

**Multiplication  
Stage 1**

**Understand multiplication as  
repeated groups.**

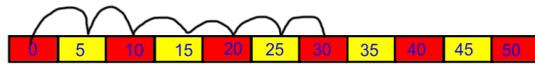
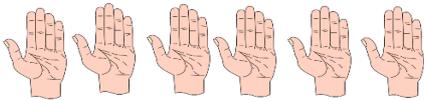
**Vocab/Key  
Questions**

Use concrete apparatus. Pictorial recording.  
Record simple number sentences using  $\times$  and  $=$ .

*If there are 2 cakes on each plate how many cakes have we got altogether?*



*How many fingers altogether are there on six hands?*



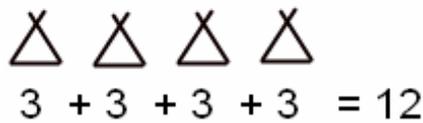
*Each tent holds 3 people. How many people are there in 4 tents?*

$$3 \times 4$$



leads to:

$$3 \times 4$$


$$3 + 3 + 3 + 3 = 12$$

Groups of, lots of, how many altogether? total, repeated addition, multiplication

*What is the group size?  
How many groups?  
How many altogether?*

**Multiplication  
Stage 2**

**Understand multiplication as arrays.  
Describe an array as repeated  
addition.**

**Vocab/Key  
Questions**

Explore arrays, making links to repeated addition:



$$3 + 3 + 3 + 3 =$$

or

$$4 + 4 + 4 =$$

becomes

$$3 \times 4 =$$

or

$$4 \times 3 =$$



$$4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 =$$

or

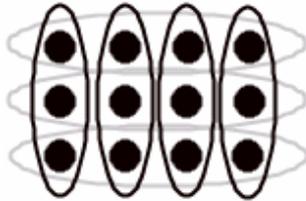
$$8 + 8 + 8 + 8 =$$

becomes

$$4 \times 8 =$$

or

$$8 \times 4 =$$



$$3 \times 4$$

$$4 \times 3$$

Groups, sets

*How many lots  
of?*

*How many sets  
of?*

*How many groups  
of?*

*Can you describe  
this array?*

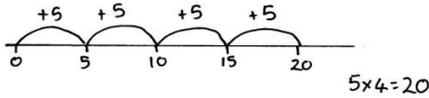
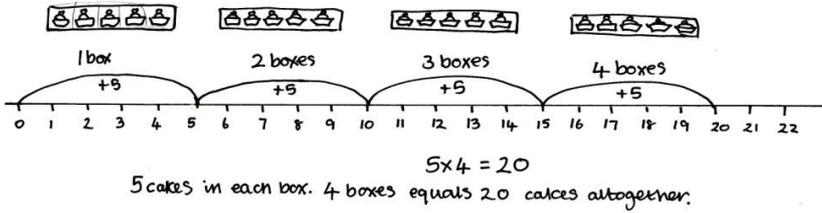
**Multiplication  
Stage 3**

**Repeated addition on a number line -  
 $U \times U$  and  $TU \times U$ .**

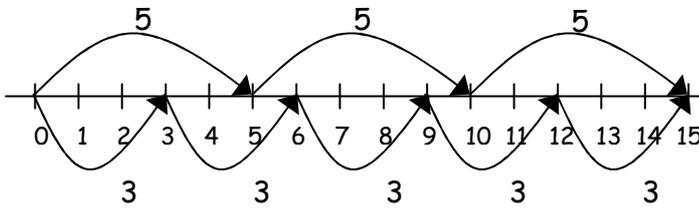
**Vocab/Key  
Questions**

Link to arrays:

