

Meadows First School

Calculation Policy



Year 1 - Addition

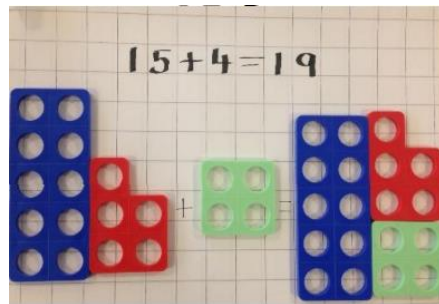
Objective and Strategies

Start at the biggest number and count on.

Concrete

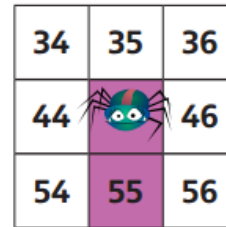


Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.



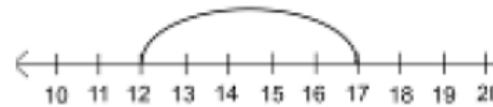
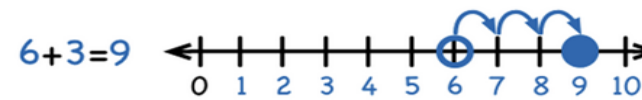
Pictorial

Use number square to count in ones on number square. Progress to use number square to add ten to any 2 digit number.



SPIDER COUNTING

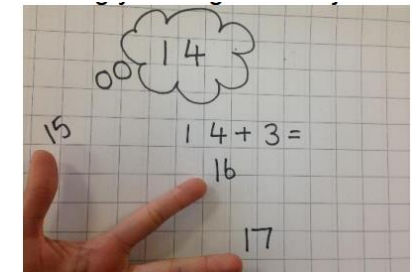
Start at the larger number on the number line and count on in ones or in one jump to find the answer.



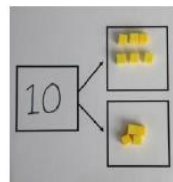
Abstract

$$3 + 14 = 17$$

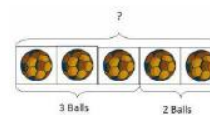
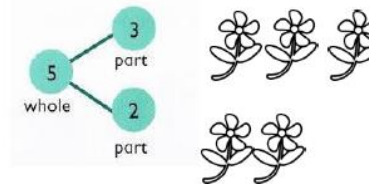
Place the larger number in your head and count on the smaller number to find your answer.



Combining two parts to make a whole: part-whole model.



Use cubes to add two numbers together as a group or in a bar.

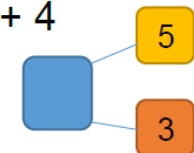


Use pictures to add two numbers together as a group or in a bar.



$$4 + 3 = 7$$

$$10 = 6 + 4$$

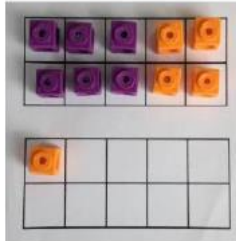


Use the part-part whole diagram as shown above to move into the abstract.

Regrouping to make 10.



$$6 + 5 = 11$$

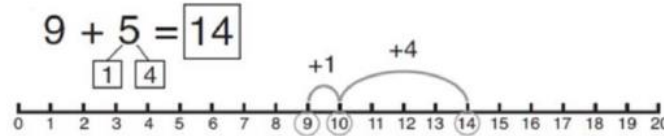


Start with the bigger number and use the smaller number to make 10.



$$3 + 9 =$$

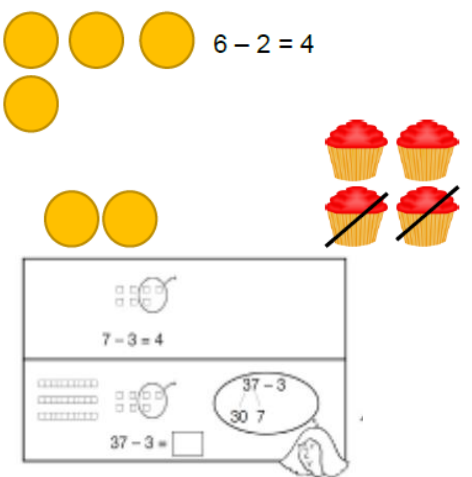
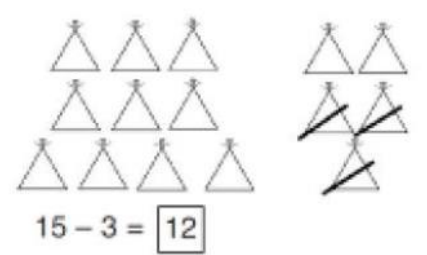
Use pictures or a number line. Regroup or partition the smaller number to make 10.



$$7 + 4 = 11$$

If I am at seven, how many more do I need to make 10. How many more do I add on now?

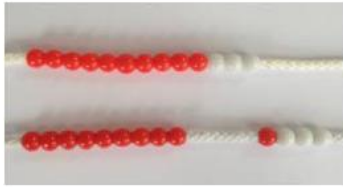
Year 1 - Subtraction

Objective and strategies	Concrete	Pictorial	Abstract
Taking away ones	<p>Use physical objects, counters, cubes etc to show how objects can be taken away.</p>  <p>6 - 2 = 4</p> <p>7 - 3 = 4</p> <p>37 - 3 = 34</p>	<p>Cross out drawn objects to show what has been taken away.</p>  <p>15 - 3 = 12</p>	<p>18 - 3 = 15</p> <p>8 - 2 = 6</p>

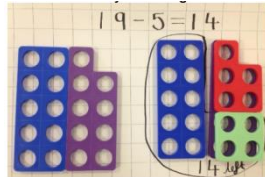
Counting back

Make the larger number in your subtraction. Move the beads along your bead string as you count backwards in ones.

$$13 - 4$$



Use counters and move them away from the group as you take them away counting backwards as you go.

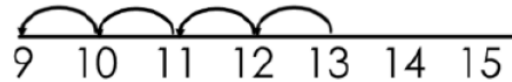


Subtract by covering the Numicon.

Use number square to count back in ones on number square. Progress to use number square to subtract ten from digit number.

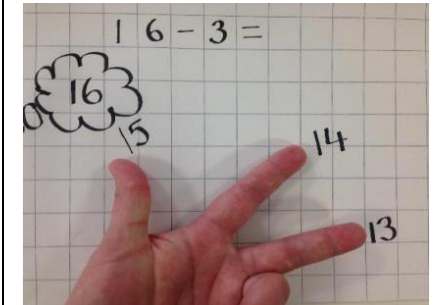
32	33	34
42	43	44
52	53	54

Count back on a number line or number track



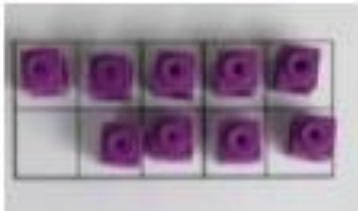
16 - 3

Put 16 in your head, count back 4. What number are you at? Use your fingers to help.

