Canon Popham CE Primary Academy
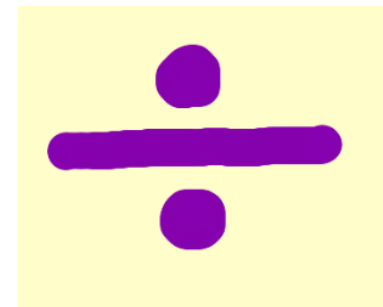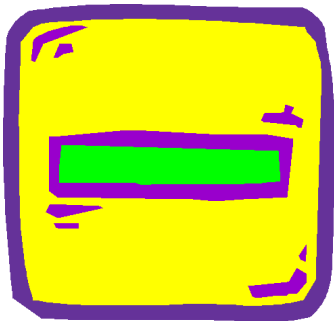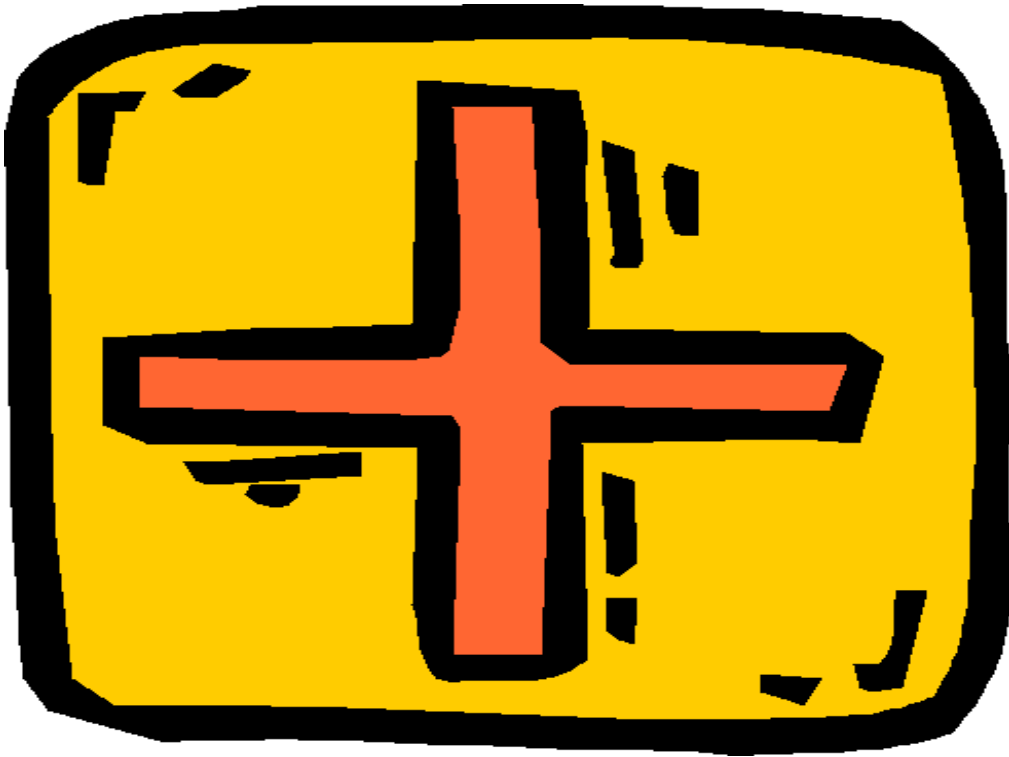
WHOLE SCHOOL PROGRESSION IN CALCULATION STRATEGIES IN MATHEMATICS

GUIDANCE FOR PARENTS & FAMILIES

ADDITION

Stage 5

Using Dienes apparatus / place value counters alongside the formal written method.

$$25 + 47 =$$

Tens	Ones
2	5
4	7

or

leading to

	2	5
+	4	7
	7	2

Tens	Ones
2	5
4	7

Stage 6:

