

# **How to Help your Child with Maths**



## **A Quick Guide to the New Curriculum Year 6**

# Year 6

## What topics are they taught?

\*Please see the target tracker statement sheets for individual objectives!\*

### Topics taught in Year 6:

- **Number, place value, approximation/estimation**
- **Calculations (multiplication and division)**
- **Measurement**
- **Fractions, decimals and percentages**
- **Ratio & proportion**
- **Algebra Geometry (shape)**
- **Geometry (position and direction)**
- **Statistics**



To help your child develop a good understanding of number we ask you to use every opportunity to explore mathematical ideas in everyday life.

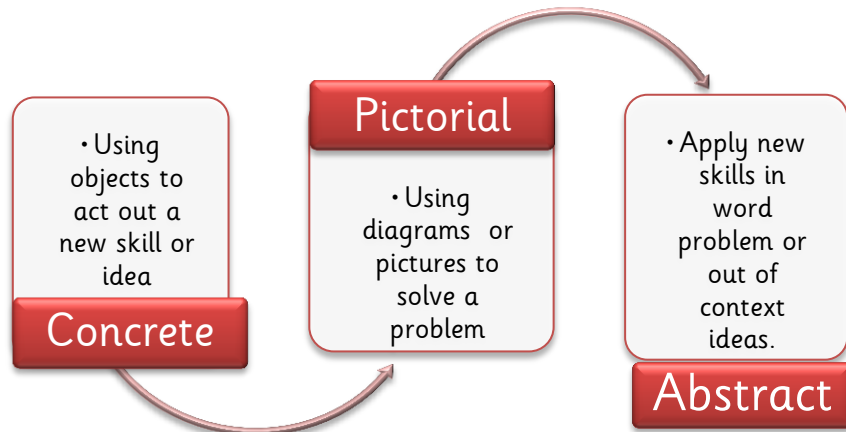
### For example:

- Play fun board games with your children like dominoes, snakes and ladders, snap, connect 4, uno, battleships, Cranium, Guess Who?
- Practice all the multiplication tables or play multiplication songs (up to 12 multiplication table).
- If you are following recipe, ask...If this recipe is for 4 people, how much ingredients do we need for 8?
- Encourage your child to handle money. Ask questions...If there is 10% off, how much is the new price? Compare money off deals e.g. buy one get one half price and ask...How much cheaper is the deal?
- Encourage children to have savings and to manage their own money.
  - When planning DIY ask...How many tins of paint will we need? How long/wide do the new curtains need to be?
  - Other ideas...If the film starts at 7.45pm and is 120 minutes long, when will it finish?
- Explore bus time tables...What bus do you need to get to arrive at school on time?
- Keep a Maths folder or book including any activities, games or practice that you do together at home!



## LEARNING

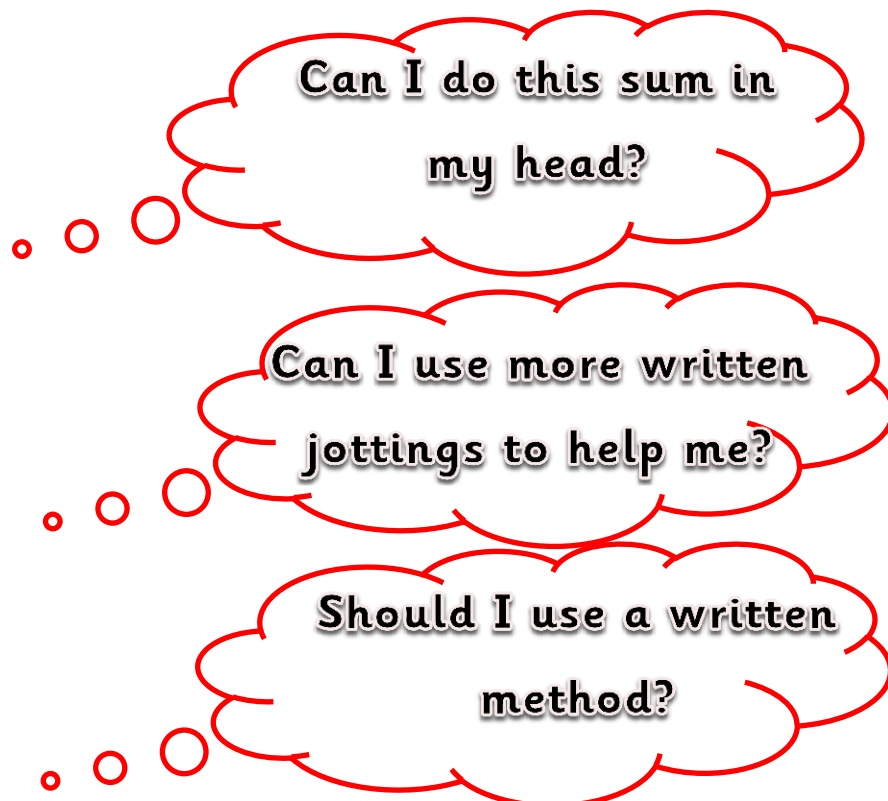
At Highworth, we use three steps (or representations) necessary for pupils to develop understanding of each mathematical concept.



