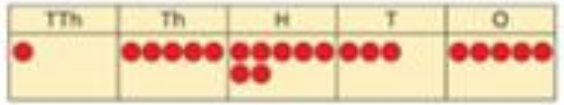
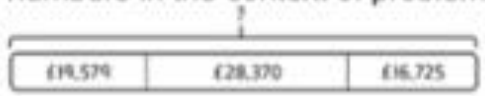
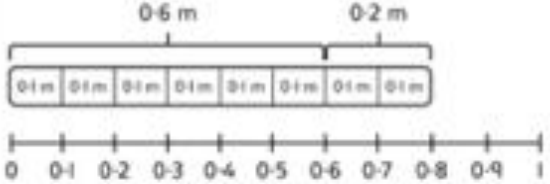
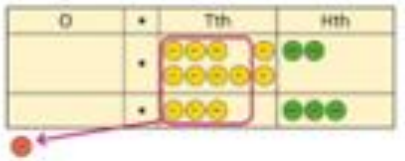
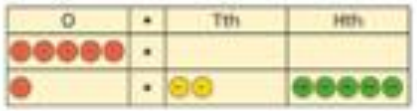
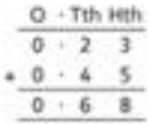
Helping your child with Maths at home

YEAR 6

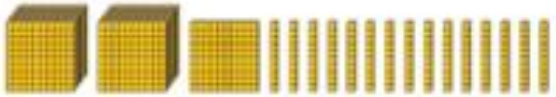
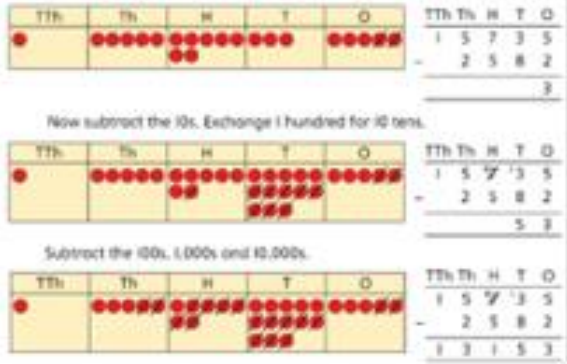
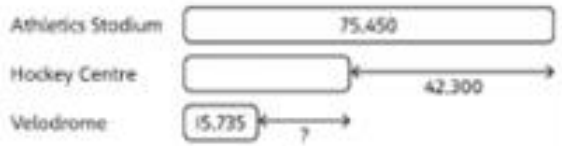
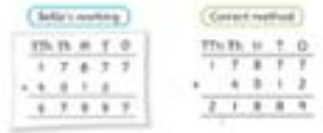
Addition

Column addition with whole numbers	Use place value equipment to represent additions. *Add a row of counters onto the place value grid to show 15,735 + 4,012.*  	Represent additions, using place value equipment on a place value grid alongside written methods.  *I need to exchange 10 tens for a 100.* TTh Th H T O 2 0 1 5 3 + 1 9 1 7 5 3 9 3 2 8	Use column addition, including exchanges. TTh Th H T O 1 9 1 7 5 + 1 8 4 1 7 3 7 5 9 2
Representing additions		Bar models represent addition of two or more numbers in the context of problem solving.  	Use approximation to check whether answers are reasonable. TTh Th H T O 2 3 4 0 5 + 7 8 9 2 2 0 2 9 7 TTh Th H T O 2 3 4 0 5 + 7 8 9 2 3 1 2 9 7 *I will use 23,000 + 8,000 to check.*

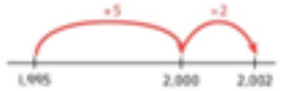
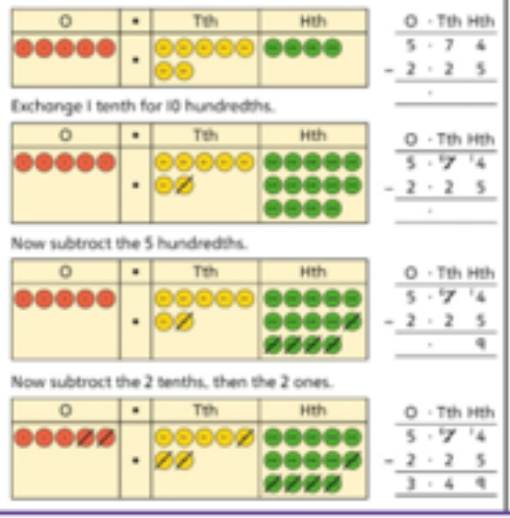
Addition continued

