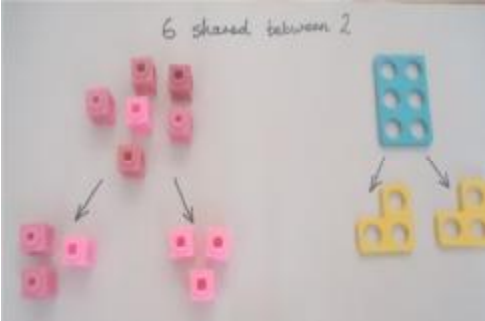


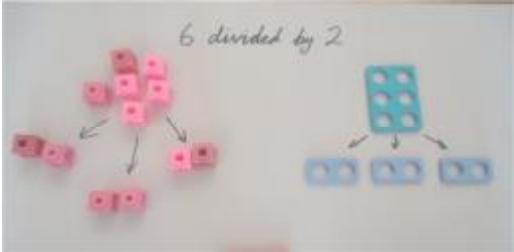
# Staples Road Primary School - Division Calculation Progression

## Stages STAGE 1

First develop division as sharing.



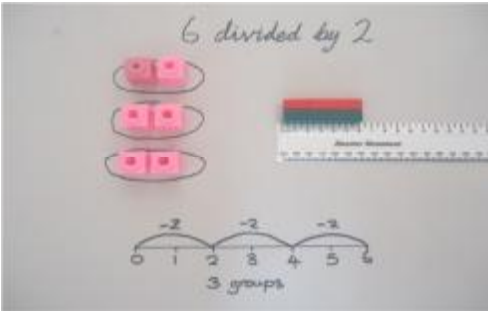
Develop division as repeated grouping (repeated subtraction of sets of the same size) using practical apparatus and diagrams.



## STAGE 2

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

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



## STAGE 3

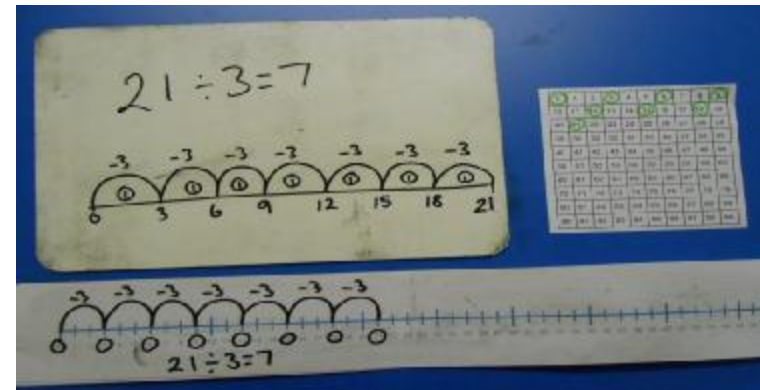
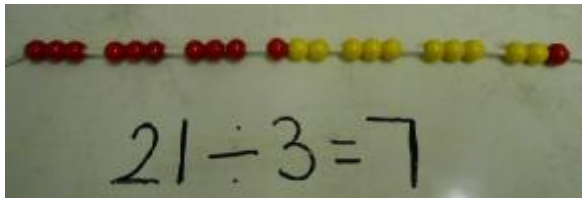
### TU ÷ U

Develop the use of ÷ and = symbols to record calculations horizontally  
Use bead strings and other practical apparatus to illustrate making of repeated groups

Begin to carry out division of two-digit by one-digit numbers, first without remainders, then introducing remainders, illustrating this using informal methods first if required.

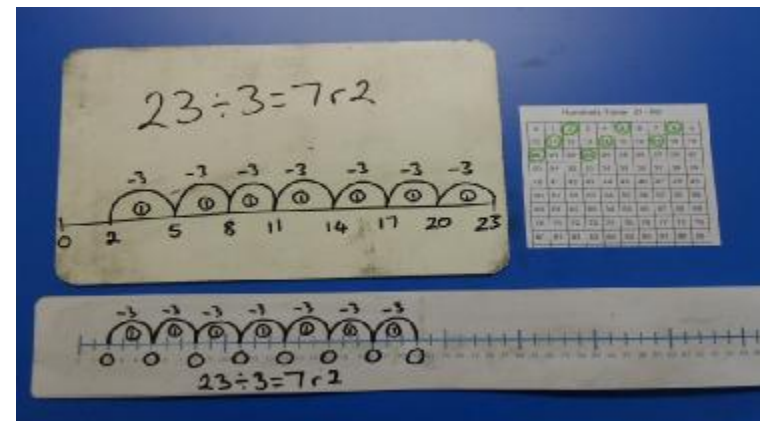
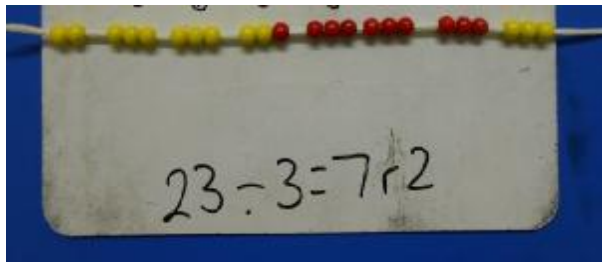
$$21 \div 3 =$$