Compact column method

789 + 642 becomes

```
      7   8   9
  +   6   4   2
  ─────────────
  1   4   3   1
  ─────────────
          1   1
```
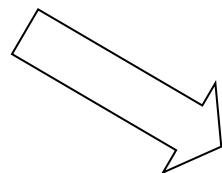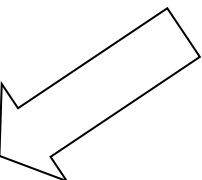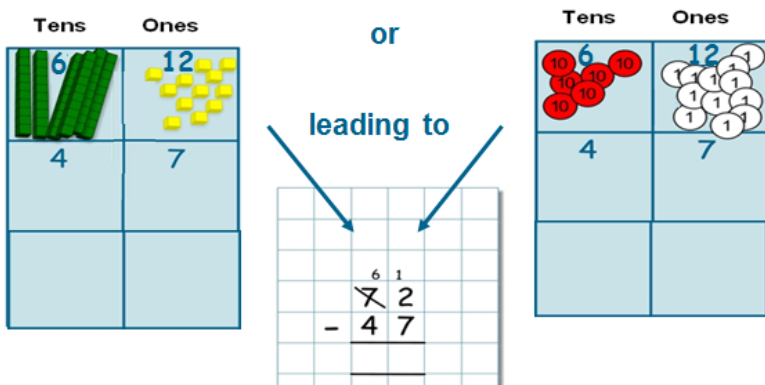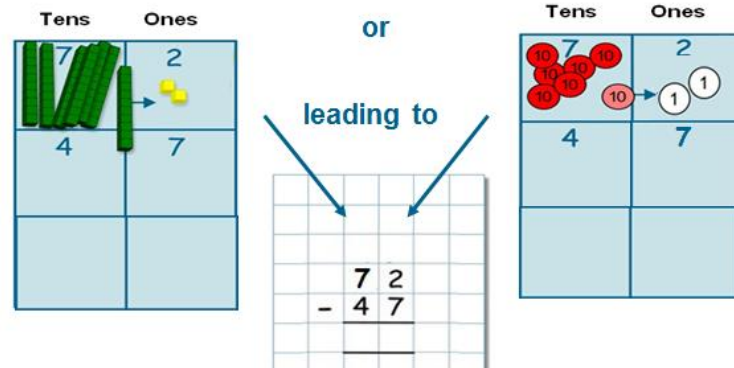
Answer: 1431

SUBTRACTION

Stage 5:

Making the link between the practical and column subtraction.

72 - 47
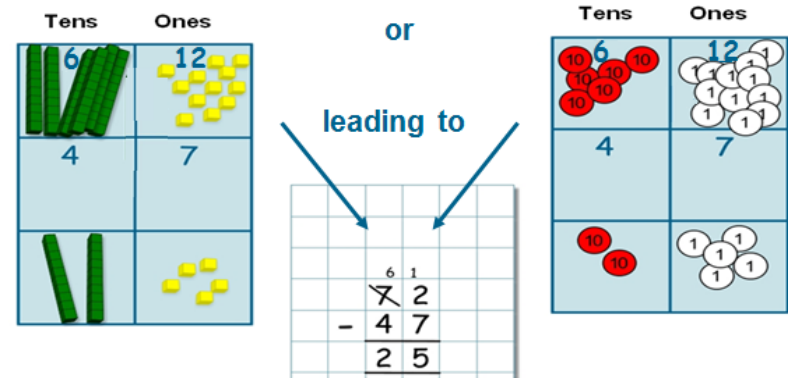
Stage 6:

Compact method

874 – 523 becomes

```
    8  7  4
 −  5  2  3
 ─────────
    3  5  1
 ─────────
```

Answer: 351

932 – 457 becomes

```
    8   12  1
    9   3   2
 −  4   5   7
 ─────────
    4   7   5
 ─────────
```

