

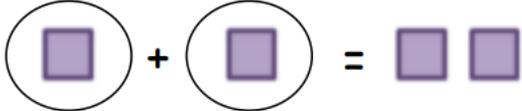


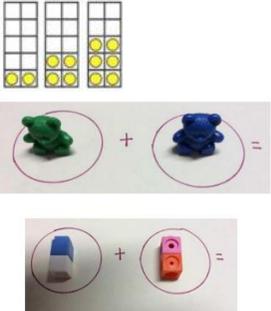
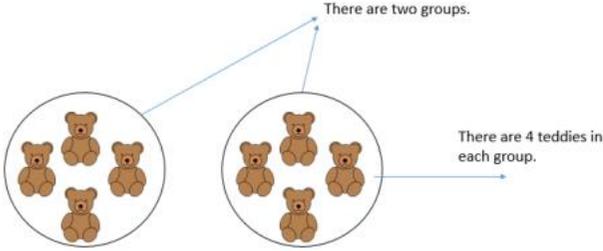
Calculation Policy

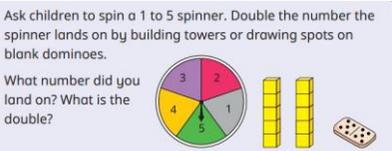
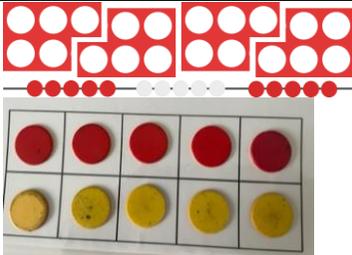
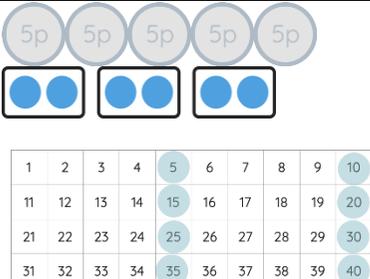
Multiplication

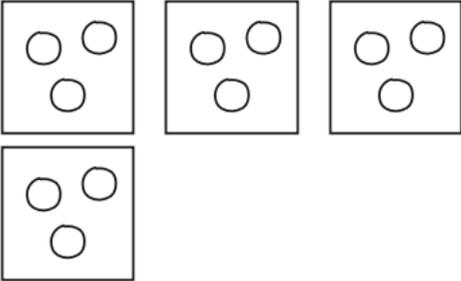
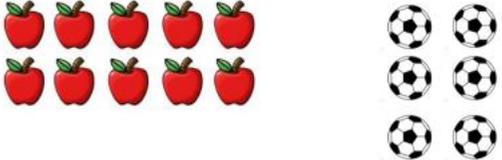
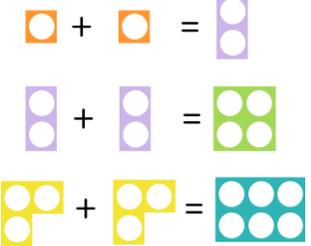
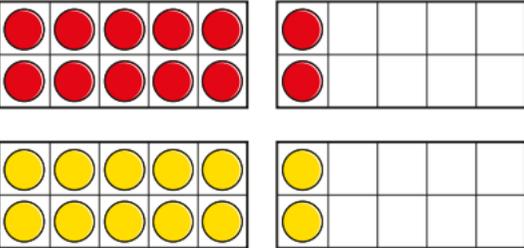
September 2024

