Calculation Methods

WEST RISE

Year 3

About Our Calculation Policy

The following calculation policy has been written to meet requirements of the National Curriculum 2014 for the teaching and learning of mathematics, and is also designed to give pupils a consistent and smooth progression of learning in calculations across the school.

Year Group expectations:
The calculation policy is organized according to Year group expectations, as set out in the National Curriculum 2014, however it is vital that pupils are taught according to the stage that they are currently working at, being moved on to the next level as soon as they are ready or working at a lower stage until they are secure enough to move on.

Providing a context for calculation:
It is important that any type of calculation is given a real-life context or problem solving approach to help build children's understanding of the purpose of calculation, and to help them recognize when to use certain operations and methods when faced with problems. This will be a priority within calculation lessons.

Choosing a calculation method:
Children will be taught and encouraged to use the following processes in deciding which approach they will take to a calculation to ensure they select the most appropriate method for the numbers involved.

Key Skills for Year 3

- Locate any 3-digit number on 0-1000 landmarked line; use to order and compare numbers
- Understand Place Value in 3-digit numbers
- Add and subtract 1s, 10s/100s without difficulty; use this to add and subtract multiples of 1, 10, 100 to/from 3-digit numbers
- Know securely number pairs for all numbers up to and including 20
- Round to nearest ten and hundred
- Mentally + or - any pair of 2-digit numbers
- Recognise 2 ways of completing subtractions: either by counting up or by counting back
- Subtract larger numbers with confidence using a number line for counting up, e.g. 302-288
- Understand that multiplication is commutative, e.g. 4x8 = 8x4
- Know 2X, 3X, 5X and 10X tables; all tables learned to 12th multiple. Include division facts.
- Multiply any 2-digit number by 10 or a single-digit number by 100
- Divide any multiple of 10 or 100 by 10 or 100. Understand effect of x or ÷ whole numbers by 10 and 100
- Multiply a 1-digit number by a 2-digit number starting to use the grid
- Partition to double and halve numbers
- Know that division is the inverse of multiplication
- Recognise and derive equivalent fractions for $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$, e.g. $\frac{1}{4}$ = 3/12
- Find unit and non-unit fractions of small amounts
- Add and subtract easy amounts of money, e.g. £3.64 + £4.50. Give change by counting up
- Compare durations of events using analogue and digital times
- Know 100cm = 1 metre; 10mm = 1cm.
- Use a ruler to measure lines
- Identify right angles as 90° in shapes, and also as turns
- Recognise angles as less than or greater than 90°; identify horizontal and vertical lines

Key Vocabulary for Year 3

Addition

add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, tens, units, ones, partition, plus, addition, column, tens boundary, hundreds boundary, increase, carry, expanded, compact.

Subtraction

take, take away, less, minus, subtract, leaves, distance between, how many more, how many less/ fewer, how many left, how much less it ___? Difference, count on, partition, tens, units, ones, least, count back, count on, exchange, decrease, hundreds, value, digit

Multiplication

groups of, lots of, times, array, altogether, multiply, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times, ____ times, once/twice/three times, partition, grid method, multiple, product, tens, unit, value

Division

share, share equally, one each, two each, group, equal groups of, lots of, arrays, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, carry, remainder, multiple