Answer: 475

MULTIPLICATION

Using arrays to support multiplication

3 x 5 = 15
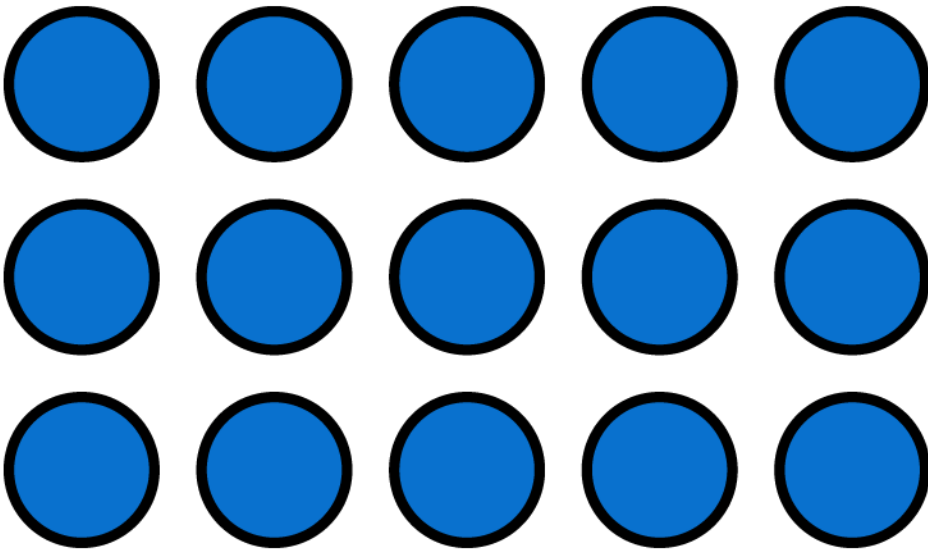
5 x 3 = 15

To multiply 3 one digit numbers together.

3 x 2 x 5 = 30
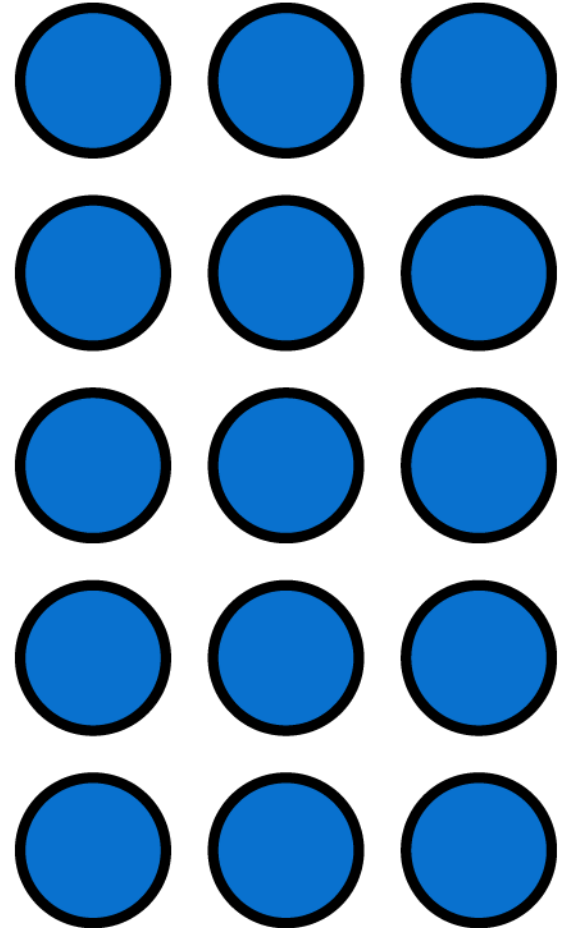
5 x 2 x 3 = 30

5 x 3 x 2 = 30

The same answer will be reached no matter which numbers are multiplied first.

