




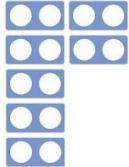
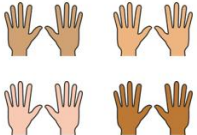



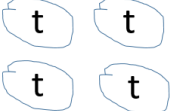

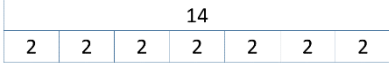

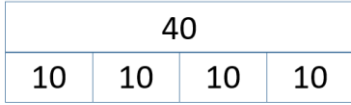
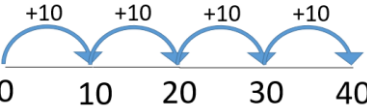


## Northgate Progression in Multiplication

### EYFS Multiplication

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
EYFS	<p>The link between addition and multiplication should be introduced though doubling.</p> <p>If available, Numicon is used to visualise the repeated adding of the same number. These can then be drawn around or printed as a way of recording.</p>  <p>Real life contexts and use of practical equipment to count in repeated groups of the same size: How many wheels are there altogether?</p>  <p>Count in twos; fives; tens both aloud and with objects.</p>	<p>Repeated grouping/repeated addition</p> 	<p>Children to draw the concrete resources they are using.</p> 	<p>Write the number sentence</p> $2 + 2 + 2 = 6$	<p>Lots of</p> <p>Groups of</p> <p>Times</p> <p>Repeated addition</p> <p>Double</p>	<p>100 square</p> <p>Number lines</p> <p>Number tracks</p> <p>Bead strings (for children)</p> <p>Bead bar</p> <p>Tens Frame</p> <p>Numicon</p> <p>Place Value Disks</p> <p>Cuisenaire</p> <p>Base tens and ones</p>
	Useful IWB links for manipulatives	<p><a href="https://www.coolmath4kids.com/manipulatives/base-ten-blocks">https://www.coolmath4kids.com/manipulatives/base-ten-blocks</a></p> <p><a href="https://mathsbot.com/manipulatives/placeValueCounters">https://mathsbot.com/manipulatives/placeValueCounters</a></p> <p><a href="https://mathsbot.com/manipulatives/bar">https://mathsbot.com/manipulatives/bar</a></p> <p><a href="https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/">https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/</a></p> <p><a href="https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/">https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/</a></p> <p><a href="http://www.ictgames.com/mobilePage/tenFrame/index.html">http://www.ictgames.com/mobilePage/tenFrame/index.html</a></p>				

## Year One Multiplication

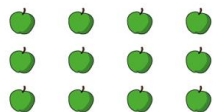
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 1	<p>Count on from and back to zero in ones, twos, fives or tens</p> <p>Make connections between arrays, number patterns, and counting in twos, fives and tens.</p>	<p><b>Repeated Addition – Counting in 2s</b></p> <p>Use images of different objects</p>  <p>There are 7 groups of 2</p>  <p><b>Repeated addition – Counting in Tens</b></p> <p>Use images of different objects – including Numicon</p>  <p>4 groups of 10 (fingers and thumbs)</p>  <p>4 groups of 10 pens</p> <p>18 – 5 using counters</p>	<p><b>Repeated Addition – Counting in 2s</b></p> <p>Draw the objects</p>   <p>There are 7 groups of 2</p> <p><b>Repeated addition – Counting in Tens</b></p> <p>Draw the objects</p>  <p>4 groups of ten ( t represents ten)</p>  <p>Try to avoid pupils drawing out ALL ten objects 4 times.</p>	<p><b>Repeated Addition – Counting in 2s</b></p> <p>Can use bar model, number line and equation</p>   <p><math>2 + 2 + 2 + 2 + 2 + 2 + 2 = 14</math></p> <p><b>Repeated addition – Counting in Tens</b></p> <p>As above</p>   <p><math>10 + 10 + 10 + 10 = 40</math></p>	<p>Lots of</p> <p>Groups of</p> <p>Times</p> <p>Repeated addition</p> <p>Double</p> <p>Sets</p> <p>Groups,</p> <p>Pairs</p> <p>Array</p>	<p>100 square</p> <p>Number lines</p> <p>Number tracks</p> <p>Bead strings ( for children )</p> <p>Bead bar</p> <p>Tens Frame</p> <p>Numicon</p> <p>Place Value Disks</p> <p>Cuisenaire</p> <p>Base tens and ones</p>

### Repeated addition – Counting in Fives

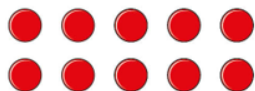
Please follow the guidance from counting in 2s and 10s – exactly the same principle

#### Using arrays

Explain the language of columns and rows. Use concrete apparatus.