## CALCULATION

Talk to your child about how you work things out. Ask your child to explain their thinking. The work your child is doing at school may look very different to the kind of 'sums' you remember. This is because children are encouraged to work mentally, where possible, using personal jottings to help support their thinking. Even when children are taught more formal written methods (from Year 3 onwards), they are only encouraged to use these methods for calculations they cannot solve in their heads.

As part of a child's learning in calculation, they need to be taught how to select the best method according to the numbers. The hierarchy of thinking should be:



## Year 6

# Addition +

In Year 5, your child was taught to add numbers with at least 4 digit numbers including money, measure and decimals with different numbers of decimal places. In Year 6, are taught to add several numbers of increasing complexity including money, measure and decimals with different numbers of decimal places. They will use the compact column method to add in context of money, measures, including decimals with different numbers of decimal places.

Pupils should apply their knowledge of a range of mental strategies, mental recall skills, informal and formal written methods when selecting the appropriate method to work out addition problems. We also discuss the appropriateness of methods used.

**Tenths, hundredths and thousandths should be correctly aligned, with the decimal point aligned vertically, including in the answer.**

$$\begin{array}{r} \text{Th H T U} \\ + 3517 \\ 396 \\ \hline 3913 \\ \hline 11 \end{array}$$

Remember this number is 500 not 5.

Start with the units

Carry any numbers underneath.

$$\begin{array}{r} + 23.59 \\ 7.55 \\ \hline 31.14 \\ \hline 111 \end{array}$$

The decimal point should be aligned in the same way as the other place value columns, and must be in the same column in the answer

### Key vocabulary:

**add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, addition, column, tens boundary, hundreds boundary, increase, vertical, 'carry', expanded, compact, thousands, hundreds, digits, inverse, decimal places, decimal point, tenths, hundredths, thousandths.**

### Key Skills for Addition at Year 6:

- Add mentally with confidence using larger numbers and calculations of increasing complexity.
- Add several large numbers using written addition.
- Add several large or decimal numbers using written addition.
- Perform mental calculations, including with mixed operations and large numbers, using a range of strategies.
- Solve multi-step problems.
- Use estimation and inverse to check the validity of an answer.

# Subtraction—

## Year 6

In Year 5, your child was taught to subtract with at least 4-digit numbers including money measures and decimals. In Year 6, your child will be taught to subtract with increasingly large and more complex numbers and decimal values. They will use the compact column method to subtract in context of money, measures, including decimals with different numbers of decimal places.

### Compact Column

$$\begin{array}{r} \text{Th H T U} \\ 6 \quad 1 \\ 2754 \\ - 1562 \\ \hline 1192 \end{array}$$

### Compact Column with decimals

$$\begin{array}{r} 0 \quad 9 \quad 1 \quad 3 \quad 1 \\ 105.409 \\ - 39.080 \\ \hline 66.329 \end{array}$$

Empty decimal places can be filled with zero to show the place value in each column.

Pupils will apply their knowledge of a range of mental strategies, mental recall skills, informal and formal written methods when selecting the appropriate method to work out subtraction problems. They will also have opportunities to discuss the appropriateness of methods.

### Key Skills for Subtraction at Year 6:

- Subtract mentally with confidence – where the numbers are less than 100 or the calculation relies upon simple subtraction and place value. Examples include:  $6,723 - 400$ ,  $72 - 46$ ,  $100 - 64$ .
- Subtract large numbers using column subtraction or counting up, e.g.  $1323 - 758$ .
- Subtract decimal numbers using counting up.
- Use negative numbers in context and calculate intervals across zero.
- Children need to utilise and consider a range of mental subtraction strategies, jottings and written methods before deciding how to calculate.
- Decide which methods to use and explain why.

