

Calculation Methods

What should I expect my child to be doing in Year 5?

Written methods:

Addition

National Curriculum Expectations:

- add numbers mentally with increasingly large numbers add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar method)
- Solve problems involving numbers with up to three decimal places.

$$\begin{array}{r} 5413 \\ + 1528 \\ \hline 6941 \end{array}$$

Subtraction

National Curriculum Expectations:

- subtract numbers mentally with increasingly large numbers (e.g. $12\,462 - 2300 = 10\,162$)
- subtract whole numbers with more than 4 digits, including using formal written methods (columnar method)
- Solve problems involving numbers with up to three decimal places.

$$\begin{array}{r} 16.32 \\ - 3.91 \\ \hline 12.41 \end{array}$$
$$\begin{array}{r} 1246.2 \\ - 230.5 \\ \hline 1015.7 \end{array}$$

Division

National Curriculum Expectations:

- divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context (*as fractions, as decimals or by rounding*)

For example:

- $98 \div 4 = 24 \text{ r } 2$ (as remainder)
- $98 \div 4 = 24 \frac{1}{2}$ (fraction)
- $98 \div 4 = 24.5$ (decimal)
- $98 \div 4 = 24.5 \approx 25$ (rounding to the nearest whole number)

$$\begin{array}{r} 0507 \\ 3 \overline{) 1521} \end{array}$$
$$\begin{array}{r} 0549 \text{ r } 1 \\ 5 \overline{) 2746} \end{array}$$
$$\begin{array}{r} 0549 \text{ r } 1 \\ 5 \overline{) 2746} \end{array} = 549 \frac{1}{5}$$
$$\begin{array}{r} 0549.2 \\ 5 \overline{) 2746.0} \end{array}$$

Multiplication

National Curriculum Expectations:

- multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers

Written method

1. Reinforce short multiplication for 3 and 4 digit numbers x 1 digit.
2. Long multiplication

$$\begin{array}{r} 73 \\ \times 5 \\ \hline 365 \end{array}$$
$$\begin{array}{r} 124 \\ \times 6 \\ \hline 744 \end{array}$$
$$\begin{array}{r} 71 \\ \times 64 \\ \hline 284 \\ + 4260 \\ \hline 4544 \end{array}$$
$$\begin{array}{r} 312 \\ \times 26 \\ \hline 1872 \\ + 6240 \\ \hline 8112 \end{array}$$

Mental methods:

Alongside formal, written methods, our children will be equipped with a range of strategies to solve problems mentally. This table reflects the progression in the teaching and learning of mental methods of calculation. The majority of mental strategies will develop during numeracy lessons or guided numeracy sessions but discrete learning of mental methods may also be appropriate. Our children should look at a calculation and be able to say: **Can I work this out in my head? Do I need to use a written method? Do I need to use a calculator?**

	Addition	Subtraction	Multiplication	Division
Y4	Add up to 2 three digit numbers using partitioning or counting on.	Subtract up to 2 x 3 numbers using counting down or counting on.	<ul style="list-style-type: none"> - Read & use x facts (all 2 x 12) - x mentally (using partitioning e.g. $9 \times 34 = 9 \times 30$ and 9×4) - 3 digit numbers – derive facts - $2 \times 6 \times 5$; $10 \times 6 = 60$ 	Halving numbers up to 100. Extend mental methods to 3 digit numbers eg $600 \div 3 = 200$ ($2 \times 3 = 6$) INN - PIM. \div facts for x tables up to 12×12 .
Y5	Increasingly large numbers using 1 of the 3 mental methods: <ul style="list-style-type: none"> - partitioning - counting on - adjusting 	Subtract with increasingly large numbers using 1 of the 3 methods (see below)	Multiply increasing large numbers using partitioning and jottings	Applying coin multiplication: $650 \div 50 = 13$ Calculate adjusted known facts e.g $2,500 \div 50 = 50$ To include decimals $0.81 \div 9 = 0.09$.
Y6	Add any 2 large numbers or decimal numbers using the most appropriate of the 3 mental methods. <ul style="list-style-type: none"> - partitioning - counting on - adjusting 	Subtract any 2 large numbers or decimal numbers using the most appropriate of the 3 methods <ul style="list-style-type: none"> - adjusting - counting back - counting on 	Multiply increasing large numbers using partitioning and jottings	Perform mental calculations with large numbers. $1300 \div 14$ Derive known facts with any adjustment. Coin x and combining multiples 1,2,5,10,30,50,100.

H = Hundreds

T = Tens

U = Units