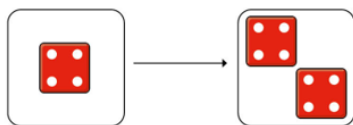
There are 3 apples in each column.  
There are 4 columns.  
There are 12 apples altogether.



There are 5 counters in each row.  
There are 2 rows.  
There are 10 counters altogether.

#### Doubling

Use lots of different manipulatives to support doubling numbers



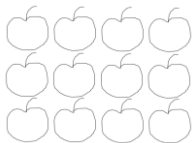
Double  is

### Repeated addition – Counting in Fives

Please follow the guidance from counting in 2s and 10s – exactly the same principle

#### Using arrays

Explain the language of columns and rows. Children can draw the arrays



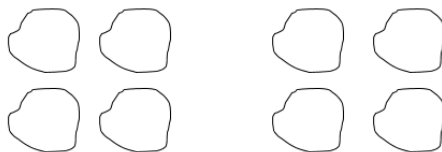
There are 3 apples in each column.  
There are 4 columns.  
There are 12 apples altogether.



There are 5 counters in each row.  
There are 2 rows.  
There are 10 counters altogether.

#### Doubling

Children can draw it



### Repeated addition – Counting in Fives

Please follow the guidance from counting in 2s and 10s – exactly the same principle

#### Using arrays

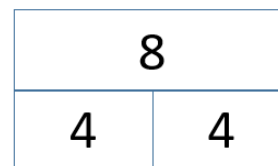
Explain the language of columns and rows

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

$$5 + 5 = 10$$

#### Doubling


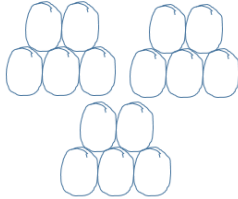
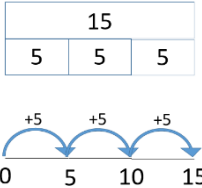
Use a bar model and equation



$$4 + 4 = 8$$

	<p>Solve simple one-step problems, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. Understanding multiplication as an array: see above.</p> <p>Practical problem solving activities involving equal sets or groups. Through grouping small quantities, pupils should begin to understand multiplication; doubling numbers and quantities.</p>		
Useful IWB links for manipulatives	<p><a href="https://www.coolmath4kids.com/manipulatives/base-ten-blocks">https://www.coolmath4kids.com/manipulatives/base-ten-blocks</a></p> <p><a href="https://mathsbot.com/manipulatives/placeValueCounters">https://mathsbot.com/manipulatives/placeValueCounters</a></p> <p><a href="https://mathsbot.com/manipulatives/bar">https://mathsbot.com/manipulatives/bar</a></p> <p><a href="https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/">https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/</a></p> <p><a href="https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/">https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/</a></p> <p><a href="http://www.ictgames.com/mobilePage/tenFrame/index.html">http://www.ictgames.com/mobilePage/tenFrame/index.html</a></p>		

