

# Calculation Methods



**WEST RISE**

Year 3

# 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.  $4 \times 8 = 8 \times 4$
- 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  $\times$  or  $\div$  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.  $\frac{1}{4} = \frac{3}{12}$
- Find unit and non-unit fractions of small amounts
- Add and subtract easy amounts of money, e.g.  $\pounds 3.64 + \pounds 4.50$ . Give change by counting up
- Compare durations of events using analogue and digital times
- Know  $100\text{cm} = 1\text{ metre}$ ;  $10\text{mm} = 1\text{cm}$ .
- Use a ruler to measure lines
- Identify right angles as  $90^\circ$  in shapes, and also as turns
- Recognise angles as less than or greater than  $90^\circ$ ; 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**

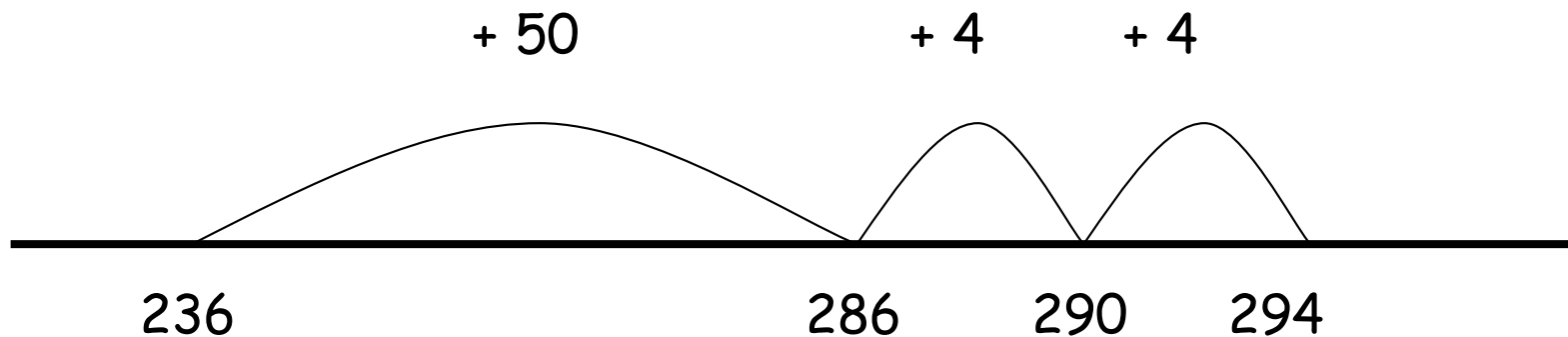
# Addition

$$\begin{array}{r} \text{H T U} \\ 236 \\ + 58 \\ \hline \end{array}$$

$$236 + 58 = 294$$

# Number Line

- 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

$$\begin{array}{cc} \text{T} & \text{U} \\ 7 & 6 \\ + & 4 & 2 \\ \hline \end{array}$$

$$76 + 42 = 118$$

# Partitioning

- 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

$$\begin{array}{r} 76 \quad ( \quad 70 \quad + \quad 6 \quad ) \\ + 42 \quad ( \quad 40 \quad + \quad 2 \quad ) \\ \hline 110 \quad + \quad 8 \quad = \quad 118 \end{array}$$

# Addition

$$\begin{array}{r} \text{H T U} \\ 456 \\ + 367 \end{array}$$

- 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

# Standard Method

$$\begin{array}{r} \text{HTU} \\ 456 \\ + 367 \\ \hline 823 \\ \hline 11 \end{array}$$

