



Gravel Hill Primary School

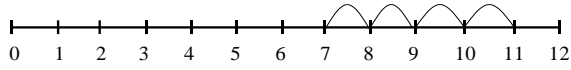
Calculation Policy

ADDITION

Stage 1

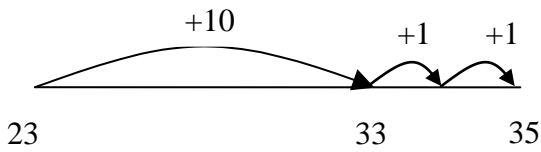
Using number lines to count on in ones.

$$7 + 4 = 11$$



Stage 2

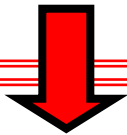
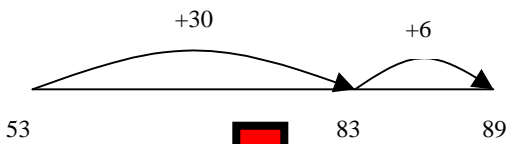
$$\begin{aligned} 23 + 12 &= 23 + 10 + 1 + 1 \\ &= 33 + 1 + 1 \\ &= 35 \end{aligned}$$



Stage 3

Partition into tens and ones and recombine.

$$53 + 36 =$$

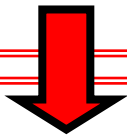


Stage 4

$$83 + 42 = 125$$

Progress to:

$80 + 3$	83
$+ 40 + 2$	$+ 42$
$120 + 5 = 125$	5
	$\underline{120}$
	125



Stage 5

Formal method, showing numbers carried underneath.

$$\begin{array}{r} 358 \\ + 73 \\ \hline 431 \\ 11 \end{array}$$

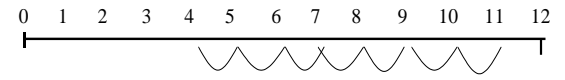
Extend to numbers with any number of digits and decimals with 1 and 2 decimal places.

SUBTRACTION

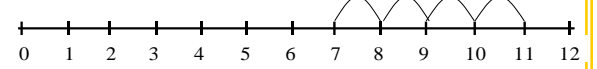
Stage 1

Using number lines to count back in ones.

$$11 - 7 = 4$$



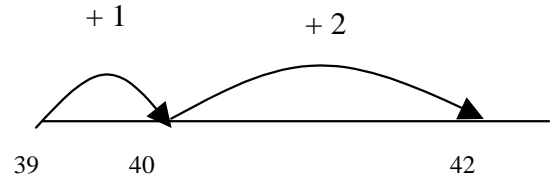
Counting on, using a number line, to find the difference between 7 and 11.



Stage 2 -

Find a small difference by counting up.

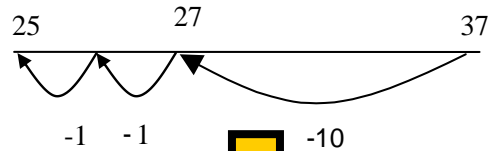
$$42 - 39 = 3$$



Stage 3

Counting back in tens and ones.

$$\begin{aligned} 37 - 12 &= 37 - 10 - 1 - 1 \\ &= 27 - 1 - 1 \\ &= 25 \end{aligned}$$

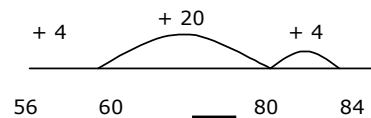


Stage 4

Complementary addition

(Counting up from the smaller number to the larger number)

$$84 - 56 = 28$$



Stage 5 -

Decomposition

larger numbers.

$$\begin{array}{r} 3000 - 0 \\ \hline 3194 \end{array}$$

Exchange with the next digit.

Start subtracting from the units

$150 - 60 = 90$

Progress to using decomposition with decimals.

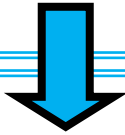
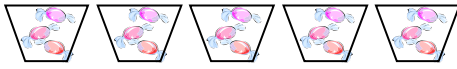
MULTIPLICATION

Stage 1

Pictures and symbols

There are 3 sweets in one bag.

