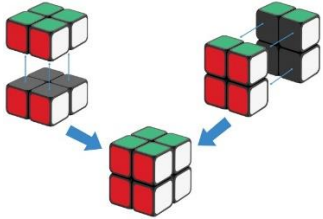
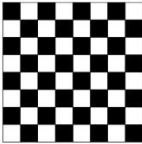
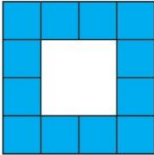


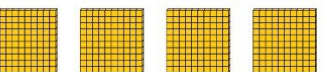


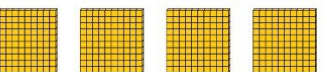
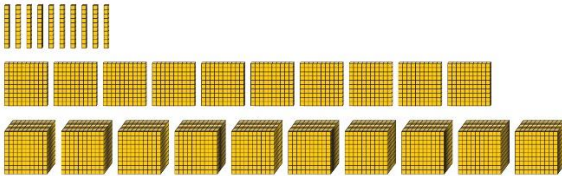


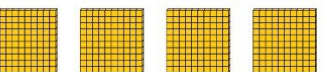
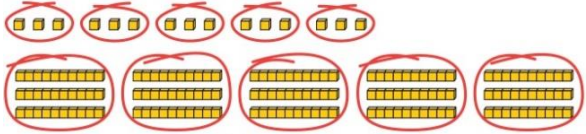
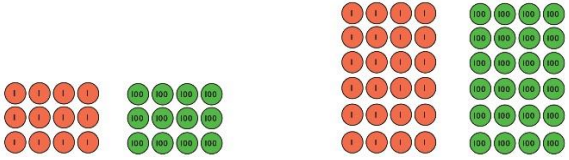
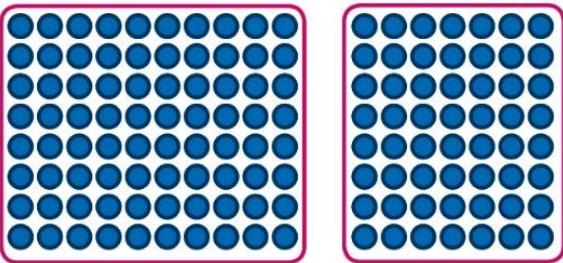


Year 5 Multiplication															
<p>Understanding factors</p>	<p>Use cubes or counters to explore the meaning of 'square numbers'.</p> <p><i>25 is a square number because it is made from 5 rows of 5.</i></p> <p>Use cubes to explore cube numbers.</p>  <p><i>8 is a cube number.</i></p>	<p>Use images to explore examples and non-examples of square numbers.</p>  <p>$8 \times 8 = 64$ $8^2 = 64$</p>  <p><i>12 is not a square number, because you cannot multiply a whole number by itself to make 12.</i></p>	<p>Understand the pattern of square numbers in the multiplication tables.</p> <p>Use a multiplication grid to circle each square number. Can children spot a pattern?</p>												
<p>Multiplying by 10, 100 and 1,000</p>	<p>Use place value equipment to multiply by 10, 100 and 1,000 by unitising.</p> <table border="1" data-bbox="353 1034 925 1198"> <tr> <td>$4 \times 1 = 4 \text{ ones} = 4$</td> <td></td> </tr> <tr> <td>$4 \times 10 = 4 \text{ tens} = 40$</td> <td></td> </tr> <tr> <td>$4 \times 100 = 4 \text{ hundreds} = 400$</td> <td></td> </tr> </table>	$4 \times 1 = 4 \text{ ones} = 4$		$4 \times 10 = 4 \text{ tens} = 40$		$4 \times 100 = 4 \text{ hundreds} = 400$		<p>Understand the effect of repeated multiplication by 10.</p> 	<p>Understand how exchange relates to the digits when multiplying by 10, 100 and 1,000.</p> <table border="1" data-bbox="1559 1070 1933 1201"> <thead> <tr> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td></td> <td>1</td> <td>7</td> </tr> </tbody> </table> <p>$17 \times 10 = 170$ $17 \times 100 = 17 \times 10 \times 10 = 1,700$ $17 \times 1,000 = 17 \times 10 \times 10 \times 10 = 17,000$</p>	H	T	O		1	7
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H	T	O													
	1	7													

