


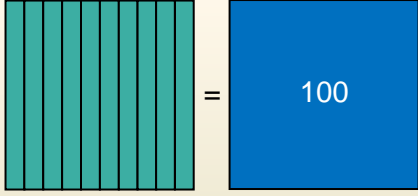
# THE DEVELOPMENTAL NATURE OF MATHS

How to get the early stages of teaching multiplication right to avoid confusion in the future


**Make use of manipulatives**


$\square = 1$


$1 \times 10 =$  

$10 \times 10 =$  

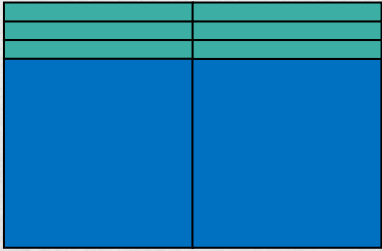
**Stage 1** **1 × 13**


  $1 \times 13$

  $1 \times 3$

  $1 \times 10$

**Stage 5** **22 × 13**


  $13$

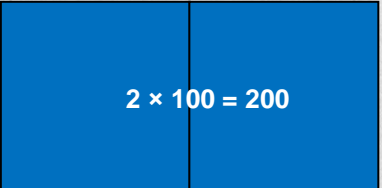
  $2$

$$\begin{array}{r} 13 \\ \times 22 \\ \hline 260 \\ \underline{26} \\ 286 \end{array}$$

$20 \times 13$   
 $2 \times 13$


$20 \times 3 = 60$


  $2 \times 3 = 6$


  $10$   $2 \times 100 = 200$   $2 \times 10 = 20$

	20	2	
3	60	6	66
10	200	20	220
	260	26	286


**Stage 2** **2 × 13**

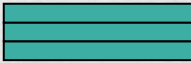
  $2 \times 13$


  $2 \times 3$

  $2 \times 10$

**Stage 3** **10 × 13**

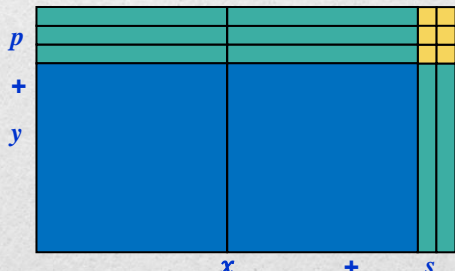
  $10 \times 13$

  $3 \times 10$

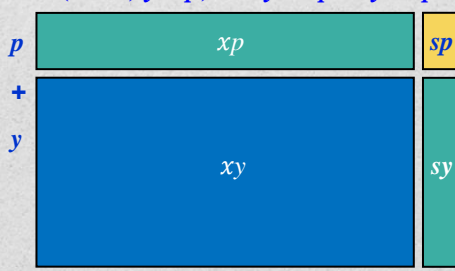
  $10 \times 10$

**Stage 6** **Algebra**

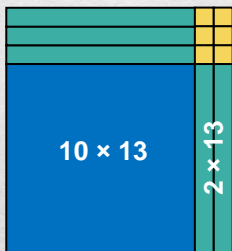
$(x + s)(y + p)$

  $p$   $+$   $y$   $x$   $+$   $s$

$(x + s)(y + p) = xy + xp + sy + sp$

  $p$   $+$   $y$   $x$   $+$   $s$

**Stage 4** **12 × 13**

  $13$   $10 \times 13$   $2 \times 13$

$$\begin{array}{r} 13 \\ \times 12 \\ \hline 130 \\ \underline{26} \\ 156 \end{array}$$

$10 \times 13$   
 $2 \times 13$