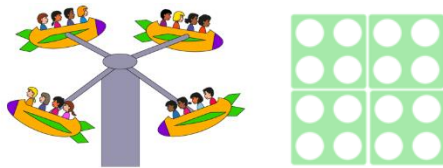
### Year Two Multiplication

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 2	<p>Practise to become fluent in recall and use of multiplication facts for the 2, 5 and 10 multiplication tables, (connect the 10x table to place value, and the 5x table to the divisions on the clock face)</p> <p>Double any multiple of 5 up to 50, eg. double 35</p> <p>Find the total number of objects when they are organised into</p>	<p><b><u>Fluent in the recall and calculations of 2, 5 and 10 multiplication tables</u></b></p> <p>Please see the guidance for Year 1</p> <p>Here is one example</p>  <p>3 equal groups of 5 equals 15 eggs</p> <p><b><u>Using arrays</u></b></p> <p>Please see the guidance for Year 1 and using arrays below</p>	<p><b><u>Fluent in the recall and calculations of 2, 5 and 10 multiplication tables</u></b></p> <p>Please see the guidance for Year 1</p> <p>Here is one example – hand drawn</p>  <p><b><u>Using arrays</u></b></p> <p>Please see the guidance for Year 1 and using arrays below</p>	<p><b><u>Fluent in the recall and calculations of 2, 5 and 10 multiplication tables</u></b></p> <p>Please see the guidance for Year 1</p>  <p>Introduce the multiplication symbol</p> <p><b>5 + 5 + 5 = 5 x 3 = 15</b></p> <p><b><u>Using arrays</u></b></p> <p>Please see the guidance for Year 1 and using arrays below</p>	<p>Lots of</p> <p>Groups of</p> <p>Times</p> <p>Repeated addition</p> <p>Double</p> <p>Sets</p> <p>Groups,</p> <p>Pairs</p> <p>Array</p> <p>symbol x</p>	<p>100 square</p> <p>Number lines</p> <p>Number tracks</p> <p>Bead strings ( for children )</p> <p>Bead bar</p> <p>Tens Frame</p> <p>Numicon</p> <p>Place Value Disks</p>

groups of 2, 5 or 10  
Recognise odd and even numbers

Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. Introduce the symbol for multiplication

Recognising Multiplication with other factors

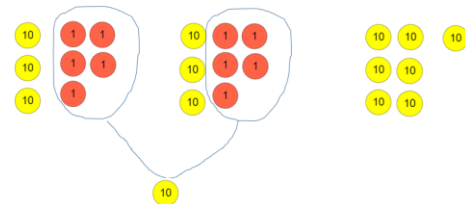


four groups of four children  
Numicon can be used too.

Doubling

See Y1. Children need to double multiples of 10 to 100, then double multiples of 5 to 100

E.g. 35 doubled – use counters –



Recognising Multiplication with other factors



four groups of four children

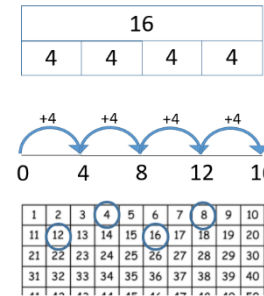
Doubling

See Y1. Children need to double multiples of 10 to 100, then double multiples of 5 to 100

E.g. 35 doubled  
Can be drawn



Recognising Multiplication with other factors

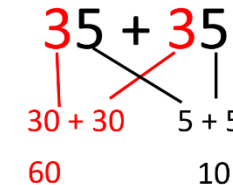


$4 + 4 + 4 + 4 = 4 \times 4$

Doubling

See Y1. Children need to double multiples of 10 to 100, then double multiples of 5 to 100

E.g. 35 doubled



times as big ...as  
wide ...as  
long

Cuisenaire  
Base  
hundreds  
tens and  
ones


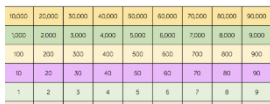
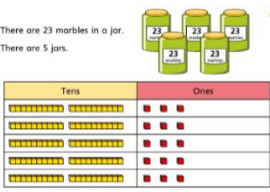
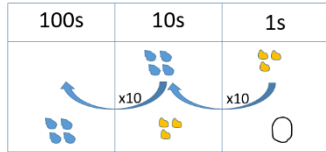
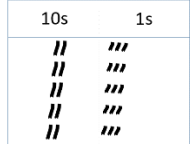
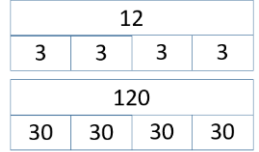
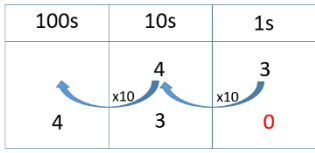
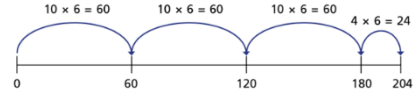
Arrow Cards