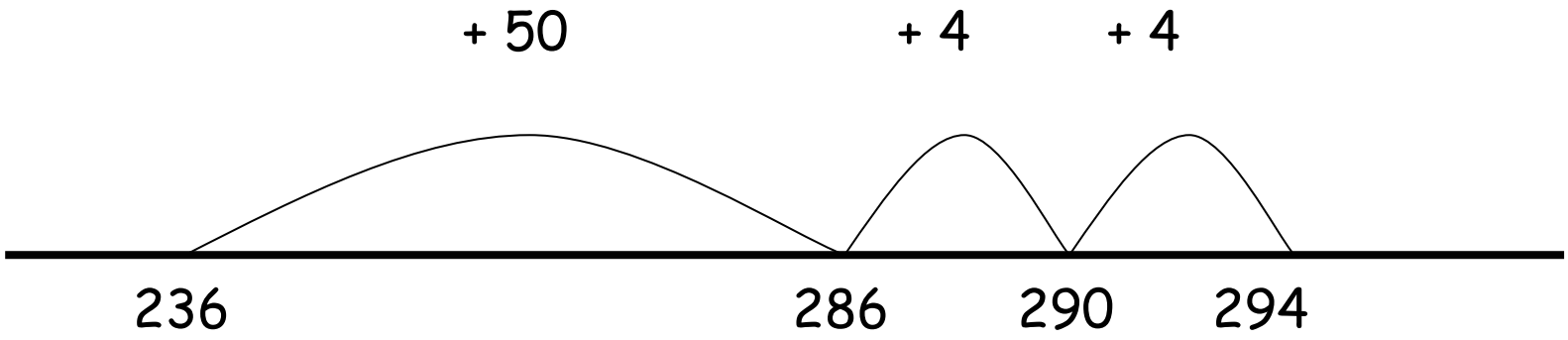
Addition

Number Line

H	T	U	+	T	U
2	3	6	+	5	8

236 + 58 = 294

- Draw a straight line
- Write the larger number on the beginning of the number line
- **Partition** the smaller number into **tens** and **units**
- Count on the multiples of 10 first and then the units



Addition

Partitioning

T U + T U

7 6 + 4 2

- Line the numbers up in the correct columns
- **Partition** the larger number into **tens** and **units**
- **Partition** the smaller number into **tens** and **units**
- Add the **tens** together
- Add the **units** together
- Now add the answers together

76 + 42 = 118

7 6 (7 0 + 6)

+ 4 2 (4 0 + 2)

~~1 1 0~~ + ~~8~~ = 118

Addition

Standard Method

H T U + H T U
4 5 6 + 3 6 7

- Line the numbers up in the correct columns
- Add the **units** together (carry any **tens** forward to the **tens** column)
- Add the **tens** together (carry any **hundreds**)
- forward to the **hundreds** column)
- Add the **hundreds** together

H T U
4 5 6
\+ 3 6 7
8 2 3
1 1

456 + 367 = 823

Subtraction

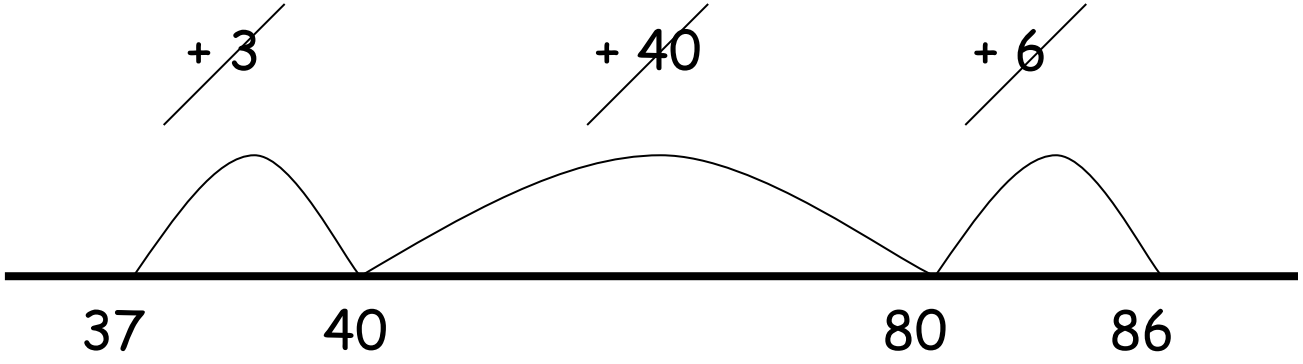
Number Line

T U - T U

8 6 - 3 7

86 - 37 = 49

- Draw a straight line
- Write the smaller number at the beginning of the number line and the larger at the end
- Count on to the nearest multiple of 10
- Count on in multiples of 10 first and then the units.
- Now add the jumps together using any of the addition methods (crossing out the numbers)



	T	U	
	4	0	
+		6	
		3	
		9	(6 + 3)
	4	0	(40 + 0)
	4	9	

Subtraction

Standard Method

T	U	+	T	U
7	8	-	4	6

- Line the numbers up in the correct columns
- Subtract the units
- Subtract the tens

	T	U
-	7	8
	4	6
	2	2

78 - 46 = 22

Subtraction

Standard Method

T U + T U
7 8 - 4 6

- Line the numbers up in the correct columns
- Subtract the **units**
- Exchange from the **tens** column
- Subtract the **tens**

