

# St John the Baptist, Progression in multiplication

## MULTIPLICATION

### Prerequisite skills and knowledge

Understanding of place value

Counting on and back in multiples of numbers

Multiplication as repeated addition.

Reversing order of numbers makes no difference to the answer:

$$2 \times 3 = 3 \times 2$$

(Commutative Law)

Multiplying by 0 = 0

Times tables facts

Build up from 2, 5 and 10; then 3, 4 and 6; 7, 8 and 9; finally 11 & 12

Partitioning of numbers

Repeated addition

Factors  
Multiples

Square numbers

Squares of multiples:  
60 x 60

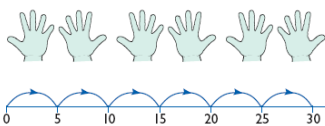
Understand principle of moving columns when x and ÷ by 10, 100, 1000

### Key vocabulary:

Multiply, lots of, groups of, times, product, multiplied by, multiple of, once...twice..., double, repeated addition, array, place holder

### Visual models and prompts

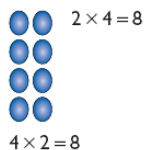
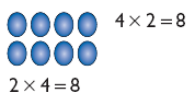
#### Drawing groups of objects



#### Counting stick to emphasise counting patterns

#### Using hands to represent multiples

#### Arrays:



#### Recording number patterns

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

$$10 \times 2 = 20$$

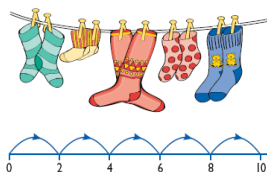
Using the inverse to calculate missing number problems

$$9 \times \square = 18$$

$$18 \div 9 = 2$$

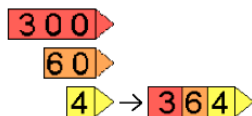
### Models and images to support mental calculations

#### Jumps along a number line:



$2 + 2 + 2 + 2 + 2 = 10$   
 $2 \times 5 = 10$   
 2 multiplied by 5  
 5 pairs  
 5 hops of 2

#### Place value columns for multiplying by 10, 100 and 1000.

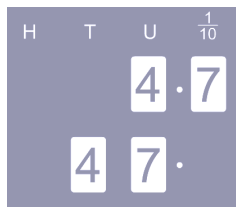


Th	H	T	U
3	5	0	0
3	5	0	0
2	7	0	0

This shows that  $35 \times 10 = 350$   
 This shows that  $27 \times 100 = 2700$

#### Place value columns for decimals

$$4.7 \times 10 =$$



### Expanded written methods (grid method)

#### Grid method:

$$34 \times 6$$

x	30	4
6	180	24

Then add

$$\begin{array}{r} 180 \\ + 24 \\ \hline 204 \end{array}$$

$$257 \times 6$$

x	200	50	7
6	1200	300	42

Then add

$$\begin{array}{r} 1200 \\ + 300 \\ + 42 \\ \hline 1542 \end{array}$$

$$45 \times 78$$

x	40	5
70	2800	350
8	320	40

Then add

$$\begin{array}{r} 2800 \\ + 350 \\ + 40 \\ \hline 3510 \end{array}$$

#### Progression:

- TU x U / HTU x U
- TU x TU / HTU x TU
- Extend to decimals  
 $U. + x U$   
 $TU. + x U$

### Compact, most efficient method

#### Long multiplication (expanded method):

$$\begin{array}{r} 72 \\ \times 38 \\ \hline 560 \quad (8 \times 2) \\ + 2100 \quad (30 \times 2) \\ \hline 2736 \end{array}$$

#### Short multiplication (compact method):

$$\begin{array}{r} 38 \\ \times 7 \\ \hline \end{array}$$

Emphasise the importance of estimating the answer first.

$$38 \times 5 = 190 \quad (38 \times 10 / 2)$$

$$2 \times 40 = 80$$

Answer is approximately 270

$$\begin{array}{r} 38 \\ \times 7 \\ \hline 266 \\ 5 \end{array}$$

Then calculate formally. Use your estimation to check your answer.

$$\begin{array}{r} 56 \\ \times 27 \\ \hline 392 \quad (7 \times 56) \\ + 1120 \quad (20 \times 56) \\ \hline 1512 \\ 1 \end{array}$$