*There are 5 cakes in one box. How many cakes would there be in 4 boxes?*

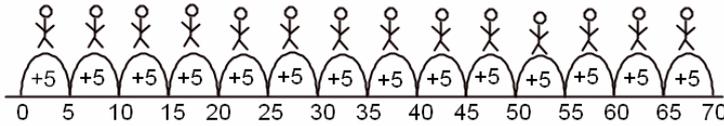


Explore commutativity:  $3 \times 5$  or  $5 \times 3$



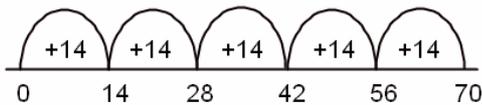
Multiply larger

$5 \times 14$



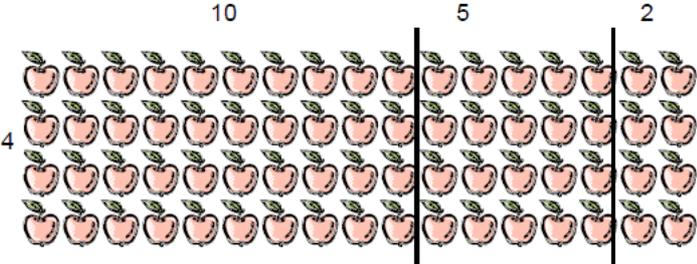
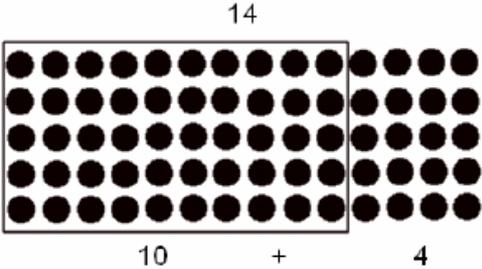
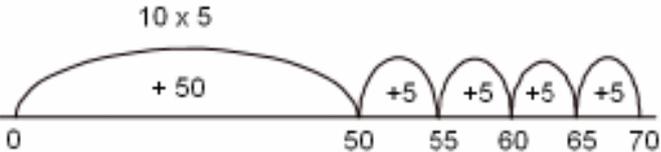
then, more efficiently:

$5 \times 14$



Groups of, lots of, how many altogether? total, repeated addition, multiplication, product, array, row, column, multiply, multiply by, multiple, half, quarter

*How many lots of?  
What is the most efficient way to approach this problem?*

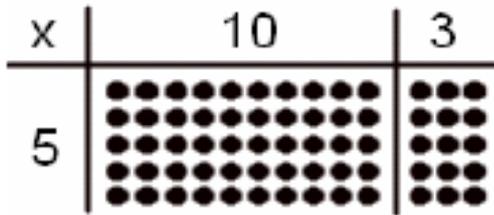
<b>Multiplication Stage 4</b>	<b>Multiplying in 'chunks' - TU x U.</b>	<b>Vocab/Key Questions</b>
<p>Pictorial or symbolic e.g.:</p> <p><math>17 \times 4</math></p>  <p><math>(10 \times 4) + (7 \times 4)</math>      or      <math>(10 \times 4) + (5 \times 4) + (5 \times 2)</math></p>		<p>Inverse, multiply, multiply by, times, product, multiple, calculation/ calculate, partition</p>
<b>Multiplication Stage 4b</b>	<b>Multiplying in 'chunks' on a number line - TU x U (extend to HTU x U).</b>	<b>Vocab/Key Questions</b>
<p><math>14 \times 5 =</math></p>  <p><math>10 \times 5</math></p> 		<p>Inverse, multiply, multiply by, times, product, multiple, calculation/ calculate, quotient</p>

**Multiplication  
Stage 5**

**Link arrays to grid multiplication -  
TU x U and HTU x U.**

**Vocab/Key  
Questions**

$5 \times 13$



leads to:

$$\begin{array}{r|l|l} \times & 10 & 3 \\ \hline 5 & 50 & 15 \end{array} = 65$$

$123 \times 4$

$$\begin{array}{r|l|l|l} \times & 100 & 20 & 3 \\ \hline 4 & 400 & 80 & 12 \end{array} = 492$$

Use language of place value:  
Partitioning, units column, tens column, line up digits.  
Estimate, approximate