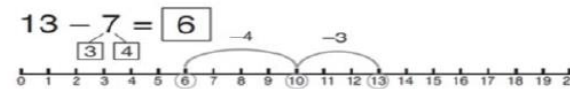


Make 10

$$14 - 5 =$$



Make 14 on the ten frame. Take away the four first to make 10 and then takeaway one more so you have taken away 5. You are left with the answer of 9.

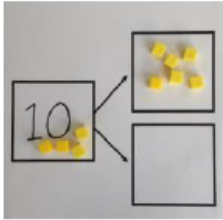


Start at 13. Take away 3 to reach 10. Then take away the remaining 4 so you have taken away 7 altogether. You have reached your answer.

$$16 - 8 =$$

How many do we take off to reach the next 10?
How many do we have left to take off?

Part Part Whole Model

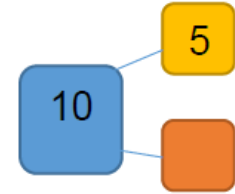
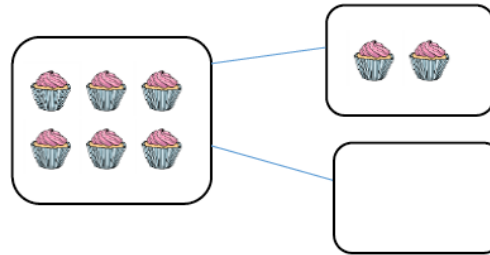


Link to addition- use the part whole model to help explain the inverse between addition and subtraction.

If 10 is the whole and 6 is one of the parts. What is the other part?

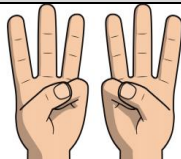
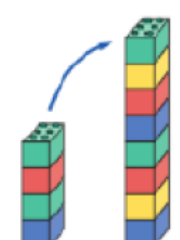
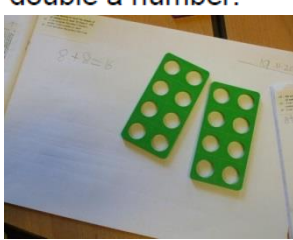

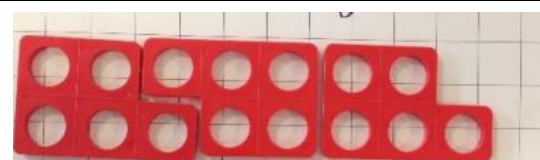


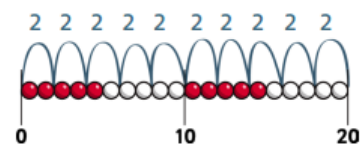


$$10 - 6 =$$

Use a pictorial representation of objects to show the part whole model.



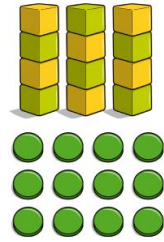
Move to using numbers within the part whole model.

Year 1 - Multiplication

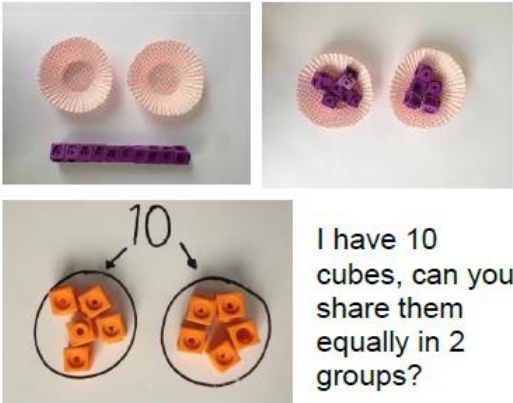
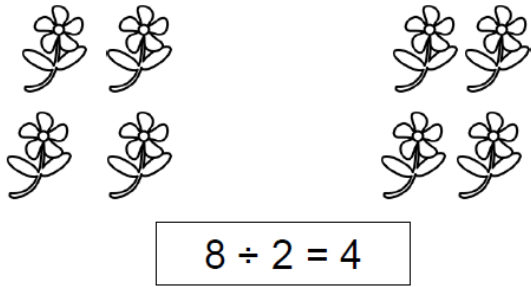
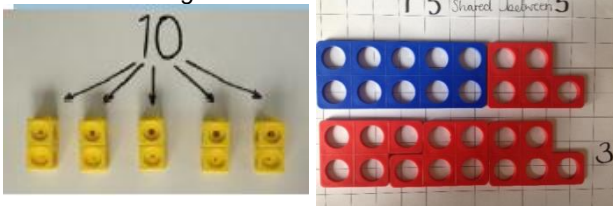
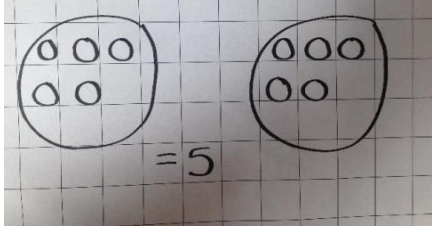
Objective and strategies	Concrete	Pictorial	Abstract																																																																																																				
<p>Doubling</p>	 <p><i>Find doubles to 10 + 10 e.g. Double 3</i> Use practical activities to show how to double a number.</p>   <p>double 4 is 8 $4 \times 2 = 8$</p>	<p>Draw pictures to show how to double a number.</p> <p>Double 4 is 8</p> 	<p>Double 4 is 8. $4 + 4 = 8$</p>																																																																																																				
<p>Counting in multiples</p>	   <p>Count in multiples supported by concrete objects in equal groups.</p>	 <table border="1" data-bbox="1120 1053 1366 1276"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> <tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td></tr> <tr><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td><td>47</td><td>48</td><td>49</td><td>50</td></tr> <tr><td>51</td><td>52</td><td>53</td><td>54</td><td>55</td><td>56</td><td>57</td><td>58</td><td>59</td><td>60</td></tr> <tr><td>61</td><td>62</td><td>63</td><td>64</td><td>65</td><td>66</td><td>67</td><td>68</td><td>69</td><td>70</td></tr> <tr><td>71</td><td>72</td><td>73</td><td>74</td><td>75</td><td>76</td><td>77</td><td>78</td><td>79</td><td>80</td></tr> <tr><td>81</td><td>82</td><td>83</td><td>84</td><td>85</td><td>86</td><td>87</td><td>88</td><td>89</td><td>90</td></tr> <tr><td>91</td><td>92</td><td>93</td><td>94</td><td>95</td><td>96</td><td>97</td><td>98</td><td>99</td><td>100</td></tr> </table> <p>Spider counting</p>  	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	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	<p>Count in multiples of a number aloud. Write sequences with multiples of numbers. 2, 4, 6, 8, 10 5, 10, 15, 20, 25, 30</p>
1	2	3	4	5	6	7	8	9	10																																																																																														
11	12	13	14	15	16	17	18	19	20																																																																																														
21	22	23	24	25	26	27	28	29	30																																																																																														
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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																																																																																														

