

Addition: Written Calculations

Year 3: Column addition with carrying (see below *)		
$442 + 335 = 777$ $\begin{array}{r} 442 \\ 335+ \\ \hline 777 \end{array}$	$872 + 541 = 1413$ $\begin{array}{r} 872 \\ 541+ \\ \hline 1413 \\ \hline 11 \end{array}$	<ul style="list-style-type: none"> Add numbers with up to three digits, using the formal written methods of column addition Estimate the answer to a calculation and use inverse operations to check answers
Year 4: Column addition with carrying (see below *)		
$442 + 335 = 777$ $\begin{array}{r} 442 \\ 335+ \\ \hline 777 \end{array}$	$7872 + 541 = 8413$ $\begin{array}{r} 7872 \\ 541+ \\ \hline 8413 \\ \hline 11 \end{array}$	<ul style="list-style-type: none"> Add numbers with up to 4 digits using the formal written methods of column addition where appropriate Estimate and use inverse operations to check answers to a calculation
Year 5: Column addition with carrying (including decimals up to 2 decimal places)		
$7176 + 6147 = 13323$ $\begin{array}{r} 7176 \\ 6147+ \\ \hline 13323 \\ \hline 11 \end{array}$	$4.28 + 7.99 = 12.27$ $\begin{array}{r} 4.28 \\ 7.99+ \\ \hline 12.27 \\ \hline 11 \quad 1 \end{array}$	<ul style="list-style-type: none"> Add whole numbers with more than 4 digits, including using formal written methods (column addition) Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy Use addition methods in a range of real life and problem based contexts.
Year 6: Column addition with carrying (including decimals up to 3 decimal places)		
$7176 + 6147 = 13323$ $\begin{array}{r} 7176 \\ 6147+ \\ \hline 13323 \\ \hline 11 \end{array}$	$4.28 + 7.99 = 12.27$ $\begin{array}{r} 4.28 \\ 7.99+ \\ \hline 12.27 \\ \hline 11 \quad 1 \end{array}$	<u>As above.</u>

* Use expanded methods if necessary to support move to formal method

$$\begin{array}{r} 47 \\ +76 \\ \hline \end{array} \quad \begin{array}{r} 40+7 \\ 70+6 \\ \hline 110+13 = 123 \end{array} \quad \text{or} \quad \begin{array}{r} 47 \\ +76 \\ \hline 13 \\ 110 \\ \hline 123 \end{array}$$

Subtraction: Written Calculations

Year 3: Column subtraction (see below *)	
$242 - 131 = 111$ $\begin{array}{r} 242 \\ -131 \\ \hline 111 \end{array}$	$932 - 457$ $\begin{array}{r} \overset{8}{9} \overset{12}{3} \overset{1}{2} \\ - 457 \\ \hline 475 \end{array}$ <ul style="list-style-type: none"> • Subtract numbers with up to three digits, using the formal written methods of column subtraction • Estimate the answer to a calculation and use inverse operations to check answers
Year 4: Column subtraction (see below *)	
$3675 - 1234 = 2441$ $\begin{array}{r} 3675 \\ -1234 \\ \hline 2441 \end{array}$	$\begin{array}{r} \overset{6}{2} \overset{5}{7} \overset{1}{5} \overset{4}{4} \\ - 1562 \\ \hline 1192 \end{array}$ <ul style="list-style-type: none"> • Subtract numbers with up to 4 digits using the formal written methods of column subtraction where appropriate • Estimate and use inverse operations to check answers to a calculation
Year 5: Column subtraction (including decimals up to 2 decimal places)	
$\begin{array}{r} \overset{2}{2} \overset{10}{7} \overset{10}{1} \overset{0}{0} \overset{8}{8} \overset{6}{6} \\ - 2128 \\ \hline 28928 \end{array}$	$\begin{array}{r} \overset{7}{7} \overset{10}{7} \overset{10}{6} \overset{8}{9} \overset{0}{0} \\ - 372.5 \\ \hline 6796.5 \end{array}$ <ul style="list-style-type: none"> • Subtract whole numbers with more than 4 digits, including using formal written methods (column subtraction) • Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. • Use subtraction methods in a range of real life and problem based contexts.
Year 6: Column subtraction (including decimals up to 3 decimal places)	
$\begin{array}{r} \overset{9}{9} \overset{8}{8} \overset{10}{10} \overset{9}{9} \overset{9}{9} \\ - 89,949 \\ \hline 60,750 \end{array}$ $\begin{array}{r} \overset{15}{15} \overset{11}{11} \overset{9}{9} \\ - 36.080 \\ \hline 69.339 \end{array}$	<p><u>As above.</u></p>

