Year 3 Maths at Gayhurst:
A Guide for Parents and Carers.

End of year objectives:

- **Count in steps of 2, 3, 4, 5, 8, 10, 50 and 100 from any number, forward and backward.**

Count whenever you can, from taking stairs, to the number of black cars on the road, to leaves in the park. Additionally, ask your child to count in from different numbers without concrete things. Focus on counting across the 10s and 100s. E.g. 699 to 700. Start on any number and count in different multiples with some thinking time, e.g. back in 4s from numbers like 256. Counting backwards can be much trickier but is great to really solidify a number line in our mind. Counting in multiples from any number should enable to children to quickly add on or subtract, and then see a pattern to follow.

- **Recognise the place value of each digit in a 3-digit number. Find 10 and 100 more or less than any number**

Children should develop their understanding of the digits in each number and what they represent. The **1** in **100**7 means 1 thousand, also understood as ten hundreds. The zeros are place holders – if we don't have them the number becomes 17. The 7, shows 7 ones. At the start of year 3, they focus on 3 digit numbers (100 – 999), moving to prepare for the thousands by the summer term.

Say a 3 digit number and ask how many hundreds, tens and ones it has. Write another number down and ask them to point out the hundreds tens and then the ones. Ask what the number would be with 2 more hundreds. How about with 7 more tens? etc.
Play "I am a number with…" Write down a number, hide it and say: *I am a number with 4 hundreds, 7 tens and 6 ones. What number am I? What number would I be if I added one more lot of 10? What about if I subtract 100?* Take it in turns to pick a number, so you play too.

- **Compare and order numbers up to 1000; use <, > and = signs**

Ask your child to pick a number, such as between 311 and 580. You pick a number, write them both down separately and ask them to compare using the correct symbol. Read the sentence aloud to check.

- **Create and solve problems by partitioning hundreds, tens and ones e.g. 472 – 70 = 402**
- **Solve missing number problems using place value**

See how many missing number sentences can be completed in 1 minute, using their understanding of place value. e.g. 370 = 450 - __,
359 + __ = 409. Bring them back to drawing or imagining a place value mat with dienes if needed.

- **Read and write numbers up to 1000 in numbers and in words**

Say a number and support your child to write them numerically and then in words. Remember these rules:
-Read from left to write (largest value first)
-Hyphenate numbers 21 to 99 (twenty-one)
-Add an 'and' before any tens and ones.

- **Recall and use addition and subtraction facts up to 20 fluently.**

Children should recall these facts for all numbers off by heart, to 20, by the end of year Key stage 1 (year 2). To continue to revise them, play a game of 'ping pong'. Say the number that you are doing the bonds for (e.g. 14) and then 'ping'. Child says 'pong'. Keep going then 'ping' them number "9" and then 'pong' back the number that you add for 14, "5". Then can then build on this, learning pairs of numbers to 100, e.g. 70 + 30.

Mentally add and subtract:

- **a three-digit number and ones,**
  a three-digit number and tens,
  a three-digit number and hundreds

For a thee digit number and a number of ones, your child can add or subtract to the nearest ten, and then add or take away the rest. Encourage them to use their number facts from year 1 and 2 to help:

e.g. 334 – 7 can be done as 334 – 4 = 330. Then 330 – 3 = 227. They can draw on a blank number line to help with this, if needed.

Use place value knowledge to add or subtract tens and hundreds . e.g. count on in tens from 655 to do 655 + 20. Remember when we add ten, "the tens get bigger, the ones stay the same". When we subtract ten, "the tens get smaller, the ones stay the same". This works until we get to something like 600 – 10 = 590. Here children have to be able to understand a ten comes from the 10 tens in one of the hundreds, leaving us with 590. It is conceptually much harder than 988 – 10 = 978 and lots of practice is good.

- **Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction**

Try to ensure that children are adding/subtracting mentally wherever possible and then using columnar addition and subtraction to check. Watch out for columns being aligned and common mis-conceptions. Eg, children do not have a concrete understanding of 375 – 137 if they attempt to do 7 ones take away 5 ones instead of 'stopping and swapping'. They can draw the dienes to show a pictorial understanding alongside their column method.