*What is ten /one hundred times bigger?  
(Not add a zero!)*

**Multiplication  
Stage 6a**

**Grid method -  
TU x TU and HTU x TU.**

**Vocab/Key  
Questions**

43 x 36

x	30	6	
40	1200	240	= 1290
3	1290	18	= 258

$$\begin{array}{r} 1000 \\ 400 \\ 140 \\ \underline{8} \\ 1548 \end{array}$$

or, more compact:

43 x 36

x	30	6	
40	1200	240	= 1290
3	1290	18	= 258

$$\begin{array}{r} 1548 \\ \underline{\phantom{0}} \\ 1 \end{array}$$

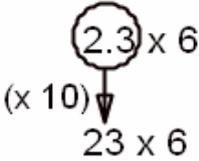
and with larger numbers where a calculator is unavailable:

247 x 58

x	200	40	7	
50	10,000	2,000	350	= 12,350
8	1,600	320	56	= 1,976

$$\begin{array}{r} 14,326 \\ \underline{\phantom{0}} \\ 1 \end{array}$$

*What number is  
10x bigger?  
100x?  
Which box will  
the smallest  
answer be in?  
Why does the top  
left box always  
contain the  
largest answer?  
How can you  
check your  
answer is  
accurate?*

<b>Multiplication Stage 6b</b>	<b>Grid method for decimal notation.</b>	<b>Vocab/Key Questions</b>							
<p>Convert multiple(s) to whole number initially then convert the answer using the inverse e.g.</p> <div style="text-align: center;">  </div> <div style="text-align: center;"> <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 5px;">x</td> <td style="padding: 5px;">20</td> <td style="padding: 5px;">3</td> <td rowspan="2" style="padding: 5px;">= 138</td> </tr> <tr> <td style="padding: 5px;">6</td> <td style="padding: 5px;">120</td> <td style="padding: 5px;">18</td> </tr> </table> </div> <p style="text-align: center;"><math>138 \div 10 = \underline{13.8}</math></p>		x	20	3	= 138	6	120	18	<p>Tenths, 10 times bigger/smaller, inverse, adjust Tenths column, hundredths column, decimal point</p>
x	20	3	= 138						
6	120	18							
<b>Multiplication Stage 7</b>	<b>Partitioning using short multiplication - HTU x U.</b>	<b>Vocab/Key Questions</b>							
<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <math display="block">  \begin{array}{r}  123 \\  \times 4 \\  \hline  400 \text{ (100 x 4)} \\  80 \text{ (20 x 4)} \\  \underline{12 \text{ (3 x 4)}} \\  492  \end{array}  </math> </div> <div style="width: 65%;"> <p>Multiply most significant digit of top multiple first.</p> <p>Record the number of groups first in your jottings (in brackets - this helps you keep track of your working!).</p> <p>Add the totals mentally or using column addition.</p> </div> </div>		<p><i>How is this method similar to the grid method?</i></p> <p><i>How is it different?</i></p> <p><i>Could you teach someone else to do this method?</i></p>							

<b>Multiplication Stage 8a</b>	<b>Partitioning using long multiplication - TU x TU, HTU x TU and HTU x HTU.</b>	<b>Vocab/Key Questions</b>
$  \begin{array}{r}  43 \\  \times 36 \\  \hline  1200 \text{ (40 x 30)} \\  240 \text{ (40 x 6)} \\  90 \text{ (3 x 30)} \\  18 \text{ (3 x 6)} \\  \hline  1548 \\  1  \end{array}  $ <p>and with larger numbers where a calculator is unavailable:</p> $  \begin{array}{r}  157 \\  \times 289 \\  \hline  20,000 \text{ (100 x 200)} \\  8,000 \text{ (100 x 80)} \\  900 \text{ (100 x 9)} \\  10,000 \text{ (50 x 200)} \\  4,000 \text{ (50 x 80)} \\  450 \text{ (50 x 9)} \\  1,400 \text{ (7 x 200)} \\  560 \text{ (7 x 80)} \\  63 \text{ (7 x 9)} \\  \hline  45,373 \\  121  \end{array}  $		<p><i>How many lines of working will this calculation need?</i></p>

