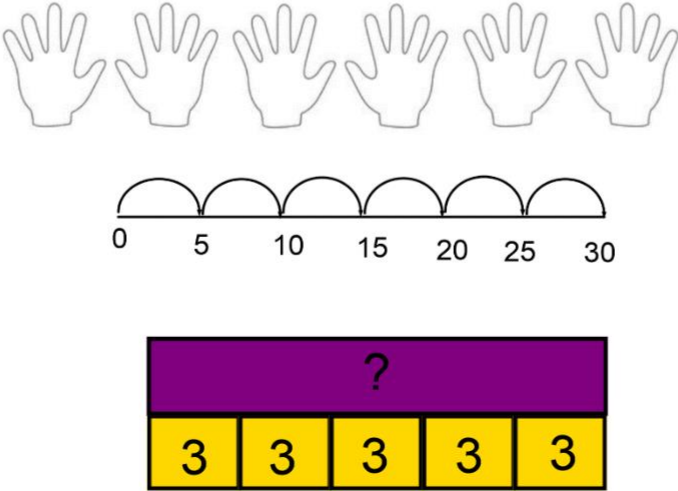
Objective & Strategy	Concrete	Pictorial	Abstract
To count in steps of 2, 5 and 10s.	<p>Children will be able to use concrete resources to count in steps of 2, 5 and 10.</p> 	<p>Children will verbally say their number sequence aloud to demonstrate their understanding. Children would begin to count aloud and write numbers to match the sequence. E.g. 0, 5, 10, 15, 20...</p> 	<p>Children will be able to count aloud in sequences, starting at different points.</p> <p>Children will be able to write sequences with multiples of numbers 2, 4, 6, 8...</p> <p>10, 20, 30, 40...</p> <p>5, 10, 15, 20, 25, 30...</p>
To double numbers up to 20.	<p>Children will demonstrate knowledge of doubling through concrete resources, including uni-fix cubes.</p>  <p>Double 20 equals 40.</p> <p>Double 16 equals 32</p> <p>When beginning to double more complex numbers, children will need to explore partitioning the whole number into tens and ones, using base 10, and double the tens and then the ones, before recombining to find the total.</p> 	<p>Children will be able to use jottings and picture representations to show demonstration of doubling.</p>  <p>Double 16 equals 32</p>	<p>Children will learn to partition a number and then double each part before recombining it back together.</p>  <p>16 10 6 x2 x2 20 + 12 = 32</p> <p>Stem Sentence: Double <u>1</u> equals <u>2</u></p>

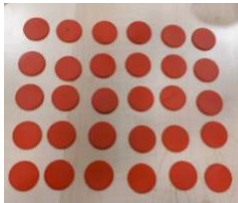
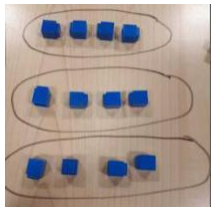
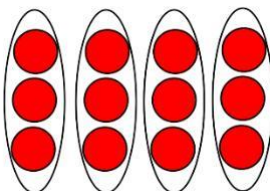
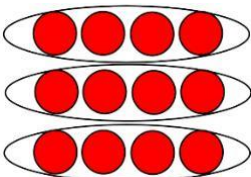
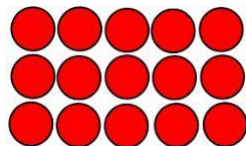
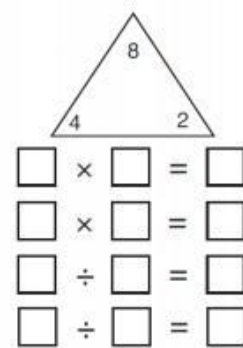
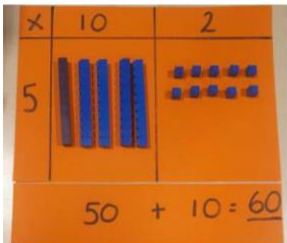
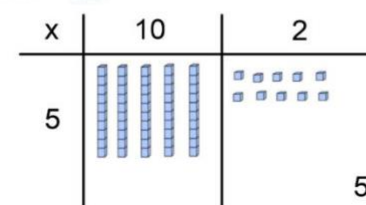
<p>To make equal groups and count the total.</p>	<p>Children will use concrete resources to make equal groups.</p>  <p>Stem Sentence: I know there are <u>2</u> groups with <u>6</u> in each group.</p>	<p>Children will draw jottings and have pictorial representations to demonstrate knowledge of equal groups.</p> <p>$2 \times 6 = 12$</p>  <p>I know there are 2 groups and in each group there are 6 flowers.</p>	<p>$2 \times 6 = 12$</p> <p>Stem Sentence: I know there are <u>2</u> groups with <u>6</u> in each group.</p>
<p>To understand multiplication as repeated addition.</p>	<p>Children will be able to use a range of concrete resources to add equal groups.</p> 	<p>Children will use pictorial representations, including the use of a number line to solve problems.</p> <p>There are 3 sweets in 1 bag. How many sweets are in 5 bags altogether?</p>  	<p>Children will be able to write addition number sentences to describe pictures or objects.</p> <p>$3+3+3+3+3=15$</p>
<p>To understand multiplication as arrays.</p>	<p>Children will create arrays using concrete objects, which they then can describe what it represents e.g. 2 lots of 5, 3 lots of 10.</p> 	<p>Children will draw their own pictorial representations and will have the visually provided to show understanding of arrays.</p> <p>2 lots of 5</p>  <p>3 lots of 2.</p> 	<p>$3 \times 2 = 6$</p> <p>$2 \times 5 = 10$</p>

Year 2

Key Vocabulary: multiplication, multiply, multiplied by, multiple, grouping, doubling, array, row, column, groups of, times once, twice, three times ... ten times, repeated addition, one each, two each, three each ... ten each, equal groups of, multiplication table, multiplication fact.

Times Tables: children in Year 2 need to count in steps of 2, 3, 5 and 10s.

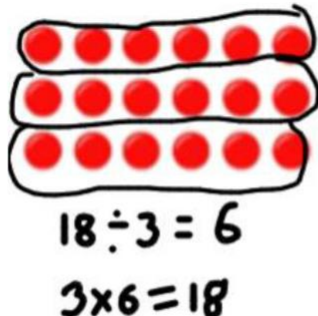
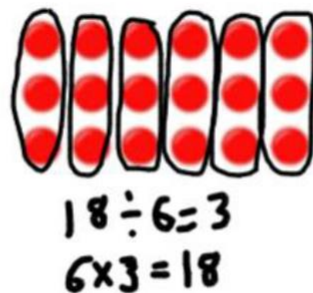
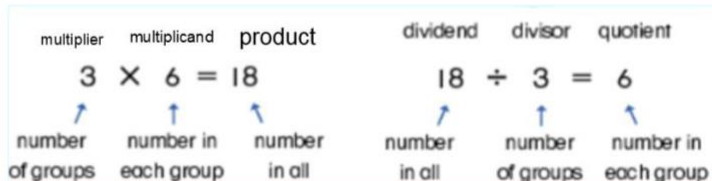
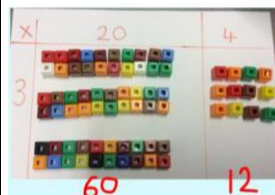
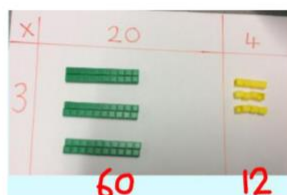
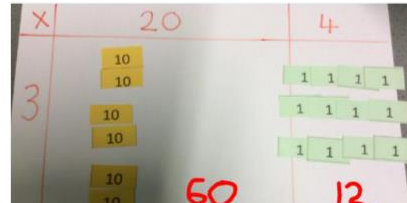
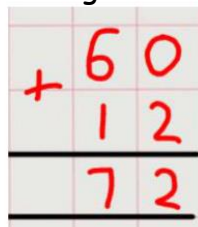
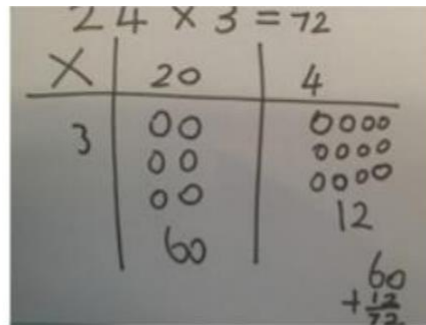
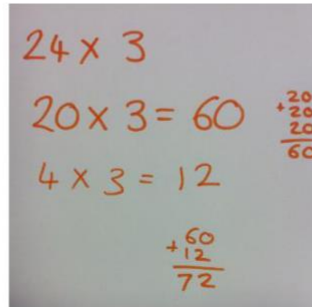
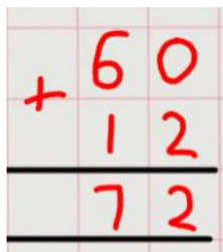
Objective & Strategy	Concrete	Pictorial	Abstract
To double numbers up to 100.	<p>Model using base 10 to partition a number and then double the ones and the tens.</p> <p>Double 26 is 52</p> 	<p>Draw pictures and representations to show how to double numbers.</p> <p>Double 26 is 52</p> 	<p>Partition a number and then double each part before recombining back together.</p> 
To count in multiples of 2s, 3s, 5s and 10s (repeated addition).	<p>Count the groups as children are skip counting, children may use their fingers as they are skip counting. Use bar models.</p> 	<p>Number lines, counting sticks and bar models should be used to show representation of counting in multiples.</p> 	<p>Count in multiples of a number aloud.</p> <p>Write sequences with multiples of numbers.</p> <p>0, 2, 4, 6, 8, 10</p> <p>0, 3, 6, 9, 12, 15</p> <p>0, 5, 10, 15, 20, 25, 30</p> <p>$4 \times 3 = \square$</p>

<p>To show that multiplication is commutative.</p>	<p>Children will create arrays using a variety of concrete resources, including cubes and counters.</p> <div></div> <p>Pupils should understand that an array can represent different equations and that, as multiplication is commutative, the order of the multiplication does not affect the answer</p> <div></div> <p>$4 \times 3 = 12$ $3 \times 4 = 12$</p>	<p>Children will use a range of pictures to represent arrays to show different calculations and show commuatativity.</p> <div>$4 \times 3 = 12$</div> <div>$3 \times 4 = 12$</div>	<p>Children will write the different multiplication sentences to show the commutative law.</p> <p>$12 = 3 \times 4$</p> <p>$12 = 4 \times 3$</p> <p>Children will also be able to use an array to write multiplication number sentences and reinforce repeated addition.</p> <div></div> <p>$3+3+3+3+3=15$ $5 \times 3 = 15$</p> <p>$5+5+5=15$ $3 \times 5 = 15$</p>						
<p>To use related multiplication and division facts using the inverse for the 2, 3, 5 and 10 times table.</p> <p>This will be taught alongside division to show how the numbers relate and build fluency.</p>	<p>Children will use concrete resources, including cubes to represent arrays. These will then form part of the learning process to explain number related facts and begin to write these in number form.</p> <p>$2 \times 4 = 8$ $4 \times 2 = 8$ $8 \div 2 = 4$ $8 \div 4 = 2$</p> <div></div>	<p>Children will use pictorial representations to solve missing number facts that demonstrate related facts.</p> <div></div>	<p>Children will show all 8 related number sentences to demonstrate related facts.</p> <p>$2 \times 4 = 8$</p> <p>$4 \times 2 = 8$</p> <p>$8 \div 2 = 4$</p> <p>$8 \div 4 = 2$</p> <p>$8 = 2 \times 4$</p> <p>$8 = 4 \times 2$</p> <p>$2 = 8 \div 4$</p> <p>$4 = 8 \div 2$</p>						
<p>To begin to use the grid method to solve multiplication problems</p>	<p>Children will be introduced to the grid method by using arrays to demonstrate the links.</p> <p>$12 \times 5 = 60$</p> <p>Step 1: Partition the number into tens and ones, e.g. $12 = 10$ and 2 and place the multiplier to the side.</p> <p>Step 2: times the multiplicand by the multiplier. E.g. 10×5 and 2×5 and record the answers in base 10 in the boxes.</p> <p>Step 3: Add both answers to find the total for multiplication sentence. E.g. $50 + 10 = 60$</p> <div></div>	<p>Children can represent their work with place value counters or base 10 in a way that they understand. They can draw the counters (using colours to show different amounts or just use the circles in the different columns) or base 10 like shown below.</p> <p>$12 \times 5 = 60$</p> <div></div> <p>$50 + 10 = 60$</p>	<p>Start with multiplying by one digit numbers and showing the clear addition alongside the grid.</p> <p>$12 \times 5 = 60$</p> <div><table><tr><td>x</td><td>10</td><td>2</td></tr><tr><td>5</td><td>50</td><td>10</td></tr></table></div> <p>$50 + 10 = 60$</p>	x	10	2	5	50	10
x	10	2							
5	50	10							

Year 3

Key Vocabulary: multiplication, multiply, multiplied by, multiple, factor, product, grouping, doubling, array, row, column, groups of, times once, twice, three times ... ten times, repeated addition, one each, two each, three each ... ten each, equal groups of, multiplication table, multiplication fact.