Adding tenths	Link measure with addition of decimals. *Two lengths of fencing are 0·6 m and 0·2 m.* *How long are they when added together?* 0·6 m 0·2 m 	Use a bar model with a number line to add tenths.  *0·6 + 0·2 = 0·8* *6 tenths + 2 tenths = 8 tenths*	Understand the link with adding fractions. $\frac{6}{10} + \frac{2}{10} = \frac{8}{10}$ *6 tenths + 2 tenths = 8 tenths* *0·6 + 0·2 = 0·8*
Adding decimals using column addition	Use place value equipment to represent additions. *Show 0·23 + 0·45 using place value counters.*	Use place value equipment on a place value grid to represent additions. Represent exchange where necessary.  Include examples where the numbers of decimal places are different.  	Add using a column method, ensuring that children understand the link with place value.  Include exchange where required, alongside an understanding of place value.  Include additions where the numbers of decimal places are different. *3.4 + 0.65 = ?* 

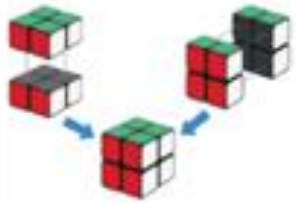
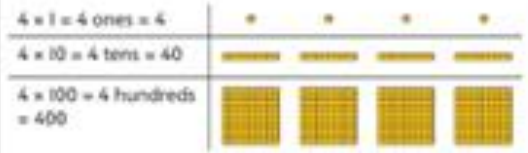
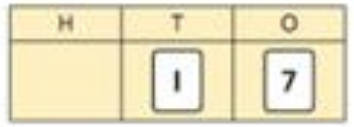
Subtraction

Column subtraction with whole numbers	Use place value equipment to understand where exchanges are required. *2,250 – 1,070* 	Represent the stages of the calculation using place value equipment on a grid alongside the calculation, including exchanges where required. *15,735 – 2,582 = 13,153* 	Use column subtraction methods with exchange where required.  *62,097 – 18,534 = 43,563*
Checking strategies and representing subtractions		Bar models represent subtractions in problem contexts, including 'find the difference'. 	Children can explain the mistake made when the columns have not been ordered correctly.  Use approximation to check calculations. *I calculated 18,000 + 4,000 mentally to check my subtraction.*

Subtraction continued

Choosing efficient methods			To subtract two large numbers that are close, children find the difference by counting on. *2,002 − 1,995 = ?*  Use addition to check subtractions. *I calculated 7,546 − 2,355 = 5,191.* *I will check using the inverse.*
Subtracting decimals	Explore complements to a whole number by working in the context of length.  1 m − ☐ m = ☐ m *1 − 0·49 = ?*	Use a place value grid to represent the stages of column subtraction, including exchanges where required. *5·74 − 2·25 = ?*  	Use column subtraction, with an understanding of place value, including subtracting numbers with different numbers of decimal places. *3·921 − 3·75 = ?* O · Tth Hth Thth 3 · 9 2 1 − 3 · 7 5 0

Multiplication

Understanding factors	Use cubes or counters to explore the meaning of 'square numbers'. *25 is a square number because it is made from 5 rows of 5.* Use cubes to explore cube numbers.  *8 is a cube number.*	Use images to explore examples and non-examples of square numbers.  *8 × 8 = 64* *8^2 = 64*  *12 is not a square number, because you cannot multiply a whole number by itself to make 12.*	Understand the pattern of square numbers in the multiplication tables. Use a multiplication grid to circle each square number. Can children spot a pattern?
Multiplying by 10, 100 and 1,000	Use place value equipment to multiply by 10, 100 and 1,000 by unitising.  	Understand the effect of repeated multiplication by 10. 	Understand how exchange relates to the digits when multiplying by 10, 100 and 1,000.  *17 × 10 = 170* *17 × 100 = 17 × 10 × 10 = 1,700* *17 × 1,000 = 17 × 10 × 10 × 10 = 17,000*

Multiplication continued

<table>
<tr>
<td>Multiplying 2-digit numbers by 2-digit numbers</td>
<td>Partition one number into 10s and 1s, then add the parts.