* Use expanded methods if necessary to support move to formal method

Multiplication: Written Calculations

Year 3: Grid method leading to short multiplication

35×7

x	30	5
7	210	35

$210 + 35 = 245$

24×6

$$\begin{array}{r} 24 \\ \times 6 \\ \hline 144 \\ \hline 2 \end{array}$$

- Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, progressing to efficient written methods

Year 4: Short Multiplication (see below *)

342×7

$$\begin{array}{r} 342 \\ \times 7 \\ \hline 2394 \\ \hline 21 \end{array}$$

- Multiply two-digit and three-digit numbers by a one-digit number using a formal written layout

Year 5: Short multiplication (including decimals in context) *

2741×6

$$\begin{array}{r} 2741 \\ \times 6 \\ \hline 16446 \end{array}$$

x	2000	600	90	3	
20	40000	12000	1800	60	= 53 860
4	8000	2400	360	12	= 10 772 +
					<u>64 632</u>

- Multiply numbers up to 4 digits by a one-digit number using a formal written method
- Multiply numbers up to 3 digits by a two-digit number using the grid method

Year 6: Short and long multiplication (including decimals in context)

24×16

$$\begin{array}{r} 24 \\ \times 16 \\ \hline 144 \\ 240 \\ \hline 384 \end{array}$$

124×26

$$\begin{array}{r} 124 \\ \times 26 \\ \hline 744 \\ 2480 \\ \hline 3224 \\ \hline 11 \end{array}$$

- Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.
- Where there is a digit to be carried when multiplying by the tens digit, this will be written below the multiplication but above the addition calculation.

* Continue to use grid method if necessary to support move to short multiplication

Division: Written Calculations

Year 3: Long and Short division (see below *)

$$\begin{array}{r} 32 \\ 3 \overline{) 96} \end{array}$$

$72 \div 3$

$$\begin{array}{r} 24 \\ 3 \overline{) 72} \\ - 30 \\ \hline 42 \\ - 30 \\ \hline 12 \\ - 6 \\ \hline 6 \\ - 6 \\ \hline 0 \end{array}$$

Answer : 24

1x	3
2x	6
5x	15
10x	30

Children should write key facts in a menu box. This will help them in identifying the largest group they can subtract in one chunk.

- Children will start to use short division with simple problems where each digit is a multiple of the divisor.

Year 4: Short division (see below *)

$98 \div 7$

$$\begin{array}{r} 14 \\ 7 \overline{) 98} \\ - 70 \\ \hline 28 \\ - 21 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 218 \\ 4 \overline{) 872} \\ - 80 \\ \hline 72 \\ - 68 \\ \hline 42 \\ - 40 \\ \hline 2 \end{array}$$

- Children will continue to use short division to solve division problems. They will begin to work on remainders, including problems where there are remainders in the first numbers but not in the final answer.

Year 5: Short division - dividing by a one digit number (including decimals in context)*

$432 \div 5$

$$\begin{array}{r} 86 \text{ r} 2 \\ 5 \overline{) 432} \\ - 40 \\ \hline 32 \\ - 30 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 0.663 \text{ r} 5 \\ 8 \overline{) 5.35029} \\ - 40 \\ \hline 13 \\ - 12 \\ \hline 15 \\ - 16 \\ \hline -1 \\ + 0 \\ \hline 9 \end{array}$$

- Divide numbers up to 4 digits by a one-digit whole number using the formal written method of short division, and interpret remainders according to the context

Year 6: Short and long division - dividing by a two digit number (including decimals in context)

$$972 \div 36$$

$$\begin{array}{r}
 27 \\
 36 \overline{) 972} \\
 \underline{- 720} \\
 252 \\
 \underline{- 252} \\
 0
 \end{array}$$

20x
7x
↓
 Answer : 27

- Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

$$496 \div 11$$

$$\begin{array}{r}
 45 \text{ r}1 \\
 11 \overline{) 496} \\
 \underline{44} \\
 56 \\
 \underline{55} \\
 1
 \end{array}$$

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

$$432 \div 15$$

$$\begin{array}{r}
 28 \\
 15 \overline{) 432} \\
 \underline{30} \\
 132 \\
 \underline{120} \\
 12
 \end{array}$$

15×20
 15×8

$$\frac{12}{15} = \frac{4}{5}$$

Answer: $28 \frac{4}{5}$

* Use expanded methods if necessary to support move to formal method