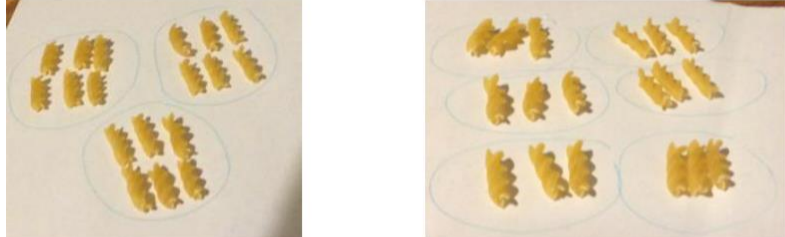
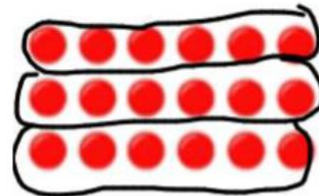
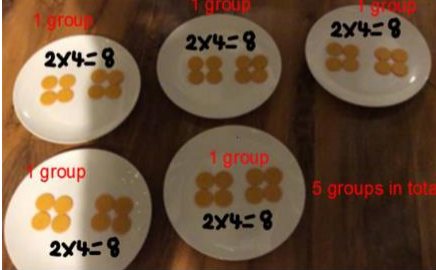
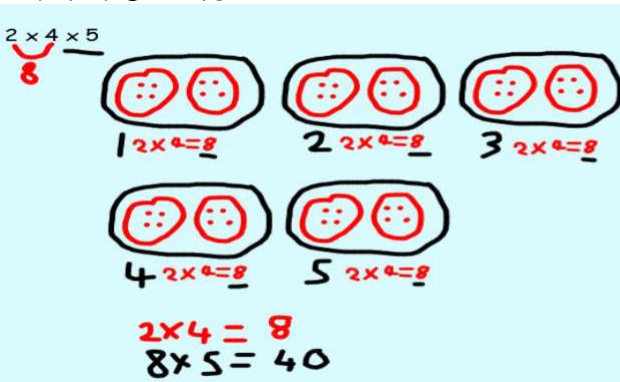
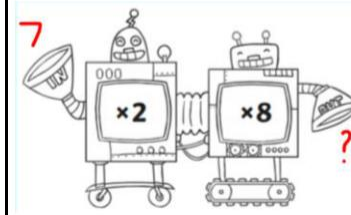
Times tables- Children in Year 3 need to be able to confidently count in steps of 2, 3, 4, 5, 8, 10, 50 and 100.

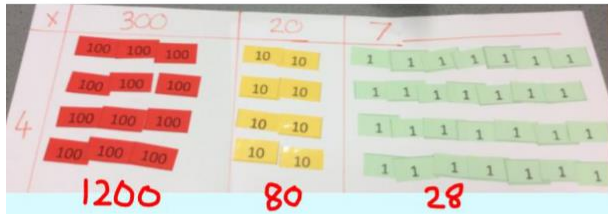
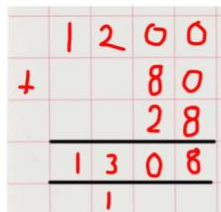
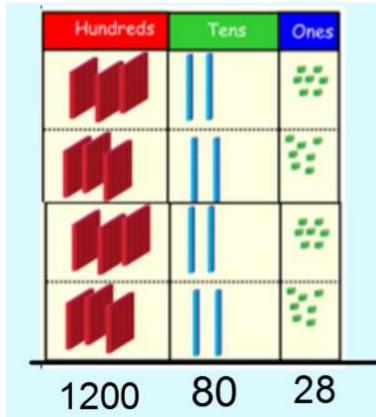
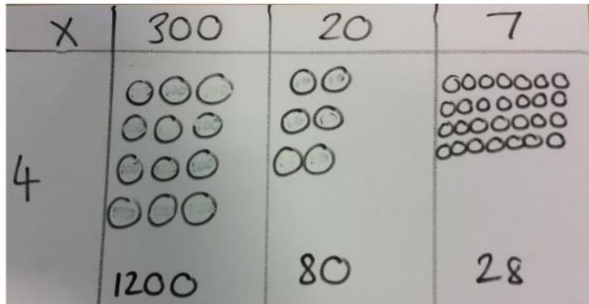
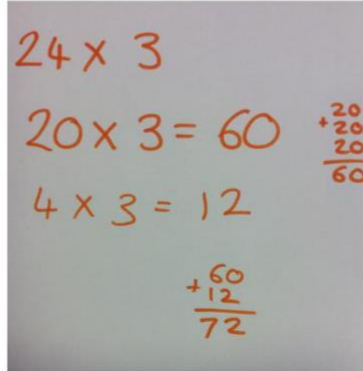
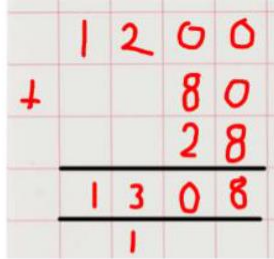
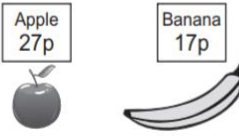
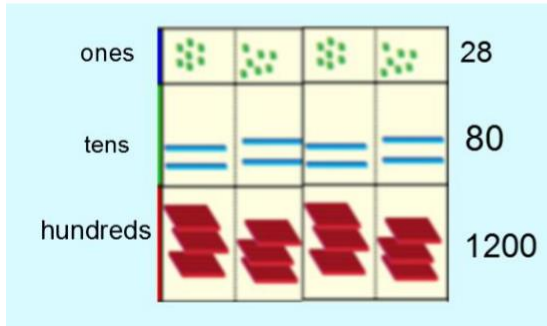
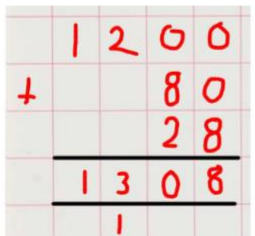
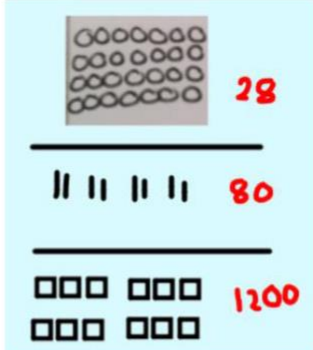
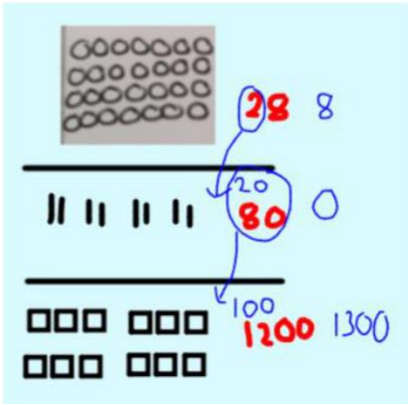
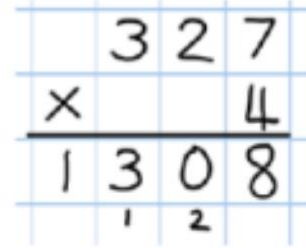
Objective & Strategy	Concrete	Pictorial	Abstract						
To use related multiplication and division facts using the inverse for the 2, 3, 4, 5, 8 and 10 times table.	Children understand the link between multiplication and division and use physical objects to find related facts. $3 \times 6 = 18$ $18 \div 3 = 6$ $6 \times 3 = 18$ $18 \div 6 = 3$  	Children represent an array pictorially then find the associated multiplication and division facts by sorting into equal groups.  	Children apply their understanding of inverse relationships to write related multiplication and division statements. $3 \times 6 = 18$ $18 = 3 \times 6$ $6 \times 3 = 18$ $18 = 6 \times 3$ $18 \div 3 = 6$ $6 = 18 \div 3$ $18 \div 6 = 3$ $3 = 18 \div 6$ They use associated vocabulary correctly and know what each number represents in the calculation. 						
To use a formal written method of multiplication (grid method). 2-digit x 1 digit number	Children use partitioning to multiply numbers using the grid method. They partition the multiplicand and multiply each part by the multiplier. Children use base ten and place value counters to represent arrays of the partitioned number. $24 \times 3 = 72$ Use of unit cubes   Use of place value counters  	Children show their understanding by represent the calculation in the grid using their own pictorial representation. $24 \times 3 = 72$  Children use jottings to partition the multiplicand and multiply each part by the multiplier. 	Formal Method The children use the grid method for larger numbers. They multiply numbers by first partitioning the multiplicand and then multiplying each part by the multiplier. In year 3 children are expected to multiply 2-digit by a 1 digit number. $24 \times 3 = 72$ <table border="1"><tr><td>X</td><td>20</td><td>4</td></tr><tr><td>3</td><td>60</td><td>12</td></tr></table>  Children apply their knowledge of multiplication to word problems. <i>There are 5 balloons in a packet. There are 18 packets in a box. How many balloons are there altogether in a box?</i>	X	20	4	3	60	12
X	20	4							
3	60	12							

Year 4

Key Vocabulary: multiplication, multiply, multiplied by, multiple, factor, product, grouping, doubling, array, row, column, groups of, times once, twice, three times ... ten times, repeated addition, one each, two each, three each...ten each, equal groups of, multiplication table, multiplication fact, inverse, square, squared, cube, cubed, distributive law.

Times tables- Children in Year 4 need to be able to confidently count in steps of 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12.

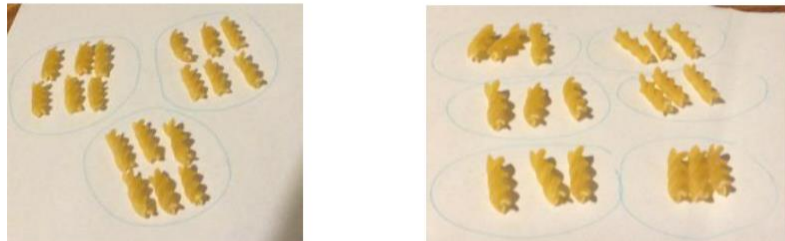
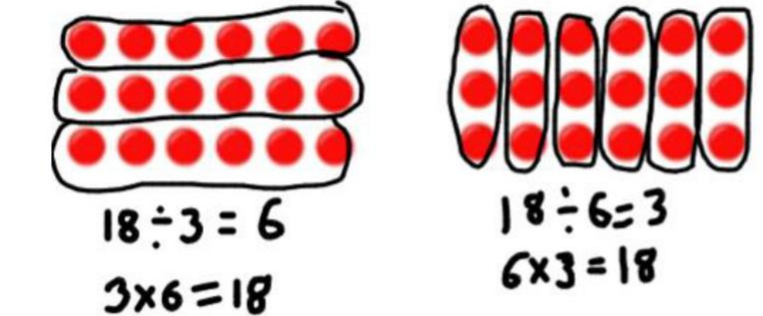
Objective & Strategy	Concrete	Pictorial	Abstract						
To recall multiplication and division facts for multiplication tables up to 12x 12.	Children continue to deepen their understanding of the link between multiplication and division and use physical objects to find related facts. <div>3 x 6= 18 18÷3=6 6 x 3 = 18 18 ÷ 6 = 3</div> 	Children represent an array pictorially then find the associated multiplication and division facts by sorting into equal groups.  18 ÷ 3 = 6 3 x 6 = 18  18 ÷ 6 = 3 6 x 3 = 18	Children apply their understanding of inverse relationships to write related multiplication and division statements. <div>3 x 6 = 18 18 = 3 x 6 6 x 3 = 18 18 = 6 x 3 18 ÷ 3 = 6 6 = 18 ÷ 3 18 ÷ 6 = 3 3 = 18 ÷ 6</div> They use associated vocabulary correctly and know what each number represents in the calculation. <div><div>multiplier multiplicand product 3 x 6 = 18 number number in number of groups each group in all</div><div>dividend divisor quotient 18 ÷ 3 = 6 number number number in all of groups in each group</div></div>						
	To multiply and divide mentally, including: multiplying by 0 and 1 and multiplying together 3 numbers.	Children multiply and divide numbers by zero and one. They understand the meaning of the calculation and the need of equal sized groups.  6 x 2 = 12 6 x 1 = 6 6 x 0 = 0 Children use objects to calculate totals when three numbers are multiplied together. 2 x 4 x 5 = 40 	Children show their understanding of multiplying by 0 and 1 by drawing representations. <div>4 x 0 = 0 4 x 1 = 4</div>  Children use objects to calculate totals when three numbers are multiplied together. 2 x 4 x 5 = 40  2 x 4 = 8 8 x 5 = 40 Or they may decide to represent it as 2 x (4 x 5) 2 x (20) = 40	Children understand how to multiply by 1 and 0 and apply to word problems. 1 x 83 = 76 x 1 = 4567 x 0 = 0 x 23 = Jack earns £12 a week on his paper round. He did not work for one week whilst he was on holiday. How much did he earn? Children solve number puzzles using the knowledge of multiplying 3 single digit numbers. <div><div>Make the target number 30 by using three of the digits below. <table><tr><td>7</td><td>5</td><td>3</td><td>4</td><td>6</td><td>2</td></tr></table> _____ x _____ x _____ = 30</div></div>	7	5	3	4	6
7		5	3	4	6	2			

<p>To use a formal written method of multiplication (grid method).</p> <p>3-digit x 1 digit number</p>	<p>Children recap the grid method introduced in Year 3 and represent calculations using the place value counters and base ten equipment. They first partition the multiplicand then multiply each part by the multiplier.</p> <p>327 x 4 = 1308</p> <div></div> <p>1200 + 80 + 28 = 1308</p> <div><p>1200 80 28 1200 + 80 + 28 = 1308</p></div>	<p>Children show their understanding by represent the calculation in the grid using their own pictorial representation.</p> <p>327 x 4 = 1308</p> <div></div> <p>Children use jottings to partition the multiplicand and multiply each part by the multiplier.</p> <div></div>	<p>Formal Method</p> <p>The children continue to use the grid method using partitioning to multiply each part.</p> <p>In year 4 children are expected to multiply 3-digit by a 1 digit number.</p> <p>327 x 4 = 1308</p> <div><table data-bbox="2083 445 2522 567"><tr><td>X</td><td>300</td><td>20</td><td>7</td></tr><tr><td>4</td><td>1200</td><td>80</td><td>28</td></tr></table></div> <p>1200 + 80 + 28 = 1308</p> <p>Children apply their knowledge of multiplication to worded problems.</p> <div><div><p>A box has 70 chocolates in it.</p><p>20 children each take 3 chocolates.</p><p>Mia buys four apples and six bananas.</p><p>How much does she spend altogether?</p></div><div><p>How many chocolates are left in the box?</p></div></div>	X	300	20	7	4	1200	80	28
X	300	20	7								
4	1200	80	28								
<p>To use a formal written method of multiplication (short multiplication).</p> <p>3-digit x 1 digit number</p>	<p>Children represent calculations using the place value counters and base ten equipment and move towards using a columnar method. They begin by multiplying the ones, then the tens then the hundreds before finding the total.</p> <p>327 x 4 = 1308</p> <p>7 x 4 = 28 20 x 4 = 80 300 x 4 = 1200</p> <div></div> <p>1200 80 28 1200 + 80 + 28 = 1308</p>	<p>Children represent the calculation by drawing pictorial representations. They partition the multiplicand then multiply each part by the multiplier.</p> <p>327 x 4 = 1308</p> <div></div> <p>Children understand the place value and can exchange between columns which leads to the formal condensed method.</p> <div></div> <p>327 x 4 = 1308</p>	<p>Formal Method</p> <p>In year 4 children are expected to multiply a 3-digit by a 1 digit number.</p> <p>Children apply their knowledge of the grid method begin to record in a columnar form. At this stage they still partition the multiplicand and multiply each part by the multiplier.</p> <div><table data-bbox="2662 1197 2804 1512"><tr><td>327</td></tr><tr><td>x 4</td></tr><tr><td>28</td></tr><tr><td>80</td></tr><tr><td>1200</td></tr><tr><td>1308</td></tr></table></div> <p>Children then move on to using the condensed method of short multiplication. They carry below the line.</p> <div></div>	327	x 4	28	80	1200	1308		
327											
x 4											
28											
80											
1200											
1308											

Year 5

Key Vocabulary: multiplication, multiply, multiplied by, multiple, factor, product, grouping, doubling, array, row, column, groups of, times once, twice, three times ... ten times, repeated addition, one each, two each, three each ... ten each, equal groups of, multiplication table, multiplication fact, inverse, square, squared, cube, cubed, distributive law.

