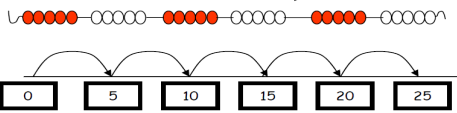
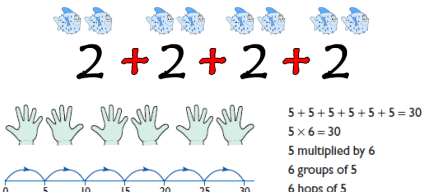
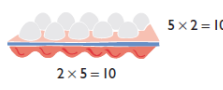
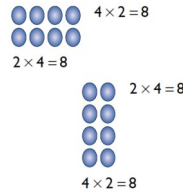
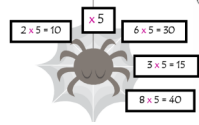

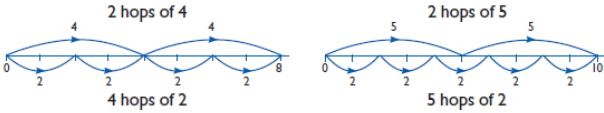



<u>Resources</u>		<u>Progression</u>
Counters Bead strings Numicon Dienes Number lines Arrays Arrow cards 100 Squares Place Value chart	<p>R Read and understand</p> <p>I Important words and numbers</p> <p>C Choose a method</p> <p>H Have you checked your answer?</p> <p>1. Become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately</p> <p>2. Reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language</p> <p>3. Can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions</p>	<p>2, 5 & 10 tables.</p> <p>3, 4 & 8 tables 2 digit x 1 digit Tables up to 12 x 12 3 digit x 1 digit X 10 & 100</p> <p>Multiples, factors, prime. 4 digit x 1 or 2 digits</p>

Stage 1 Counters Bead strings Numicon Dienes Number lines	<ul style="list-style-type: none"> Count up in 2's up to 20 Count up in 5's and 10's up to 100. Counting concrete objects in 2's, 5's and 10's Know doubles and halves to 20. 	<p>How could you count these shells? What is the quickest way to count them?</p> <p>Continue this count. Stop when you get to 20. 2, 4, 6,</p>
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Stage 2 Bead strings Numicon Dienes Number lines	<ul style="list-style-type: none"> Counting on or back in steps of 2, 5 and 10 using images.  <ul style="list-style-type: none"> Understand multiplication as repeated addition.  <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;"> $2 + 2 + 2 + 2 = 8$ $4 \times 2 = 10$ 2 multiply £ 4 lots of 8 </div>	<p>Count in twos to find how many socks on the washing line.</p> <p>What is the cost of 12 stamps at 5p each?</p>
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Stage 3 Bead strings Number lines Arrays Dienes 100 squares	<ul style="list-style-type: none"> Understand multiplication as arrays.   <ul style="list-style-type: none"> Start to know multiplication facts for 2, 5 and 10 times tables. Start to count in threes and fours.  	<p>How can you work out the 4 times table from the 2 times table? The 6 times table from the 3 times table?</p> <p>What multiplication and division facts does this array show?</p> <table border="1" style="width: 100%; height: 40px; border-collapse: collapse;"> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table> <p>Use a variety of vocabulary:</p> <p>5 'jumps' of 3. 5 lots of 3 5 x 3 5 groups of 3</p>												

