

# Calculation Methods



**WEST RISE**

Year 6

# Key Skills for Year 6

- Locate numbers up to 999,999 on a landmarked line; use this to compare and order numbers
- Round to ten, a hundred and a thousand, ten thousand or one hundred thousand
- Read scales with accuracy and confidence
- Add and subtract mentally with confidence
- Add several large or decimal numbers using written addition
- Subtract large numbers using decomposition or counting up
- Subtract decimal numbers using counting up
- Multiply numbers up to 20 by single-digit numbers mentally or using grid method
- Multiply 3-digit numbers by numbers up to 12 using written multiplication
- Scale up or down by a factor of 2, 5 or 10
- Perform divisions mentally within the range of tables facts using remainders or rounding the answer up or down as appropriate
- Divide 3-digit by 1-digit numbers using chunking
- Recognise equivalent fractions; reduce fractions to their simplest form
- Identify simple fraction/decimal equivalents
- Understand that when two numbers  $< 1$  are multiplied, the answer is smaller than either
- Calculate simple percentages of whole numbers
- Solve missing number problems
- Generate and describe linear sequences
- Use, read, write, and convert between standard units of measurement
- Measure areas and perimeters
- Understand area is a measurement of covering (in square units), and perimeter is a length (in cm, m, or mm)
- Use 12 and 24 hour clocks; calculate time intervals; use timetables
- Compare and classify geometric shapes; identify circles and parts of circles
- Identify positions in the 1st and 4th quadrants on co-ordinate grid; reflect and translate shapes
- Find and interpret the mean of several quantities

# Key Vocabulary for Year 6

## 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. thousands, hundreds, digits, inverse, decimal places, decimal point, tenths, hundredths, thousandths

## 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, inverse, square, factor, integer, decimal, short/long multiplication, tenths, hundredths, decimal

## 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, inverse, decimal places, decimal point, tenths, hundredths, thousandths

## 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, divisible by, factor, inverse, quotient, prime numbers, prime factors, composite, common factor

# Addition

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

- 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

$$\begin{array}{r} \text{H T U} \\ 456 \\ + 367 \\ \hline 823 \\ \hline 11 \end{array}$$

$$456 + 367 = 823$$

# Subtraction

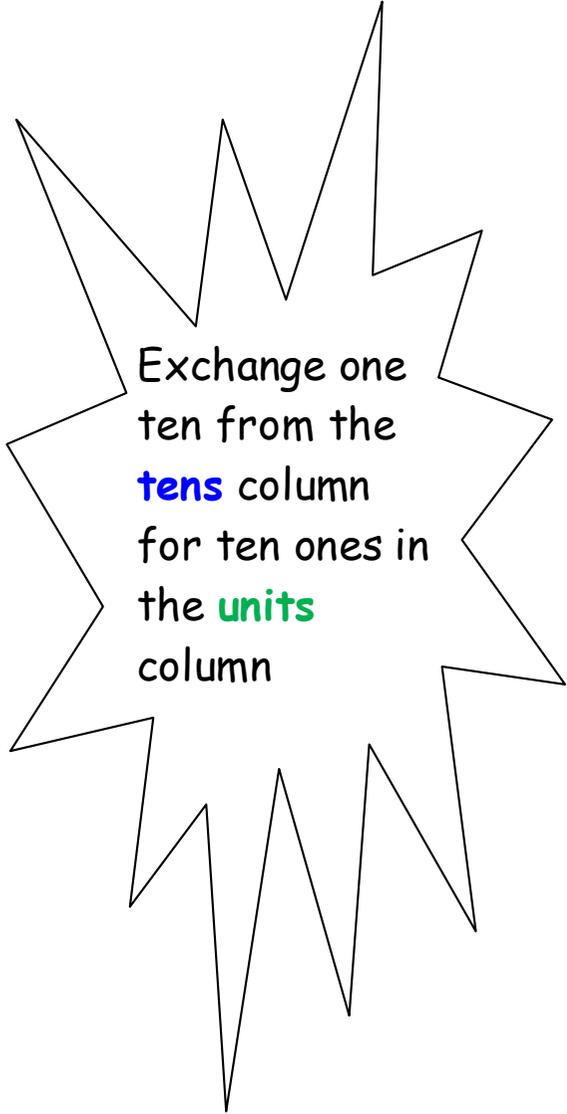
T U + T U

7 6 - 4 8

- 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

$$\begin{array}{r} \text{H T U} \\ 136 \end{array} \times \begin{array}{r} \text{H T U} \\ 7 \end{array}$$

