

Staples Road Primary School - Addition Calculation Progression

Stages STAGE 1

Count on using number tracks / number lines / 100 grids/ to support.



Develop concept of number bonds, initially to ten and then to 20.
Record related number facts.

e.g. $4 + 5 = 9$, $5 + 4 = 9$, $9 = 4 + 5$, $9 = 5 + 4$



STAGE 2

Develop understanding of the equals sign / equality and the concept of 'empty box' questions.

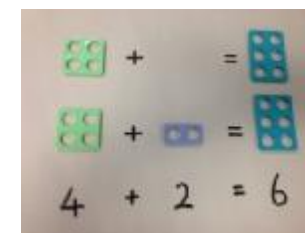
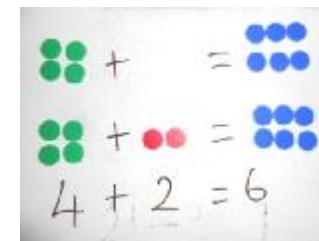
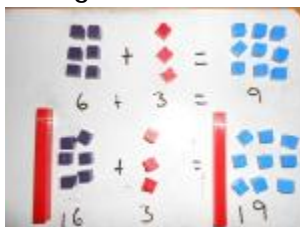
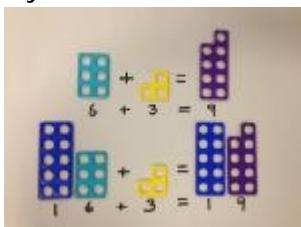
Record solutions to calculations such as $4 + \square = 9$.

Use understanding of patterning, place value and partitioning to derive number facts.
e.g. $6 + 3 = 9$ (known fact)

$$16 + 3 = 19$$

$$26 + 3 = 29$$

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



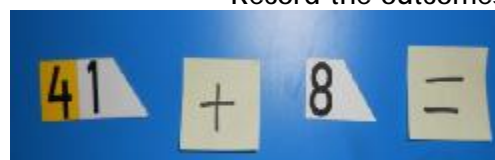
STAGE 3

TU + U

Continue to develop understanding of partitioning and place value and use this to support addition.

$$\begin{aligned} 41 + 8 \\ 0 + 1 + 8 \\ 40 + 9 = 49 \end{aligned}$$

Practical apparatus is used to support this, as are placevalue cards/number tracks /100 squares and number lines.
Record the outcomes of calculations in horizontal format.



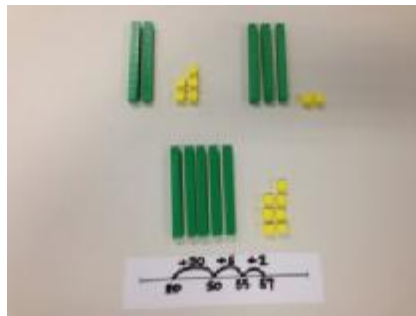
STAGE 4

TU + TU

Continue to develop understanding of partitioning and place value and use this to support addition. Practical apparatus is used to support this dienes, beadstrings, place value cards, as are number tracks /100 squares and number lines.

Record the outcomes of calculations in horizontal format.

First step is to give numbers that don't cross the 10 or 100 boundaries.



$$25 + 32 =$$

$$\begin{array}{r} 20 + 5 \\ 30 + 2 \\ \hline 50 + 7 = 57 \end{array}$$

$$\begin{array}{r} 25 + 32 = \\ \hline 20 + 5 \quad 30 + 2 \\ \hline 50 + 7 = 57 \end{array}$$

Where units combine to make totals greater than 10 or 100, children can regroup using partitioning skills

$$34 + 48 =$$
$$\begin{array}{r} 30 + 4 \\ 40 + 8 \\ \hline 70 + 12 = 82 \end{array}$$

$$\begin{array}{r} 47 + 45 \\ \hline 80 + 7 \\ 40 + 5 \\ \hline 120 + 12 = 132 \\ \hline 100 + 20 + 10 + 2 = 132 \end{array}$$

Pupils continue to determine when calculations are best carried out using mental strategies. Use expanded recording and apparatus to illustrate concept.

STAGE 5

HTU + HTU

Continue to develop understanding of partitioning and place value and use this to support addition. Practical apparatus is used to support this dienes, beadstrings, place value cards, as are number tracks /100 squares and number lines. Record the outcomes of calculations in horizontal expanded format.