Stage 4 Number lines Arrays Dienes Arrow cards 100 Squares Place Value chart	<ul style="list-style-type: none"> Use number lines for repeated addition. Move from structured to unstructured numberlines  <ul style="list-style-type: none"> Know multiplication facts for 2,3,4,5,8,10 times tables. Recognise multiples of 2, 5 and 10 up to 1000. Understand the effect of multiplying by 10 and 100. <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;"> <p style="text-align: center;">43 x 100</p> <p style="text-align: center;">Each digit moves two columns to the left and zero is used as a place holder *</p> </div>	<p>How many fives make the same number as three tens?</p> <p>What is the relationship between $4 \times 7 = 28$, $6 \times 7 = 42$ and $10 \times 7 = 70$? What is the missing number in this statement: $? \times 5 = 35$. How do you know?</p> <p>How many 10ps do you need to make £2.30?</p> <p>$\square \times 5 = 20$ $3 \times r = 18$ $\square \times 0 = 32$</p> <p>Scaling: e.g. Find a ribbon that is 4 times as long as the blue ribbon</p>  <p>Reinforce that moving to the left means the columns are worth more Ann says that $38 \times 10 = 308$. Explain how you know she is wrong.</p>
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<p>Stage 5</p> <p>Number lines 100 Squares</p>	<ul style="list-style-type: none"> Start to make decisions about size of jump to make calculating more efficient. <p>14×4</p> <p>Becomes</p>	<ul style="list-style-type: none"> Meg drew this number line. What calculation did she work out? <ul style="list-style-type: none"> Show me how you would work out 15×4.
<p>Stage 6</p> <p>Dienes 100 squares</p> <p>Grid Method</p>	<p>Introduce Grid Method using apparatus</p> <p>13×4</p> <p>Build these</p> <p>$40 + 12 = 52$</p> <ul style="list-style-type: none"> Know all multiplication facts up to the 12 times tables. 	<p>What is 4×2? What is 10×2? How could we use these facts to work out 14×2?</p> <p>How does $6 \times 4 = 24$ help you to know the answer to 6×40? And the answer to $240 \div 6$?</p> <p>One length of the swimming pool is 25 metres. Jane swims 5 lengths of the pool. How far does Jane swim altogether? How can you check that your answer makes sense?</p> <p>What is 20×3? Now can you do 21×3, 22×3.....?</p>
<p>Stage 7</p> <p>Arrays Dienes 100 squares</p> <p>Short Method</p>	<ul style="list-style-type: none"> Mentally multiply a 2 digit number by a multiple of 10 <p>$20 \times 14 = (2 \times 14) \text{ then } \times 10$ $28 \times 10 = 280$ or $(10 \times 14) \text{ then } \times 2$ $140 \times 2 = 280$</p> <ul style="list-style-type: none"> Use known facts to solve similar multiplication problems <p>$8 \times 4 = 32$ so $80 \times 4 = 320$ or $0.8 \times 4 = 3.2$</p> <ul style="list-style-type: none"> Extend Grid Method to become Formal Short Method TU x U <p>The next step is to represent the method of recording in a column format, but showing the working. Draw attention to the links with the area and grid method above.</p> <p>24</p> $\begin{array}{r} \times 3 \\ 12 \\ 60 \\ \hline 72 \end{array}$ <p>(3 x 4) (3 x 20)</p> <p>Expanded Column</p> <p>Quickly becomes</p> $\begin{array}{r} 24 \\ \times 3 \\ \hline 72 \\ 1 \end{array}$ <p>Standard written method</p> <p>Reduce the recording, showing links to the grid method.</p>	<p>Write in the missing numbers: $5 \times 70 = ?$, $600 \times 4 = ?$, $4 \times ? = 200$</p> <p>What is 50 times 90? A packet of plums costs 68p. Mark bought 3 packs of plums. How much change did he get from a £5 note? Explain to the class why you solved the problem in that way.</p> <p>How many times bigger is 2400 than 6? How do you know?</p> <p>Explain how you can use the fact $7 \times 8 = 56$ to find the answer to $5.6 \div 0.8$.</p> <p>If $7 \times 8 = 56$ what is 0.07×8? Give some other decimal facts that are linked to this multiplication fact. What number multiplied by 8 gives 4.8?</p>
<p>Stage 8</p> <p>Long Method</p>	<ul style="list-style-type: none"> Extend to Formal Long Method TU x TU <p>56×27 is approximately $60 \times 30 = 1800$.</p> <p>Reduce the recording further</p> $\begin{array}{r} 56 \\ \times 27 \\ \hline 392 \\ + 1120 \\ \hline 1512 \end{array}$ <p>0 as a placeholder</p>	<p>Make link clear between short multiplication and long</p> <div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Top Tip Children will need lots of experience of short multiplication before they tackle formal long multiplication</p> </div>
<p>Stage 9</p> <p>Long Method</p>	<ul style="list-style-type: none"> Extend formal written method to include decimals 	<p>How would you explain how to multiply a decimal by 10?</p> <p>Explain how you would solve these problems: <i>Would you use a calculator? Why or why not?</i> 185 people go to the school concert. They pay £1.35 each. How much ticket money is collected?</p> <p>Harry has a regular octagonal shaped box. He wants to decorate it with ribbon all around the edge. Each side measures 9.58cm. How much ribbon does he need altogether?</p>