### Key vocabulary:

equal to, take, take-away, less, minus, subtract, leaves, distance between, how many more, how many fewer/less than, most, least count back, how many left, how much less is..., difference, count on, strategy, partition, tens units, take and make, exchange, digit, value, hundreds, inverse, tenths, hundredths, decimal point, decimal

# Multiplication x

## Year 6

In Year 5, your child was taught to subtract with at least 4-digit numbers including money measures and decimals. In Year 6, will be taught to use short and expanded column (long) multiplication, as in Year 5, and multiply decimals with up to 2 decimal places by a single digit.

**Expanded Column Method**

$$\begin{array}{r} 96 \\ \underline{32} \times \\ 192 \leftarrow \text{this is } 96 \times 2 \\ 2880 \leftarrow \text{this is } 96 \times 30 \\ \hline 3072 \leftarrow \text{this is } 96 \times 32 \end{array}$$

Include multiplying more complex numbers and decimals.

$$\begin{array}{r} 3.19 \\ \times 8. \\ \hline 25.52 \\ \hline 17 \end{array}$$

Remember place value, make sure numbers are in the correct column.

### Key Skills for Multiplication at Year 6:

- Recall multiplication facts up to  $12 \times 12$ .
- Use short multiplication to multiply a 1-digit number by a number with up to 4 digits.
- Use long multiplication to multiply a 2-digit by a number with up to 4 digits.
- Use short multiplication to multiply a 1-digit number by a number with one or two decimal places, including amounts of money.
- Multiply fractions and mixed numbers by whole numbers.
- Multiply fractions by proper fractions.
- Use percentages for comparison and calculate simple percentages.
- Estimate answers using rounding and approximation/estimating.

### **Key vocabulary:**

groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, column, row, sets of, equal groups, times as big as, once, twice, three times..., partition, grid method, multiple, product, tens, units, value, inverse, square, factor, integer, decimal



# ÷ Division

## Year 6

In Year 5, your child was taught to divide up to 4 digits by a single digit, including answers with remainders. In Year 6, children are taught to divide at least 4-digit numbers by single and 2-digit numbers (including decimals.) Children should continue to use short division with remainders. They need to learn how to express an answer as a remainder, a fraction or as a decimal.

### Short Division

$$\begin{array}{r} 1061 \text{ r}4 \\ 5 \overline{) 5309} \end{array}$$

\*We teach pupils to write a 'useful list' first at the side that will help them decide what chunks to use. This is usually the times tables that we are dividing by. For the above example we would write the 5 times tables\*

### Key Skills for Division at Year 6:

- Recall and use multiplication and division facts for all numbers to 12 x 12 for more complex calculations.
- 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. Use short division where appropriate.
- Perform mental calculations, including with mixed operations and large numbers.
- Identify common factors, common multiples and prime numbers.
- Solve problems involving all 4 operations.
- Use estimation to check answers to calculations and determine accuracy, in the context of a problem.
- Use written division methods in cases where the answer has up to two decimal places.
- Solve problems which require answers to be rounded to specified degrees of accuracy.

### Key vocabulary:

Share, share equally, one each, two each..., group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, 'carry', remainder, multiple, divisible by, factor quotient, prime number, prime factors, composite number (non-prime) common factor

# Website links

The following web addresses are ones which we use in school as part of our teaching, plus additional ones which your child may find enjoyable. Most of the games are straightforward and your child will be able to play/consolidate their maths skills independently.

Useful online maths vocabulary dictionary:

<http://www.amathsdictionaryforkids.com/dictionary.html>

**The following websites have links to numerous maths topics:**

<http://www.bbc.co.uk/schools/ks2bitesize/maths/>

<http://www.topmarks.co.uk/Interactive.aspx?cat=20>

<http://www.woodlands-junior.kent.sch.uk/maths/>

<http://www.bbc.co.uk/education/dynamo/den/dynamake/make.shtml>

<http://www.crickweb.co.uk/ks2numeracy.html>

<http://uk.ixl.com/math/years>

<http://www.mathplayground.com/>

<http://www.maths-games.org/times-tables-games.html>

**Look at our school website to see what websites we use in school.**

<http://www.highworth.bucks.sch.uk/NEW/default.htm>