<p>Multiplying by multiples of 10, 100 and 1,000</p>	<p>Use place value equipment to explore multiplying by unitising.</p>  <p>5 groups of 3 ones is 15 ones. 5 groups of 3 tens is 15 tens.</p> <p>So, I know that 5 groups of 3 thousands would be 15 thousands.</p>	<p>Use place value equipment to represent how to multiply by multiples of 10, 100 and 1,000.</p>  <p>$4 \times 3 = 12$ $6 \times 4 = 24$ $4 \times 30 = 1,200$ $6 \times 40 = 2,400$</p>	<p>Use known facts and unitising to multiply.</p> <p>$5 \times 4 = 20$ $5 \times 40 = 200$ $5 \times 400 = 2,000$ $5 \times 4,000 = 20,000$</p> <p>$5,000 \times 4 = 20,000$</p>																																																												
<p>Multiplying up to 4-digit numbers by a single digit</p>	<p>Explore how to use partitioning to multiply efficiently.</p> <p>$8 \times 17 = ?$</p>  <p>$8 \times 10 = 80$ $8 \times 7 = 56$</p> <p>$80 + 56 = 136$</p> <p>So, $8 \times 17 = 136$</p>	<p>Represent multiplications using place value equipment and add the 1s, then 10s, then 100s, then 1,000s.</p> <table border="1" data-bbox="958 815 1406 1225"> <thead> <tr> <th></th> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td>1000</td> <td></td> <td></td> <td>1 1 1</td> </tr> <tr> <td>100</td> <td></td> <td>10 10 10 10 10 10 10 10</td> <td>1 1 1</td> </tr> <tr> <td>10</td> <td></td> <td>10</td> <td></td> </tr> <tr> <td>1</td> <td></td> <td></td> <td>1 1 1</td> </tr> <tr> <td>1000</td> <td></td> <td></td> <td>1 1 1</td> </tr> <tr> <td>100</td> <td></td> <td>10 10 10 10 10 10 10 10</td> <td>1 1 1</td> </tr> <tr> <td>10</td> <td></td> <td>10</td> <td></td> </tr> <tr> <td>1</td> <td></td> <td></td> <td>1 1 1</td> </tr> <tr> <td>1000</td> <td></td> <td></td> <td>1 1 1</td> </tr> <tr> <td>100</td> <td></td> <td>10 10 10 10 10 10 10 10</td> <td>1 1 1</td> </tr> <tr> <td>10</td> <td></td> <td>10</td> <td></td> </tr> <tr> <td>1</td> <td></td> <td></td> <td>1 1 1</td> </tr> </tbody> </table>		H	T	O	1000			1 1 1	100		10 10 10 10 10 10 10 10	1 1 1	10		10		1			1 1 1	1000			1 1 1	100		10 10 10 10 10 10 10 10	1 1 1	10		10		1			1 1 1	1000			1 1 1	100		10 10 10 10 10 10 10 10	1 1 1	10		10		1			1 1 1	<p>Use an area model and then add the parts.</p> <table border="1" data-bbox="1563 775 2123 855"> <tr> <td></td> <td>100</td> <td>60</td> <td>3</td> </tr> <tr> <td>5</td> <td>$100 \times 5 = 500$</td> <td>$60 \times 5 = 300$</td> <td>$3 \times 5 = 15$</td> </tr> </table> <p>Use a column multiplication, including any required exchanges.</p> $\begin{array}{r} 136 \\ \times \quad 6 \\ \hline 816 \\ \underline{2\ 3} \end{array}$		100	60	3	5	$100 \times 5 = 500$	$60 \times 5 = 300$	$3 \times 5 = 15$
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Multiplying 2-digit numbers by 2-digit numbers

Partition one number into 10s and 1s, then add the parts.