Arrays with Support

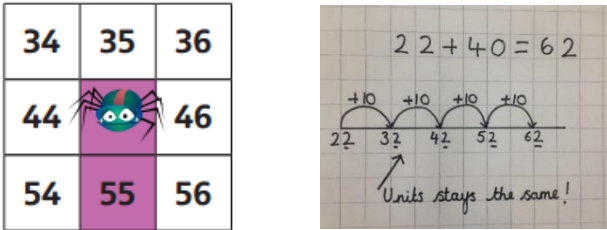
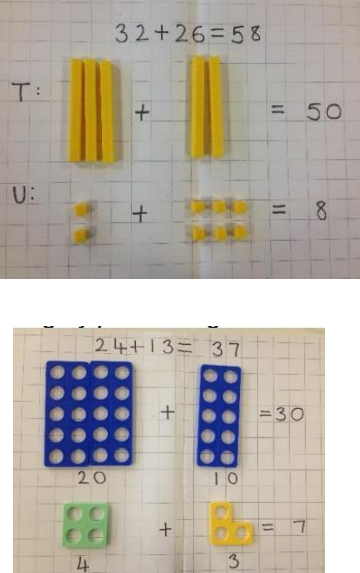
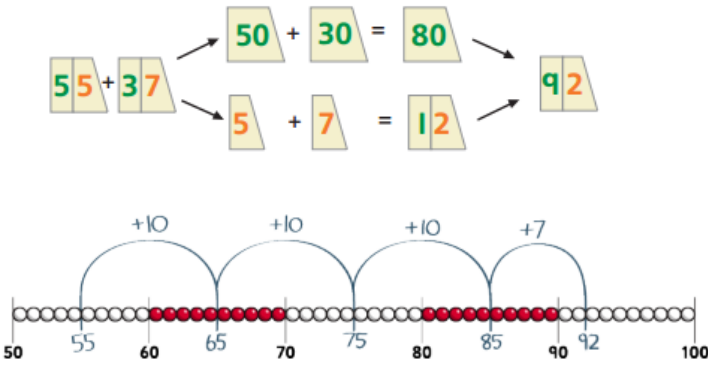
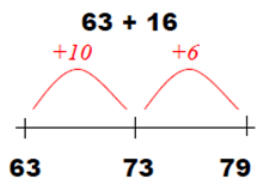
Create arrays using counters/ cubes to show multiplication sentences.


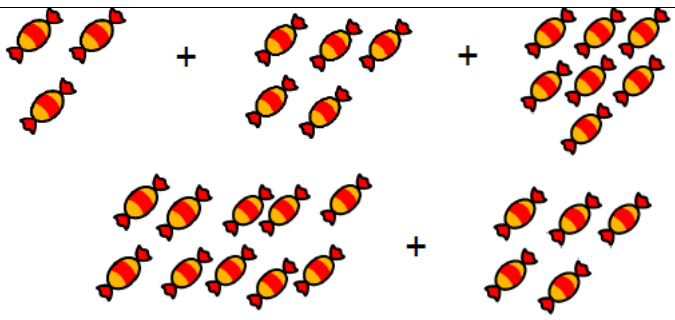
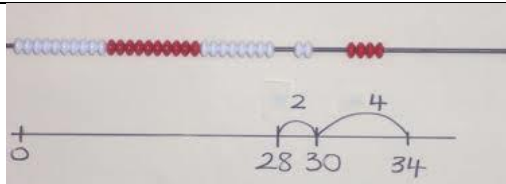
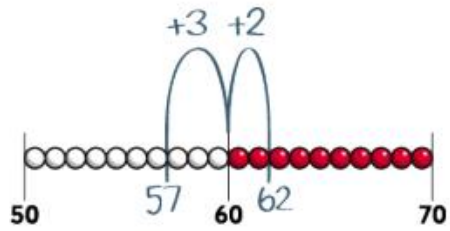


Year 1 - Division

Objective and strategies	Concrete	Pictorial	Abstract
Sharing objects into groups (including halving)	 <p>I have 10 cubes, can you share them equally in 2 groups?</p>	<p>Children use pictures or shapes to share quantities.</p> 	<p>Begin to recognise and use symbols.</p> <p>Share 9 buns between three people. $9 \div 3 = 3$</p>
Division as grouping	<p><i>Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.</i></p> 	 <p>10 divided into 2 groups of 5.</p>	<p>Begin to recognise and use symbols.</p> <p>$10 \div 5 = 2$</p>

Year 2 - Addition


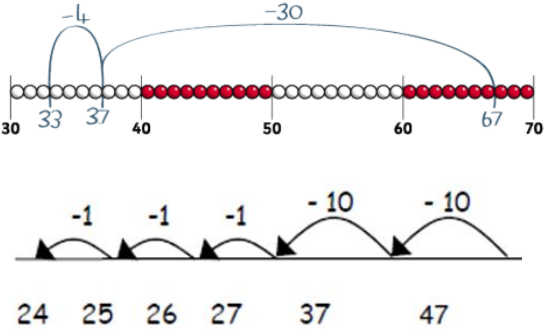



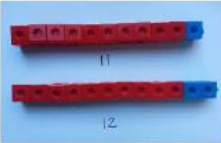
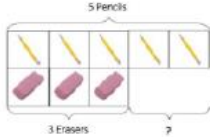
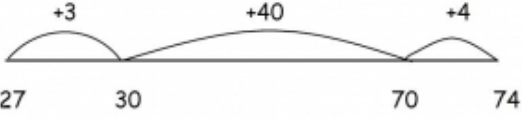
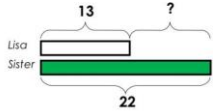
Objective and Strategies	Concrete	Pictorial	Abstract
Using Place value to add multiples of ten to a 2 digit number.			$25 + 10 = 35$
Partitioning			$55 + 37 =$ $50 + 30 = 80$ $5 + 7 = 12$ $80 + 12 = 92$ 

<p>Adding 3 1 digit numbers.</p>	<p>$4 + 7 + 6 = 17$ Put 4 and 6 together to make 10. Add on 7.</p>  <p>Following on from making 10, make 10 with 2 of the digits (if possible) then add on the third digit.</p>	 <p>Add together three groups of objects. Draw a picture to recombine the groups to make 10.</p>	$\begin{array}{r} \textcircled{4} + 7 + \textcircled{6} = \boxed{10} + \boxed{7} \\ 10 \\ = \boxed{17} \end{array}$ <p>Combine the two numbers that make 10 and then add on the remainder.</p>
<p>Bridging ten</p>			<p>$62 - 57 = 5$</p>

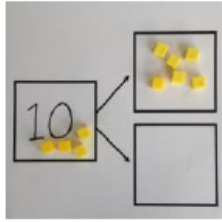
Children should

- 1) Solve problems with addition, using concrete objects, pictorial representations, involving numbers, quantities and measures, and applying mental and written methods.
- 2) Apply their increasing knowledge of mental and written methods.
show that addition of two numbers can be done in any order (commutative) *e.g.* $5+2+1 = 2+1+5 = 1+5+2 =$
- 3) Recognise and use the inverse relationship between addition & subtraction and use this to check calculations and solve missing number problems.