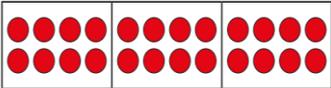
Multiplication

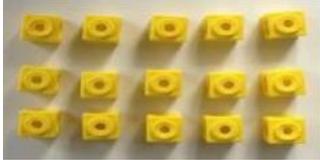
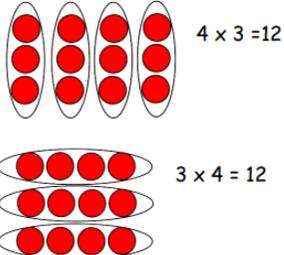
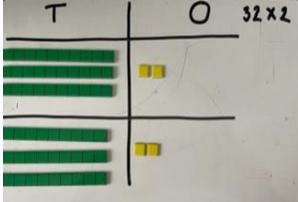
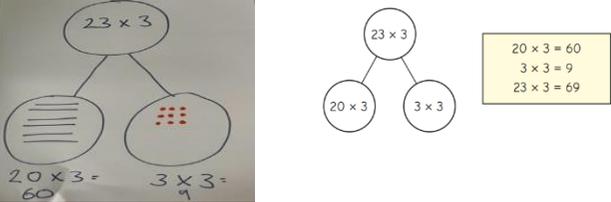
EYFS:			
Vocabulary :	Double Equal Groups Grouping	Manipulatives & scaffolds:	Fingers Five frames Ten frames Double sided counters Numicon Cubes Bead strings Part-whole model
Small step:	Concrete:	Pictorial:	Abstract:
Doubling	The link between addition and multiplication can be introduced through doubling. Domino and dice fames can be used to do this as well as fingers. Representing the even number pair-wise on 10 frames supports the children to make the link between doubling and halving. They can also be used to illustrate the odd and even patterns of numbers	Children have a go at recording by drawing pictures in groups 	1 + 1 = 2 Double 1 equals 2 Double ___ is ___

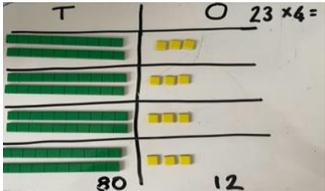
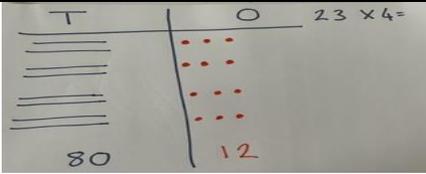
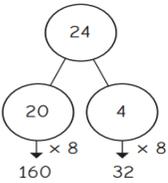
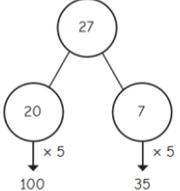
			
<p>Doubles to 10</p>	 <p>There are 3 here and 3 there. Double 3 is 6. 6 is double 3.</p>	 <p>There are 5 here and 5 there. Double 5 is 10. 10 is double 5.</p>	<p>There are ___ here and ___ there. Double ___ is ___ ___ is double ___</p>
<p>Grouping</p>	<p>Children will experience equal groups of objects. Children will be encouraged to count the groups, then count how many objects are in a group – 4 and 4</p> 		<p>Stem sentence: There are ___ groups There are ___ in each group</p>