How many groups of 3?



$$23 \div 3 =$$

How many groups of 3?  
How many are left over?  
How many remainders?

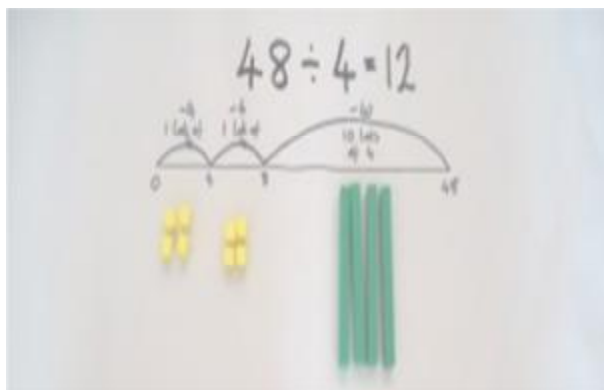


## STAGE 4

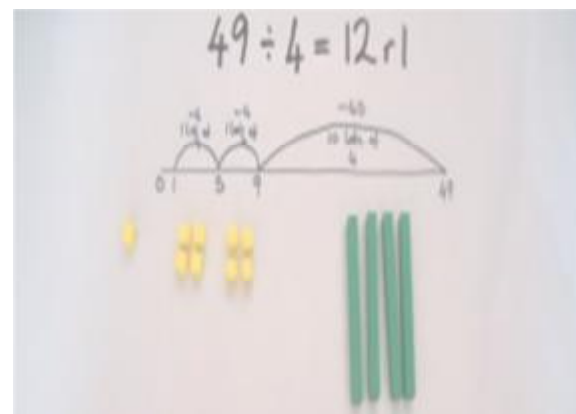
TU ÷ U

Division using larger multiples of the divisor, first with no remainders, then with remainders

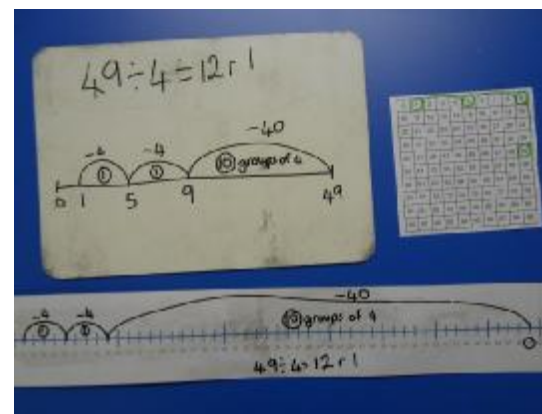
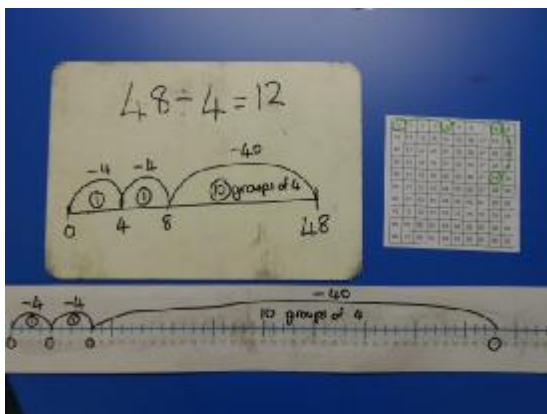
$$48 \div 4$$



$$49 \div 4$$



Can we take a group of 10? How many groups of 10?



## STAGE 5

TU ÷ U

Move to develop the standard method for long division, first with no remainders, then with remainders

$$48 \div 4 =$$

Handwritten long division for  $48 \div 4 = 12$ . The calculation shows 48 divided by 4, with 40 subtracted (4 × 10) and 8 subtracted (4 × 2), resulting in 0.

$$49 \div 4 =$$

Handwritten long division for  $49 \div 4 = 12 \text{ r } 1$ . The calculation shows 49 divided by 4, with 40 subtracted (4 × 10) and 8 subtracted (4 × 2), leaving a remainder of 1.