	T	U
	6	1
-	7	6
	~~4~~	8
	2	8

Exchange one ten from the **tens** column for ten ones in the **units** column

76 - 48 = 28

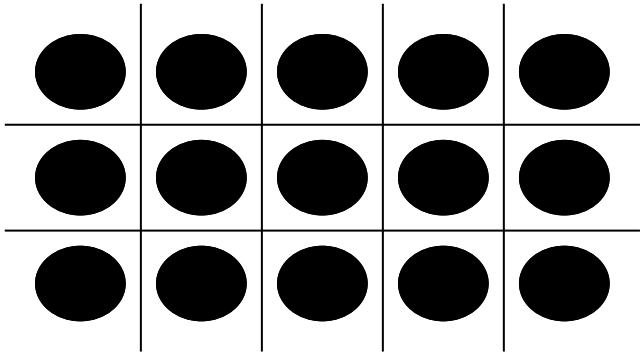
Multiplication

Arrays

U x U

3 x 5

5 x 3

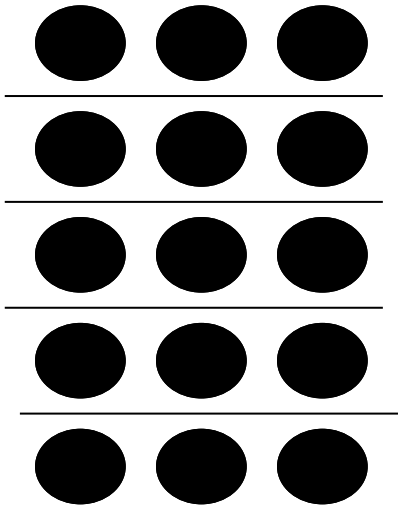


3 x 5 = 15

- Lay out counters in rows and columns.

E.g. For 3 x 5 organise the counters into three rows of five counters.

- Add up the number of counters



5 x 3 = 15

Multiplication

Grid Method

T U x U

3 5 x 6

x	30	5
6	180	30

- Draw out the grid
- **Partition** the TU number into **tens** and **units**.
- Place numbers in grid
- Multiply the numbers together
- Take the answers out of the grid to add up using any of the addition methods (cross out the numbers)

	H	T	U
	1	8	0
+		3	0
	2	1	0
	1		

35 x 6 = 210

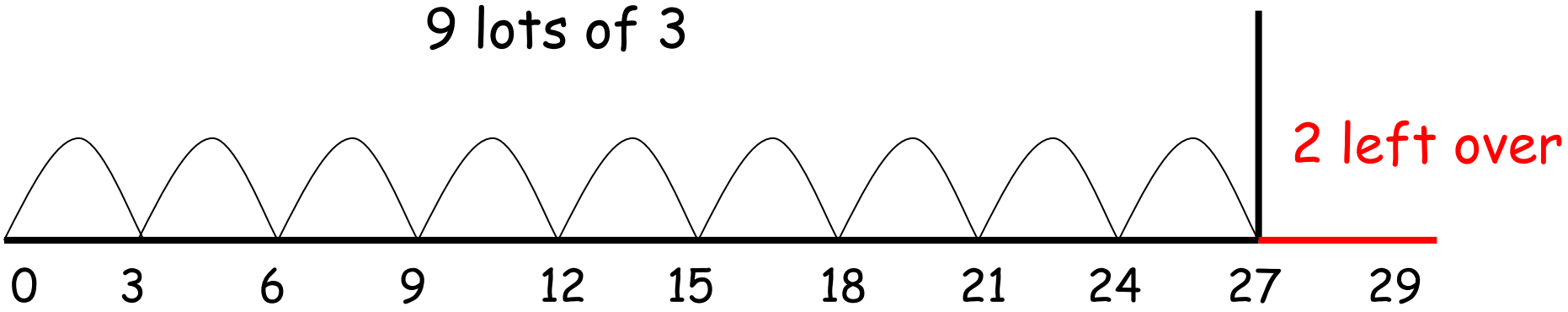
Division

Number Line

T U ÷ U
2 9 ÷ 3

29 ÷ 3 = 9 r 2

- Draw a straight line
- Write the number being divided at the end of the line
- Count on in groups on a number line



There are 9 groups of 3 in 29, with 2 left over