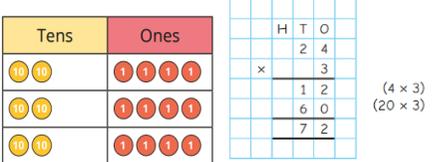
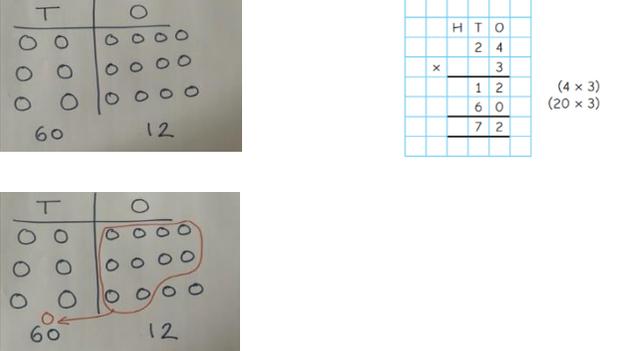
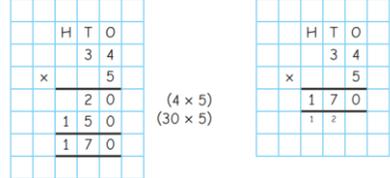
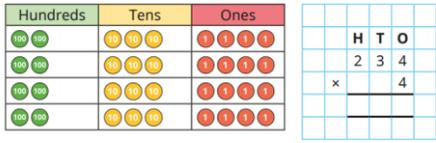
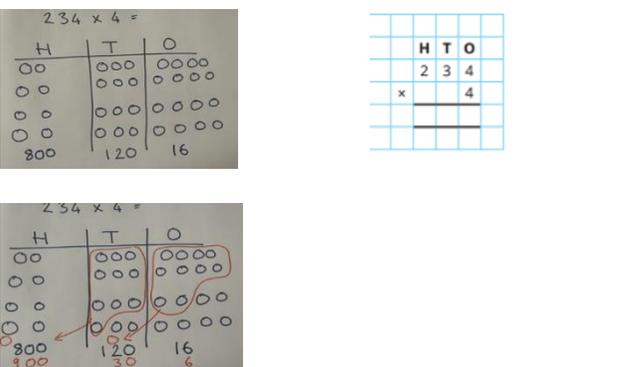
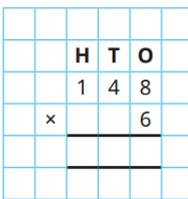
<p>Play with and build doubles</p>	<p>Children find and make doubles. Progress this to showing children a double and asking them to say what number has been doubled, by finding the inverse.</p> <p>Ask children to spin a 1 to 5 spinner. Double the number the spinner lands on by building towers or drawing spots on blank dominoes.</p> <p>What number did you land on? What is the double?</p> 	 <p>I can see 4 and 4 Double 4 is 8</p>	<p>Double __ is __ I can see __ and __ I can see __ altogether This is double __</p>
<p>Y1</p>			
<p>Vocabulary :</p>	<p>equal, unequal, group, odd, even, array, multiple, multiplication, multiplied by, division, dividing, grouping, groups of</p>	<p>Manipulatives & scaffolds:</p>	<p>Ten frames Double sided counters Numicon Cubes Bead strings Number line Bar model</p>
<p>Small step:</p>	<p>Concrete:</p>	<p>Pictorial:</p>	<p>Abstract:</p>
<p>Counting in multiples – 2s, 5, 10s</p>			<p>Say/write sequences: 2, 4, 6, 8... 10, 20, 30, 40... 5, 10, 15, 20, 25, 30...</p>

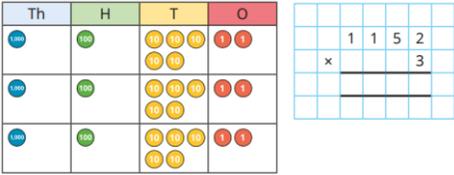
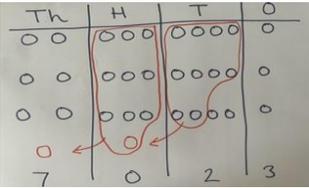
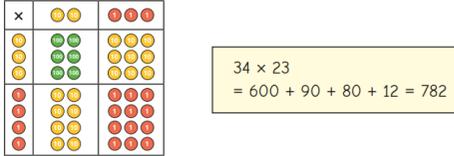
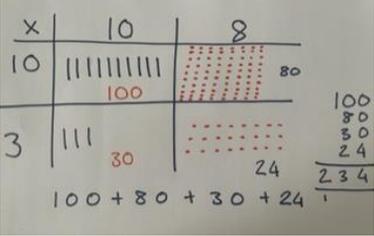
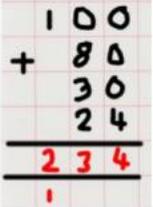
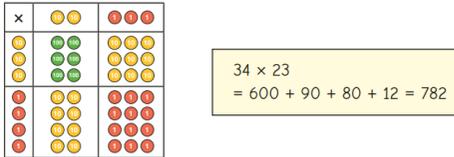
<p>Recognise equal groups</p>	 <p>There are _____ equal groups of _____ pencils.</p>	 <p>There are _____ equal groups of _____</p>	<p>There are _____ equal groups of _____</p>
<p>Add equal groups</p>	 <p>$10 + 10 + 10 = 30$</p>	<p>$5 + 5 + 5 = 15$</p> 	<p>$5 + 5 + 5 = 15$</p>
<p>Make arrays</p>	 <p>There are ___ rows. There are ___ in a row. There are ___ in total. There are ___ columns. There are ___ in a column. There are ___ altogether.</p>	 <p>There are ___ rows. There are ___ in a row. There are ___ in total. There are ___ columns. There are ___ in a column. There are ___ altogether.</p>	<p>$2 + 2 + 2 = 6$ $3 + 3 = 6$ There are 6 altogether</p>
<p>Make doubles</p>			<p>Double 6 is ___</p>