$$456 + 367 = 823$$

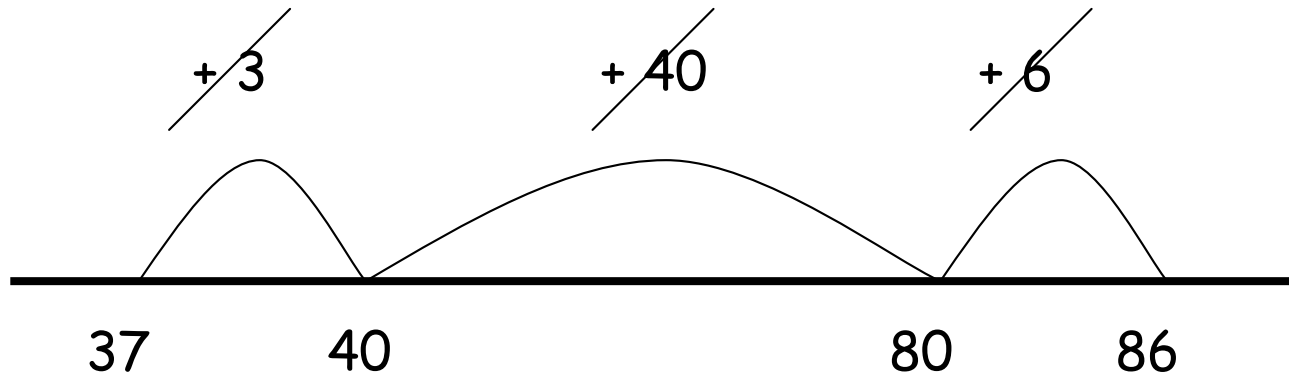
# Subtraction

# Number Line

$$\begin{array}{r} \text{T U} \\ 86 \end{array} - \begin{array}{r} \text{T U} \\ 37 \end{array}$$

$$86 - 37 = 49$$

- 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)



$$\begin{array}{r} \text{T U} \\ 40 \\ + \quad 6 \\ \hline 9 \quad (6 + 3) \\ \text{40} \quad (40 + 0) \\ \hline 49 \end{array}$$

