


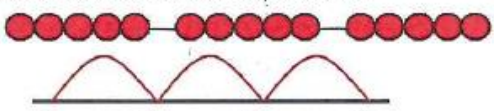

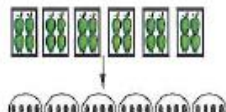
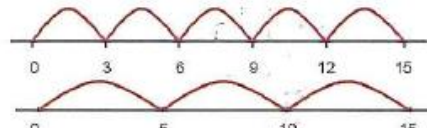

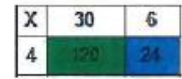
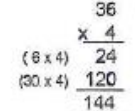
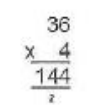
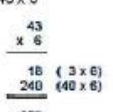
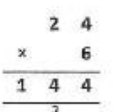
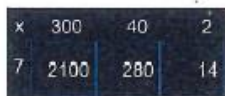
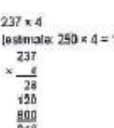
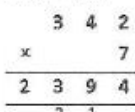
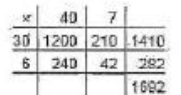
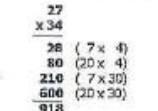
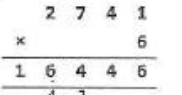
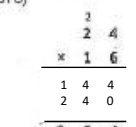
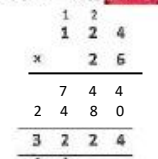
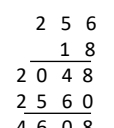

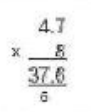
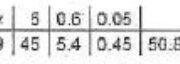