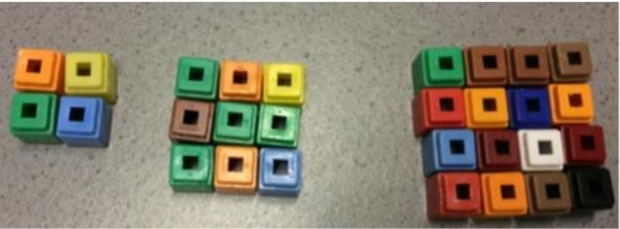
Times tables- Children in Year 5 need to be able to confidently count in steps of 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12.

Objective & Strategy	Concrete	Pictorial	Abstract
<p>To recall multiplication and division facts for multiplication tables up to 12x 12.</p>	<p>Children continue to deepen their understanding of the link between multiplication and division and use physical objects to find related facts.</p> <p>3 x 6= 18 18÷3=6 6 x 3 = 18 18 ÷ 6 =3</p> 	<p>Children represent an array pictorially then find the associated multiplication and division facts by sorting into equal groups.</p> 	<p>Children apply their understanding of the inverse relationships to write related multiplication and division statements.</p> <p>3 x 6 = 18 </p>

To recognise and use square numbers and cube numbers.

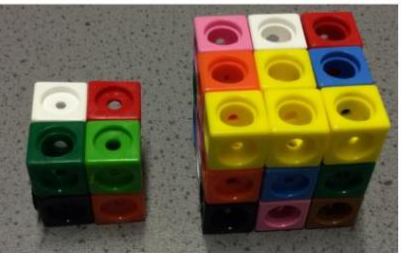
Children use resources to explore squared and cubed numbers.

Square numbers



4 9 16

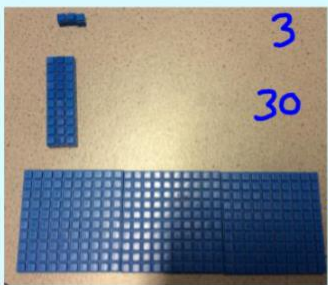
Cubed numbers



8 27

To multiply whole numbers and those involving decimals by 10, 100 and 1,000

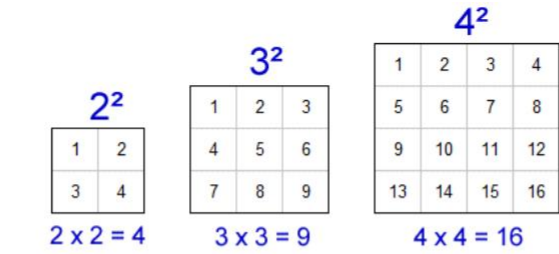
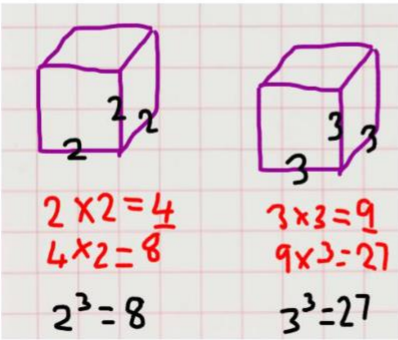
Children use resources to understand what 10, 100 and 1000 times bigger looks like.



30 is ten times bigger than 3.
300 is ten times bigger than 30.
300 is one hundred times bigger than 3.

300

Children represent squared and cubed numbers pictorially. They use the correct notation for squared (²) and cubed (³).



Children can find and recognise squared and cubed numbers and use the correct notation for squared (²) and cubed (³).

2^2 or $2 \times 2 = 4$

3^2 or $3 \times 3 = 9$

4^2 or $4 \times 4 = 16$

$1^3 = 1 \times 1 \times 1 = 1$
 $2^3 = 2 \times 2 \times 2 = 8$
 $3^3 = 3 \times 3 \times 3 = 27$
 $4^3 = 4 \times 4 \times 4 = 64$

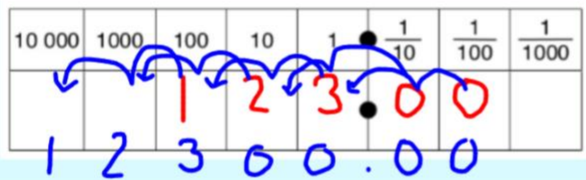
Children use place value grids to multiply numbers by 10, 100 and 1000s. They understand the movement of the digits on the place value grid.

Multiplying

X 10 digits move LEFT 1 space
X 100 digits move LEFT 2 spaces
X 1000 digits move LEFT 3 spaces

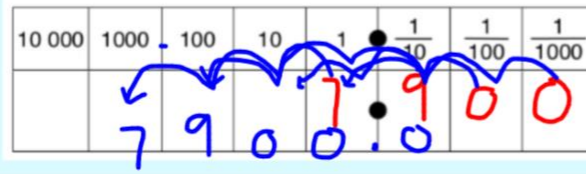


$123 \times 100 = 12300$



They apply this knowledge to decimal numbers.

$7.9 \times 1000 = 7900$



Children apply their knowledge of place value to multiply numbers by 10, 100 and 1000, including decimal numbers.

$34 \times 100 = 3400$
 $1234 \times 1000 = 1234000$
 $5.6 \times 10 = 56$
 $12.367 \times 100 = 1236.7$

They apply their knowledge to word and number puzzles.

Complete these calculations.

15 $\times$ 100 =

 $\times$ 10 = 1500

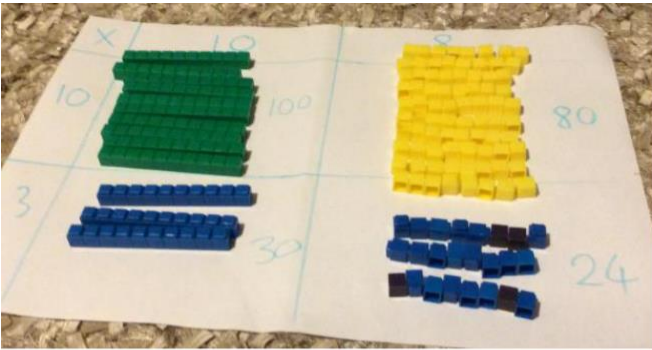
Breen Airways charges £1600 for a return flight to Australia. King Airlines is ten times cheaper. How much do King Airlines charge?

To use a formal written method of multiplication (long multiplication).

Up to 4-digit x 2 digit number

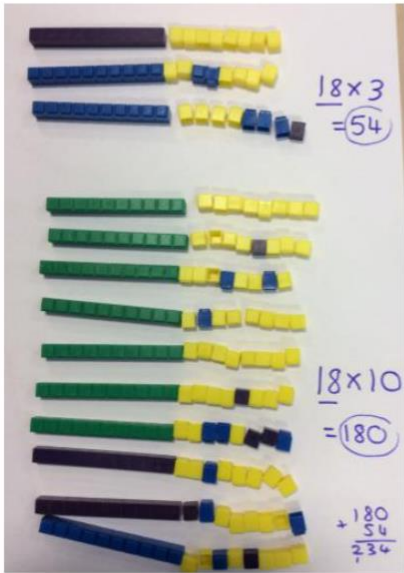
Children represent calculations using the place value counters using the grid method.

18 x 13 = 234



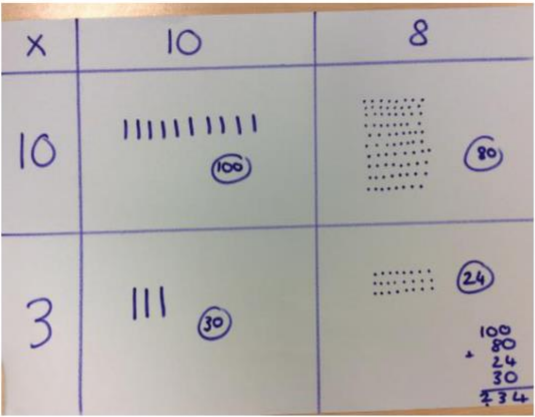
18 x 13 = 234

Children then solve in a columnar form. They begin by multiplying the ones, then the tens, the hundreds then the thousands before finding the total.

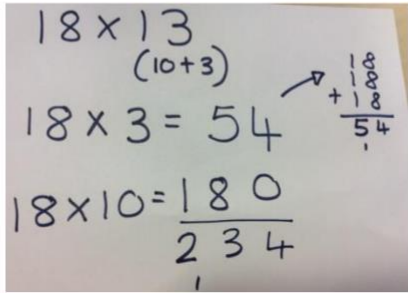


Children will first use their knowledge of place value to partition the multiplicand and multiplier. They then show their understand pictorially in a grid method.

18 x 13 = 234



Children then move towards the columnar method by representing each stage with jottings. Children are encouraged to multiply the ones first.

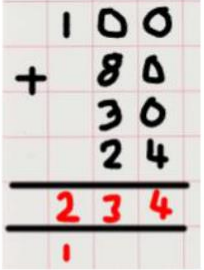


18 x 13 = 234

Children will first secure their understanding using the grid method.

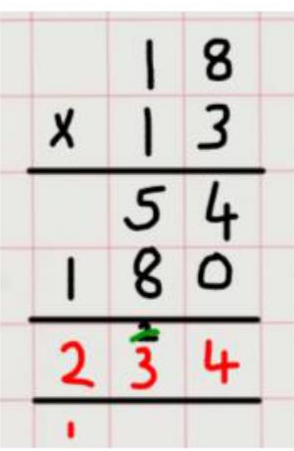
18 x 13 = 234

X	10	8
10	100	80
3	30	24

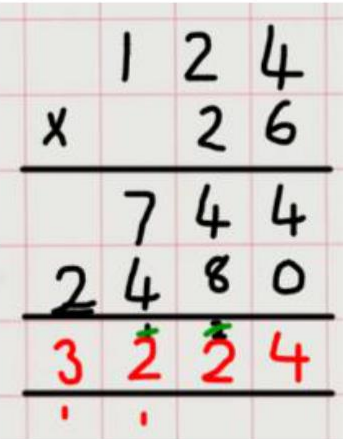


They will then move on to a more condensed method of long multiplication.

18 x 13 = 234



124 x 26 = 3224

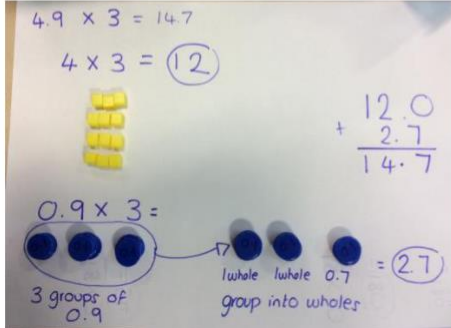


To use a formal written method of multiplication to multiply number up to 2 decimal places (grid method).

Decimal numbers x 1 digit number

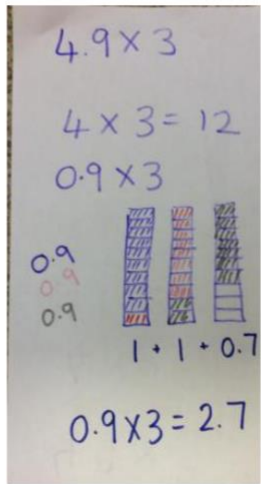
Children represent calculations using the place value counters and base ten equipment. They partition the decimal number and multiply by the multiplier. They then find the total.

4.9 x 3 = 14.7



Children continue to multiply decimal numbers by partitioning the decimal number. They draw pictorial representations and use jottings to find the total.

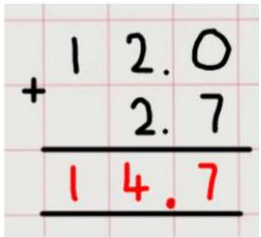
4.9 x 3 = 14.7



Using the grid method, children will be able to multiply decimals with one decimal place by a single digit number. They should know that the decimal points line up under each other and place holders are added.