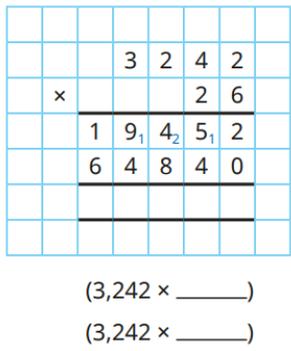
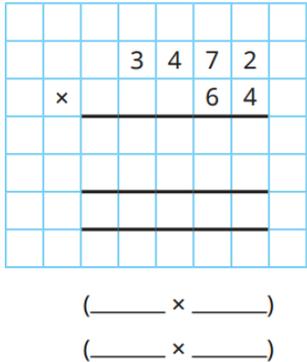
		Double 12 is ____	
Y2			
Vocabulary :	equal, unequal, group, odd, even, array, multiple, multiplication, multiplied by, division, dividing, grouping, groups of, times, repeated addition, row, column, commutative	Manipulatives & scaffolds:	Ten frames Double sided counters Numicon Cubes Bead strings Number line Bar model
Small step:	Concrete:	Pictorial:	Abstract:
Multiplication symbol	 $5 + 5 + 5 + 5 + 5 + 5 =$ There are 6 lots of 5 $5 \times 6 = 30$	 There are ____ equal groups with ____ in each group. $____ + ____ + ____ = 24$ $____ \times ____ = 24$	$____ + ____ + ____ = ____$ $____ \times ____ = ____$
Multiplication sentences	 $3 + 3 + 3 + 3 = 12$ ____ lots of 3 = 12 ____ multiplied by ____ = 12 $____ \times ____ = 12$	 $5 + 5 + 5 = 15$ $3 + 3 + 3 + 3 + 3 = 15$ $5 \times 3 = 15$ $3 \times 5 = 15$	$5 + 5 + 5 + 5 = 20$ $4 \times 5 = 20$ $5 \times 4 = 20$

Use arrays	 <p>5 x 3 = 15 3 x 5 = 15</p>	 <p>4 x 3 = 12 3 x 4 = 12</p>	<p>__ X __ = 20 __ x __ = 20</p>
Y3:			
Vocabulary:	equal, unequal, group, odd, even, array, multiple, multiplication, multiplied by, division, dividing, grouping, groups of, times, repeated addition, row, column, commutative, factor, product	Manipulatives and scaffolds:	Base 10/Dienes Place value charts Part whole models
Small step:	Concrete:	Pictorial:	Abstract:
Multiply a 2-digit number by a 1-digit number (no exchange)	 <p>3 tens x 2 = __ tens 2 ones x 2 = __ ones __ + __ = 32 x 2 =</p>	 <p>23 x 3 20 x 3 = 60 3 x 3 = 9 23 x 3 = 69</p>	<p>42 x 3 = __ tens x 3 + __ ones x 3 = __ + __ = __</p>

<p>Multiply a 2-digit number by a 1-digit number (with exchange)</p>	 <p>2 tens $\times 4 =$ __ tens 3 ones $\times 4 =$ __ ones $24 \times 3 =$ __ + __ $24 \times 3 =$</p>	  <div style="border: 1px solid black; padding: 2px; display: inline-block;"> $160 + 32 = 192$ $24 \times 8 = 192$ </div>	24×8 $= 20 \times 8 + 4 \times 8$ $= \underline{\quad} + \underline{\quad}$ $= \underline{\quad}$
<p>Y4</p>			
<p>Vocabulary:</p>	<p>equal, unequal, group, odd, even, array, multiple, multiplication, multiplied by, division, dividing, grouping, groups of, times, repeated addition, row, column, commutative, factor, product</p>	<p>Manipulatives & scaffolds:</p>	<p>Base 10/Dienes Place value charts Place value counters Part whole models</p>
<p>Small step:</p>	<p>Concrete:</p>	<p>Pictorial:</p>	<p>Abstract:</p>
<p>Informal methods</p>	 <div style="border: 1px solid black; padding: 2px; display: inline-block;"> $3 \times 26 = 60 + 18 = 78$ </div>	 <div style="border: 1px solid black; padding: 2px; display: inline-block;"> $27 \times 5 = 100 + 35 = 135$ </div>	$36 \times 4 = 160 + 35 = 195$

