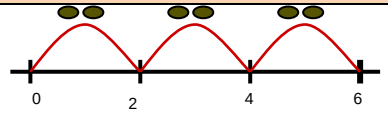
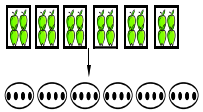
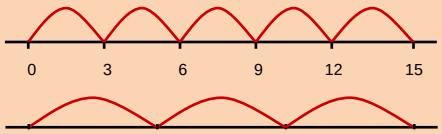
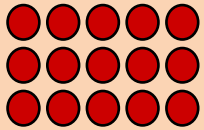
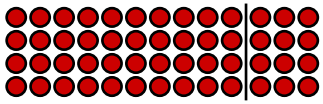
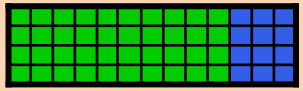
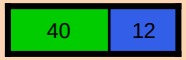
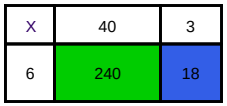
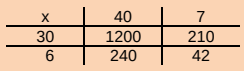
Multiplication

Recording → Rapid Recall | Mental calculation | Resources

Method(s) highlighted indicate end of year expectation for year group

Age-related expectations

Estimate first

		Recording	Rapid Recall	Mental calculation	Resources
YR	Count repeated groups of the same size (2s / 10s) ref *Overview of learning 5*	Pictures / Objects 3 plates, 2 cakes on each plate:  **Number track – repeated addition** Symbols 3 plates, 2 cakes on each plate: 	Exposure to 2s, 10s and 5s but not expected to be independent.	(*see recording*)	Concrete materials Unifix/Counters
Y1	Solve (practical) problems that involve combining groups of 2, 5 or 10 NB. Grid wallpaper can be a powerful resource.	Pictures / Symbols There are three sweets in one bag. How many sweets are there in five bags?  Number tracks / Number line (modelled using bead strings) Written method: 3 x 2 =6 2 x 3 **or** 3 x 2 [two, three times] or [three groups of two]   0 2 4 6 3 x 2 = 6 2 x 3 = 6 **Arrays**  Modelled but not necessarily independent	Count on / back in 2s, 5s and 10s Doubles of numbers to 10, by x 2 Begin to learn multiplication and division facts for 2, 5, 10	(*see recording*)	Bead string Numicon Empty number line
Y2	Multiplication as *repeated addition* and *arrays*	Pictures / Symbols There are four apples in each box. How many apples in six boxes  Repeated addition 5 x 3 or 3 x 5  0 3 6 9 12 15 0 5 10 15 [ref *Multiplication facts* ITP] Arrays 5 x 3 or 3 x 5 	Count in 2s, 5s and 10s Multiples of 2, 5 & 10 Relate to x facts (and related ÷ facts) Doubles of numbers to 20	Doubles of TU numbers, by x 2	Dienes Place value cards
Y3	TU x U (eg 13 x 4)	Arrays 13 x 4  10 x 4 = 40 3 x 4 = 12 [ref *Arrays* spreadsheet] **Expanded** grid method 13 x 4  **Compact** grid method 13 x 4  40 12	Recall 2, 3, 4, 5, 6 and 10 times tables (Related division facts) Link to divisibility and multiples	U / TU x 10 / 100 (describe the effect) Doubles of TU / HTU numbers	Peg boards (arrays)
Y4	HTU x U TU x U (eg 16 x 8; 43 x 6) Commutativity factors	**Compact** grid method 43 x 6  X 40 3 6 240 18 [ref *Multiplication grid* ITP] Column method for SHORT division. 43 x 6 258 1	Recall facts to 12 x 12 Multiples of numbers to 12 up to the 12th multiple	Numbers up to 1000 x 10 / 100 (whole number answers and understand the effect) Doubles of TU / HTU numbers and multiples of 10 / 100	
Y5	**Refine and use efficient methods:** ThHTU x U ThHTU xTU HTU x U TU x TU U.t x U Proper fractions, mixed numbers x whole numbers	Grid method for multiplying by 2 or 3 digits 47 x 36 = (estimate: 50 x 40 = 2000)  x 40 7 30 1200 210 =1410 6 240 42 = 282 1692 When children are **very secure** with grid method for long multiplication they may be introduced to traditional column long multiplication. 47 x 36 282 1410 1692 Column method for SHORT multiplication 43 x 6 258 1	Recall quickly facts to 12 x 12 Use facts to multiply pairs of multiples of 10 / 100 Use known facts to calculate other facts [Find common multiples of two numbers] Use knowledge of multiplication facts to 12 x 12 to find fractions of numbers.	TU x U (eg 12 x 9) TU x TU (eg 16 x 25) Doubles of U.t / 0.th Multiply whole numbers / decimals by 10 / 100 / 1000	

Y6	**Use efficient methods:** Integer x U (eg 2307 x 8) Decimal x U (eg 31.6 x 7) TU x TU HTU x TU ThHTU x TU	Some children may still be using grid method – especially when multiplying where one number is a decimal i.e. 3.45 x 17 47 x 36 = (estimate: 50 x 40 = 2000) x | 3 | 0.4 | 0.05 10 | 30 | 4 | 0.5 = 34.50 7 | 21 | 2.8 | 0.35 = 24.15 58.65	**Traditional Long Multiplication** 47 x 36 282 1410 1692	Column method for SHORT multiplication 43 x 6 258 1	Multiply a pair of fractions by multiplying numerator x numerator then denominator x denominator and simplifying. $\frac{2}{3} \times \frac{1}{4} = \frac{2}{12} = \frac{1}{6}$ Recognise that the following 3 statements are the same and calculate by ÷ by the denominator and x by numerator. $\frac{2}{3}$ of 180 = 120 $\frac{2}{3}$ x 180 = 120 180 x $\frac{2}{3}$ = 120	Use facts up to 12 x 12 to calculate facts involving multiples of 10 / 100 (eg 80 x 30) and decimals (eg 0.8 x 7) Calculate squares of numbers to 12 x 12 Calculate corresponding squares of multiples of 10 Use knowledge of multiplication facts to 12 x 12 to find fractions of numbers.	TU x U U.t x U Integer x 1000 / 100 / 10 / 0.1 / 0.01	