# Subtraction

$$\begin{array}{r} \text{T U} + \text{T U} \\ 78 - 46 \end{array}$$

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

# Standard Method

$$\begin{array}{r} \text{T U} \\ - 78 \\ 46 \\ \hline 22 \end{array}$$

$$78 - 46 = 22$$



# Subtraction

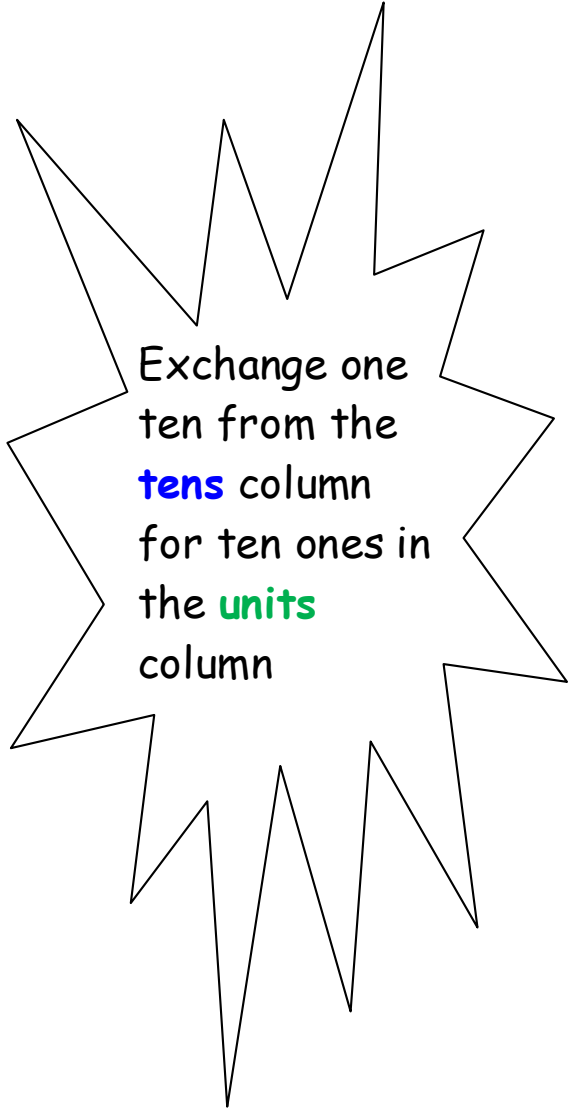
T U + T U

7 8 - 4 6

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

# Standard Method

	T	U
	6	1
-	<del>7</del>	6
	4	8
	<hr/>	
	2	8
	<hr/>	



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

$$76 - 48 = 28$$

# Multiplication

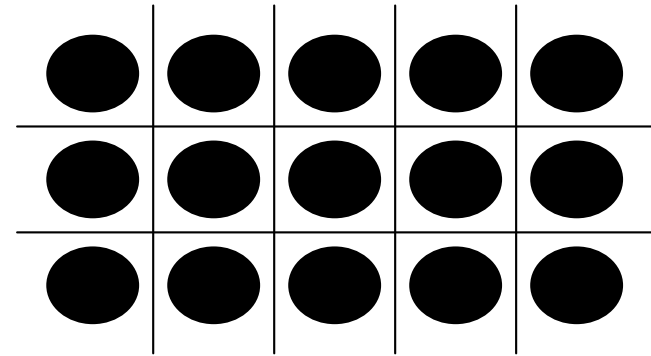
$$U \times U$$

$$3 \times 5$$

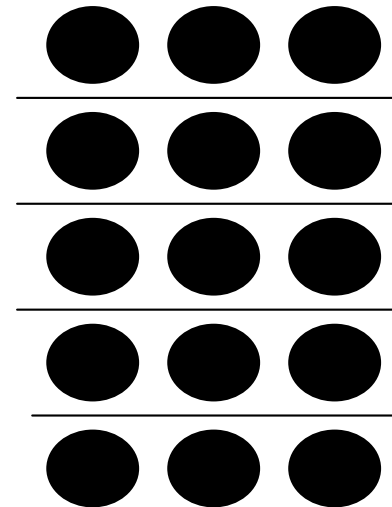
$$5 \times 3$$

- Lay out counters in rows and columns.  
E.g. For  $3 \times 5$  organise the counters into three rows of five counters.
- Add up the number of counters

# Arrays



$$3 \times 5 = 15$$



$$5 \times 3 = 15$$

# Multiplication

TU × U

35 × 6

- 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)

# Grid Method

x	30	5
6	<del>180</del>	<del>30</del>

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

$$35 \times 6 = 210$$

# Division

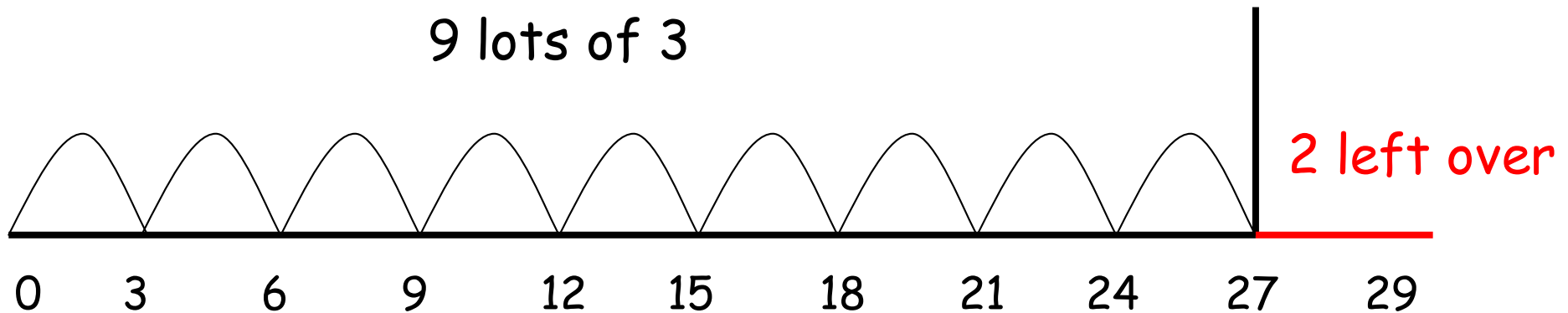
# Number Line

$$TU \div U$$

$$29 \div 3$$

$$29 \div 3 = 9 \text{ r } 2$$

- 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