Calculate mathematical statements and write them using the multiplication (x) and equals (=) signs  
Solve one-step x problems using materials, arrays, repeated addition and x facts, include problems in contexts.  
Understand multiplication as repeated addition  
Begin recording subtraction in columns to support understanding of place value and prepare for efficient written methods

Useful IWB links for manipulatives

- <https://www.coolmath4kids.com/manipulatives/base-ten-blocks>
- <https://mathsbot.com/manipulatives/placeValueCounters>
- <https://mathsbot.com/manipulatives/bar>
- <https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/>
- <https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/>
- <http://www.ictgames.com/mobilePage/tenFrame/index.html>

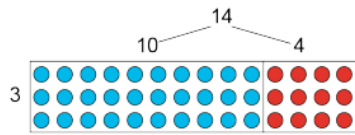
## Year 3 Multiplication

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 3	<p>Recall and use multiplication facts for the 4, 8 and 3 multiplication tables</p> <p>Practise mental recall of x tables to improve fluency. Use doubling to connect the 2, 4 and 8 x tables.</p> <p>Use x facts to derive related facts and write mathematical statements e.g. using <math>3 \times 2 = 6</math> to derive <math>30 \times 2 = 60</math></p> <p>Develop efficient mental methods using commutativity e.g. <math>4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240</math></p> <p>Double any two-digit number, e.g. double 39 and any multiple of 5, 10 or 100, e.g. double 340, double 800,</p> <p>Multiply one-digit or two-digit numbers by 10 or 100 and</p>	<p><b><u>Consolidate 2, 5 10 times table</u></b> Please see Y2 examples</p> <p><b><u>4, 8 then 3 times table</u></b></p> <p>Please see Y2 examples as they hold the same principles</p> <p><b><u>Make connections x10</u></b></p> <p>4 x 3, 4 x 30, 4 x 300 – use counters</p>  <p>Also use the Gattegno Chart to help</p>  <p><b><u>Simple 2 digit by one digit</u></b></p> <p>Use dienes or counters</p> 	<p><b><u>Consolidate 2, 5 10 times table</u></b> Please see Y2 examples</p> <p><b><u>4, 8 then 3 times table</u></b></p> <p>Please see Y2 examples as they hold the same principles</p> <p><b><u>Make connections x10</u></b></p> <p>4 x 30 = 120 – draw it</p> <p>Draw on a place value grid</p>  <p><b><u>Simple 2 digit by one digit</u></b></p> <p>Draw it in a grid</p> 	<p><b><u>Consolidate 2, 5 10 times table</u></b> Please see Y2 examples</p> <p><b><u>4, 8 then 3 times table</u></b></p> <p>Please see Y2 examples as they hold the same principles</p> <p><b><u>Make connections x10</u></b></p> <p>4 x 3 = 12 4 x 30 = 120</p>  <p>Use place value grid</p>  <p><b><u>Simple 2 digit by one digit</u></b></p> <p>23 x 5 = 20 x 5 + 3 x 5 = 100 + 15 = 115</p> 	<p>Lots of</p> <p>Groups of</p> <p>Times</p> <p>Repeated addition</p> <p>Double</p> <p>Sets</p> <p>Groups,</p> <p>Pairs</p> <p>Array</p> <p>symbol x</p> <p>times as big ...as</p> <p>wide ...as</p> <p>long</p> <p>factor</p> <p>product</p> <p>multiple</p>	<p>100 square</p> <p>Number lines</p> <p>Number tracks</p> <p>Bead strings ( for children )</p> <p>Bead bar</p> <p>Tens Frame</p> <p>Numicon</p> <p>Place Value Disks</p> <p>Cuisenaire</p> <p>Base hundreds tens and ones</p> <p>Arrow Cards</p> <p>Gattegno chart</p> <p>Place Value Grid</p>

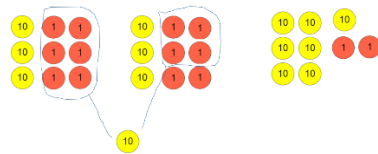
understand the effect  
e.g.  $7 \times 100$ ,  $46 \times 10$ ,  
 $54 \times 100$