4.9 x 3 = 14.7

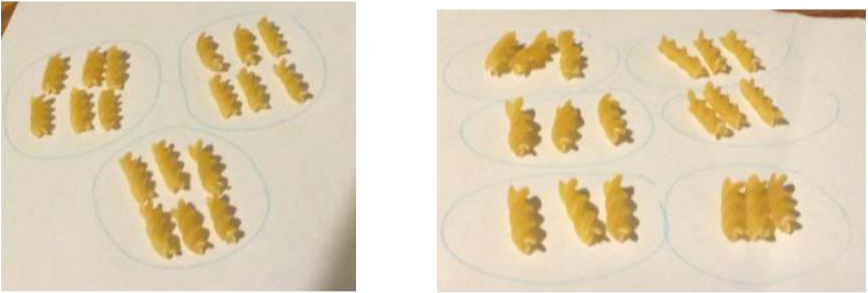
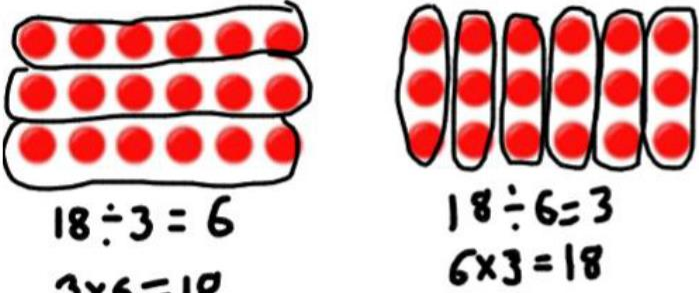
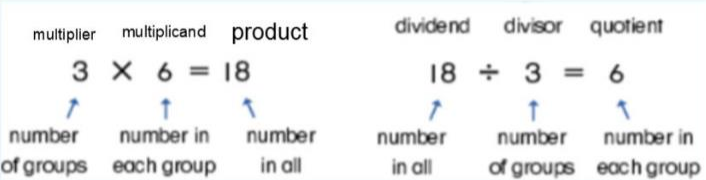
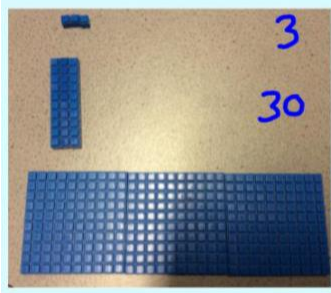
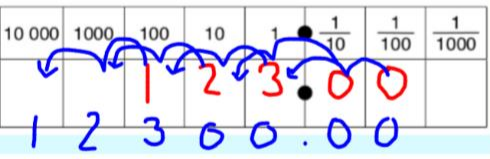
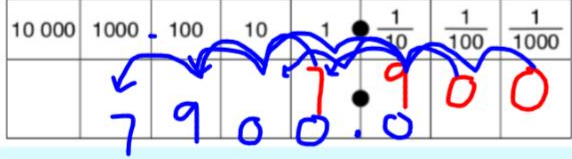
X	4	0.9
3	12	2.7



Year 6

Key Vocabulary: multiplication, multiply, multiplied by, multiple, factor, product, grouping, doubling, array, row, column, groups of, times once, twice, three times ... ten times, repeated addition, one each, two each, three each ... ten each, equal groups of, multiplication table, multiplication fact, inverse, square, squared, cube, cubed.

Times tables-children in Year 4 needs to be able to confidently count in steps of 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12.

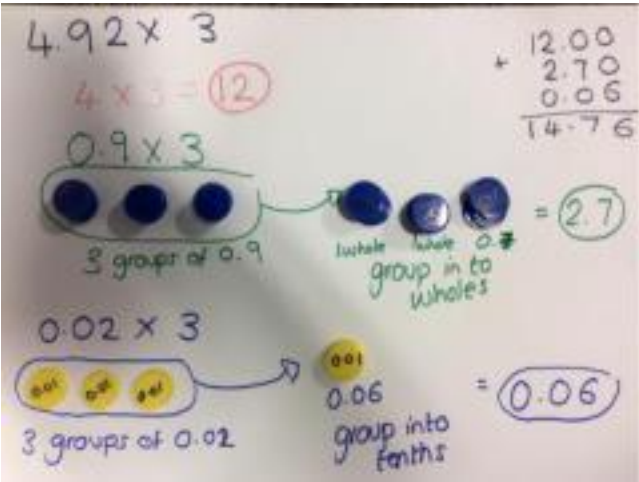
Objective & Strategy	Concrete	Pictorial	Abstract
To recall multiplication and division facts for multiplication tables up to 12x 12.	Children continue to deepen their understanding of the link between multiplication and division and use physical objects to find related facts. $3 \times 6 = 18$ $18 \div 3 = 6$ $6 \times 3 = 18$ $18 \div 6 = 3$ 	Children represent an array pictorially then find the associated multiplication and division facts by sorting into equal groups. 	Children apply their understanding of inverse relationships to write related multiplication and division statements. $3 \times 6 = 18$ $18 = 3 \times 6$ $6 \times 3 = 18$ $18 = 6 \times 3$ $18 \div 3 = 6$ $6 = 18 \div 3$ $18 \div 6 = 3$ $3 = 18 \div 6$ They use associated vocabulary correctly and know what each number represents in the calculation. 
To multiply whole numbers and those involving decimals by 10, 100 and 1,000	Children use resources to understand what 10, 100 and 1000 times bigger looks like.  <div>30 is ten times bigger than 3. 300 is ten times bigger than 30. 300 is one hundred times bigger than 3.</div> 300	Children use place value grids to multiply numbers by 10, 100 and 1000s. They understand the movement of the digits left on the place value grid. Multiplying X 10 digits move LEFT 1 space X 100 digits move LEFT 2 spaces X 1000 digits move LEFT 3 spaces ← $123 \times 100 = 12300$  They apply this knowledge to decimal numbers. $7.9 \times 1000 = 7900$ 	Children apply their knowledge of place value to multiply numbers by 10, 100 and 1000, including decimal numbers. $34 \times 100 = 3400$ $1234 \times 1000 = 1234000$ $5.6 \times 10 = 56$ $12.367 \times 100 = 1236.7$ They apply their knowledge to word and number puzzles. Here are five number cards. <div>0.47 10 100 1000 4.07</div> Use four of the cards to complete these calculations. $47 \div \square = \square$ $\square \times \square = 40.7$

To use a formal written method of multiplication to multiply number up to 2 decimal places (grid method).

Decimal numbers x 1 digit number

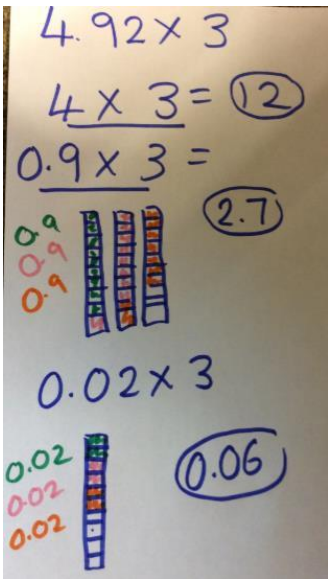
Children represent calculations using the place value counters and base ten equipment. They partition the decimal number and multiply by the multiplier. They then find the total.

$4.92 \times 3 = 14.76$



Children continue to multiply decimal numbers by partitioning the decimal number. They draw pictorial representations and jottings to find the total.

$4.92 \times 3 = 14.76$



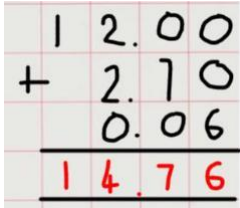
use

Formal method

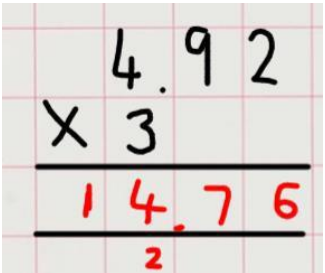
Using the grid method, children will be able to multiply decimals with up to two decimal places by a single digit number. They should know that the decimal points line up under each other and zeros are added at place holders.

4.92×3

X	4	0.9	0.02
3	12	2.7	0.06



Children will move onto using the condensed method.



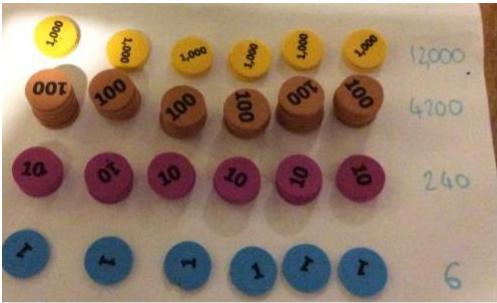
To use a formal written method of multiplication (short multiplication).

Multi-digit numbers x 1 digit number

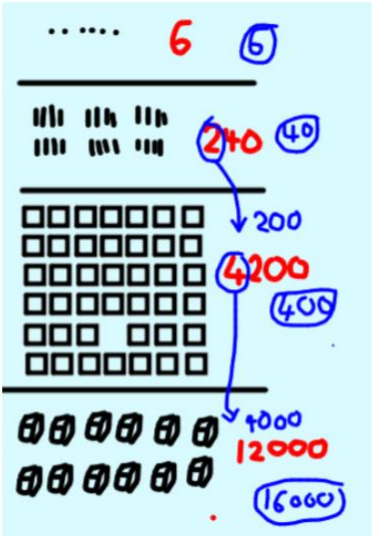
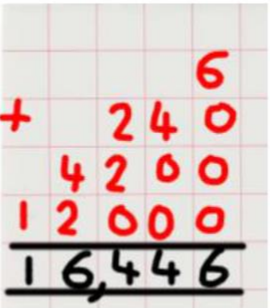
Children represent calculations using the place value counters and base ten equipment. They solve in a columnar form and begin by multiplying the ones, then the tens then the hundreds then the thousands before finding the total.

$2741 \times 6 = 16,446$

$1 \times 6 = 6$
 $40 \times 6 = 240$
 $700 \times 6 = 4,200$
 $2000 \times 6 = 12,000$



Children represent the calculation by drawing pictorial representations. They partition the multiplicand then multiply each part by the multiplier. They understand the place value and can confidently exchange between columns. This leads to the condensed method.

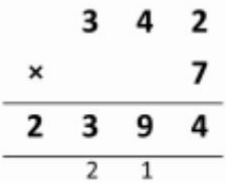


Formal Method

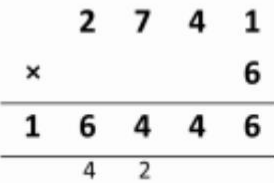
In year 6 children are expected to multiply multi digit numbers by a 1 digit number.

The children continue to use the condensed method of short multiplication. The number is carried underneath.

342×7 becomes



2741×6 becomes

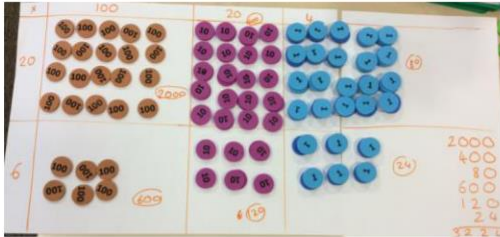
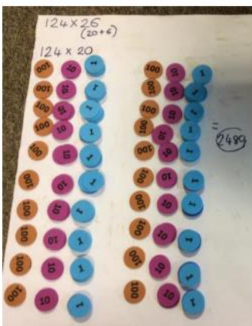
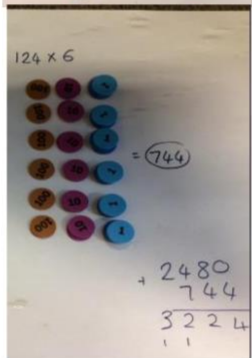


To use a formal written method of multiplication (long multiplication).

Multi-digit x 2 digit number

Children represent calculations using the place value counters using the grid method.

124 x 26 = 3224

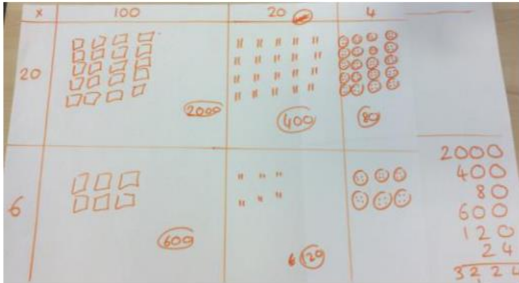


They then solve calculations in a columnar form and begin by multiplying the ones, the tens then the hundreds then the thousands before finding the total.

124 x 26 = 3224

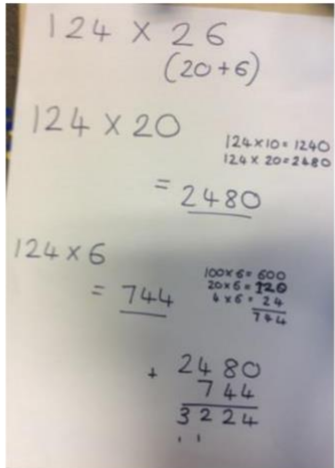
Children will first use their knowledge of place value to partition the multiplicand and multiplier. They then show their understand pictorially in a grid method.

124 x 26 = 3224



124 x 26 = 3224

Children then move towards the columnar method by representing each stage with jottings. Children are encouraged to multiply the ones first.

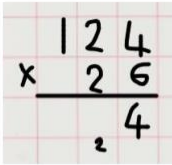


Formal Method

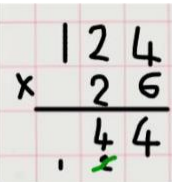
In year 6 children are expected to multiply multi digit numbers by a 2 digit number. The children are introduced to long multiplication. The number is carried underneath.

124 x 26 = 3224

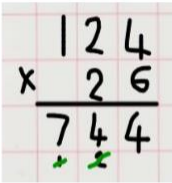
Step 1: Multiply the multiplier by the multiplicand. Start with the ones, multiply 6 by 4 (24). Write the 4 in the ones column and carry the 20 below the line.



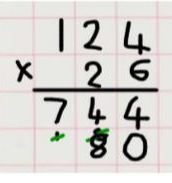
Step 2: Multiply the 6 by 20 (120) and add the 2 (122). Cross off the carried 20. Write the 4 in the tens column and carry the 100 below the line.



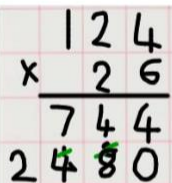
Step 3: Multiply the 6 by 100 (600) and add the 100 (700). Cross off the carried 100. Write the 7 in the hundreds.



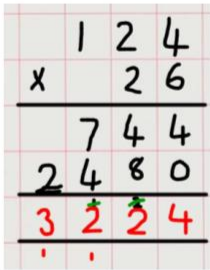
Step 4: Move to the tens column on the multiplier and start a new line. Multiply the 20 by 4 (80) and record.



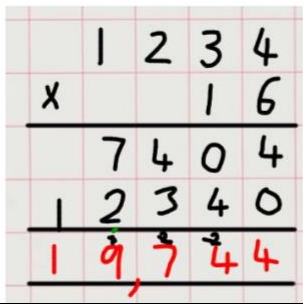
Step 5: Multiply the 20 by 20 (400) and record. Then multiply the 20 by the 100 (200) and record.



Step 6: Total the numbers.