23 × 15 = ?

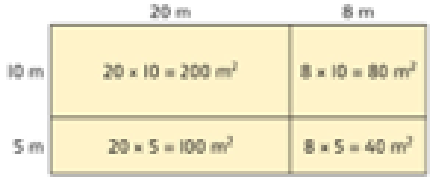
 
3 × 15 = 45

There are 345 bottles of milk in total.

H T O
1 5 0
1 5 0
+ 4 5
3 4 5

23 × 15 = 345</td>
<td>Use an area model and add the parts.

28 × 15 = ?

H T O
2 0 0
1 0 0
8 0
+ 4 0
4 2 0

28 × 15 = 420</td>
<td>Use column multiplication, ensuring understanding of place value at each stage.

3 4
× 2 7
2 3 8 34 × 7

3 4
× 2 7
2 3 8 34 × 7
6 8 0 34 × 20

3 4
× 2 7
2 3 8 34 × 7
6 8 0 34 × 20
9 1 8 34 × 27</td>
</tr>
<tr>
<td>Multiplying up to 4-digits by 2-digits</td>
<td></td>
<td>Use the area model then add the parts.

143 × 12 = 1,716

There are 1,716 boxes of cereal in total.

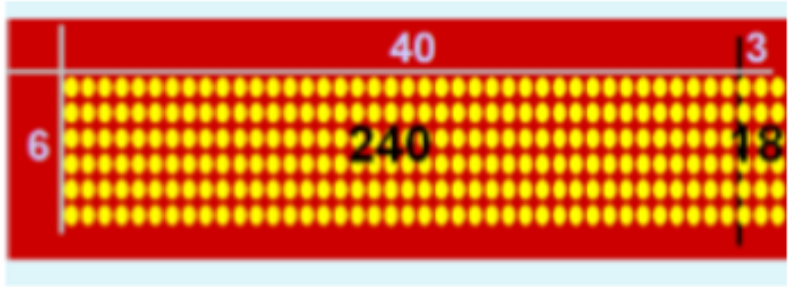
Th H T O
1 0 0 0
4 0 0
2 0 0
8 0
3 0
+ 6
1 7 1 6

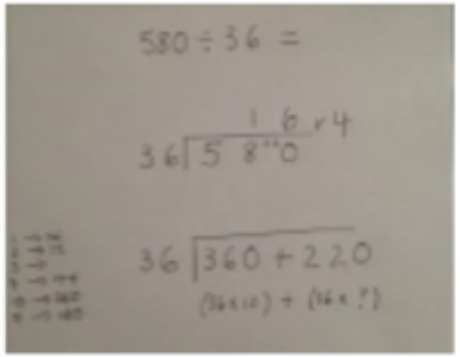
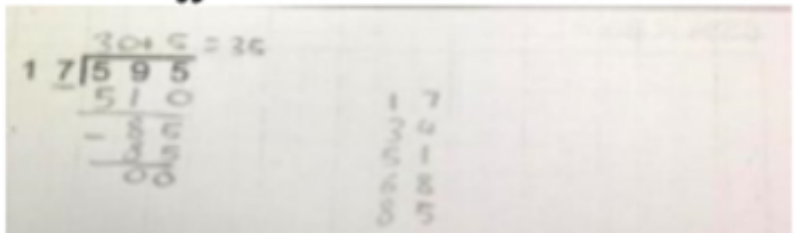
143 × 12 = 1,716</td>
<td>Use column multiplication, ensuring understanding of place value at each stage.