- Multiply the **units** by the **multiplier** (carry any **tens** forward to the **tens** column)
- Multiply the **tens** by the **multiplier** (carry any **hundreds** forward to the **hundreds** column)
- Multiply the **hundreds** by the **multiplier**

# Standard Method

$$\begin{array}{r} \text{HTU} \\ 136 \\ \times \quad 7 \\ \hline 952 \\ \hline 24 \end{array}$$

$$136 \times 7 = 952$$

# Multiplication

T U × T U

4 3 × 3 2

- Line the numbers up in the correct columns
- Multiply the **units** by the **unit multiplier** (carry any **tens** forward to the **tens** column)
- Multiply the **tens** by the **unit multiplier** (carry any **hundreds**)
- **Add a place holder**
- Multiply the **units** by the **tens multiplier** (carry any **tens** forward to the **tens** column)
- Multiply the **tens** by the **tens multiplier** (carry any **hundreds**)
- Add the two calculation results together

# Standard Method

$$\begin{array}{r} \text{T U} \\ 43 \\ \times \quad 32 \\ \hline 86 \\ \hline + 1290 \\ \hline 1376 \\ \hline 1 \end{array}$$

$$43 \times 32 = 1,376$$

# Division

H T U U

6 2 0 ÷ 5

- Draw out the bus stop
- Place in the numbers
- Divide the **hundreds** by the number you are dividing by. (Exchange remaining **tens**)
- Divide the **tens** by the number you are dividing by. (Exchange remaining **units**)
- Divide the units by the number you are dividing by

$$\begin{array}{r} 1 \\ 5 \overline{) 620} \end{array}$$

$$\begin{array}{r} 1 \quad 2 \\ 5 \overline{) 6220} \end{array}$$

$$\begin{array}{r} 1 \quad 2 \quad 4 \\ 5 \overline{) 6220} \end{array}$$

# Short Method

How many 5s in 600? 100  
(This leaves 100 which is exchanged for ten **tens** in the **tens** column)

120 divided by 5 = 20  
(This leaves 20 which is exchanged for 20 **units** in the **units** column)

20 divided by 5 = 4

$$620 \div 5 = 124$$

# Division

$$\begin{array}{r} \text{H T U} \quad \text{U} \\ 976 \div 15 \end{array}$$

- Draw out the bus stop
- Place in the numbers
- Divide the **hundreds** by the number you are dividing by. (Exchange remaining **tens**)
- Divide the **tens** by the number you are dividing by. (Exchange remaining **units**)
- Divide the units by the number you are dividing by

$$\begin{array}{r} 0 \\ 15 \overline{) 976} \end{array}$$

$$\begin{array}{r} 0 \quad 6 \\ 15 \overline{) 976} \end{array}$$

$$\begin{array}{r} 0 \quad 6 \quad 5 \quad \text{r}1 \\ 15 \overline{) 976} \end{array}$$

# Short Method

How many 15s in 9? 0  
(Carry the **hundreds** to the **tens** column)

97 divided by 15 = 6  
(This leaves 7 which is carried to the **units** column)

76 divided by 15 = 5 with a remainder of 1

$$976 \div 15 = 65 \text{ r}1$$

# Division

$$\begin{array}{r} \text{H T U} \quad \text{U} \\ 120 \div 5 \end{array}$$

# Chunking Method

$$120 \div 5 = 24$$

$$\begin{array}{r} \text{H T U} \\ 120 \\ \underline{50} \\ 70 \\ - \underline{50} \\ 20 \\ \underline{20} \\ 0 \end{array}$$

$$(5 \times 10)$$

$$(5 \times 10)$$

$$(5 \times 4)$$

$$10 + 10 + 4 = 24$$

- First subtract chunks of 10  
(Subtract chunks of 50)
- Subtract chunks of the number you  
are dividing by.  
(How many groups of 5 in 20?)  
(Subtract chunks of 5)
- Total the number of groups