<p>Multiply a 2-digit number by a 1-digit number</p>	 <p>(4 × 3) (20 × 3)</p>	 <p>(4 × 3) (20 × 3)</p>	 <p>(4 × 5) (30 × 5)</p>
<p>Multiply a 3-digit number by a 1-digit number</p>			
<p>Y5</p>			
<p>Vocabulary:</p>	<p>equal, unequal, group, odd, even, array, multiple, multiplication, multiplied by, division, dividing, grouping, groups of, times, repeated addition, row, column, commutative, factor, product</p>	<p>Manipulatives & scaffolds:</p>	<p>Base 10/Dienes Place value charts Place value counters Part whole models</p>
<p>Small step:</p>	<p>Concrete:</p>	<p>Pictorial:</p>	<p>Abstract:</p>

<p>Multiply a 4-digit number by a 1-digit number</p>		<p>$2341 \times 3 =$</p> 	<table border="1"> <thead> <tr> <th></th> <th>Th</th> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td></td> <td>1</td> <td>8</td> <td>2</td> <td>6</td> </tr> <tr> <td>x</td> <td></td> <td></td> <td></td> <td>3</td> </tr> <tr> <td></td> <td>5</td> <td>4</td> <td>7</td> <td>8</td> </tr> <tr> <td></td> <td>2</td> <td></td> <td>1</td> <td></td> </tr> </tbody> </table>		Th	H	T	O		1	8	2	6	x				3		5	4	7	8		2		1																																										
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<p>Multiply a 2-digit number by a 2-digit number (area model)</p>			<p>$18 \times 13 = 234$</p> <table border="1"> <thead> <tr> <th>X</th> <th>10</th> <th>8</th> </tr> </thead> <tbody> <tr> <td>10</td> <td>100</td> <td>80</td> </tr> <tr> <td>3</td> <td>30</td> <td>24</td> </tr> </tbody> </table> 	X	10	8	10	100	80	3	30	24																																																									
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<p>Multiply a 2-digit number by a 2-digit number</p>		<table border="1"> <thead> <tr> <th>x</th> <th>10</th> <th>3</th> </tr> </thead> <tbody> <tr> <td>30</td> <td>300</td> <td>90</td> </tr> <tr> <td>2</td> <td>20</td> <td>6</td> </tr> </tbody> </table> <p>$300 + 90 + 20 + 6 = 416$</p>	x	10	3	30	300	90	2	20	6	<table border="1"> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>2</td> <td>3</td> <td></td> </tr> <tr> <td>x</td> <td></td> <td></td> <td>1</td> <td>4</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>9</td> <td>2</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>2</td> <td>3</td> <td>0</td> </tr> </tbody> </table> <p>(23×4) (23×10)</p>										2	3		x			1	4					9	2					2	3	0																											
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<p>Multiply a 3-digit number by a 2-digit number</p>	<p>When children begin to multiply larger numbers, written methods become more efficient; concrete and pictorial methods are less effective and take too much time</p>	<table border="1"> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>x</td> <td></td> <td></td> <td></td> <td>2</td> <td>3</td> </tr> <tr> <td></td> <td></td> <td></td> <td>3</td> <td>6</td> <td>9</td> </tr> <tr> <td></td> <td></td> <td></td> <td>2</td> <td>4</td> <td>6</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0</td> </tr> </tbody> </table> <p>(123×3) (123×20)</p>										1	2	3	x				2	3				3	6	9				2	4	6						0	<table border="1"> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>2</td> <td>8</td> <td>4</td> </tr> <tr> <td>x</td> <td></td> <td></td> <td></td> <td>3</td> <td>7</td> </tr> <tr> <td></td> <td></td> <td></td> <td>1</td> <td>9</td> <td>8</td> </tr> <tr> <td></td> <td></td> <td></td> <td>8</td> <td>5</td> <td>2</td> </tr> </tbody> </table> <p>(____ x ____) (____ x ____)</p>										2	8	4	x				3	7				1	9	8				8	5	2
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<p>Multiply a 4-digit number by a 2-digit number</p>	 <p>(3,242 × _____)</p> <p>(3,242 × _____)</p>	 <p>(_____ × _____)</p> <p>(_____ × _____)</p>																																																																																