Year 2 -Subtraction

Objective and strategies	Concrete	Pictorial	Abstract									
<p>Subtract by counting back.</p>	<p>Make the larger number in your subtraction. Move the beads along your bead string as you count backwards ones.</p> 	<p>Subtract two 2-digit numbers by counting back in 10s, then in 1s e.g. $67 - 34$ as 67 subtract 30 (37) then count back 4 (33)</p>  <table border="1" data-bbox="1149 767 1355 975"> <tr> <td>34</td> <td>35</td> <td>36</td> </tr> <tr> <td>44</td> <td></td> <td>46</td> </tr> <tr> <td>54</td> <td>55</td> <td>56</td> </tr> </table> <p>Know 1 less or 10 less than any number e.g. 1 less than 74 e.g. 10 less than 82 Use number square to subtract tens and then the ones.</p>	34	35	36	44		46	54	55	56	<p>$67 - 34 = 33$</p>
34	35	36										
44		46										
54	55	56										
<p>Find the difference – Maths Frog</p>	<p>Compare amounts and objects to find the difference.</p>  <p>Use cubes to build towers or make bars to find the difference</p>  <p>Use basic bar models with items to find the difference</p>	<p>MATHS FROG</p>  <p>Begin to draw bar models to find the difference.</p> <p>Comparison Bar Models</p> <p>Lisa is 13 years old. Her sister is 22 years old. Find the difference in age between them.</p> 	<p>Hannah has 23 sandwiches, Helen has 15 sandwiches. Find the difference between the number of sandwiches.</p>									

Part Part Whole Model

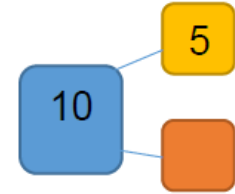
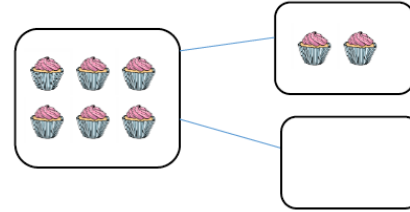


Link to addition- use the part whole model to help explain the inverse between addition and subtraction.

If 10 is the whole and 6 is one of the parts. What is the other part?

$$10 - 6 =$$

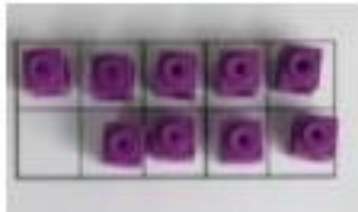
Use a pictorial representation of objects to show the part part whole model.



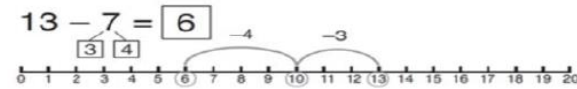
Move to using numbers within the part whole model.

Make 10

$$14 - 5 =$$



Make 14 on the ten frame. Take away the four first to make 10 and then takeaway one more so you have taken away 5. You are left with the answer of 9.



Start at 13. Take away 3 to reach 10. Then take away the remaining 4 so you have taken away 7 altogether. You have reached your answer.

$$16 - 8 =$$

How many do we take off to reach the next 10?
How many do we have left to take off?

Year 2 - Multiplication

Objective and strategies

Counting in multiples
(clever counting)
Count in 2s, 3s, 5s and
10s

Concrete



Using money to count in multiples 2, 5 and 10



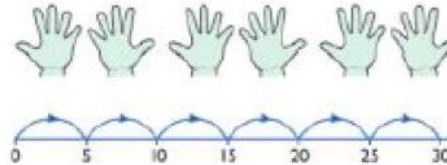
Count in
multiples
supported by
concrete objects
in equal groups



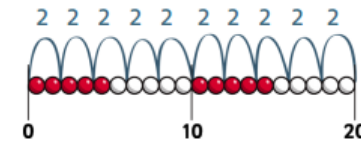
Pictorial

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

Spider counting



Use number lines
and pictures to
support counting
in multiples.



Abstract

Count in multiples of a
number aloud.
Write sequences with
multiples of numbers
2, 4, 6, 8, 10
5, 10, 15, 20, 25, 30

Doubling
Know doubles to 20 by heart.

Use practical activities to show how to double a number.

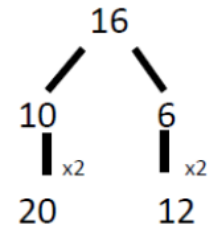


double 4 is 8
 $4 \times 2 = 8$



Draw pictures to show how to double a number.

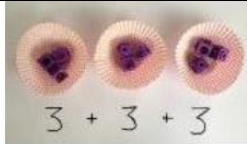
Double 4 is 8



Partition a number and then double each part before recombining it back together.

Begin to know doubles of multiples of 5 to 100
e.g. double 35 is 70

Repeated Addition



$3 + 3 + 3$

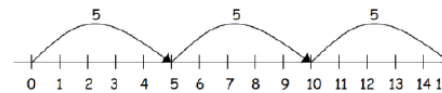


Use different objects to add equal groups.

There are 3 plates. Each plate has 2 star biscuits on. How many biscuits are there?



2 add 2 add 2 equals 6



$5 + 5 + 5 = 15$

Write addition sentences to describe objects and pictures.



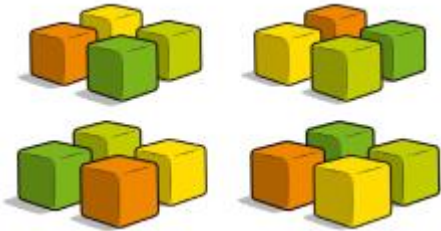
$2 + 2 + 2 + 2 + 2 = 10$

Year 2 - Division

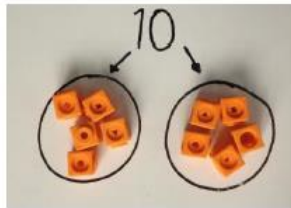
Objective and strategies

Sharing

Concrete



Sharing concrete objects into groups e.g $16 \div 4$



I have 10 cubes, can you share them equally in 2 groups?

Pictorial

Children use pictures or shapes to share quantities.



$$8 \div 2 = 4$$

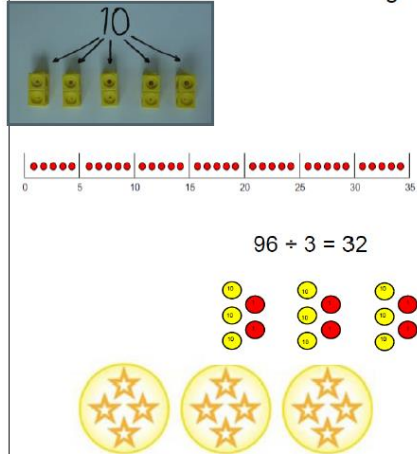
Abstract

Share 9 buns between three people.

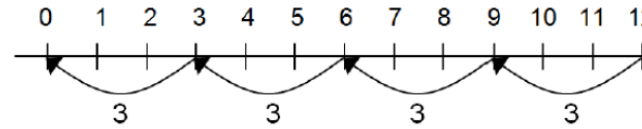
$$9 \div 3 = 3$$

Division as grouping

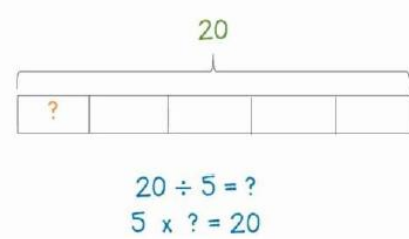
Divide quantities into equal groups.
Use cubes, counters, objects or place value counters to aid understanding.