# Multiplication

## TATUTORY REQUIREMENTS

## Rapid Recall/Mental Calculations

## Non-statutory guidance

<p>Children ... solve problems, including doubling, halving and sharing. [Expected] Solve practical problems that involve combining groups of 2/5/10. [Exceeding]</p>	<p>Practical/ recorded using ICT (eg digital photos / pictures on IWB) How many 10p coins are here? How much money is that? This domino is a double 4. How many spots does it have?</p>	<p>Pictures/Objects How many socks in three pairs? </p>	<p>Symbolic 3 pairs, 2 socks in each pair: </p>					
<p>Solve one-step problems using concrete objects, pictorial representations and arrays (with the support of the teacher)</p>	<p>Practical/recorded using ICT Pictures/Symbolic There are five cakes in each bag. How many cakes are there in three bags? </p>	<p>Visual (eg modelled using bead strings) 5 x 3 or 3 x 5 (two, three times) or (three groups of two) </p>	<p>Arrays 5 x 2 or 2 x 5 </p>		<p><i>Doubling numbers/quantities</i> <i>Count on/back in 2s, 5s and 10s</i></p>			
<p>Calculate statements for multiplication within the multiplication tables and write them using the multiplication and equals signs. [Show multiplication of two numbers can be done in any order.]</p>	<p>Pictures/Symbolic There are four apples in each box. How many apples in six boxes? </p>	<p><b>Pupils use a variety of language to describe multiplication.</b></p>	<p>Repeated addition 5 x 3 or 3 x 5 </p>	<p>Arrays 6 x 4 or 4 x 6 </p>	<p>Recall and use multiplication facts for the 2, 5 and 10 multiplication tables, (including recognising odd and even numbers).  Use commutativity/inverse relations to develop multiplicative reasoning (eg 4 x 5 = 20 and 20 ÷ 5 = 4).</p>	<p><i>Pupils ... practise to become fluent in the 2/5/10 multiplication tables and connect them to each other.</i> <i>They connect the 10x table to place value, and the 5x table to divisions on the clock face.</i> <i>They begin to use other multiplication tables and recall facts, including using related division facts to perform written and mental calculations.</i></p>		
<p>Write/calculate statements using the multiplication tables that they know (progressing to formal written methods). TU x U (multiplier is 2/3/4/5/8/10)</p>	<p>36 x 4 = 144 </p>	<p>36 x 4 = 144 30 x 4 = 120 6 x 4 = 24</p>	<p>36 x 4 = 144 </p>	<p>36 x 4 = 144 </p>	<p><b>Pupils develop reliable written methods for multiplication, starting with calculations of TU by 4 (progressing to formal written methods of short multiplication).</b></p>	<p>Recall and use multiplication facts for the 3, 4 and 8 multiplication tables.</p>	<p><i>Through doubling, they connect the 2/4/8 multiplication tables.</i> <i>Pupils develop efficient mental methods, using commutativity (eg 4 x 12 = 5 = 4 x 5 x 12 = 20 x 12 = 240) and multiplication and division facts (eg using 3 x 2 = 6, 6 ÷ 3 = 2 &amp; 2 = 6 ÷ 3) to derive related facts (30 x 2 = 60, 60 ÷ 3 = 20 &amp; 20 ÷ 2 = 10).</i></p>	
<p>Use formal written layout: TU x U HTU x U Convert between different units of measure (eg km to m; hr to min)</p>	<p>43 x 6 = 258 (estimate: 40 x 6 = 240) 40 x 6 = 240 3 x 6 = 18</p>	<p>43 x 6 </p>	<p>24 x 6 = 144 </p>	<p>342 x 7 = 2394 </p>	<p>237 x 4 (estimate: 250 x 4 = 1000) </p>	<p>342 x 7 = 2394 </p>	<p>Recall multiplication facts to 12 x 12. Use place value, known &amp; derived facts to multiply mentally, including x by 0/1; x 3 numbers. Recognise/use factor pairs and commutativity in mental calculations.  Pupils use multiplication to convert from larger to smaller units.</p>	<p><i>Practise mental methods and extend this to HTU numbers to derive facts, for example 200 x 3 = 600 into 600 + 3 = 200.</i> <i>Write statements about equality of expressions (eg 39 x 7 = 30 x 7 + 9 x 7 and (2 x 3) x 4 = 2 x (3 x 4)). Combine knowledge of facts and arithmetic rules to solve mental/written calculations (eg 2 x 6 x 5 = 10 x 6 = 60).</i></p>
<p>Use a formal written method (including long x for TU nos) TU x TU HTU x U / HTU x TU THTU x U Convert between units of measure (eg km/m; min/cm; cm/mm; kg/g; litre and ml)</p>	<p>47 x 36 = 1692 (estimate 50 x 40 = 2000) </p>	<p>27 x 34 = 918 (estimate 30 x 30 = 900) </p>	<p>2741 x 6 = 16446 (estimate 3000 x 6 = 18000) </p>	<p>24 x 18 = 384 (estimate 25 x 15 = 375) </p>	<p>124 x 26 = 3224 <b>See Y6</b> </p>	<p><b>Pupils cannot multiply by a fraction using fractions as operators (fractions 20, and to division. The rules to scaling by simple fractions, including those + 7. Find fractions of numbers and quantities, writing remainders as a fraction.</b></p>	<p>Identify multiples/factors, including finding all factor pairs of a number, &amp; common factors of two numbers. Know/use vocabulary of prime numbers, prime factors and composite (non-prime) nos. Establish if a number up to 100 is prime; recall prime numbers to 19. x nos mentally using known facts. Multiply whole numbers and those involving decimals by 10/100/1000.</p>	<p><i>Pupils ... apply all the x tables frequently, commit them to memory and use them to make larger calculations.</i> <i>They understand the terms factor, multiple/prime, square/cube numbers &amp; use to construct equiv. statements (eg 4 x 35 = 2 x 2 x 35; 3 x 270 = 3 x 3 x 9 x 10 = 9^2 x 10).</i></p>
<p>Multi-digit numbers (up to 4 digits) x TU whole number using the formal method of long multiplication. Multiply one-digit numbers with up to two decimal places by whole numbers</p>	<p>256 x 18 = 4608 (estimate 250 x 20 = 5000) </p>	<p>124 x 26 = 3224  <b>NB See Y5 method!</b></p>	<p>4.7 x 8 = 37.6 (estimate 5 x 8 = 40)  [Or 47 x 8, then divide the solution by 10.]</p>	<p>5.65 x 9 = 50.85 (estimate 6 x 9 = 54)  [Or, compute 565 x 9, then divide the solution by 100.]</p>	<p><i>Use a variety of images to support understanding of x with fractions. Use understanding of relationship between unit fractions and ÷ to work backwards by x a quantity that represents a unit fraction to find the whole quantity (eg if 1/4 of a length is 36cm, whole length 36 x 4 = 144cm).</i> <i>x numbers with up to 2dp by U/TU whole nos (starting with simplest cases eg 0.4 x 2 = 0.8, and in practical contexts).</i></p>	<p>Perform mental calculations, including with mixed operations/large numbers. Identify common factors/multiples and prime numbers. Use knowledge of order of operations to carry out calculations. Use estimation to check answers to calculations and determine an appropriate degree of accuracy. Identify value of each digit to 3dp and x nos by 10/100/1000 (ans to 3dp)</p>	<p><i>Undertake mental calcs with increasingly large numbers and more complex calculations.</i> <i>Continue to use all x tables to calculate statements in order to maintain their fluency.</i> <i>Explore the order of operations using brackets.</i> <i>Common factors can be related to finding equivalent fractions.</i></p>	