



SOUTHWICK C E PRIMARY SCHOOL
CALCULATION POLICY
Multiplication

Reception Year

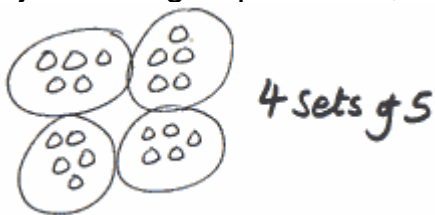
- Calculations almost always involve real objects. Children make several sets of objects, sometimes of equal size.

Year 1

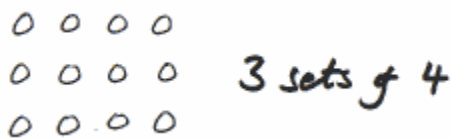
- Learners use cubes (or other counters and coins) to make doubles (and near-doubles).

Year 2

- Children use knowledge of doubles (and near doubles) to carry out calculations in 'real-life' situations (e.g. shopping)
- Objects are grouped in 2's, 5's and 10's:

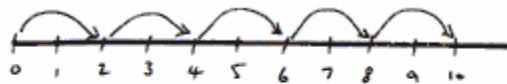


- Learners draw rectangular arrays (to help show what multiplying means):



- Children use the multiplication symbol when recording simple multiplication calculations; these are recorded as jumps on a number line (and understood as repeated addition):

$$2 \times 5 = 10$$



“ Multiplying 2 is like adding lots of 2's. ”

$$2 + 2 + 2 + 2 + 2$$

- Children use the idea of multiplication when using coins:

$$2p \times 4 = 8p$$

- Children start to learn times table facts (x10, x2, x5).

Year 3

- Year 2 concepts are reinforced. Learning times tables becomes crucial: a good order after the 10's, 2's and 5's is x3, 4, 9, 6, 7, 8
- Larger values can be multiplied by partitioning and recombining (2 alternative jottings are shown):

double 19

$$10 \times 2 = 20$$

$$9 \times 2 = 18$$

$$\underline{\quad 18}$$

$$38$$

“ I'll partition 19 into 10 and 9.
I can count in tens.
Double 10 is easy: 20.
I can count in twos: 2, 4, 6, 8,
10, 12, 14, 16, 18.
I'll recombine these parts of
the answer to make 38 in all. ”

- An understanding of place value makes harder calculations possible:

$$40 \times 5$$

$$4 \times 5 = 20$$

$$40 \times 5 = 200$$

“ 40×5 looks tricky.
But I know 4×5 ; it's 20.
40 is 10 times bigger than 4, so the answer must
be 10 times bigger than 20. That's 200. ”

Year 4

- Learners start to use the grid method (this illustrates the partition of larger values, and makes clear the separate parts of the calculation):

$$27 \times 6$$

	20	7
6	120	42

$$120 + 42 = 162$$

“ 27 times 6 is 20 times 6 and
7 times 6 put together.
20 times 6 is like 2×6 , but
10 times bigger: 120.
7 times 6 is 42.
162 altogether. ”

- Knowledge of multiplication facts ('times tables') is increasingly important. Children need to know the connection between tables facts and division facts too.

Year 5

- Numbers are rounded so that estimates can be made (this is especially important when calculators are used)

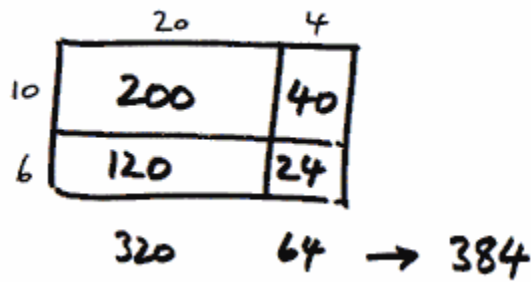
$$24 \times 16$$

$$20 \times 15 = 300$$

“ I estimate the answer to
be *something* like 300. ”

- The grid method is extended to larger numbers:

“ The grid reminds me that there are **four** parts to this calculation. I use the times-table facts that I know and my knowledge of place value to find each part before adding them together to get the complete answer. ”



Year 6

- When the grid method is understood then the familiar formal written method can be seen as a shorthand way of recording and combining all the parts of a multiplication (these shortcut recordings are introduced in Year 5 if appropriate):

$$\begin{array}{r}
 26 \\
 \times 16 \\
 \hline
 200 \\
 120 \\
 60 \\
 36 \\
 \hline
 416
 \end{array}
 \quad
 \begin{array}{l}
 (20 \times 10) \\
 (20 \times 6) \\
 (6 \times 10) \\
 (6 \times 6)
 \end{array}$$

This is an expanded version of the formal method. Writing the partial products down the side is a good way to keep tabs on what's going on, especially while children build their confidence.

- The layout below is a bit more abbreviated than the previous recording (above). It's very important that all four partial products (6 x 6; 6 x 20; 10 x 6; 10 x 20) are calculated.

$$\begin{array}{r}
 26 \\
 \times 16 \\
 \hline
 156 \\
 260 \\
 \hline
 416
 \end{array}
 \quad
 \begin{array}{l}
 (26 \times 6) \\
 (26 \times 10)
 \end{array}$$

- Below is the shorthand version.

$$\begin{array}{r} 26 \\ \times 16 \\ \hline 156 \\ 260 \\ \hline 416 \\ \hline \end{array}$$

Is this better than the grid method? Only if it's at least as accurate and at least as fast. If your child handles the grid method well then that's fine too.

“ I like to mark in when I've done each bit of the multiplication - that way I don't miss any.”

$$\begin{array}{r} 26) \\ \times 16 \\ \hline \end{array}$$