Know the vocabulary  
below  
Factor multiplied by  
factor equals product

factor		product
6	$\times$	24
	4	=
	factor	



Doubling all two digit numbers



Draw it in a grid  
See above

Doubling all two digit numbers

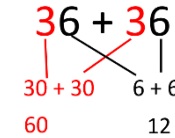


$$14 \times 3 = 10 \times 3 + 4 \times 3$$

$$= 30 + 12$$

$$= 42$$

Doubling all two digit numbers

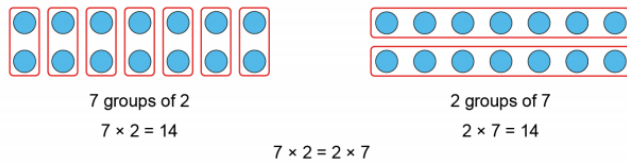


ten times  
the size  
  
hundred  
times the  
size  
  
a tenth the  
size  
  
a  
hundredth  
the size

Solve problems in context decide which operation to use and why, including missing number problems  
integer scaling problems eg double or treble 50p or 5 x 60cm

Correspondence problems in which m objects are connected to n objects eg finding all possibilities '3 hats and 4 coats, how many different outfits?'

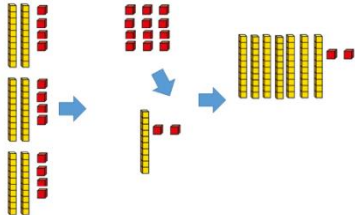

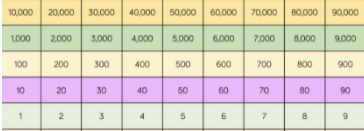
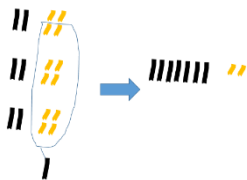
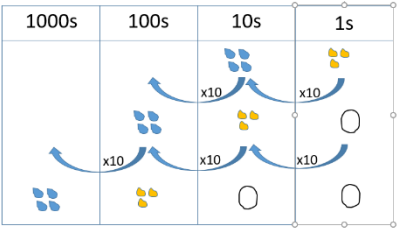
Understand multiplication represented as an array and the concept of commutativity.  
"The order of the factors does not affect the product."



Useful IWB links  
for  
manipulatives

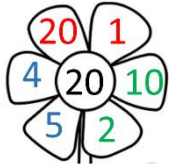
- <https://www.coolmath4kids.com/manipulatives/base-ten-blocks>
- <https://mathsbot.com/manipulatives/placeValueCounters>
- <https://mathsbot.com/manipulatives/bar>
- <https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/>
- <https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/>
- <http://www.ictgames.com/mobilePage/tenFrame/index.html>