Use a number line to show jumps in groups. The number of jumps equals the number of groups.

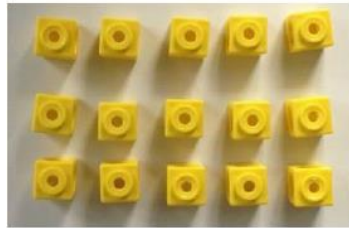


Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group.



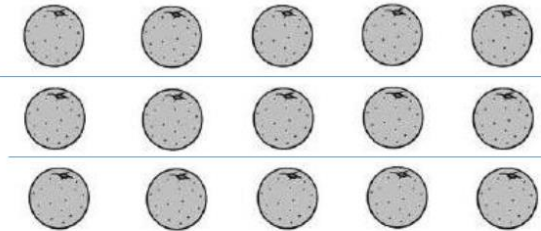
$28 \div 7 = 4$
Divide 28 into 7 groups. How many are in each group

Division within arrays



Link division to multiplication by creating an array and thinking about the number sentences that can be created.

Eg $15 \div 3 = 5$ $5 \times 3 = 15$
 $15 \div 5 = 3$ $3 \times 5 = 15$



Draw an array and use lines to split the array into groups to make multiplication and division sentences.

Find the inverse of multiplication and division sentences by creating four linking number sentences.
 $7 \times 4 = 28$
 $4 \times 7 = 28$
 $28 \div 7 = 4$
 $28 \div 4 = 7$

Year 3-Addition

Objective and strategies

Column Method up to 3 digits

Concrete

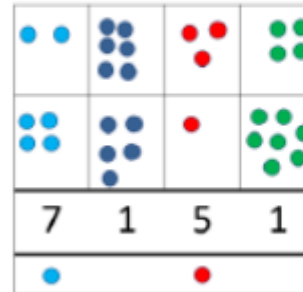
Column method with dienes



Make both numbers on a place value grid.
 Add up the units and exchange 10 ones for one 10.
 Add up the rest of the columns, exchanging the 10 counters from one column for the next place value column until every column has been added.
 This can also be done with Base 10 to help children clearly see that 10 ones equal 1 ten and 10 tens equal 100.
 As children move on to decimals, money and decimal place value counters can be used to support learning.

Pictorial

Children can draw a pictorial representation of the columns and place value counters to further support their learning and understanding.



Abstract

Build on partitioning to develop expanded column addition with two 3-digit numbers with no carrying

$$\begin{array}{r} 400 \ 20 \ 3 \\ 200 \ 30 \ 1 \\ \hline 600 \ 50 \ 4 \end{array}$$

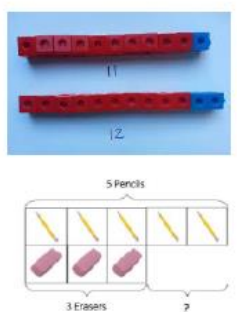
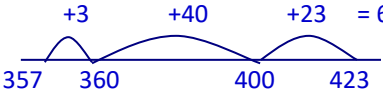

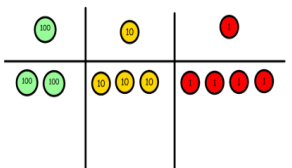
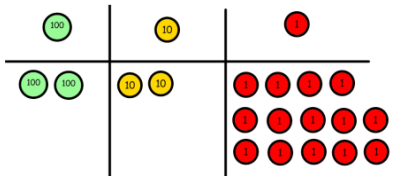
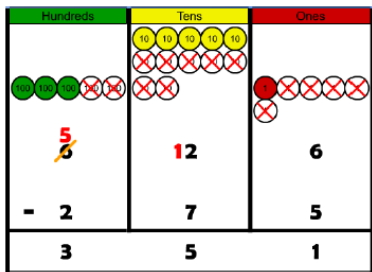
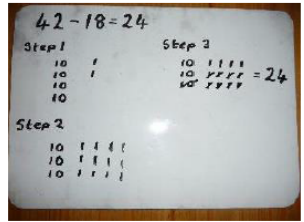
Use expanded column addition with carrying.
 e.g. $466 + 358$

$$\begin{array}{r} 353 + 268 = 621 \\ 300 + 50 + 3 \\ 200 + 60 + 8 \\ \hline 600 + 20 + 1 = 621 \\ \text{100} \quad \text{10} \end{array}$$

Compact column addition with two or more 3-digit numbers or towers of 2-digit numbers e.g. $347 + 286 + 495$

$$\begin{array}{r} 3517 \\ + \quad 396 \\ \hline 3913 \end{array}$$

Year 3 - Subtraction

Objective and strategies	Concrete	Pictorial	Abstract
<p>Find the difference – Maths Frog</p>	<p>Compare amounts and objects to find the difference.</p>  <p>Use cubes to build towers or make bars to find the difference</p> <p>Use basic bar models with items to find the difference</p>	<p>MATHS FROG Develop counting up subtraction e.g. $423 - 357 = 66$</p>  	<p>$901 - 899 = 2$</p>
<p>Column subtraction</p>	<p>Use Base 10 to start with before moving on to place value counters. Start with one exchange before moving onto subtractions with 2 exchanges. Make the larger number with the place value counters</p>  <p>Calculations</p> $\begin{array}{r} 234 \\ - 88 \\ \hline \end{array}$ <p>Start with the ones, can I take away 8 from 4 easily? I need to exchange one of my tens for ten ones.</p>  <p>Calculations</p> $\begin{array}{r} 234 \\ - 88 \\ \hline \end{array}$	 <p>Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make.</p>  <p>When confident, children can find their own way to record the exchange/regrouping.</p> <p>Just writing the numbers as shown here shows that the child understands the method and knows when to exchange/regroup.</p>	<p>Expanded column subtraction</p> $\begin{array}{r} 600 \quad 110 \quad 16 \\ - 700 \quad 20 \quad 8 \\ \hline 300 \quad 60 \quad 8 \end{array}$ <p>Compact Column Subtraction</p> $\begin{array}{r} 6 \quad 11 \quad 16 \\ - 7 \quad 2 \quad 8 \\ \hline 3 \quad 6 \quad 8 \end{array}$

Year 3 - Multiplication

Objective and strategies

Counting in multiples
Count in multiples of
2,3,4,5,8 and 10s.

Concrete



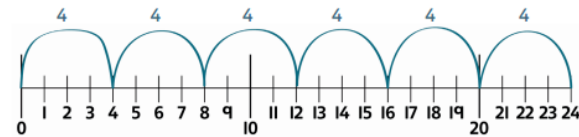
Count in multiples supported by concrete objects in equal groups



**Count in 2s,
3s, 4s, 5s,
8s and 10s**

Pictorial

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



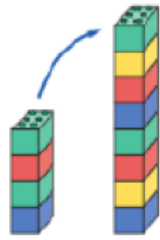
Use number lines and pictures to support counting in multiples.

Abstract

Count in multiples of a
number aloud.
Write sequences with
multiples of numbers
4, 8, 12, 16, 20
8, 16, 24, 32, 40
Make link between 4 and
8 times table.