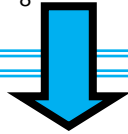
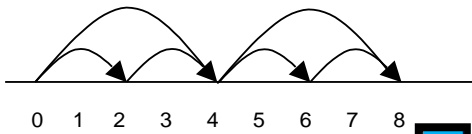
How many sweets are there in 5 bags?



Stage 2

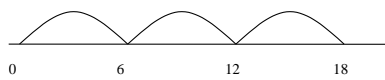
Arrays and repeated addition

$\begin{array}{cccc} \bullet & \bullet & \bullet & \\ \bullet & \bullet & \bullet & \bullet \end{array}$ 4×2 or 2×4 is
 $\bullet \bullet \bullet \bullet$ $2 + 2 + 2 + 2$ or $4 + 4$



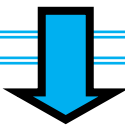
Stage 3

Number lines E.g. 6×3 :



Partitioning E.g. $15 \times 2 = 30$:

$$\begin{array}{r} \times \\ 10 \\ 20 \\ \hline 20 \\ 10 \\ \hline 30 \end{array}$$



Stage 4

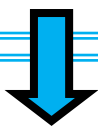
Grid method to multiply by 1 digit

E.g. $35 \times 2 = 70$

$$\begin{array}{r|l|l} \times & 30 & 5 \\ 2 & 60 & 10 \\ \hline & 60 & 10 \\ & \hline & 70 \end{array}$$

E.g. $123 \times 3 = 369$

$$\begin{array}{r|l|l|l} \times & 100 & 20 & 3 \\ 3 & 300 & 60 & 9 \\ \hline & 300 & 60 & 9 \\ & \hline & 369 \end{array}$$



Stage 5

Grid method to multiply by more than 1 digit

E.g. 72×38

$$\begin{array}{r|l|l} \times & 70 & 2 \\ 30 & 2100 & 60 \\ 8 & 560 & 16 \\ \hline & 2160 & 576 \\ & \hline & 2736 \\ & & 1 \end{array}$$

Progressing to using the grid method for decimals.

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Stage 1

Pictures / marks

12 children get into teams of 4 to play a game. How many teams are there?

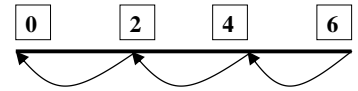


Stage 2

Sharing – 6 sweets are shared between 2 people. How many do they have each? ($6 \div 2$)



Grouping – There are 6 sweets. How many people can have 2 each? (How many 2's make 6?)

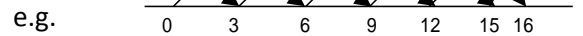


Stage 3

Division with remainders

$16 \div 3 = 5 \text{ r}1$

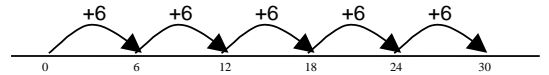
Grouping – How many 3s make 16, how many left over?



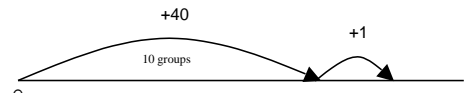
Stage 4

$30 \div 6$ can be modelled as:

Grouping – groups of 6 taken away and the number of groups counted e.g.



$41 \div 4 = 10 \text{ r}1$



Stage 5

Use "chunking"

$$\begin{array}{r} 8 \overline{) 146} \\ \underline{80} \\ 66 \\ \underline{40} \\ 26 \\ \underline{24} \\ 2 \end{array}$$

(8×10)
 (8×5)
 (8×3)

Total all the 'chunks' of 8 to find the answer.

Answer: $18 \text{ r} 2$

or short division.

$$\begin{array}{r} 153 \\ 8 \overline{) 1296} \\ \underline{80} \\ 49 \\ \underline{40} \\ 91 \\ \underline{80} \\ 118 \\ \underline{112} \\ 6 \end{array}$$

This method can be used when dividing larger numbers and decimals, and when there is a remainder

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