4 digit x 2 digit
1234 x 16 = 19,7





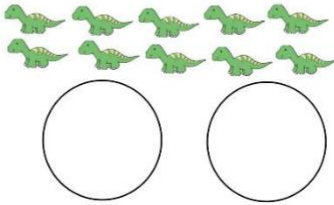
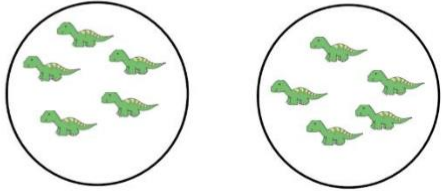
WESTONZOYLAND

Community Primary School and Pre-school

Division

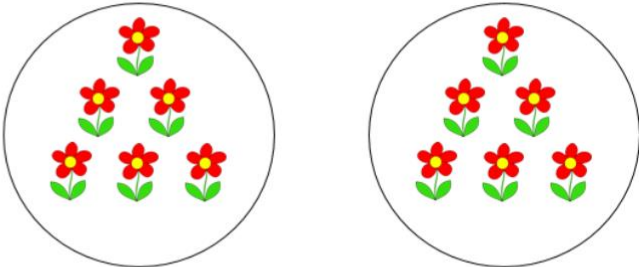
Foundation Stage

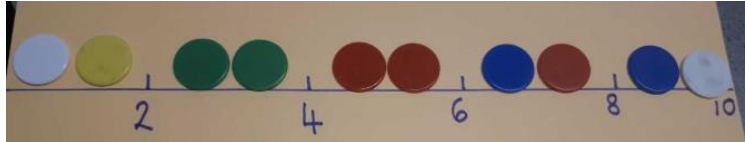
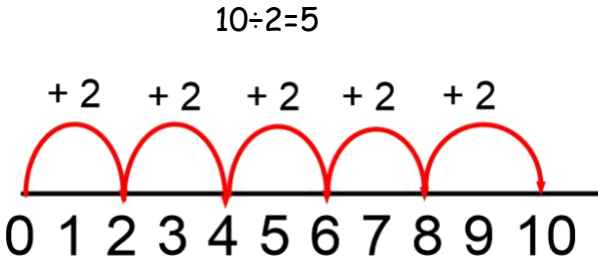
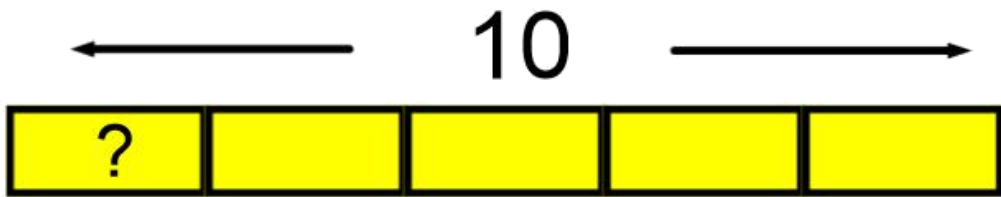
Key Vocabulary: *sharing, halving, number patterns*

Objective & Strategy	Concrete	Pictorial	Abstract
To begin to divide by sharing.	<p>Children will use a range of resources to share concrete resources to begin to demonstrate understanding.</p> <p>Children will start with an even number and will need to share this out equally in a given group. e.g. $10 \div 2 = 5$</p>  	<p>Children will understand equal groups and share items out in play and problem solving. They will count in 2s and 10s and later in 5s.</p> <p>Step 1: Count how many you have. Step 2: Share them equally so each group has the same amount. Step 3: Count how many are in each group.</p>  	<p>Children will begin to experiment with writing division number sentences using the division symbol.</p> <p>$10 \div 2 = 5$</p>

Year 1

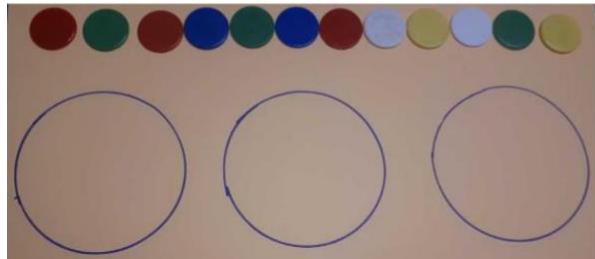
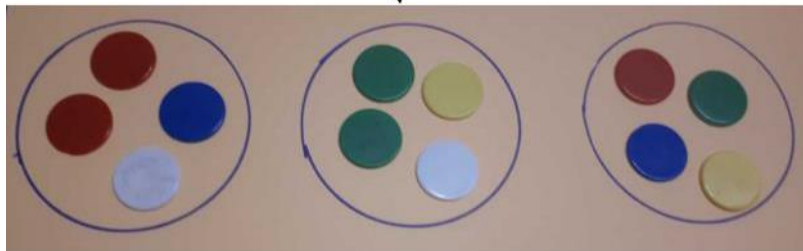
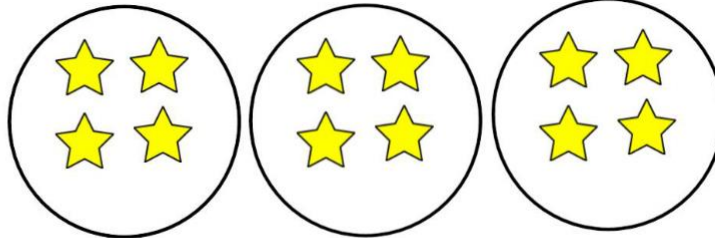
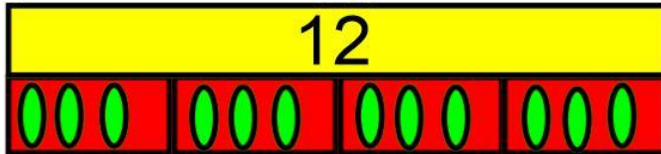
Key Vocabulary: *division, dividing, grouping, sharing, doubling, halving, array, number pattern, equal grouping, equal sharing*

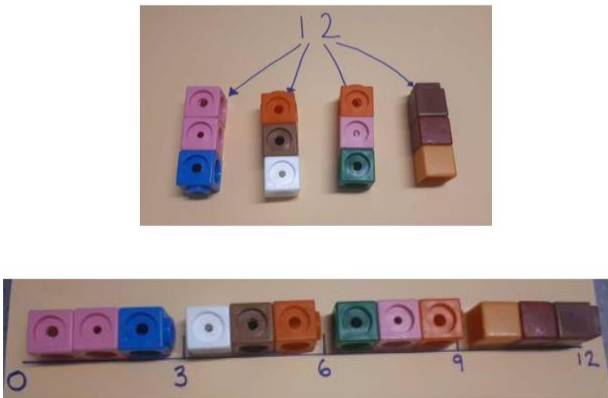
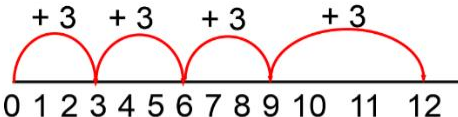
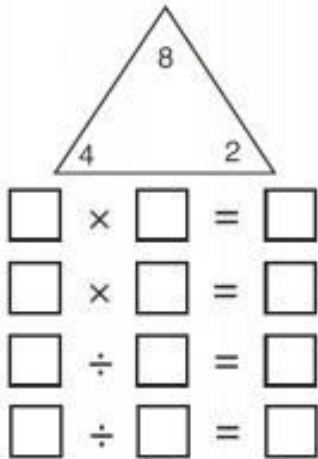
Objective & Strategy	Concrete	Pictorial	Abstract
<p>To divide by sharing</p> <p>To half a number up to 20.</p>	<p>Children will use concrete resources, including uni-fix cubes to share into equal groups. Children will also be able to half a number up to 20 by sharing into equal groups.</p>  <p>Stem Sentence: I know there are <u>2</u> groups so I can share <u>12</u> counters which will equal <u>6</u> in each group.</p>	<p>Children will draw jottings and have pictorial representations to demonstrate knowledge of sharing into equal groups.</p> <p>$12 \div 2 = 6$</p>  <p>I know there are 2 groups and in each group there are 6 flowers.</p> <p>$12 \div 2 = 6$</p> <p>12</p> 	<p>Children will be introduced to word problems to solve division problems.</p> <p>6 sweets are shared between 2 people. How many do they have each?</p> <p>$12 \div 2 = 6$</p> <p>Stem Sentence: I know <u>12</u> divided equally between <u>2</u> groups' equals <u>6</u>.</p>

<p>To divide by grouping.</p>	<p>Children will begin to solve division problems, which require sorting objects and quantities into 2s, 4s, 5s and 10s.</p> <p>Children will use concrete resources such as cubes, counters or objects to aid understanding.</p> $10 \div 5 = 2$ 	<p>Children will use number lines to show grouping.</p> $10 \div 2 = 5$  <p>Children will also experiment dividing by grouping using the bar model.</p> <p>The children will be given a number or picture representatives. This will represent the whole. They then need to split the whole into the number of groups they are dividing by and work out how many would be in each group. e.g. $10 \div 5 = 2$</p> 	<p>There are 10 flower bulbs. Plant 2 in each pot. How many pots are there?</p> $10 \div 2 = 5$ <p>There are 10 flower bulbs. Plant 5 in each pot. How many pots are there?</p> $10 \div 5 = 2$
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Year 2

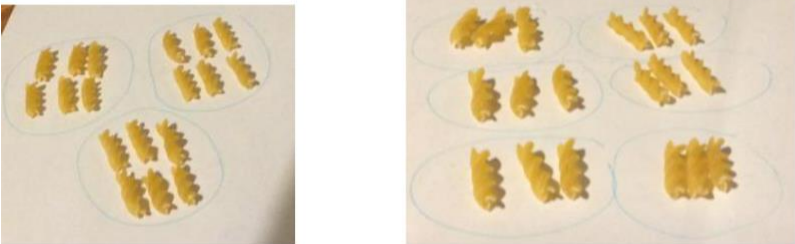
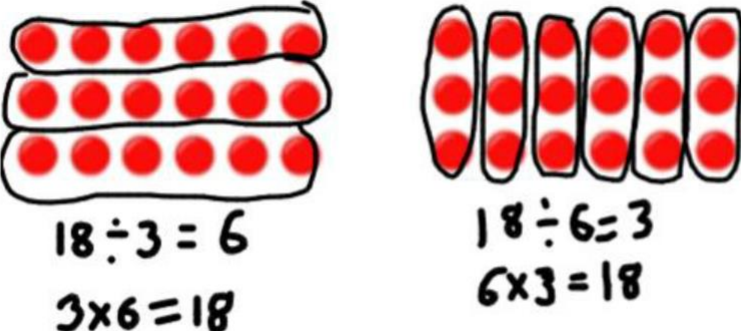
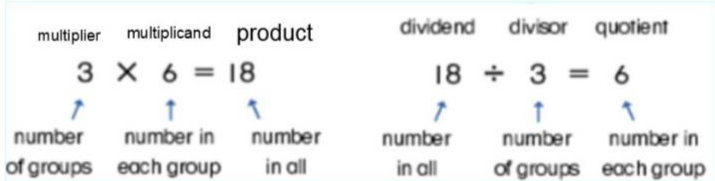
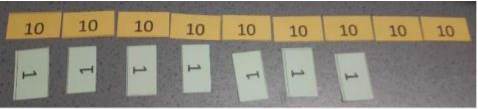
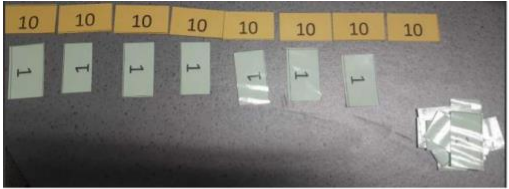
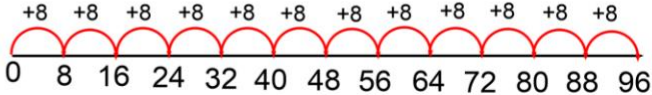
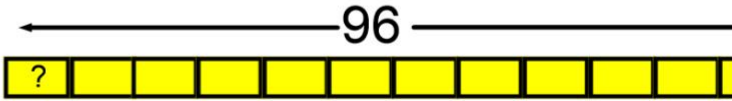
Key Vocabulary: multiplication, multiply, multiplied by, multiple, grouping, doubling, array, row, column, groups of, times once, twice, three times ... ten times, repeated addition, one each, two each, three each ... ten each, equal groups of, multiplication table, multiplication fact.

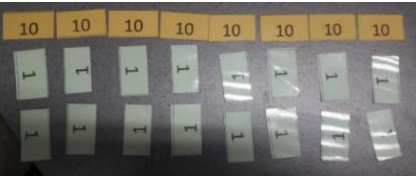
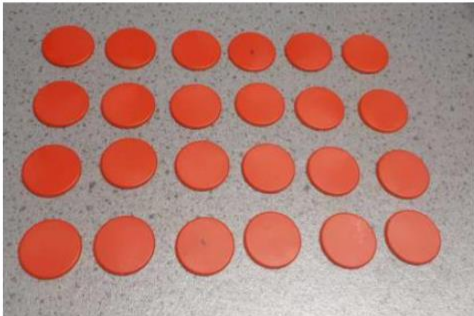
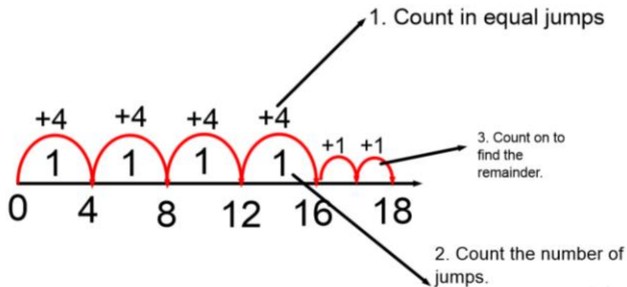
Objective & Strategy	Concrete	Pictorial	Abstract
To divide by sharing.	<p>Children will use a range of concrete resources, including cubes to share objects and quantities into equal groups.</p> <p>I have 12 cubes, can you share them equally into 3 groups?</p>  	<p>Children will use pictures and shapes to share quantities.</p> <p>$12 \div 3 = 4$</p>  <p>Children will also be able to use the bar model to show and support their understanding. e.g. $12 \div 4 = 3$</p> 	<p>Children will be writing division number sentence using the divide symbol.</p> <p>$12 \div 3 = 4$</p> <p>$12 \div 4 = 3$</p>