247 + 351 =

First step is to give numbers that don't cross any boundaries

200 + 40 + 7
300 + 50 + 1
500 + 90 + 8 = 598

247 + 351
200 + 40 + 7
300 + 50 + 1
500 + 90 + 8 = 598

Where units combine to make totals greater than 10 or 100, children can regroup using partitioning skills

247 + 318 =

247 + 398 =

200 + 40 + 7
300 + 10 + 8
500 + 50 + 15 = 565

247 + 318
200 + 40 + 7
300 + 10 + 8
500 + 50 + 15 = 565

200 + 40 + 7
300 + 90 + 8
500 + 130 + 15 = 645
if need to regroup -> 500 + 100 + 30 + 0 + 15 = 645

247 + 398
200 + 40 + 7
300 + 90 + 8
500 + 130 + 15 = 645
500 + 100 + 30 + 0 + 15 = 645

Pupils continue to determine when calculations are best carried out using mental strategies. Use expanded recording and apparatus to illustrate concept.

Stage 6

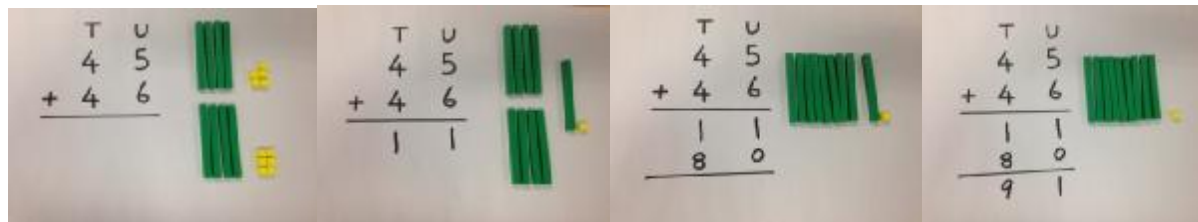
Continue to determine when calculations are best carried out using mental strategies.

When written methods are more appropriate, continue use of practical apparatus to support, develop an understanding of the formal written method for column addition, initially without and then introducing carrying.

Initially use expanded recording if appropriate to explore concept. Then move into horizontal method.

$$\begin{array}{r} 45 + 46 = \\ 45 \\ + 46 \\ \hline 11 \quad (5+6) \\ 80 \quad (40+40) \\ \hline 91 \end{array}$$

Brackets show what is happening



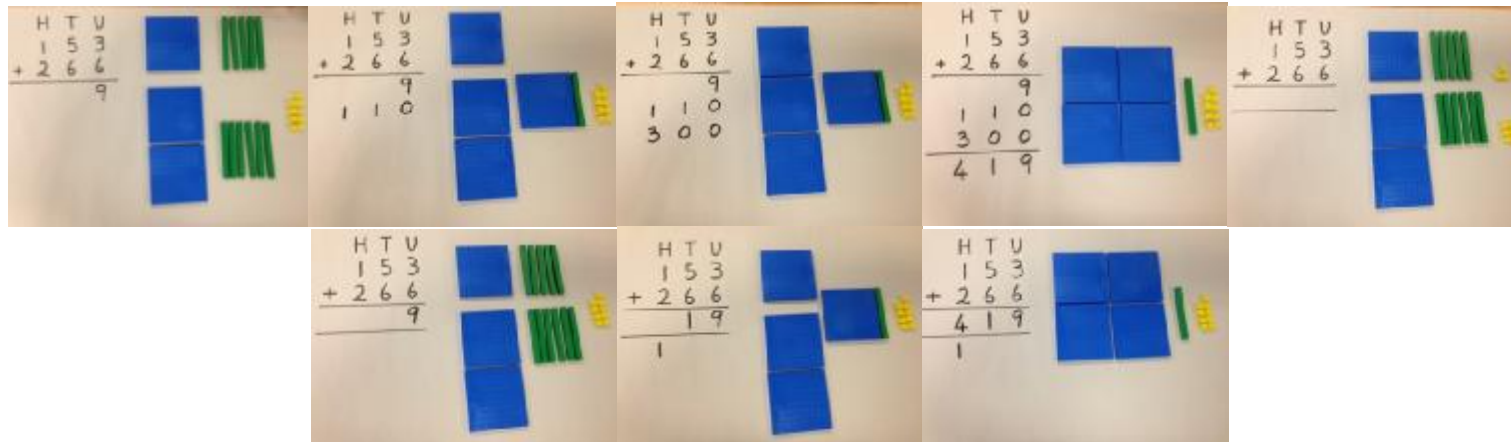
becomes

$$\begin{array}{r} \text{T} \quad \text{U} \\ 4 \quad 5 \\ + 4 \quad 6 \\ \hline 9 \quad 1 \\ 1 \end{array}$$

Continue to determine when calculations are best carried out using mental strategies.

Extend the standard written method to introduce the hundreds column, initially without and then introducing carrying, initially using expanded recording if appropriate.

$$153 + 266 =$$



This becomes

$$\begin{array}{r} 153 \\ + 266 \\ \hline 419 \\ 1 \end{array}$$

STAGE 7

Continue to determine when calculations are best carried out using mental strategies.

Develop use of the formal written method to addition of increasingly large numbers. Use expanded recording and apparatus as above to illustrate concept initially if required before moving towards the formal written method.