1 4 3
× 1 2
2 8 6 143 × 2
1 4 3 0 143 × 10
1 7 1 6 143 × 12

Progress to include examples that require multiple exchanges as understanding, confidence and fluency build.</td>
</tr>
</table>

Division

Year 5 onwards	Divide numbers up to 4 digits by a 1 digit number using the formal written method of short division. Interpret remainders appropriately according to the context. Continue teaching method above ('bus stop' short division alongside practical activities). Extend to work with 3 and 4 digit numbers, divided by 1 digit numbers, using Dienes to ensure conceptual understanding. When children are secure, use method without equipment, e.g. Short 'algorithm' 291 ÷ 3 = 2 97 3 2 9 1 As	By the end of year 6, children will have a range of calculation methods, mental and written. Selection will depend upon the numbers involved. Pupils interpret non integer answers to division by expressing results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding, e.g. (e.g. 98 ÷ 4 = 24 r 2 = 24 ½ = 24.5 ≈ 25). See	See above. Continue to use Dienes equipment alongside written method to support conceptual understanding where needed. Continue to use array images to support conceptual understanding, e.g. 258÷6= 

Year 6	**Divide numbers up to 4 digits by a two digit whole number using the formal written of short division, e.g. 580÷36=** Children will use multiple listing as jottings alongside their method. Listing multiples 580 ÷ 36 ↘ 1 → 36 2 → 72 4 → 144 10 → 360 5 → 180  ***NB children who reliably use the short method of division will be introduced to the long method of division where it is more efficient*** 

Times Tables

A good knowledge and quick recall of times tables is essential to children's mathematical progress. It is expected that the children know up to 12 x 12.

It is very important that children practice their times tables daily at home. When learning their tables, children are taught to look for patterns such as odd and even number answers, or patterns made by adding together the separate digits in the answers. Children are also taught to recognise the reversible effect so that they know 6 x 2 is the same as 2 x 6.

The children are also taught the relationship with division so that knowing 6 x 2 = 12 means they also know that 12 ÷ 2 = 6 and 12 ÷ 6 = 2. For each known times table fact, they also know three others: 6 x 7 = 42 so they know that 7 x 6 = 42; 42 ÷ 6 = 7 ; 42 ÷ 7 = 6 .

Times tables - Say together the six times table forwards, then backwards. Ask your child questions, such as: Nine sixes? How many sixes in 42? Six times four? Forty-eight divided by six? Three multiplied by six? Six times what equals sixty? Repeat with other times tables.

Rhymes - Make up rhyme together to help your child to remember the harder times-tables facts, e.g. 6 x 7 = 42 phew! 7 x 7 = 49 fine! 6 x 8 = 48 great!

Talk about Maths in everyday situations

- How much? While shopping, point out an item costing less than £1. Ask your child to work out in their head the cost of 3 items. Ask them to guess first. See how close they come. If you see any items labelled, for example, '2 for £3.50', ask them to work out the cost of 1 item for you, and to explain how they got the answer.

- Weighing, measuring capacity and timing when cooking. Converting a recipe for 4 people to one for 6 people. (Scale a recipe up or down to feed the right amount of people.)

- Being involved with measuring and calculating how much curtain fabric is needed, how much wood for shelves, how many wall or floor tiles are needed, how much carpet etc.

- Talking about time, e.g. How long is it until lunch time? The journey takes 2½ hours, when will we arrive? We need to be there at 2.00 pm, when do we need to leave home? Many children will still need practice with reading clock times, particularly minutes past and minutes to the hour.

- If you are splitting the pizza into four, why not ask the question of how much each person is getting as a fraction, percentage and a decimal?

Measuring

- What is the perimeter of your garden? What is the area of your garden? If you wanted to plant 10 trees down one side of your garden, equally spaced, how far apart would they need to be?

- Practise measuring the lengths and heights of objects in metric measurements. Help your child use different rulers or tape measures correctly. Encourage them to estimate before measuring. Compare measurements in metric and imperial.

- Let your child help with the cooking. Help them to measure ingredients accurately. Talk about what each division on a scale represents. Find a recipe for 4 people and rewrite it for 8 people, e.g. 4 people 8 people 125g flour 250g flour 50g butter 100g butter 75g sugar 150g sugar 30ml treacle 60ml treacle 1 teaspoon ginger 2 teaspoons ginger Can you rewrite it for 3 people? Or 5 people?

- Choose some food items out of the cupboard. Try to put the objects in order of weight by feel alone. Then check by looking at the weights on the packets.