## Year 4 Multiplication

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources																																								
Year 4	<p>Recall and practise multiplication facts for tables up to <math>12 \times 12</math> to aid fluency.</p> <p>Use place value, known and derived facts to multiply mentally, including multiplying by 0 and 1 TU by 4 or 8, eg. <math>26 \times 4</math> by doubling three numbers together two digit by a unit eg. <math>17 \times 3</math> numbers to 1000 by 10 and 100 (whole-number answers) eg. <math>325 \times 10</math>, <math>42 \times 100</math></p> <p>Extend mental methods to HTU to derive facts e.g. <math>200 \times 3 = 600</math> into <math>600 \div 3 = 200</math></p> <p>Recognise and use factor pairs e.g. give the factor pair associated with a multiplication fact, (if 2</p>	<p><b><u>Consolidate 3, 4, 8 times table</u></b> See Y3 guidance - same principle</p> <p><b><u>Learn the remaining tables to x 12</u></b> See Y3 guidance - same principle</p> <p><b><u>Multiply 2 digit by one digit</u></b></p> <p><math>24 \times 3</math> – Use Dienes or counters</p>  <p><b><u>Make connections x10 x 100</u></b></p> <p><math>4 \times 3</math>, <math>4 \times 30</math>, <math>4 \times 300</math> – use counters</p>  <p>Also use the Gattegno Chart to help</p> 	<p><b><u>Consolidate 3, 4, 8 times table</u></b> See Y3 guidance - same principle</p> <p><b><u>Learn the remaining tables to x 12</u></b> See Y3 guidance - same principle</p> <p><b><u>Multiply 2 digit by one digit</u></b></p> <p><math>24 \times 3</math> – Draw it</p>  <p><b><u>Make connections x10 x 100</u></b></p> <p>The counters can be drawn also</p> 	<p><b><u>Consolidate 3, 4, 8 times table</u></b> See Y3 guidance - same principle</p> <p><b><u>Learn the remaining tables to x 12</u></b> See Y3 guidance - same principle</p> <p><b><u>Multiply 2 digit by one digit</u></b></p> <p>Informal partition as in Y3</p> <table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td></td><td>2</td><td>4</td></tr> <tr><td>x</td><td>1</td><td>2</td></tr> <tr><td></td><td>6</td><td>0</td></tr> <tr><td></td><td>7</td><td>2</td></tr> </table> <p><math>3 \times 4</math> ones = 12 ones <math>3 \times 2</math> tens = 6 tens</p> <p>Formal show</p> <table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td></td><td>10s</td><td>1s</td></tr> <tr><td>x</td><td>2</td><td>4</td></tr> <tr><td></td><td>7</td><td>2</td></tr> <tr><td></td><td></td><td>1</td></tr> </table> <p>tion</p> <p><b><u>Make connections x10 x 100</u></b></p> <p><math>43 \times 100 = 43 \times 10 \times 10</math></p> <p>Use Place Value charts</p> <table border="1" style="display: inline-table;"> <tr><td>1000s</td><td>100s</td><td>10s</td><td>1s</td></tr> <tr><td></td><td></td><td>4</td><td>3</td></tr> <tr><td></td><td>4</td><td>3</td><td>0</td></tr> <tr><td>4</td><td>3</td><td>0</td><td>0</td></tr> </table>		2	4	x	1	2		6	0		7	2		10s	1s	x	2	4		7	2			1	1000s	100s	10s	1s			4	3		4	3	0	4	3	0	0	<p>Lots of</p> <p>Groups of</p> <p>Times</p> <p>Repeated addition</p> <p>Double</p> <p>Sets</p> <p>Groups,</p> <p>Pairs</p> <p>Array</p> <p>symbol x</p> <p>times as big ...as</p> <p>wide ...as</p> <p>long</p> <p>factor</p> <p>product</p> <p>multiple</p> <p>ten times the size</p>	<p>100 square</p> <p>Number lines</p> <p>Number tracks</p> <p>Bead strings (for children)</p> <p>Bead bar</p> <p>Tens Frame</p> <p>Numicon</p> <p>Place Value Disks</p> <p>Cuisenaire</p> <p>Base hundreds tens and ones</p> <p>Arrow Cards</p> <p>Gattegno chart</p> <p>Place Value Grid</p>
	2	4																																												
x	1	2																																												
	6	0																																												
	7	2																																												
	10s	1s																																												
x	2	4																																												
	7	2																																												
		1																																												
1000s	100s	10s	1s																																											
		4	3																																											
	4	3	0																																											
4	3	0	0																																											

$x 3 = 6$  then 6 has the factor pair 2 and 3)

Factor flower for 20



Know the vocabulary below  
Factor multiplied by factor equals product

factor      product  
 $6 \times 4 = 24$   
factor

factor times factor is equal to product  
 $22 \times 7 = 154$

Use divisibility tests to identify multiples of 2, 4, 10 and 5

Useful IWB links for manipulatives

Multiply using partitioning

Develop fluency in efficient written method of short multiplication

Write statements using the distributive law  $39 \times 7 = 30 \times 7 + 9 \times 7$  and associative law  $(2 \times 3) \times 4 = 2 \times (3 \times 4)$

Solve two step problems with increasingly harder numbers and in which n objects are connected to m objects eg. finding all possibilities '6 hats and 5 coats, how many different outfits?'

Understand multiplication as scaling, not just repeated addition.

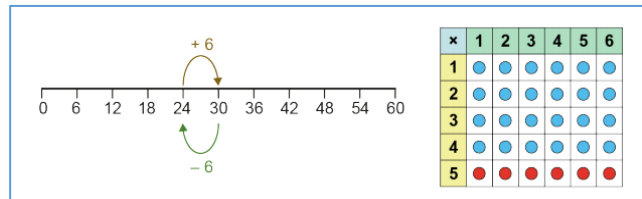
E.g. "23, made 100 times the size, is 2,300."