<p>To divide by grouping (repeated addition)</p>	<p>Children will begin to solve division problems, which require sorting objects and quantities into 2s, 4s, 5s and 10s.</p> <p>Children will use concrete resources such as cubes, counters or objects to aid understanding.</p> 	<p>Children will use number lines to show grouping</p>  <p>Children will dividing by grouping using the bar model.</p> <p>The children will be given a number or picture representatives. This will represent the whole. They then need to split the whole into the number of groups they are dividing by and work out how many would be in each.</p> 	<p>There are 12 flower bulbs. Plant 3 in each pot. How many pots are there?</p> $12 \div 3 = 4$ <p>There are 12 flower bulbs. Plant 4 in each pot. How many pots are there?</p> $12 \div 4 = 3$
<p>To use related multiplication and division facts using the inverse for the 2, 3, 5 and 10 times table.</p>	<p>Children will use concrete resources, including cubes to represent arrays. These will then form part of the learning process to explain number related facts and begin to write these in number form.</p> <p> $2 \times 4 = 8$ $4 \times 2 = 8$ $8 \div 2 = 4$ $8 \div 4 = 2$ </p> 	<p>Children will use pictorial representations to solve missing number facts that demonstrate related facts.</p> 	<p>Children will show all 8 related number sentences to demonstrate related facts.</p> $2 \times 4 = 8$ $4 \times 2 = 8$ $8 \div 2 = 4$ $8 \div 4 = 2$ $8 = 2 \times 4$ $8 = 4 \times 2$ $2 = 8 \div 4$ $4 = 8 \div 2$

Year 3

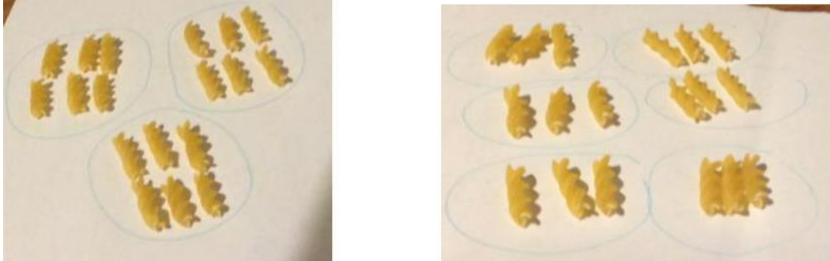
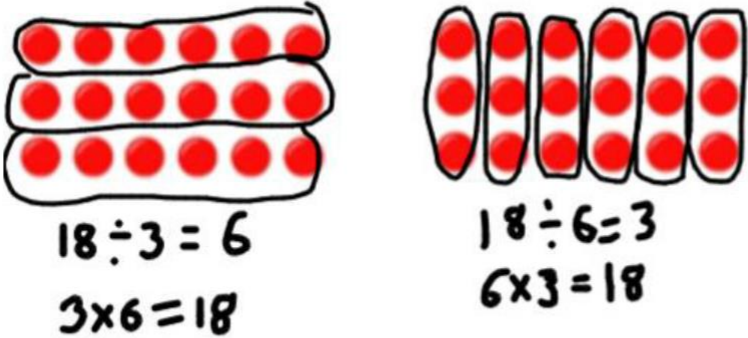
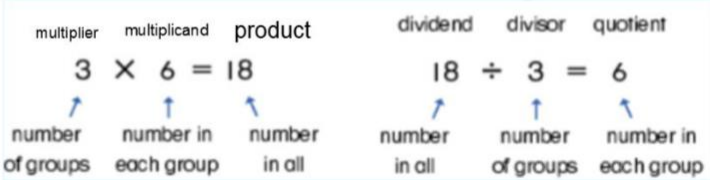
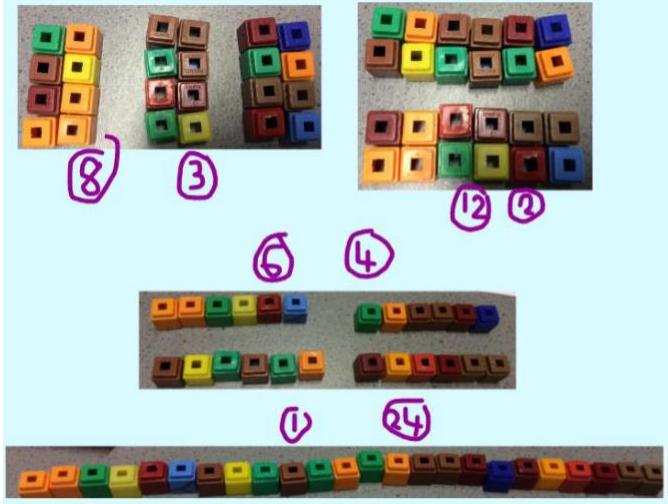
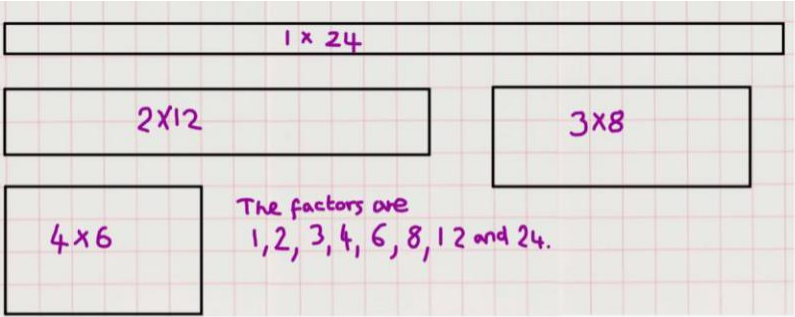
Key Vocabulary: groups of times, repeated addition, division, dividing, divide, divided by, divided into left, left over, remainder grouping sharing, share, share equally one each, two each, three each ... ten each group in pairs, threes ... tens equal groups of, halving, array row, column, number patterns, division fact

Objective	Concrete	Pictorial	Abstract
To recall multiplication and division facts for multiplication tables up to 12x 12.	Children continue to deepen their understanding of the link between multiplication and division and use physical objects to find related facts. $3 \times 6 = 18$ $18 \div 3 = 6$ $6 \times 3 = 18$ $18 \div 6 = 3$ 	Children represent an array pictorially then find the associated multiplication and division facts by sorting into equal groups.  $18 \div 3 = 6$ $18 \div 6 = 3$ $3 \times 6 = 18$ $6 \times 3 = 18$	Children apply their understanding of inverse relationships to write related multiplication and division statements. $3 \times 6 = 18$ $18 = 3 \times 6$ $6 \times 3 = 18$ $18 = 6 \times 3$ $18 \div 3 = 6$ $6 = 18 \div 3$ $18 \div 6 = 3$ $3 = 18 \div 6$ They use associated vocabulary correctly and know what each number represents in the calculation. 
To using grouping to divide (repeated addition)	Children will use concrete resources, including place value counters to divide by grouping. $96 \div 8 = 12$ Step 1: Use place value counters to create the dividend.  Step 2: Look at the divisor, this explains the number of groups you will need. E.g. 8. The children will need to exchange 1 ten for 10 ones.  Step 3: Children will need to share out the remaining number so each group is equal.	Children will continue to use repeated addition on the number line but will work with increasingly large numbers. $96 \div 8 = 12$ Children will count on from in 8s from 0 until they reach 96.  Children will also continue to use the bar model to support their understanding. 	There are 96 footballs. Each player needs 8 footballs. How many players are there? $96 \div 8 = 12$ There are 96 footballs. Each player needs 12 footballs. How many players are there? $96 \div 12 = 8$ How many groups 8 are in 96? How many groups of 12 are in 96?

			
To use arrays to divide.	<p>Children will link division to multiplication by using arrays. They will begin writing numbers sentences to show what they can create.</p>  $\begin{aligned}6 \times 4 &= 24 \\4 \times 6 &= 24 \\24 \div 6 &= 4 \\24 \div 4 &= 6\end{aligned}$	<p>Children will draw or be given a pictorial representation of an array. They will circle the array to split it into groups to make multiplication and division sentences.</p>  $24 \div 6 = 4$ <p>STEM: I know $24 \div 6 = 4$ because 6 groups of 4 equals 24</p>	<p>Children will find the inverse of multiplication and division sentences by creating linking number sentences.</p> $\begin{aligned}6 \times 4 &= 24 \\4 \times 6 &= 24 \\24 \div 6 &= 4 \\24 \div 4 &= 6\end{aligned}$
To divide with whole numbers and represent remainders.	<p>Children will use a range of concrete resources to divide between groups and see what is left over.</p> $18 \div 4 = 4 \text{ r } 2$  	<p>Children will use a number line to jump forward in equal jumps. They will then see how many more they need to jump to find the remainder.</p> $18 \div 4 = 4 \text{ r } 2$ 	<p>Children will complete written division number sentences using the division symbol and r to represent the remainder.</p> $\begin{array}{ccccccc} & & \text{divisor} & & & & \\ & & \uparrow & & & & \\ 18 & \div & 4 & = & 4 & \text{r} & 2 \\ \downarrow & & & & \downarrow & & \downarrow \\ \text{dividend} & & & & \text{quotient} & & \text{remainder}\end{array}$

Year 4

Key Vocabulary: factors, multiples, groups of, share, share equally, equal groups, division, divide, divided by, divided into, left, left over, remainder, array.

Objective & Strategy	Concrete	Pictorial	Abstract
<p>To recall multiplication and division facts for multiplication tables up to 12x 12.</p>	<p>Children continue to deepen their understanding of the link between multiplication and division and use physical objects to find related facts.</p> <p> $3 \times 6 = 18$ $18 \div 3 = 6$ $6 \times 3 = 18$ $18 \div 6 = 3$ </p> 	<p>Children represent an array pictorially then find the associated multiplication and division facts by sorting into equal groups.</p> 	<p>Children apply their understanding of inverse relationships to write related multiplication and division statements.</p> <p> $3 \times 6 = 18$ $18 = 3 \times 6$ $6 \times 3 = 18$ $18 = 6 \times 3$ $18 \div 3 = 6$ $6 = 18 \div 3$ $18 \div 6 = 3$ $3 = 18 \div 6$ </p> <p>They use associated vocabulary correctly and know what each number represents in the calculation.</p> 
<p>To recognise and use factor pairs and commutativity in mental calculations.</p>	<p>Children use physical objects to create arrays to support their understanding of factors.</p> <p>Factors of 24</p> 	<p>Children investigate finding all factors of a number by drawing arrays.</p> <p>Factors of 24</p> 	<p>Children use their knowledge of multiplication and division facts to find factors of numbers.</p> <p>Factors of 24</p> <p> $1 \times 24 = 24$ $2 \times 12 = 24$ $3 \times 8 = 24$ $4 \times 6 = 24$ </p>

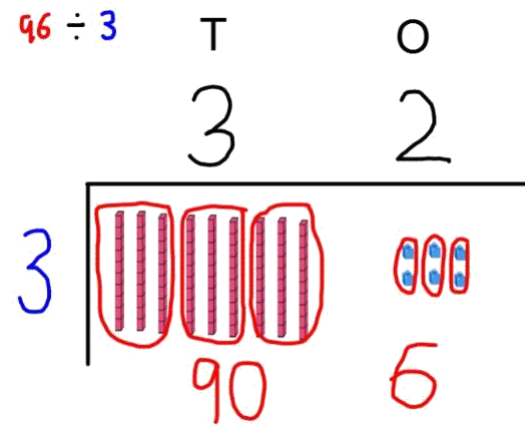
To use a formal written method of short division (bus stop method).

2/ 3 digit ÷ 1 digit number (exact answers- no remainders)

2 or 3 digit divided by a 1 digit number (simple remainders)

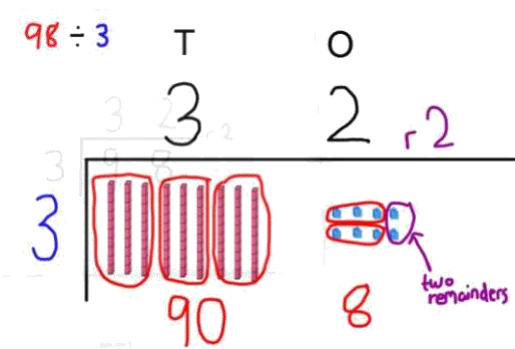
Children represent division calculations using concrete materials such as base 10 and place value counters.

The children partition the dividend and put inside the bus stop then divide each part by the divisor. The quotient is then recorded on the top line.

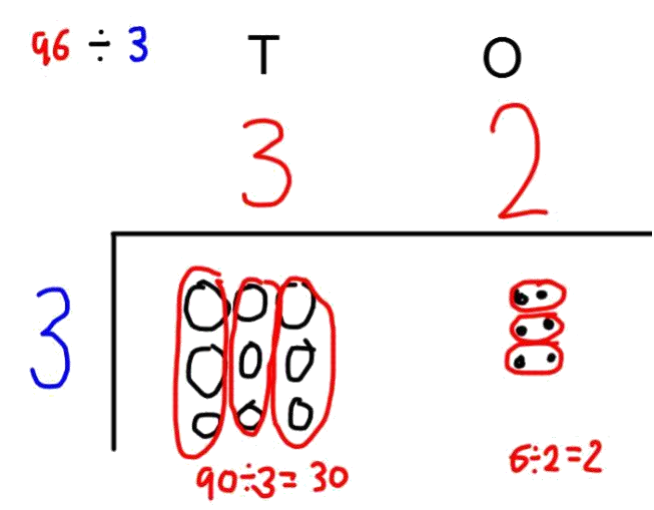


They begin to explore calculations involving simple remainders.

$98 \div 3 = 32 \text{ r}2$

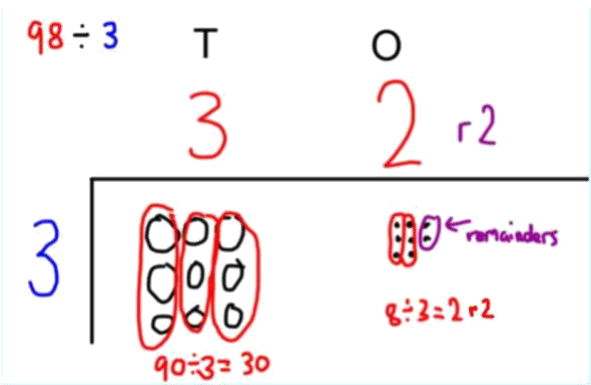


Children represent division calculations using informal jottings and pictorial representations.



They begin to explore calculations involving simple remainders.

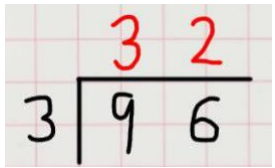
$98 \div 3 = 32 \text{ r}2$



In Year 4 children divide numbers up to 3 digits by a 1 digit numbers with exact answers.