How many groups of 10? How many multiples of 10?

$$96 \div 4 =$$

Handwritten long division for  $96 \div 4 = 24$ . The calculation shows 96 divided by 4, with 40 subtracted (4 × 10), 56 subtracted (4 × 10), and 16 subtracted (4 × 4), resulting in 0.

Handwritten long division for  $96 \div 4 = 24$ . The calculation shows 96 divided by 4, with 80 subtracted (4 × 20) and 16 subtracted (4 × 4), resulting in 0.

NB: Move children on to finding multiples of 10

## STAGE 6

Extend written calculation methods to HTU  $\div$  U, then to ThHTU  $\div$  U, first with no remainders, then with remainders, illustrating these using informal methods first if required. (numberlines )

HTU  $\div$  U

No  
remainders

$$136 \div 4 = 34$$

$$\begin{array}{r} 34 \\ 4 \overline{)136} \\ \underline{120} \quad (4 \times 30) \\ 16 \\ \underline{16} \quad (4 \times 4) \\ 0 \end{array}$$

Key facts

$4 \times 2 = 8$

$4 \times 5 = 20$

$4 \times 10 = 40$

HTU  $\div$  U

With  
remainders

$$138 \div 4 = 34 \text{ r } 2$$

$$\begin{array}{r} 34 \text{ r } 2 \\ 4 \overline{)138} \\ \underline{120} \quad (4 \times 30) \\ 18 \\ \underline{16} \quad (4 \times 4) \\ 2 \text{ remainder} \end{array}$$

Key facts

$4 \times 2 = 8$

$4 \times 5 = 20$

$4 \times 10 = 40$

Important to use key facts 2,5 & 10 times but can include all times table facts up to 10.

ThHTU  $\div$  U

No  
remainders

$$2596 \div 4 = 649$$

$$\begin{array}{r} 649 \\ 4 \overline{)2596} \\ \underline{2400} \quad (4 \times 600) \\ 196 \\ \underline{160} \quad (4 \times 40) \\ 36 \\ \underline{36} \quad (4 \times 9) \\ 0 \end{array}$$

Key facts

$4 \times 1 = 4$	$4 \times 6 = 24$
$4 \times 2 = 8$	$4 \times 7 = 28$
$4 \times 3 = 12$	$4 \times 8 = 32$
$4 \times 4 = 16$	$4 \times 9 = 36$
$4 \times 5 = 20$	$4 \times 10 = 40$

ThHTU  $\div$  U

With  
remainders

$$2598 \div 4 = 649 \text{ r } 2$$

$$\begin{array}{r} 649 \text{ r } 2 \\ 4 \overline{)2598} \\ \underline{2400} \quad (4 \times 600) \\ 198 \\ \underline{160} \quad (4 \times 40) \\ 38 \\ \underline{36} \quad (4 \times 9) \\ 2 \end{array}$$

Key facts

$4 \times 1 = 4$	$4 \times 6 = 24$
$4 \times 2 = 8$	$4 \times 7 = 28$
$4 \times 3 = 12$	$4 \times 8 = 32$
$4 \times 4 = 16$	$4 \times 9 = 36$
$4 \times 5 = 20$	$4 \times 10 = 40$

## STAGE 7

HTU  $\div$  TU ThTU  $\div$  TU

Extend written approaches to the formal method of long division when dividing by two-digit numbers, illustrating this using informal methods first if required.

Handwritten long division for  $432 \div 15 = 28 \text{ r } 12$ . The work shows the formal method with a key facts table to the right.

$$\begin{array}{r} 28 \text{ r } 12 \\ 15 \overline{) 432} \\ \underline{300} \quad (15 \times 20) \\ 132 \\ \underline{120} \quad (15 \times 8) \\ 12 \text{ remainder} \end{array}$$

Key facts
$15 \times 2 = 30$
$15 \times 4 = 60$
$15 \times 5 = 75$
$15 \times 8 = 120$
$15 \times 10 = 150$

Handwritten long division for  $2598 \div 24 = 108 \text{ r } 6$ . The work shows the formal method with a key facts table to the right.

$$\begin{array}{r} 108 \text{ r } 6 \\ 24 \overline{) 2598} \\ \underline{2400} \quad (24 \times 100) \\ 198 \\ \underline{192} \quad (24 \times 8) \\ 6 \text{ remainder} \end{array}$$

Key facts
$24 \times 2 = 48$
$24 \times 4 = 96$
$24 \times 5 = 120$
$24 \times 8 = 192$
$24 \times 10 = 240$

ThHTU  $\div$  TU

Only ever to be used by  
strong level 5 & level 6  
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