

Addition

| Year 5 | Year 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| * columnar addition with whole numbers with more than 4 digits and decimals * add mentally with increasingly large numbers | Practise, recap and consolidate previous years' learning | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Vocabulary Increase, increased by..., ones, tens, hundreds, tenths, hundredths etc, boundary, carry | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Columnar Addition</p> <table border="1" data-bbox="109 474 562 743"> <tr><td></td><td>6</td><td>5</td><td>4</td><td>4</td><td>2</td></tr> <tr><td>+</td><td>2</td><td>6</td><td>8</td><td>9</td><td>4</td></tr> <tr><td colspan="6"><hr/></td></tr> <tr><td></td><td>9</td><td>2</td><td>3</td><td>3</td><td>6</td></tr> <tr><td></td><td> </td><td> </td><td> </td><td></td><td></td></tr> </table> <table border="1" data-bbox="109 815 823 1156"> <tr><td>£</td><td>1</td><td>4</td><td>6</td><td>7</td><td>3</td><td>0</td><td>5</td></tr> <tr><td>£</td><td>1</td><td>6</td><td>4</td><td>3</td><td>2</td><td>2</td><td>8</td></tr> <tr><td colspan="8"><hr/></td></tr> <tr><td></td><td>3</td><td>1</td><td>1</td><td>0</td><td>5</td><td>3</td><td>3</td></tr> <tr><td></td><td>†</td><td>†</td><td>†</td><td></td><td></td><td>†</td><td></td></tr> </table> | | 6 | 5 | 4 | 4 | 2 | + | 2 | 6 | 8 | 9 | 4 | <hr/> | | | | | | | 9 | 2 | 3 | 3 | 6 | | | | | | | £ | 1 | 4 | 6 | 7 | 3 | 0 | 5 | £ | 1 | 6 | 4 | 3 | 2 | 2 | 8 | <hr/> | | | | | | | | | 3 | 1 | 1 | 0 | 5 | 3 | 3 | | † | † | † | | | † | | |
| | 6 | 5 | 4 | 4 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| + | 2 | 6 | 8 | 9 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | 9 | 2 | 3 | 3 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| £ | 1 | 4 | 6 | 7 | 3 | 0 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| £ | 1 | 6 | 4 | 3 | 2 | 2 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | 3 | 1 | 1 | 0 | 5 | 3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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Subtraction

Year 5

* subtract whole numbers with more than 4 digits using the formal columnar written method of subtraction
 * practise mental calculations with increasingly large numbers

Year 6

As year 5 with larger numbers and decimals

Vocabulary

As KS1 plus:

Increase, increased by..., ones, tens, hundreds, tenths, hundredths etc, boundary, carry

Formal Columnar written method

$$\begin{array}{r}
 \overset{7}{\cancel{8}}4,5\overset{5}{\cancel{6}}3 \\
 - 58,109 \\
 \hline
 26,454
 \end{array}$$

Formal columnar written method

$$\begin{array}{r}
 \overset{1}{\cancel{2}} \overset{13}{4} \overset{9}{\cancel{6}} \overset{9}{\cancel{6}} \overset{13}{7} \\
 - 218327 \\
 \hline
 105676
 \end{array}$$

$$\begin{array}{r}
 \overset{10}{\cancel{4}} \overset{9}{\cancel{4}} \overset{9}{\cancel{6}} \overset{9}{\cancel{6}} \overset{10}{\cancel{10}} \text{ cm} \\
 \phantom{\cancel{4}} 218 \overset{10}{\cancel{5}} \text{ cm} \\
 \hline
 881 \overset{10}{\cancel{5}} \text{ cm}
 \end{array}$$

Multiplication

Year 5

* expanded formal written method of numbers up to 4 digits multiplied by a one or two-digit number, moving to the standard written method of short and long multiplication of numbers up to 4 digits by a one or two-digit number

* scaling by simple fractions involving simple rates

* multiply numbers mentally drawing upon known facts eg 80×90

Vocabulary

As KS1 plus

Inverse, product

Year 6

* multiply multi-digit numbers up to 4 digits by a two-digit number using formal written methods of long multiplication

* perform mental calculations including with mixed operations and large numbers

Expanded Formal Written Method

$$\begin{array}{r}
 3624 \\
 \times \quad 4 \\
 \hline
 14496 \\
 \text{ } \quad 16 \quad (4 \times 4) \\
 \text{ } \quad 80 \quad (4 \times 20) \\
 \text{ } 2400 \quad (4 \times 600) \\
 12000 \quad (4 \times 3000) \\
 \hline
 14496
 \end{array}$$

Compact Formal Written Method

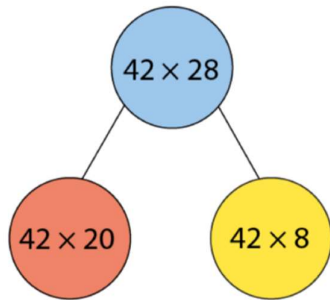
$$\begin{array}{r}
 3624 \\
 \times \quad 4 \\
 \hline
 14496 \\
 \text{ } \quad 2 \quad 1
 \end{array}$$

Formal Written Method of Long Multiplication

$$\begin{array}{r}
 339 \\
 \times 26 \\
 \hline
 2034 \\
 6780 \\
 \hline
 8814
 \end{array}$$

Expanded 2 digit by 2 digit

Part-part-whole model:



Short multiplication and combining partial products:

$$\begin{array}{r} 42 \\ \times 8 \\ \hline 336 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 42 \\ \times 20 \\ \hline 840 \\ \hline \end{array}$$

$$\begin{array}{r} 840 \\ + 336 \\ \hline 1176 \end{array}$$

Formal Written Method of Long Multiplication

| | | | | |
|---|---|---|---|---|
| | | 7 | 6 | |
| x | | 5 | 8 | |
| | | 6 | 0 | 8 |
| | 3 | 8 | 0 | 0 |
| | 4 | 4 | 0 | 8 |
| | | | | |

Division

| | |
|---------------|---------------|
| Year 5 | Year 6 |
|---------------|---------------|

* divide numbers up to 4-digits by a one-digit number using formal short division including with remainders
 * divide numbers mentally drawing upon known facts eg $2400 \div 60$

* divide numbers up to 4 digits by a two-digit number using the formal written method of long division with remainders
 * divide numbers up to 4 digits by a two-digit number using the formal written method of short division with remainders
 * perform mental calculations including with mixed operations and large numbers

Vocabulary
 As KS1 plus
 remainder, divided into, divisible by, factor, quotient, divisor, dividend

Formal Written Method of Short Division

$432 \div 5$ becomes

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

Answer: 86 remainder 2

Formal Written Method of Short Division

$432 \div 5$ becomes

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

Answer: 86 remainder 2

$496 \div 11$ becomes

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

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

Formal Written Method of Long Division

$432 \div 15$ becomes

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

Answer: 28 remainder 12

$432 \div 15$ becomes

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

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

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

$432 \div 15$ becomes

$$\begin{array}{r} 28 \cdot 8 \\ 15 \overline{) 432.0} \\ \underline{30} \\ 132 \\ \underline{120} \\ 120 \\ \underline{120} \\ 0 \end{array}$$

Answer: 28.8