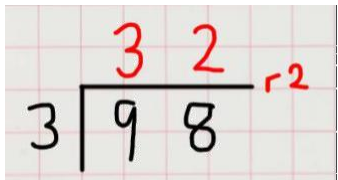
The children are introduced to the bus stop method as a formal written method.

$96 \div 3 = 32$



Once children have a secure understanding, they begin to understand how to record calculations with simple remainders.

$98 \div 3 = 32 \text{ r}2$

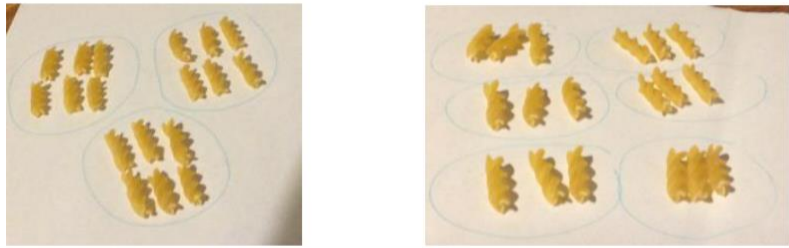
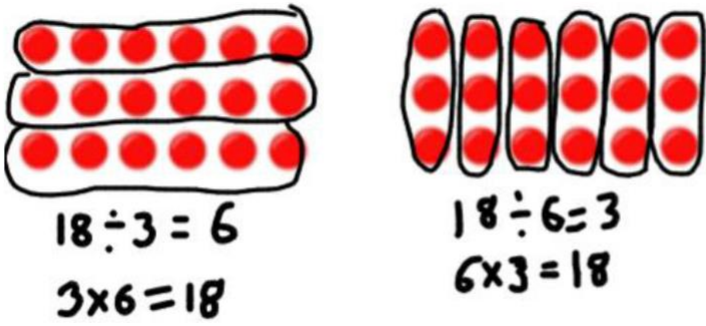
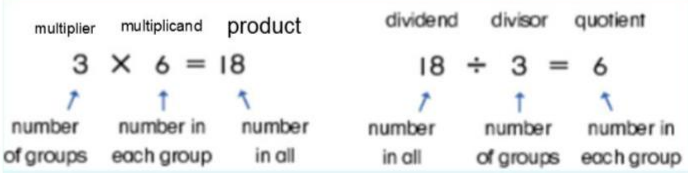
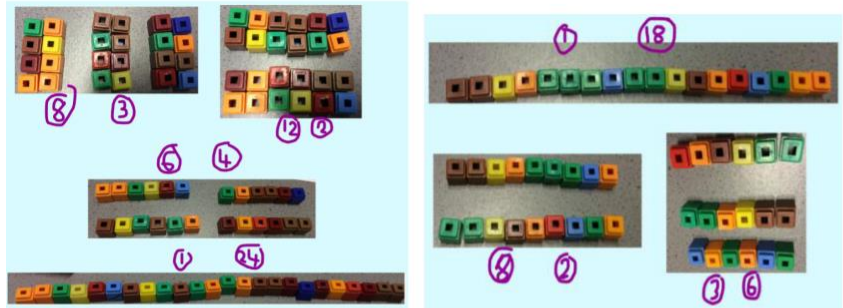
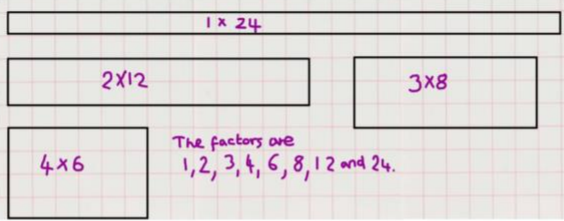
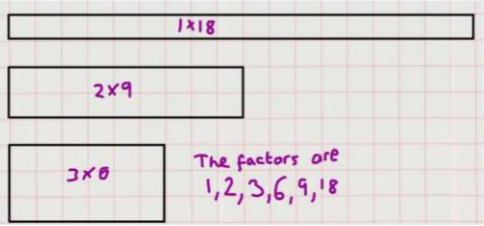
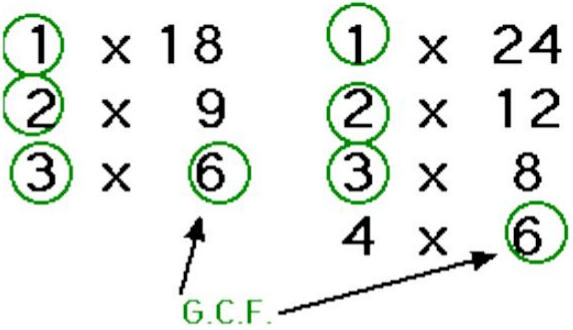


Children apply their knowledge of division to word problems.

Arron has 77 seeds. He plants 4 seeds in each plant pot. How many pots does he need?

Year 5

Key Vocabulary: factors, multiples, groups of, share, share equally, equal groups, division, divide, divided by, divided into, left, left over, remainder, array, prime numbers, composite numbers.

Objective & Strategy	Concrete	Pictorial	Abstract
<p>To recall multiplication and division facts for multiplication tables up to 12x 12.</p>	<p>Children continue to deepen their understanding of the link between multiplication and division and use physical objects to find related facts.</p> <p> $3 \times 6 = 18$ $18 \div 3 = 6$ $6 \times 3 = 18$ $18 \div 6 = 3$ </p> 	<p>Children represent an array pictorially then find the associated multiplication and division facts by sorting into equal groups.</p> 	<p>Children apply their understanding of inverse relationships to write related multiplication and division statements.</p> <p> $3 \times 6 = 18$ $18 = 3 \times 6$ $6 \times 3 = 18$ $18 = 6 \times 3$ $18 \div 3 = 6$ $6 = 18 \div 3$ $18 \div 6 = 3$ $3 = 18 \div 6$ </p> <p>They use associated vocabulary correctly and know what each number represents in the calculation.</p> 
<p>To recognise and use factor pairs of a number and find common factors of two numbers.</p>	<p>Children use physical objects to create arrays to support their understanding of factors.</p> <p>Find the common factors of 18 and 24</p> <p> <u>Factors of 24</u> <u>Factors of 18</u> </p>  <p>The common factors are 1, 2, 3 and 6.</p>	<p>Children investigate finding factors by drawing arrays to find all solutions. They then find factors which belong to both numbers.</p> <p>Find the common factors of 18 and 24</p> <p><u>Factors of 24</u></p>  <p><u>Factors of 18</u></p>  <p>The common factors are 1, 2, 3 and 6.</p>	<p>Children use multiplication and division facts to find factors of numbers.</p> <p>Find the common factors of 18 and 24</p> <p> <u>Factors of 18</u> <u>Factors of 24</u> </p>  <p>The common factors are 1, 2, 3 and 6.</p>

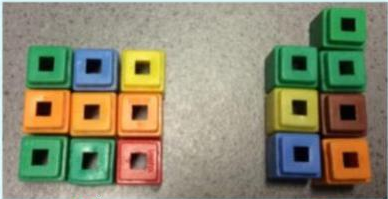
This three-digit number has 2 and 7 as factors.

2 9 4

Write another three-digit number which has 2 and 7 as factors.

To establish whether a number up to 100 is prime and recall prime numbers up to 19.

Children find prime numbers and composite (non-prime numbers) by using arrays. They understand that composite numbers form arrays and prime numbers cannot be arranged into arrays.



9
composite number



7
prime number

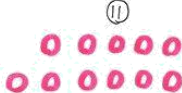
Children use jottings and pictorial representations to investigate composite and prime numbers.

Prime Numbers

⑦



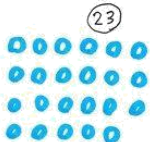
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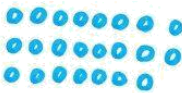
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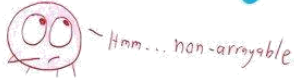


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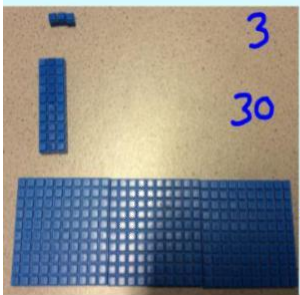


Children use their knowledge of multiples and factors to find the prime numbers up to 100. They eliminate numbers that have factors other than 1. They can recall all prime numbers up to 19.

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
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

To divide whole numbers and those involving decimals by 10, 100 and 1,000

Children use resources to understand what 10, 100 and 1000 times bigger looks like.



3

30

300

3 is ten times smaller than 30.

30 is ten times smaller than 300.

3 is one hundred times smaller than 300.

Children use place value grids to divide numbers by 10, 100 and 1000s. They understand the movement of the digits on the place value grid.

Dividing

÷ 10 digits move RIGHT 1 space

÷ 100 digits move RIGHT 2 spaces

÷ 1000 digits move RIGHT 3 spaces

→

$345 \div 100 = 3.45$

10 000	1000	100	10	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
		3	4	5	.	4	5

They apply this knowledge to decimal numbers.

$4.12 \div 10 = 0.412$

10 000	1000	100	10	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
				4	.	1	2

Children apply their knowledge of place value to divide numbers by 10, 100 and 1000, including decimal numbers.

$3450 \div 10 = 345$
 $345 \div 100 = 3.45$
 $2.67 \div 10 = 0.267$
 $12.7 \div 1000 = 0.0127$

They apply their understanding to more complex number puzzles and word problems.

Circle the number that is 10 times greater than nine hundred and seven.

9,700 907 9,007 970 9,070

Write the missing number to make this division correct.

$75 \div \boxed{} = 7.5$

A PS4 is on for sale at a tenth of its original price. It usually costs £450.90. How much is it at the sales?

Numbers up to
4 digits $\div$ 1 digit
number (with
remainders)

The children partition the dividend and put inside the bus stop then divide each part by the divisor. The quotient is then recorded on the top line. The children work with numbers that involve remainders.

$98 \div 7$ T O
 | 4
 7 28
 70

432 ÷ 5 H T O

0 8 6 r2

5

40 tens

20 ones

32 ones r2

$$98 \div 7 = 14$$

98 ÷ 7 T O

1 4

7

70 + 7 = 10

2 tens
become
20 ones

28 ÷ 7 = 4

Handwritten work for $432 \div 5$ using the long division method. The quotient is 86 with a remainder of 2. The work is annotated with red and green markings and arrows:

- Red markings:** The divisor 5 is written in blue. The quotient digits 0, 8, and 6 are written in red above the division bar. The remainder 2 is written in red to the right of the bar. The first two steps of the division are circled in red.
- Green markings:** The remainder 2 is written in green to the right of the bar. The next two steps of the division are circled in green.
- Arrows and labels:** Red arrows point from the red circles to the text "43 tens" and "430 tens". Green arrows point from the green circles to the text "30 ones" and "32 ones".

The final result is $430 \div 5 = 80 \text{ r } 3$ and $32 \div 5 = 6 \text{ r } 2$.

98 ÷ 7 becomes

$$\begin{array}{r} 14 \\ 7 \overline{) 98} \end{array}$$

Answer: 14

432 $\div$ 5 becomes

$$\begin{array}{r} 86 \text{ r } 2 \\ 5 \overline{) 432} \end{array}$$

Answer: 86 remainder 2

Children are expected to interpret non-integar answers by expressing results as fractions ($432 \div 5 = 86 \frac{2}{5}$), decimals ($432 \div 5 = 86.4$) or by rounding ($432 \div 5 = 86.4 \approx 86$ sweets) according to the context.

Children apply their knowledge using word problems and number puzzles.

A spoonful is 5ml.



How many spoonfuls can you get from this bottle?

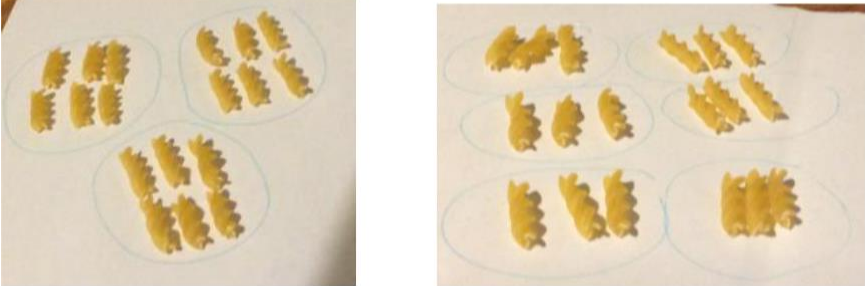
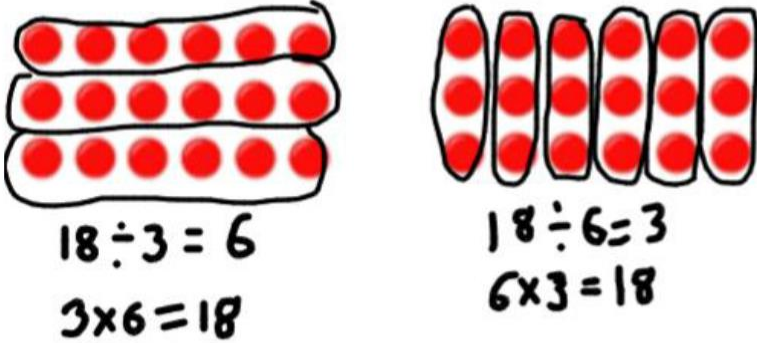
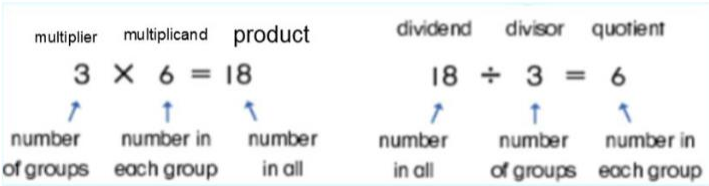
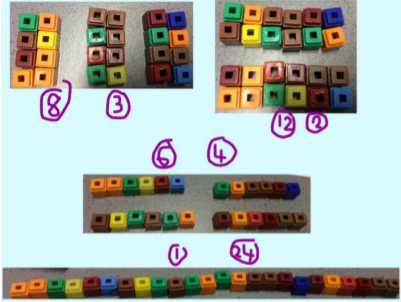
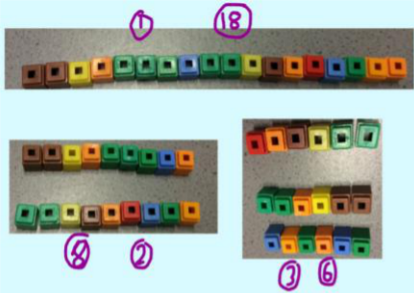
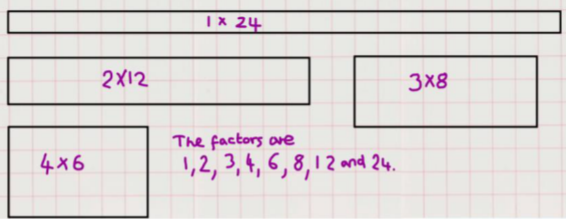
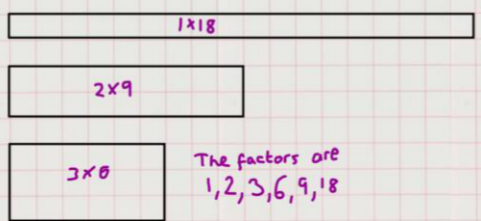
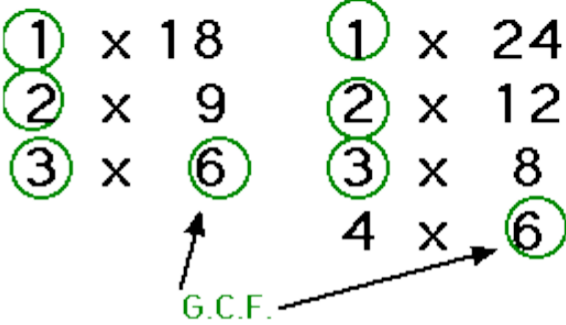
Write in the missing digit.