- Use a tape measure that shows centimetres. Take turns measuring lengths of different objects, e.g. the length of a sofa, the width of a table, the length of the bath, the height of a door. Record the measurement in centimetres, or metres and centimetres if it is more than a metre, e.g. if the bath is 165 cm long, you could say it is 1m 65cm (or 1.65m). Write all the measurements in order

- Make a list of the abbreviations used in the recipe and then write them in full – for example, L for litre, ml for millilitre, tsp. for teaspoon, tbsp. for tablespoon.

Money and percentages

Discussing catalogues can be a great way to improve your child's maths knowledge of money and percentages. Here are some questions you could ask:

- How would you spend £40 from a catalogue? How many products can you buy for £40?
- Select five products from the catalogue, then calculate what the cost would be if there was a 50% sale. Does it make a difference if you add up the items, and then deduct 50%, or if each item is reduced by 50% then totalled?

Investigate costs for family trips together. For example, a visit to a theme park may include the cost of transport, entry tickets, food and transport.

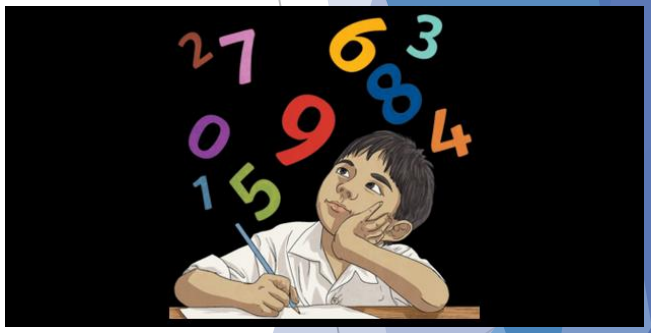
- Discuss saving money for presents or something your child may want to buy. Work out how long it will take to save this much if they get a small amount of money each week.
- Negotiate increases in pocket money as percentages. For example, a 5% increase would be how much money per week? Is this better than a monthly increase
- Calculate together how much a mobile phone costs per month. What percentage of total cost is spent on messages and what percentage on phone calls?

Ask your child to explain their mathematical thinking.

- Explaining your reasoning… Solve the following calculations: ‘When working with whole numbers, if you add two 2-digit numbers together the answer cannot be a 4-digit number.’ Do you agree? Explain your reasoning.

- Millie wanted to buy a coat that cost £80. She saw the coat on sale in one shop at 1/5 off. She saw the same coat on sale in another shop at 25% off. Which shop has the coat at a cheaper price?

- What is the same about these shapes? What is different?



Worded problems

- 13502 people were at the match last week and there are 2483 more this week, how many more people need to attend to bring the total to the club’s target of 20 000 people?

- Egg boxes hold 6 eggs. A farmer collects 439 eggs. How many boxes can he fill? Egg boxes hold 6 eggs. How many boxes must a restaurant buy to have 200 eggs?

Quick quizzes on converting decimals into their equivalent fractions are a good way to encourage learning on these topics, and you can easily incorporate them into everyday life.

Examples could include:

- I've filled this glass of water up ½ to the top. How much room is left in it as a decimal?
- We've walked 25% of the way to school. How far is that in a fraction? How much more have we got to walk as a fraction, decimal and percentage?
- ⅕ of your dinner is made up of vegetables, how much is this as a percentage?

Sports provide a good opportunity to engage your child in maths, particularly if they are a keen sportsperson.

Here are some questions to ask your child when watching or playing their favourite sport:

- How does your favourite sport tally the score? What maths is presented on the tally?
- How do other sports tally the score – for example, tennis, golf, cricket, netball, football?
- What maths do you use to find the total of the scores?
- How long do your favourite sport games go for in minutes and seconds? How is the time in the game divided? Into halves, quarters or something else?
- What are the shapes of different playing fields and courts? Talk about edges and angles.
- How can you estimate the perimeter and area of a playing field?

When faced with a calculation problem, encourage your child to ask…

- Can I do this in my head?
- Could I do this in my head using drawings or jottings to help me?
- Do I need to use a written method?
- Should I use a calculator?