

Staples Road Primary School - Multiplication Calculation Progression

Stages STAGE 1

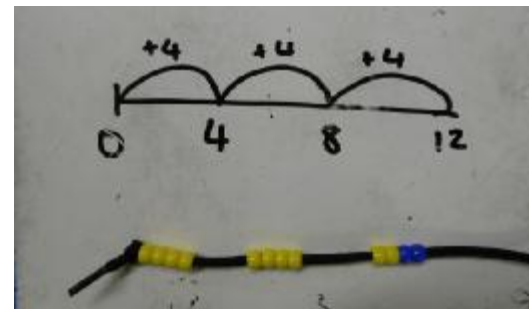
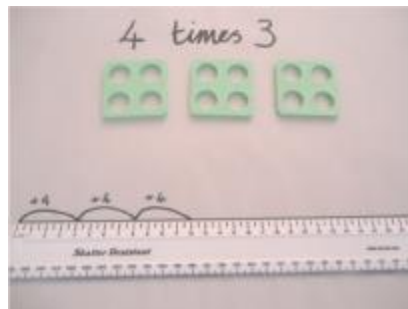
Develop multiplication as repeated grouping (repeated addition of sets of the same size) using practical apparatus and diagrams.



STAGE 2

Develop an understanding of multiplication using arrays and number lines showing repeated groups.

Use number lines to show repeated grouping (repeated addition of sets of the same size).



STAGE 3

Develop the use of x and = symbols to record calculations horizontally.

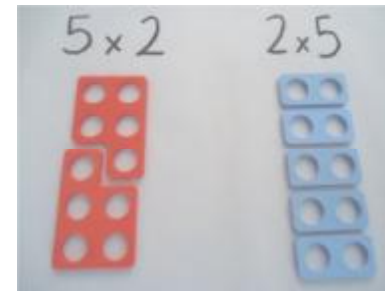
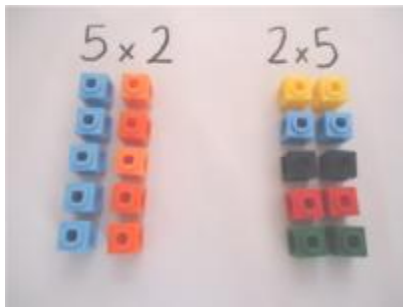
Use arrays and other practical apparatus to illustrate commutativity (that multiplication calculations can be carried out in any order) e.g. 2×5 arrives at the same product as 5×2 .

Begin to derive new facts from known facts

e.g. $3 \times 2 = 6$ (known fact)

$30 \times 2 = 60$

$300 \times 2 = 600$ etc.



STAGE 4

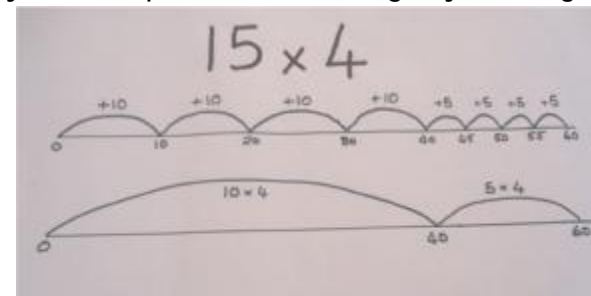
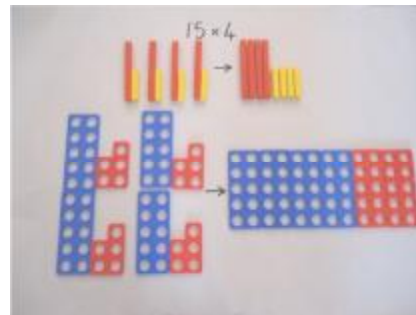
Begin to use understanding of place value and partitioning to carry out multiplication of two-digit by one-digit numbers

$$\begin{array}{r} 15 \times 4 \\ \swarrow \quad \searrow \\ 10 \quad 5 \end{array}$$

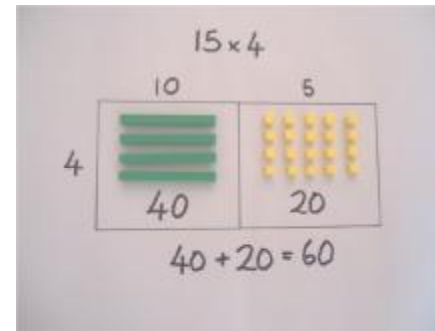
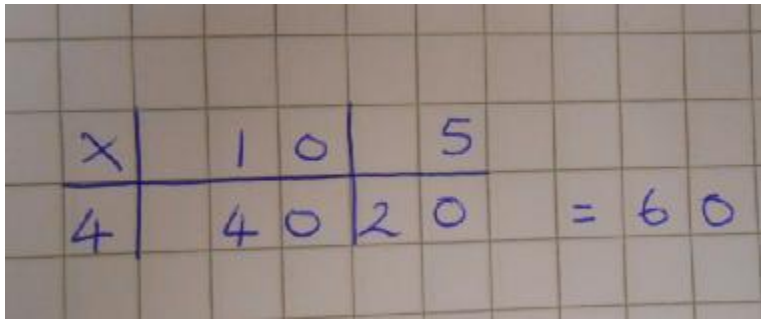
$$10 \times 4 = 40$$