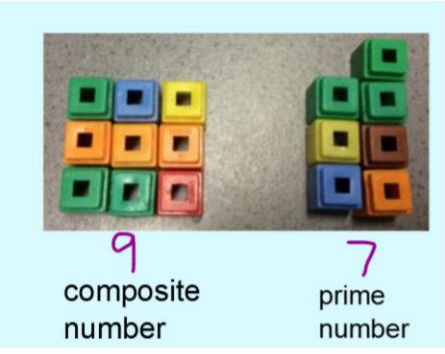
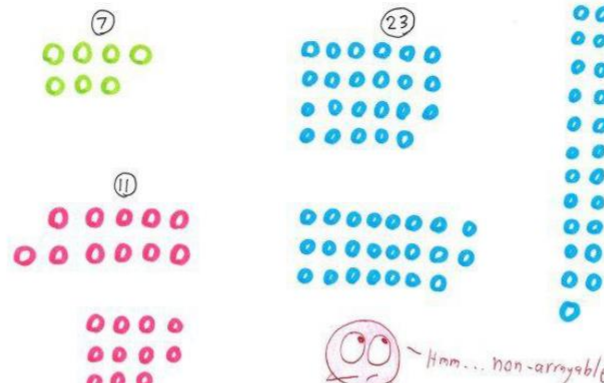
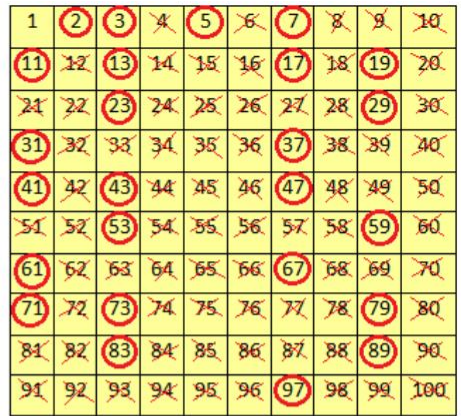
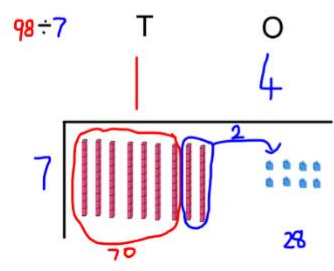
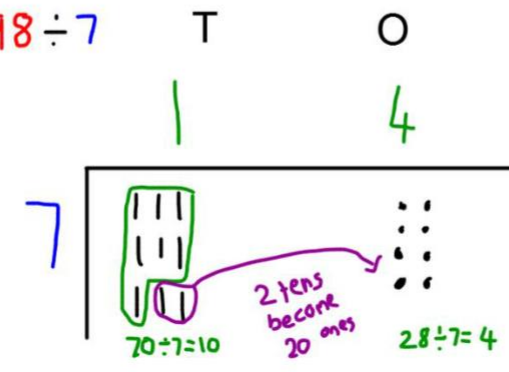
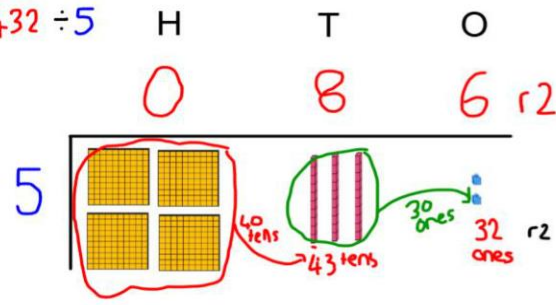
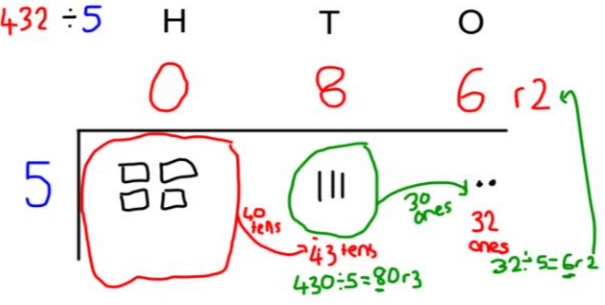
The answer does not have a remainder.

$$\begin{array}{r} 26 \\ 3 \overline{) \square 8} \end{array}$$

Year 6

Key Vocabulary: factors, multiples, groups of, share, share equally, equal groups, division, divide, divided by, divided into, left, left over, remainder, array.

Objective & Strategy	Concrete	Pictorial	Abstract
To recall multiplication and division facts for multiplication tables up to 12x 12.	Children continue to deepen their understanding of the link between multiplication and division and use physical objects to find related facts. $3 \times 6 = 18$ $18 \div 3 = 6$ $6 \times 3 = 18$ $18 \div 6 = 3$ 	Children represent an array pictorially then find the associated multiplication and division facts by sorting into equal groups.  $18 \div 3 = 6$ $3 \times 6 = 18$ $18 \div 6 = 3$ $6 \times 3 = 18$	Children apply their understanding of inverse relationships to write related multiplication and division statements. $3 \times 6 = 18$ $18 = 3 \times 6$ $6 \times 3 = 18$ $18 = 6 \times 3$ $18 \div 3 = 6$ $6 = 18 \div 3$ $18 \div 6 = 3$ $3 = 18 \div 6$ They use associated vocabulary correctly and know what each number represents in the calculation. 
To identify common factors.	Children use physical objects to create arrays to support their understanding of factors. Find the common factors of 18 and 24 Factors of 24  Factors of 18  The common factors are 1, 2, 3 and 6.	Children investigate finding all factors of a number by drawing arrays. They then find factors which are the same in both numbers. Find the common factors of 18 and 24 Factors of 24  Factors of 18 	Children use their knowledge of multiplication and division facts to find factors of numbers. Find the common factors of 18 and 24 Factors of 18 Factors of 24  The common factors are 1, 2, 3 and 6.

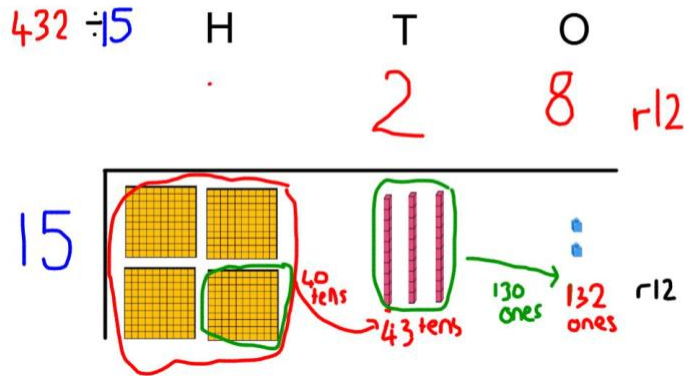
<p>To establish whether a number up to 100 is prime and recall prime numbers up to 19.</p>	<p>Children find prime numbers and composite (non-prime numbers) by using arrays. They understand that composite numbers form arrays and prime numbers cannot be arranged into arrays.</p> 	<p>The common factors are 1, 2, 3 and 6. Children use jottings and pictorial representations to investigate composite and prime numbers.</p> <h3 style="text-align: center;">Prime Numbers</h3> 	<p>Children use their knowledge of multiples and factors to find the prime numbers up to 100. They eliminate numbers that have factors other than 1. They can recall all prime numbers up to 19.</p> 
<p>To use a formal written method of short division (bus stop method). Larger numbers ÷ 1 digit number (involving remainders)</p>	<p>Children represent division calculations using concrete materials such as base 10 and place value counters.</p> <p>The children partition the dividend and put inside the bus stop then divide each part by the divisor. The quotient is then recorded on the top line. The children work with numbers that involve remainders.</p> <p>98 ÷ 7 = 14</p>  <p>432 ÷ 5 = 86 r2</p>	<p>Children represent division calculations using informal jottings and pictorial representations. The children will recognise remainders.</p> <p>98 ÷ 7 = 14</p>  <p>432 ÷ 5 = 86 r2</p>	<p>In Year 6 children divide larger numbers by a 1 digit number with calculations involving remainders. The children continue to use the bus stop method as a formal method of written calculation.</p> <p>98 ÷ 7 becomes</p> $\begin{array}{r} 14 \\ 7 \overline{) 98} \\ \underline{7} \\ 28 \\ \underline{28} \\ 0 \end{array}$ <p>Answer: 14</p> <p>432 ÷ 5 becomes</p> $\begin{array}{r} 86 \text{ r}2 \\ 5 \overline{) 432} \\ \underline{40} \\ 32 \\ \underline{30} \\ 2 \end{array}$ <p>Answer: 86 remainder 2</p> <p>Children are expected to interpret non-integar answers by expressing results as fractions ($432 \div 5 = 86 \frac{2}{5}$), decimals ($432 \div 5 = 86.4$) or by rounding ($432 \div 5 = 86.4 \approx 86$ sweets) according to the context.</p> <p>Children apply their knowledge using word problems and number puzzles.</p>
	<p>Children represent division calculations using concrete materials such as base 10 and place value counters.</p> 	<p>Children represent division calculations using informal jottings and pictorial representations.</p> 	<p>Sharon buys a pack of 24 cans of lemonade for £6. How much does each can cost?</p> <p>Write the missing number.</p> $70 \div \boxed{} = 3.5$ <p>Write the missing number in each calculation.</p> $25 \div \boxed{} = 3 \text{ remainder } 4$

To use a formal written method of long division (bus stop method).

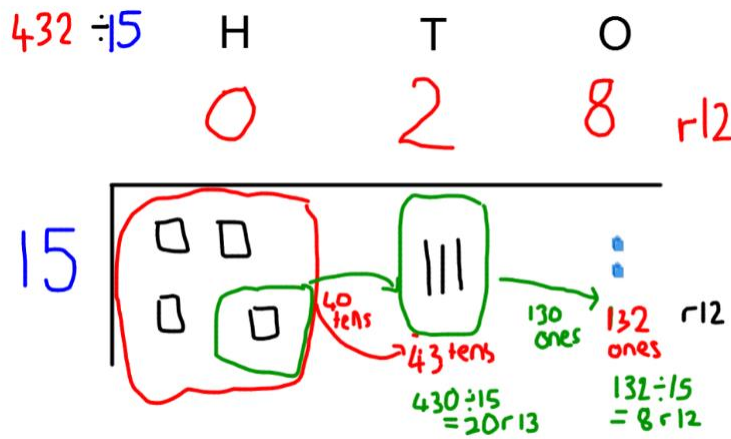
Divide larger numbers ÷ 2 digit numbers (involving remainders)

materials such as base 10 and place value counters.

The children partition the dividend and put inside the bus stop then divide each part by the divisor. The quotient is then recorded on the top line.



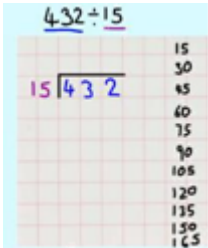
jottings and pictorial representations.



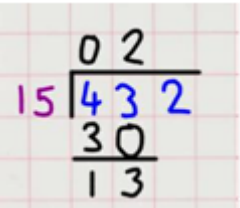
written calculation. They use their understanding of the pictorial and concrete stages to understand the value of each number

432 ÷ 15 = 28 r12.

Step one: Children will put the calculation into the bus stop grid and list their multiples of the divisor

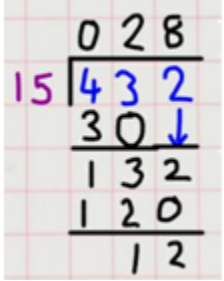


Step 2: Start with the hundreds. The divisor doesn't divide into 4 so combine the 4 hundred with the 3 tens (430). Use the multiples of 15 to calculate the nearest multiple. Two x 15 is 30. Record this underneath, put the 2 on the top then subtract.

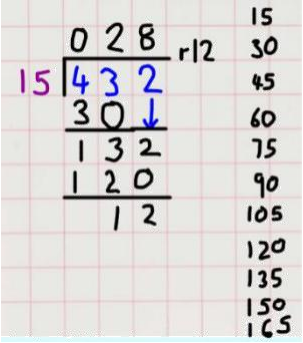


Step 3: The divisor does divide into 13 so combine the 13 tens with the 2 ones (132).

Use the multiples of 15 to calculate the nearest multiple. 8 x 15 is 120. Record this underneath, put the 8 on the top then subtract.



Step 4: The number left is your remainder, record this with your answer 432 ÷ 15 = 28 r12.



Children are expected to interpret non-integer answers by expressing results as fractions ($432 \div 15 = 28 \frac{12}{15} = 28 \frac{4}{5}$), decimals ($432 \div 15 = 28.8$) or by rounding ($432 \div 15 = 28.8 \approx 29$ cars) according to the context.

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