Stage 5:

Expanded short multiplication

38 x 7

```
        30 + 8
X            7
            56        (7 x 8)
           210        (7 x 30)
           266
```

Stage 6:

Short multiplication

24 × 6 becomes

```
      2  4
×        6
─────────
   1  4  4
─────────
         2
```

Answer: 144

342 × 7 becomes

```
   3  4  2
×        7
─────────
2  3  9  4
─────────
      2  1
```

Answer: 2394

2741 × 6 becomes

```
   2  7  4  1
×           6
────────────
1  6  4  4  6
────────────
      4  2
```

Answer: 16 446

DIVISION
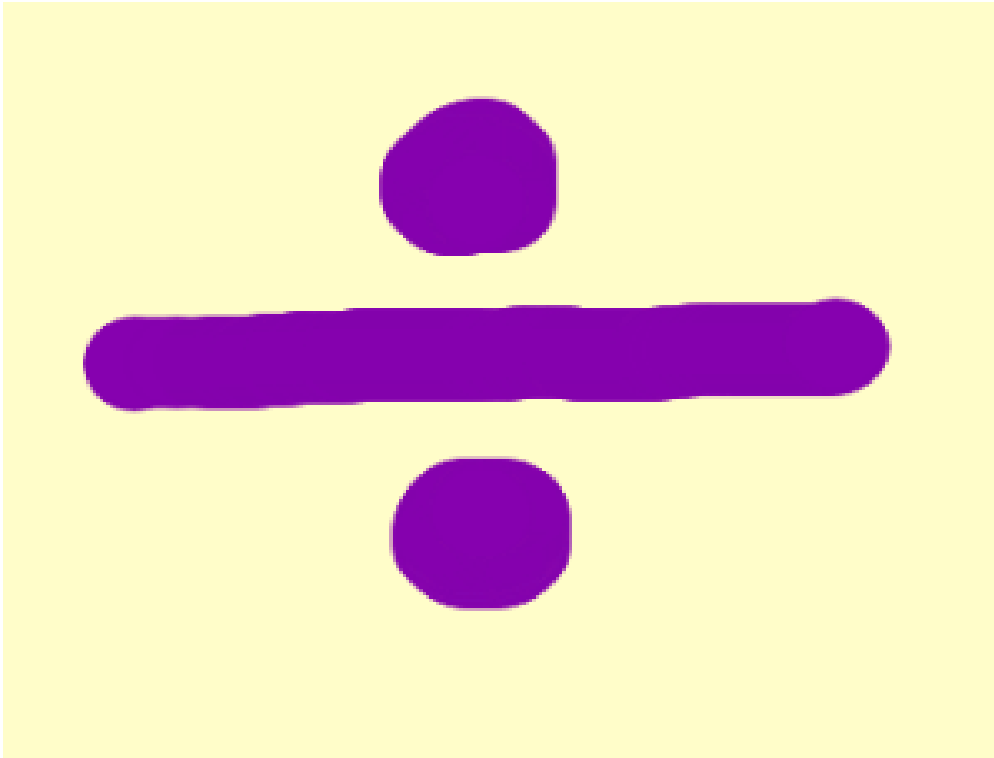
Stage 6
Short Division

98 ÷ 7 becomes

$$
\begin{array}{r}
1\ \ 4 \\
\hline
7\ |\ 9\ \ ^{2}8
\end{array}
$$

Answer: 14

432 ÷ 5 becomes

$$
\begin{array}{r}
8\ \ 6\ \ r\,2 \\
\hline
5\ |\ 4\ \ ^{3}3\ \ 2
\end{array}
$$

Answer: 86 remainder 2

496 ÷ 11 becomes

$$
\begin{array}{r}
4\ \ 5\ \ r\,1 \\
\hline
1\ 1\ |\ 4\ \ ^{5}9\ \ 6
\end{array}
$$

Answer: $45\frac{1}{11}$

Notes:

We teach the children to ask themselves 4 questions – in steps - about the calculations they are doing:-

1. Is it a calculation you can do in your head (mentally)? If yes, then do it mentally. If not, then …
2. Is it a calculation you can do with jottings? If yes, then do it using jottings. If no, then …
3. Is it calculation where you need a more formal written method? If yes, then choose the appropriate method.