Doubling
Know doubles to 20 by heart.

Use practical activities to show how to double a number.



double 4 is 8
 $4 \times 2 = 8$

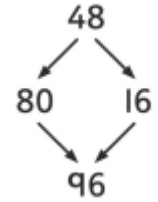


Draw pictures to show how to double a number.

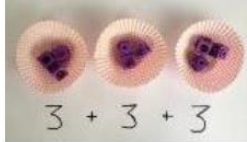
Double 4 is 8



Find doubles of numbers to 50 using partitioning e.g. double 48



Repeated Addition

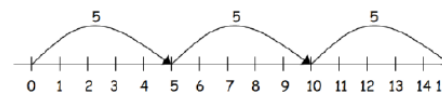


Use different objects to add equal groups.

There are 3 plates. Each plate has 2 star biscuits on. How many biscuits are there?



2 add 2 add 2 equals 6



$5 + 5 + 5 = 15$

Write addition sentences to describe objects and pictures.



$2 + 2 + 2 + 2 + 2 = 10$

Arrays

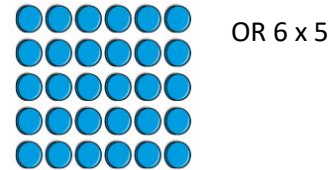
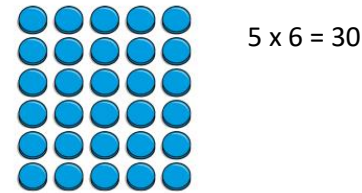
Use arrays to find answers to multiplication and relate to 'clever' counting and repeated addition.
 e.g. 3×4 as three lots of four things
 e.g. 6×5 as six steps in the 5s count as well as six lots of five and $5+5+5+5+5+5$ or $6+6+6+6+6$



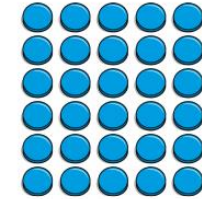
Understand that 5×3 can be worked out as three 5s or five 3s



Draw arrays in different rotations to find **commutative** multiplication sentences.



Use an array to write multiplication sentences and reinforce repeated addition.



$5+5+5+5+5=30$
 $6+6+6+6+6=30$
 $5 \times 6 = 30$
 $6 \times 5 = 30$

Grid Method 2digit x 1 digit

Show the link with arrays to first introduce the grid method.

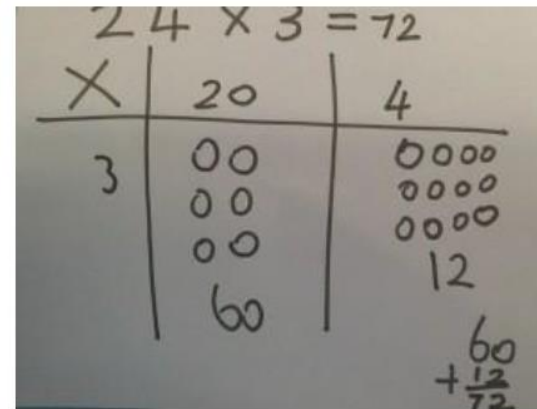
x	10	3	
4			4 rows of 10 4 rows of 3

Move on to using Base 10 to move towards a more compact method.

x	T	U	
			4 rows of 13

Children can represent the work they have done with place value counters in a way that they understand.

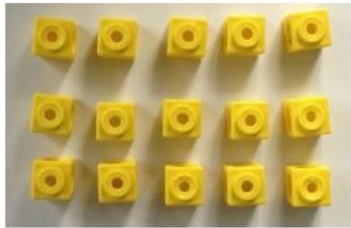
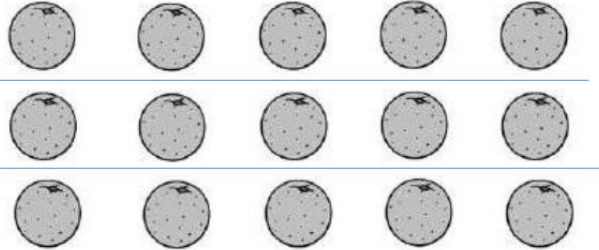
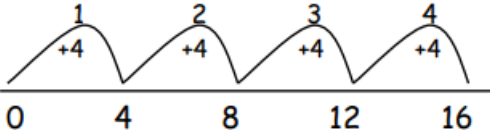
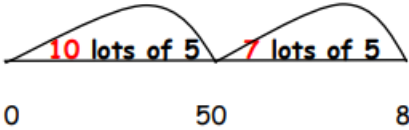
They can draw the counters, using colours to show different amounts or just use circles in the different columns to show their thinking as shown below.



Start with multiplying by one digit numbers and showing the clear addition alongside the grid.

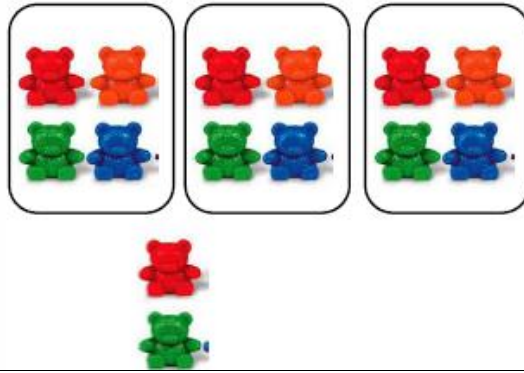
x	20	3	
4	80	12	= 92

Year 3 - Division

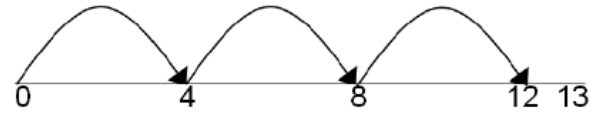
Objective and strategies	Concrete	Pictorial	Abstract
Division within arrays	 <p>Link division to multiplication by creating an array and thinking about the number sentences that can be created.</p> <p>Eg $15 \div 3 = 5$ $5 \times 3 = 15$ $15 \div 5 = 3$ $3 \times 5 = 15$</p>	 <p>Draw an array and use lines to split the array into groups to make multiplication and division sentences.</p>	<p>Find the inverse of multiplication and division sentences by creating four linking number sentences.</p> <p>$7 \times 4 = 28$ $4 \times 7 = 28$ $28 \div 7 = 4$ $28 \div 4 = 7$</p>
Division on a number line		 <p>Children progress to 'chunking' to divide past their times tables.</p> 	<p>$16 \div 4 = 4$</p> <p>$85 \div 5 = 17$</p>

1 Division with a remainder

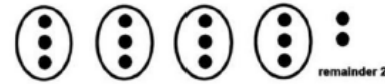
$14 \div 3 =$
Divide objects between groups and see how much is left over.



Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder.



Draw dots and group them to divide an amount and clearly show a remainder.