<p>Multiply decimals – missing values</p>	<p>$4.23 \times \underline{\hspace{1cm}} = 42.3$</p> <table border="1"> <thead> <tr> <th>T</th> <th>O</th> <th>Tth</th> <th>Hth</th> </tr> </thead> <tbody> <tr> <td></td> <td>●●●●</td> <td>●●●●</td> <td>●●●●</td> </tr> <tr> <td></td> <td>●●</td> <td></td> <td>●●</td> </tr> <tr> <td></td> <td>4</td> <td>2</td> <td>3</td> </tr> </tbody> </table> <p>Red arrows point from the 4 in the Ones place to the 4 in the Tens place, from the 2 in the Tenths place to the 2 in the Tens place, and from the 3 in the Hundredths place to the 3 in the Tens place.</p>	T	O	Tth	Hth		●●●●	●●●●	●●●●		●●		●●		4	2	3	<p>$4.82 \times \underline{\hspace{1cm}} = 482$</p> <table border="1"> <tbody> <tr><td>1,000</td><td>2,000</td><td>3,000</td><td>4,000</td><td>5,000</td><td>6,000</td><td>7,000</td><td>8,000</td><td>9,000</td></tr> <tr><td>100</td><td>200</td><td>300</td><td>400</td><td>500</td><td>600</td><td>700</td><td>800</td><td>900</td></tr> <tr><td>10</td><td>20</td><td>30</td><td>40</td><td>50</td><td>60</td><td>70</td><td>80</td><td>90</td></tr> <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></tr> <tr><td>0.1</td><td>0.2</td><td>0.3</td><td>0.4</td><td>0.5</td><td>0.6</td><td>0.7</td><td>0.8</td><td>0.9</td></tr> <tr><td>0.01</td><td>0.02</td><td>0.03</td><td>0.04</td><td>0.05</td><td>0.06</td><td>0.07</td><td>0.08</td><td>0.09</td></tr> <tr><td>0.001</td><td>0.002</td><td>0.003</td><td>0.004</td><td>0.005</td><td>0.006</td><td>0.007</td><td>0.008</td><td>0.009</td></tr> </tbody> </table> <p>Red arrows show the relationship between 4.82 and 482 on the number line.</p>	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	100	200	300	400	500	600	700	800	900	10	20	30	40	50	60	70	80	90	1	2	3	4	5	6	7	8	9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009	<p>$3.4 \times \underline{\hspace{1cm}} = 34$</p> <p>$\underline{\hspace{1cm}} \times 5.62 = 5,620$</p> <p>$1,000 \times \underline{\hspace{1cm}} = 345$</p>
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10	20	30	40	50	60	70	80	90																																																																										
1	2	3	4	5	6	7	8	9																																																																										
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9																																																																										
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09																																																																										
0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009																																																																										
<p>Y6</p>	<p>Vocabulary: equal, unequal, group, odd, even, array, multiple, multiplication, multiplied by, division, dividing, grouping, groups of, times, repeated addition, row, column, commutative, factor, product</p>	<p>Manipulatives & scaffolds:</p>	<p>Base 10/Dienes Place value charts Place value counters Part whole models</p>																																																																															
<p>Small step:</p>	<p>Concrete:</p>	<p>Pictorial:</p>	<p>Abstract:</p>																																																																															

Multiply up to a 4-digit number by a 2-digit number

$$\begin{array}{r} 23 \\ \times 64 \\ \hline 92 \\ + 138 \\ \hline \end{array}$$

(23 × 4)
(23 × 60)

$$\begin{array}{r} 312 \\ \times 23 \\ \hline 936 \\ + 624 \\ \hline \end{array}$$

(312 × 3)
(312 × 20)

$$\begin{array}{r} 3046 \\ \times 73 \\ \hline \\ \hline \end{array}$$

Multiply decimals by integers

3.24 × 3 =

$$\begin{array}{r} 4.92 \\ \times 3 \\ \hline 14.76 \\ \hline 2 \end{array}$$