$23 \times 15 = ?$



$10 \times 15 = 150$



$10 \times 15 = 150$



$3 \times 15 = 45$

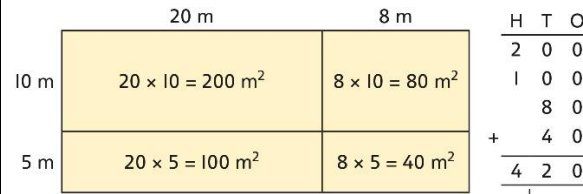
There are 345 bottles of milk in total.

H T O
5 0
5 0
+ 4 5
3 4 5

$23 \times 15 = 345$

Use an area model and add the parts.

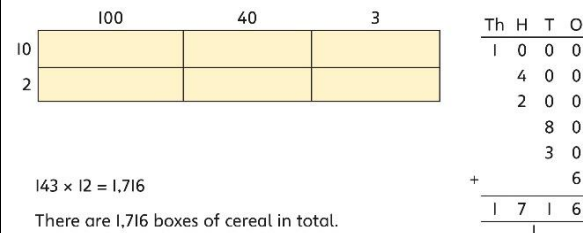
$28 \times 15 = ?$



$28 \times 15 = 420$

Multiplying up to 4-digits by 2-digits

Use the area model then add the parts.



$143 \times 12 = 1,716$

Use column multiplication, ensuring understanding of place value at each stage.

3 4
x 2 7
2 3 8
3 4 x 7

3 4
x 2 7
2 3 8
3 4 x 7
6 8 0
3 4 x 20

3 4
x 2 7
2 3 8
3 4 x 7
6 8 0
3 4 x 20
9 1 8
3 4 x 27

Use column multiplication, ensuring understanding of place value at each stage.

1 4 3
x 1 2
2 8 6
1 4 3 x 2
1 4 3 0
1 4 3 x 10
1 7 1 6
1 4 3 x 12

Progress to include examples that require multiple exchanges as understanding, confidence and fluency build.

$1,274 \times 32 = ?$
 First multiply 1,274 by 2.

$$\begin{array}{r} 1\ 2\ 7\ 4 \\ \times \quad 3\ 2 \\ \hline 2\ 5\ 4\ 8 \end{array} \quad 1,274 \times 2$$

Then multiply 1,274 by 30.

$$\begin{array}{r} 1\ 2\ 7\ 4 \\ \times \quad 3\ 0 \\ \hline 2\ 5\ 4\ 8 \quad 1,274 \times 2 \\ 3\ 8\ 2\ 2\ 0 \quad 1,274 \times 30 \end{array}$$

Finally, find the total.

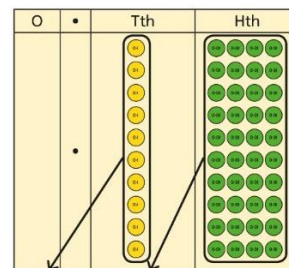
$$\begin{array}{r} 1\ 2\ 7\ 4 \\ \times \quad 3\ 2 \\ \hline 2\ 5\ 4\ 8 \quad 1,274 \times 2 \\ 3\ 8\ 2\ 2\ 0 \quad 1,274 \times 30 \\ \hline 4\ 0\ 7\ 6\ 8 \quad 1,274 \times 32 \end{array}$$

$$1,274 \times 32 = 40,768$$

Multiplying decimals by 10, 100 and 1,000

Use place value equipment to explore and understand the exchange of 10 tenths, 10 hundredths or 10 thousandths.

Represent multiplication by 10 as exchange on a place value grid.



$$0.14 \times 10 = 1.4$$

Understand how this exchange is represented on a place value chart.