Complete written divisions and show the remainder using r.

$$29 \div 8 = 3 \text{ REMAINDER}$$

↑ ↑ ↑
dividend divisor quotient

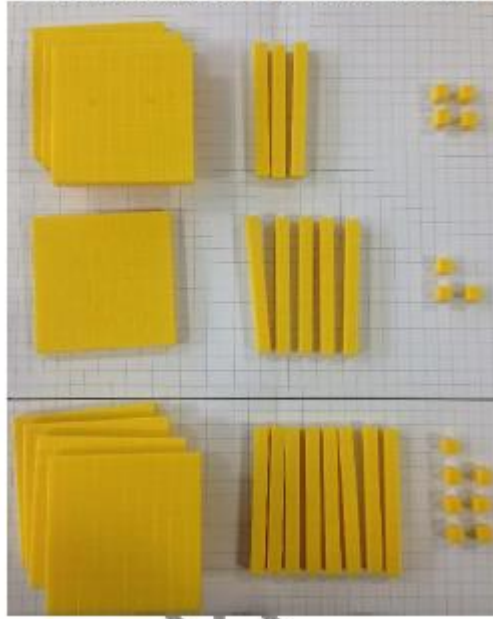
Year 4-Addition

Objective and strategies

Column Method up to 4 digits

Concrete

Column method with dienes



*Make both numbers on a place value grid.
Add up the units and exchange 10 ones for one 10.
Add up the rest of the columns, exchanging the 10 counters from one column for the next place value column until every column has been added.
This can also be done with Base 10 to help children clearly see that 10 ones equal 1 ten and 10 tens equal 100.
As children move on to decimals, money and decimal place value counters can be used to support learning.*

Pictorial

Children can draw a pictorial representation of the columns and place value counters to further support their learning and understanding.

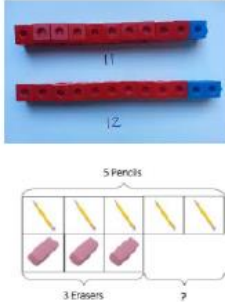

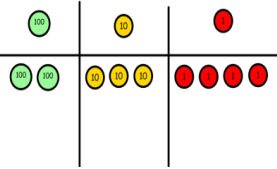
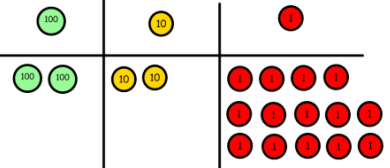
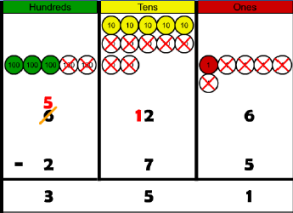
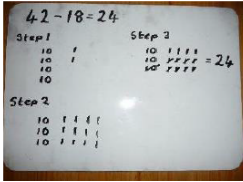


Abstract

Compact column addition with two or more 4-digit numbers

	1	3	7	8
+	2	1	4	8
	3	5	2	6
		1	1	

Year 4 - Subtraction

Objective and strategies	Concrete	Pictorial	Abstract
<p>Find the difference – Maths Frog</p>	<p>Compare amounts and objects to find the difference.</p>  <p>Use cubes to build towers or make bars to find the difference</p> <p>Use basic bar models with items to find the difference</p>	<p>Continue to develop counting up subtraction with larger numbers <i>e.g</i> 2002-1865</p> $\begin{array}{r} +5 \\ +30 \\ +102 \\ \hline = 137 \end{array}$ <p>1865 1870 1900 2002</p> <p>Use maths frog to calculate change</p>  <p>£34.75 £34.80 £35 £40 £50</p>	<p>1008 – 987</p> <p>Tom buys a game for £34.75. He pays with a £50 note. How much change will he get?</p>
<p>Column subtraction</p>	<p>Use Base 10 to start with before moving on to place value counters. Start with one exchange before moving onto subtractions with 2 exchanges. Make the larger number with the place value counters</p>  <p>Calculations</p> $\begin{array}{r} 234 \\ - 88 \\ \hline \end{array}$ <p>Start with the ones, can I take away 8 from 4 easily? I need to exchange one of my tens for ten ones.</p>  <p>Calculations</p> $\begin{array}{r} 234 \\ - 88 \\ \hline \end{array}$	 <p>Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make.</p>  <p>When confident, children can find their own way to record the exchange/regrouping.</p> <p>Just writing the numbers as shown here shows that the child understands the method and knows when to exchange/regroup.</p>	<p>Expanded column subtraction with up to 4 digits Compact Column Subtraction 4 digit numbers</p> $\begin{array}{r} 600 \quad 110 \quad 16 \\ 700 \quad 20 \quad 8 \\ - 300 \quad 50 \quad 8 \\ \hline 300 \quad 60 \quad 8 \end{array}$

Year 4 - Multiplication

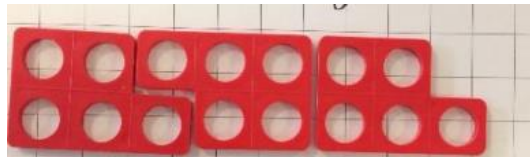
Objective and strategies

Counting in multiples
 Count in multiples of **2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s, 11s, 12s, 25s, 50s, 100s and 1000s**

Concrete

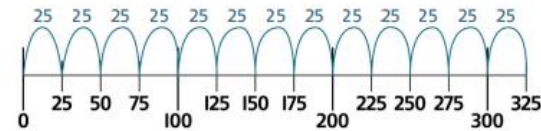


Count in multiples supported by concrete objects in equal groups



Pictorial

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



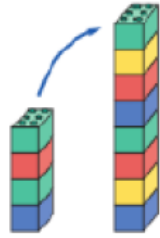
Use number lines and pictures to support counting in multiples.

Abstract

Count in multiples of a number aloud.
 Write sequences with multiples of numbers
 4, 8, 12, 16, 20
 8, 16, 24, 32, 40

Doubling
Know doubles to 20 by
heart.

Use practical activities to show how to
double a number.



double 4 is 8
 $4 \times 2 = 8$

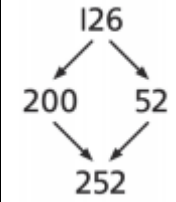


Draw pictures to show how to double a number.

Double 4 is 8



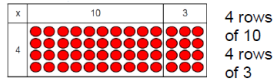
Find doubles of numbers to 50
using partitioning *e.g. double 48*



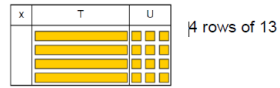
Begin to double amounts of
money *e.g. £3.50 doubled is £7*
and *double £35.60 is £71.20,*

Grid Method
 2digit x 1 digit
 3digit x 1 digit

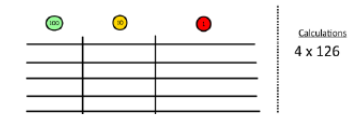
Show the link with arrays to first introduce the grid method.



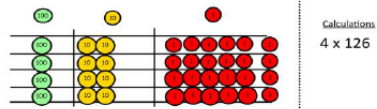
Move on to using Base 10 to move towards a more compact method.



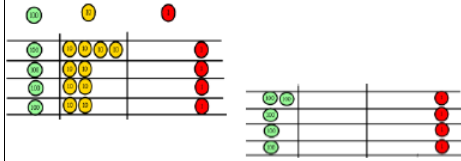
Move on to place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows.



Fill each row with 126.

