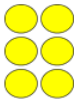
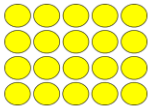
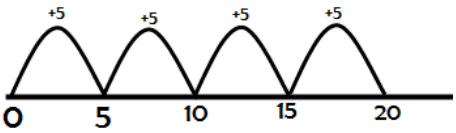
St Anne's Calculation Policy – Multiplication 2017

Red= NC 2014 Blue= St Annes

Year	What will multiplication look like?
R	• Jumping along a number line in steps of…. • Look at patterns/ counting in 1's, 2's, 10's • Grouping objects - counting groups of the same size.
1	**Multiplication in practical context** **National Curriculum 2014-solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.** Vocabulary:- • *Doubling- all numbers to to 10 (x 2);* • *Grouping- counting in groups of 2, 5, and 10.* • *Repeated addition- Pictorial representation of repeated addition eg 5+5+5* **Show the groups in pictures of rows and columns (arrays)**  Eg. 6 3 rows of 2 or 2 columns of 3
2	**Representing multiplication using arrays and Repeated addition** • **Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers** • **Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×) and equals (=) signs.** • **Show that multiplication of two numbers can be done in any order (commutative)** • **Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication facts, including problems in contexts** Vocabulary:- • *Doubles, multiply, groups of, lots of etc.* • *Multiplication tables- 2 , 5, 10* • *Place value (x10)* • *Clock face (x5)* • *Commutativity (2 x 5= 5 x 2)* • *Arrays* • *Repeated addition* **Use of arrays/ repeated addition to solve simple problems**  4 x 5 = 20 5 x 4 = 20 This is the same as 5 + 5 + 5 + 5 or 4 + 4 + 4 + 4 + 4



Use of x and = signs to record calculations.

3

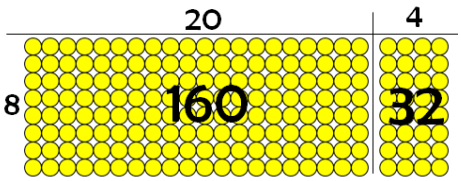
National Curriculum 2014-

- **Recall and use multiplication facts for the 3, 4 and 8 multiplication tables**
- **Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods**
- **Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which 'n' objects are connected to 'm' objects.**

Vocabulary:-

- *Recalling facts- x 3, 4, 8 tables*
- *Mathematical statements- 2 digit x 1 digit*
- *Missing number problems*
- *Scaling problems*

Informal written method- Grid (Visual representation)



x	50	4
6	300	24

$$\begin{array}{r} 300 \\ +\ 24 \\ \hline 324 \end{array}$$

More able pupils to move to formal column multiplication involving 1 digit x 2 digit numbers, when appropriate.

$$\begin{array}{rl} 23 & \\ \times\ \ 8 & \\ \hline 24 & (8\times3) \\ 160 & (8\times20) \\ \hline 184 & \end{array}$$

4

National Curriculum 2014-

- **Recall multiplication facts for multiplication tables up to 12 × 12**
- **Use place value, known and derived facts to multiply mentally, including: multiplying by 0 and 1; multiplying together three numbers**
- **Recognise and use factor pairs and commutativity in mental calculations**
- **Multiply two-digit and three-digit numbers by a one-digit number using formal written layout**
- **Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as 'n' objects are connected to 'm' objects.**

Vocabulary:-

- *Recalling facts- up to 12 X 12 tables*
- *Commutativity (2 x 5= 5 x 2)*
- *Distributive law- 5 x (20+3)= (5 x 20) + (5 x 3) (Partitioning- using grid method)*

	• *Formal written layout- 1 digit x 2 or 3 digit numbers* *Consolidate informal Grid Method (supporting use of the Distributive law)* x | 50 | 4 6 | 300 | 24 300 + 24 = 324 (also 1 digit x 3 digit numbers) **Formal written method of multiplication (expanded version)** 23 x 8 24 (8x3) 160 (8x20) 184
5	**National Curriculum 2014-** • **Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers** • **Multiply numbers mentally drawing upon known facts** • **Multiply whole numbers and those involving decimals by 10, 100 and 1000** • **Solve problems involving multiplication including using their knowledge of factors and multiples, squares and cubes** • **Solve problems involving multiplication, including understanding the meaning of the equals sign** • **Solve problems involving multiplication including scaling by simple fractions and problems involving simple rates.** • **Solve problems involving number up to 3 decimal places.** Vocabulary:- • *Multiples , Factors, Common factors* • *Prime numbers, Prime factors, Composite (Non- Prime) numbers* • *Squared (2) ,Cubed (3)* • *Formal written methods- 4 digit x 1 or 2 digit numbers* *Informal Grid Method- for those needing consolidation* x | 50 | 4 30 | 1500 | 120 6 | 300 | 24 1500 + 120 + 300 + 24 = 1944 **Formal written method of multiplication** **(Expanded)** **Short Multiplication** (up to 1 digit x 4 digit) **Long multiplication (expanded)** (2 digit x 2 digit)

	23 × 8 24 (8x3) 160 (8x20) 184 245 × 6 30 (6x5) 240 (6x40) 1200 (6x200) 1470 24 × 6 144 2 45 × 36 30 (6x5) 240 (6x40) 150 (30x5) 1200 (30x40) 1620 1
6	National Curriculum 2014- • Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • Multiply one-digit numbers with up to two decimal places by whole numbers • Use written division methods in cases where the answer has up to two decimal places Vocabulary:- • *Long multiplication* • *Interpret remainders* **Formal written method of multiplication** **Long multiplication (expanded)** 45 × 36 30 (6x5) 240 (6x40) 150 (30x5) 1200 (30x40) 1620 1 **Long multiplication (compact)** 45 X 36 270 3 1350 1 1620