Then they can solve simple equations

$\square \times 100 = 600$        $1,500 = \square \times 10$   
 $\square \div 100 = 8$        $1,200 = \square \div 10$

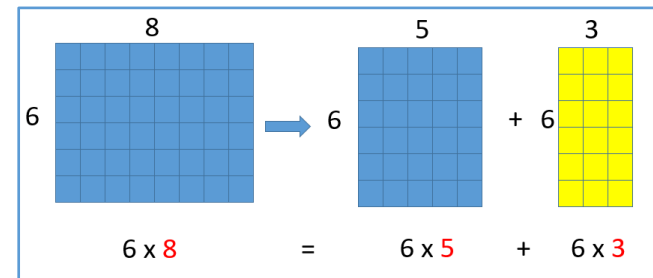
Understand that adjacent multiples of a times table have a difference of the multiplication table.

E.g. adjacent multiples of 6, have a difference of 6.



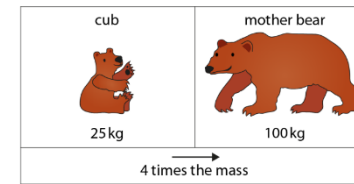
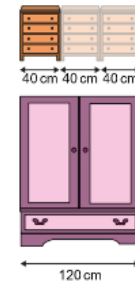
Understand the distributive law. Where a factor can be partitioned and multiplied out.

$a \times (b+c) = a \times b + a \times c$       and       $a \times (b-c) = a \times b - a \times c$



The wardrobe is 3 times the width of the cabinet. How wide is the wardrobe?

$40 \text{ cm} \times 3 = 120 \text{ cm}$



$25 \text{ kg} \times 4 = 100 \text{ kg}$

hundred times the size

a tenth the size

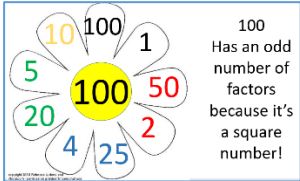
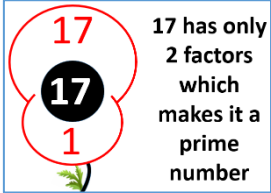
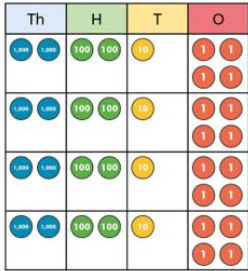
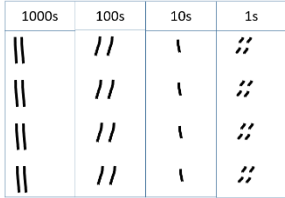
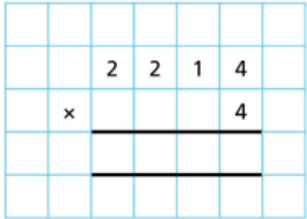
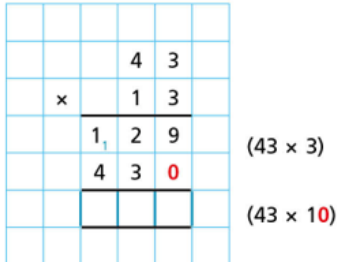
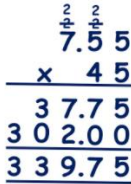
a hundredth the size

scaling

adjacent multiples

- <https://www.coolmath4kids.com/manipulatives/base-ten-blocks>
- <https://mathsbot.com/manipulatives/placeValueCounters>
- <https://mathsbot.com/manipulatives/bar>
- <https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/>
- <https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/>
- <http://www.ictgames.com/mobilePage/tenFrame/index.html>