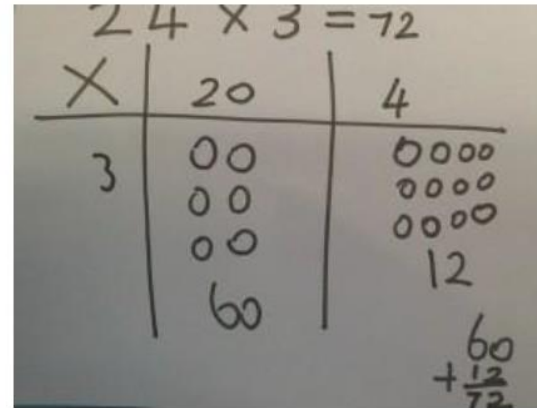


Add up each column, starting with the ones making any exchanges needed.



Children can represent the work they have done with place value counters in a way that they understand.

They can draw the counters, using colours to show different amounts or just use circles in the different columns to show their thinking as shown below.

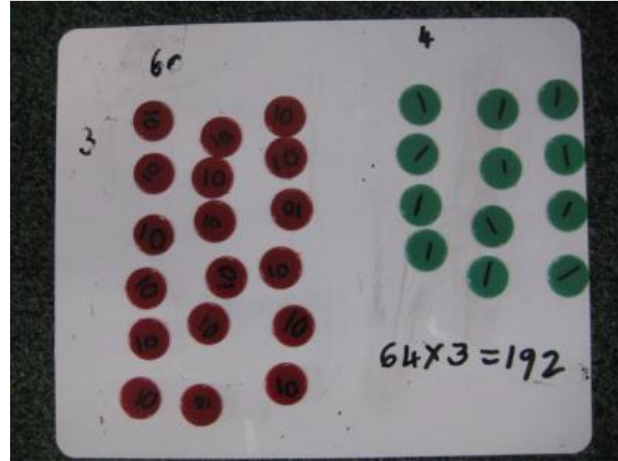


Start with multiplying by one digit numbers and showing the clear addition alongside the grid.

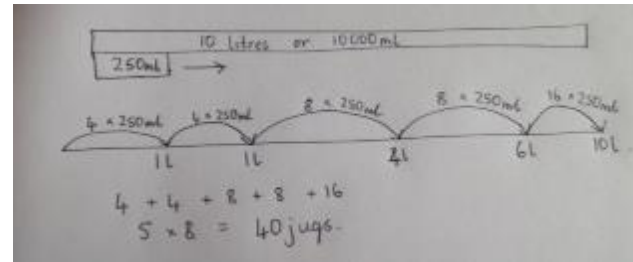
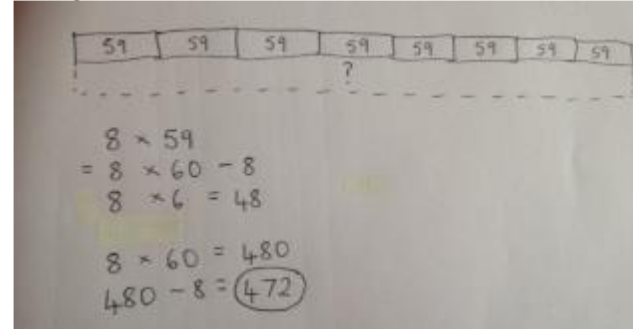
x	200	50	3	
6	1200	300	18	= 1518

Column Multiplication

Children can continue to be supported by place value counters at the stage of multiplication. It is important at this stage that they always multiply the ones first and note down their answer followed by the tens which they note below.



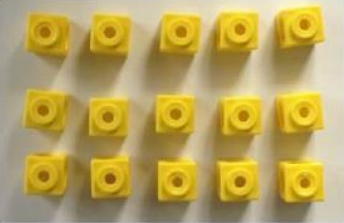
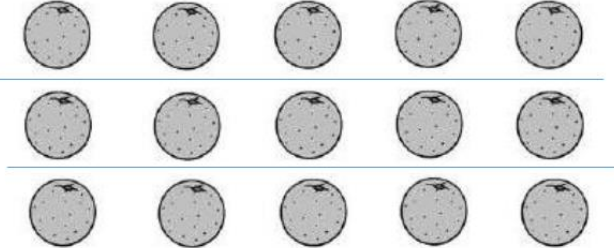
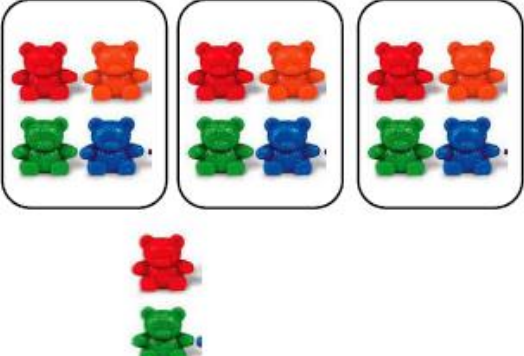
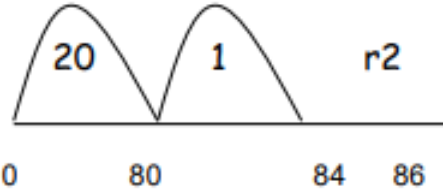
Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods.

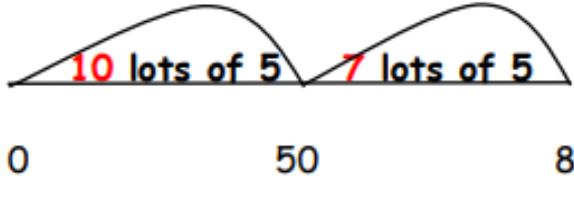


	H	T	O		
		3	4		
x			5		
		2	0	(5 x 4)	
+	1	5	0	(5 x 30)	
	1	7	0		

	H	T	O
	2	4	5
x			4
	9	8	0
	1	2	

Year 4 - Division

Objective and strategies	Concrete	Pictorial	Abstract
<p>Division within arrays</p>	 <p>Link division to multiplication by creating an array and thinking about the number sentences that can be created.</p> <p>Eg $15 \div 3 = 5$ $5 \times 3 = 15$ $15 \div 5 = 3$ $3 \times 5 = 15$</p>	 <p>Draw an array and use lines to split the array into groups to make multiplication and division sentences.</p>	<p>Find the inverse of multiplication and division sentences by creating four linking number sentences.</p> <p>$7 \times 4 = 28$ $4 \times 7 = 28$ $28 \div 7 = 4$ $28 \div 4 = 7$</p>
<p>Grouping including remainders (past times tables)</p>	<p>$14 \div 3 =$ Divide objects between groups and see how much is left over.</p> 	 <p>0 80 84 86</p>	<p>Complete written divisions and show the remainder using r.</p> <p>$86 \div 4 = 21r2$</p>

<p>Chunking on a number line (past their time tables)</p>			$85 \div 5 = 17$
<p>Written multiplication (step before short division)</p>		$\square \times 3 = 86$ $20 \times 3 = 60$ <hr style="width: 10%; margin-left: 100px;"/> $8 \times 3 = 24$ <hr style="width: 10%; margin-left: 100px;"/> 2	$86 \div 3 = \underline{28} \text{ r } 2$