$$5 \times 4 = 20$$

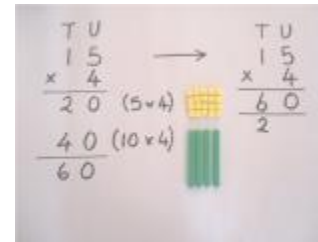
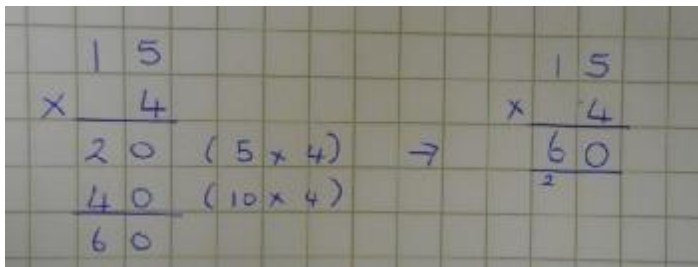
$$40 + 20 = 60$$



Use grid approaches to illustrate as appropriate using practical apparatus to support.



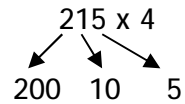
Develop expanded recording in columns and then move to formal written method, using practical apparatus to support as required.



STAGE 5

Extend written approaches to HTU x U, then to ThHTU x U

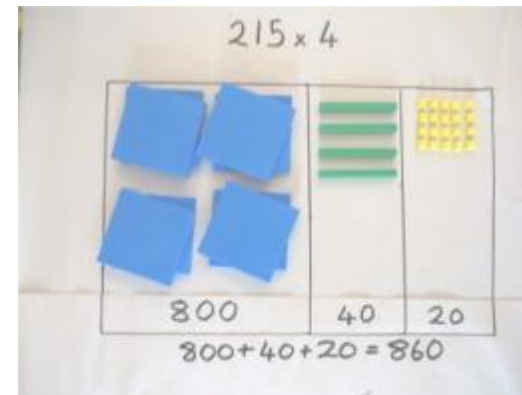
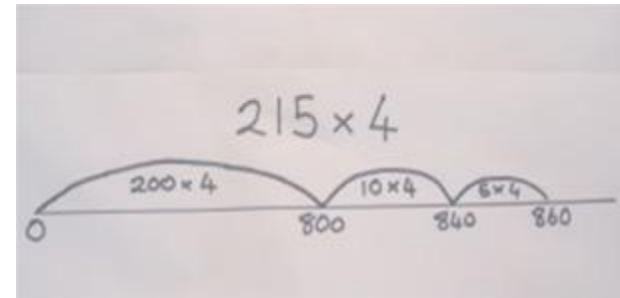
Illustrate using partitioning approaches as required



$$\begin{aligned} 200 \times 4 &= 800 \\ 10 \times 4 &= 40 \\ 5 \times 4 &= 20 \\ 800 + 40 + 20 &= 860 \end{aligned}$$

Illustrate using grid approaches as required

x	200	10	5	
4	800	40	20	= 860



Develop expanded recording in columns and then move to formal written method, using practical apparatus to support as required.

$\begin{array}{r} 215 \\ \times 4 \\ \hline 20 \text{ (5} \times 4) \\ 40 \text{ (10} \times 4) \\ 800 \text{ (200} \times 4) \\ \hline 860 \end{array}$	→	$\begin{array}{r} 215 \\ \times 4 \\ \hline 860 \\ 2 \end{array}$
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STAGE 6

Extend written approaches to TUxTU and HTU x TU and ThHTU x TU

Illustrate using grid approaches as required

A handwritten grid approach for the multiplication 26×13 . The grid is divided into four quadrants by a vertical line and a horizontal line. The top-left quadrant contains the numbers 2, 0, and 6. The top-right quadrant contains the numbers 1, 0, and 3. The bottom-left quadrant contains the products 200, 60, and 18. The bottom-right quadrant contains the products 260, 78, and 338. The final result 338 is underlined.

Develop expanded recording in columns and then move to formal written method of long multiplication, using practical apparatus to support as required.

Two handwritten methods for the multiplication 26×13 . The left method shows expanded recording in columns with partial products: 18 (6×3), 60 (20×3), 60 (6×10), and 200 (20×10), resulting in 338 . The right method shows the formal written method of long multiplication, resulting in 338 .

Illustrate using grid approaches as required