## Year 5 and Year 6 Multiplication

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 5 6	<p>Multiply TU X U mentally using known facts for all multiplication tables to 12 x 12 numbers</p> <p>Identify multiples and factors, including finding all factor pairs for numbers to 100, e.g. 30 has the factor pairs 1 x 30, 2 x 15, 3 x 10 and 5 x 6</p>  <p>100 Has an odd number of factors because it's a square number!</p> <p>Establish whether a number up to 100 is prime and recall prime numbers up to 19</p>  <p>17 has only 2 factors which makes it a prime number</p> <p>Recognise and use square and cube numbers, and relevant notation.</p> <p>Multiply by 25 or 50, e.g. <math>48 \times 25</math>, <math>32 \times 50</math>            Multiply whole numbers decimals by 10, 100 and 1000 e.g. <math>4.3 \times 10</math>, <math>0.75 \times 100</math></p> <p>Multiply pairs of multiples of 10, e.g. <math>60 \times 30</math>, and a multiple of 100 by a single digit number, e.g. <math>900 \times 8</math></p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <math display="block">30 \times 80 = 3 \times 8 \times 10 \times 10</math> <math display="block">= 3 \times 8 \times 100</math> <math display="block">= 2,400</math> </div>	<p><b>Multiply up to 4 digits by a one- number</b></p> <p>2214 x 4 – use counters</p>  <p><b>Multiply up to 4 digits by a two- number</b></p> <p>If children are working at this level – moving straight to a formal method is the best approach.</p>	<p><b>Multiply up to 4 digits by a one- number</b></p> <p>2214 x 4 – can draw in a place value grid</p>  <p><b>Multiply up to 4 digits by a two- number</b></p> <p>If children are working at this level – moving straight to a formal method is the best approach.</p>	<p><b>Multiply up to 4 digits by a one- number</b></p> <p>Use formal short method</p>  <p><b>Multiply up to 4 digits by a two- number</b></p>  	<p>As above</p> <p>factor</p> <p>product</p> <p>multiple</p> <p>ten times the size</p> <p>hundred times the size</p> <p>a tenth the size</p> <p>a hundredth the size</p> <p>scaling</p> <p>adjacent multiples</p> <p>prime square cubed</p>	<p>100 square</p> <p>Number lines</p> <p>Number tracks</p> <p>Bead strings (for children)</p> <p>Bead bar</p> <p>Tens Frame</p> <p>Numicon</p> <p>Place Value Disks</p> <p>Cuisenaire</p> <p>Base hundreds tens and ones</p> <p>Arrow Cards</p> <p>Gattegno chart</p> <p>Place Value Grid</p>

Use divisibility tests to identify multiples of 3, 6, 9 8 and revise 2, 4, 10 and 5

**Year 6**

Multiply two-digit decimals such as  $0.8 \times 7$  and pairs of multiples of 10 and 100, e.g.  $50 \times 30$ ,  $600 \times 20$

Double decimals with units and tenths, e.g. double 7.6

Scale up and down using known facts, e.g. given that three oranges cost 24p, find the cost of four oranges

Identify numbers with an odd number of factors (square numbers), even numbers of factors and no factor pairs other than 1 and themselves (prime numbers)

Explore the order of operations using brackets; eg.  $2 + 1 \times 3 = 5$  and  $(2 + 1) \times 3 = 9$ .

Use multiplication facts to solve ratio and proportion problems.

Multiplying whole numbers by 10, 100 and 1000 using place value grids

HTh	TTh	Th	H	T	O	$9 \times 100 =$ <input type="text"/>
					9	$9 \times 1,000 =$ <input type="text"/>

HTh	TTh	Th	H	T	O	$16 \times 100 =$ <input type="text"/>
				1	6	$16 \times 1,000 =$ <input type="text"/>

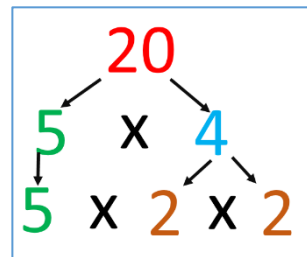
Multiplying decimals by 10 and 100 using place value grids

H	T	O	Tths	Hths	$4.1 \times 100 =$ <input type="text"/>
		4	1		

H	T	O	Tths	Hths	$4.15 \times 100 =$ <input type="text"/>
		4	1	5	

Express a product as a multiple of three factors



Useful IWB links for manipulatives

- <https://www.coolmath4kids.com/manipulatives/base-ten-blocks>
- <https://mathsbot.com/manipulatives/placeValueCounters>
- <https://mathsbot.com/manipulatives/bar>
- <https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/>
- <https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/>
- <http://www.ictgames.com/mobilePage/tenFrame/index.html>