- **Estimate the answer to a calculation and use inverse operations to check an answer. Solve word problems and missing number problems**

It's great to put maths problems into a real life context whenever possible and to encourage the application of what children and learning with problem solving. This can be done by lots

of calculations when cooking "How many grams are we using if we find the total?" as well as questions like "The shopping was £89, what would double that be?" Missing number sentences like 350 = 150 + ___ can be solved using the inverse, subtracting 150 from 350. Children have to be able to see that we have the whole number (350) and if we know one part, we can subtract that to find the other

- **Recall and use multiplication facts for the 2, 3, 4, 5 6 and 8 timestables.**

Multiplication tables are essential for a huge part of future maths learning and success. Children need to know up to 12 x 12 off by heart by the end of year 4. However, some children may achieve this earlier. The associated division facts are just as important, and are often overlooked, so please focus on these too. We have a subscription to Times Tables Rockstars which is great for this https://ttrockstars.com/home
Aside from the site, you can race your child, firing multiplication and division sentences at one another. Timestables grids are easy for children to set out on any bit of scrap paper, and they can be timed and try to reach a personal best in completing them. When they are first learning a timestables, the will need lots of practice counting in multiples of that number first, and then will need to be challenged to commit it to memory.

- **Solve and create word problems, including missing number problems for multiplication and division. Use inverse operations to check answers.**

Children should learn that to answer 49 ÷ __ = 7 they use the inverse of 7 x 7 = 49. Timestables Rockstars also supports children to learn division sentences. Word problems enable children to see mathematical applications to real life. Problem solving and more complex, mastery based work often comes from word problems. Try your child with situations such as: "The train tickets cost £32.00 in total. Four people took the train. How much did it cost for each person?"

- **Write and calculate two-digit numbers times one-digit numbers, using mental (partitioning) and progressing to formal written methods**

Support your child to split the two digit number in into tens and ones. They can then use the grid method to times the tens and then the ones by the one digit multiplier.

×	30	5
7	210	35

210 + 35 = 245

Fractions:

- **Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10***
- **Find 1/3 and ¾ of a length or shape and quantities up to 50**
- **Add and subtract fractions with the same denominator**
- **Prove that ½ = 2/4**

Children can find fractions challenging, and lots of practical experience really helps. They can be supported to know that the bottom number (denominator) is what they divide the amount/shape/ length by and they can do this by sharing/dividing by that amount. The top number (numerator) shows how many of those parts they need.

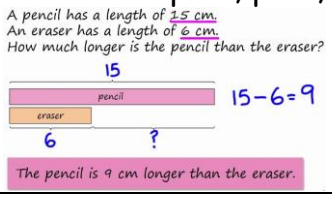
Suggest things like "Find $\frac{1}{4}$ of these grapes" by dividing them into 4 groups. Challenge then to find $\frac{3}{4}$. Ask how many grapes they get when they add $\frac{1}{4}$ + $\frac{3}{4}$ of them. Have ten smarties. What would 2/10 of these be?

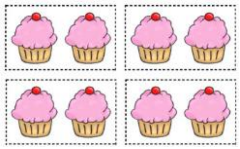
Measurement:

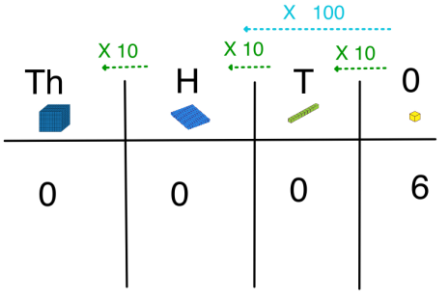
- **Tell the time on an analogue clock (including in roman numerals) to 1 minute intervals and a digital 12 and 24 hour clock (using vocabulary a.m and p.m.)**
- **Know the number of seconds in a minute, number of days in each month, year and leap year.**
- **Measure in centimetres, metres and kilometres. Work out equivalent measures of length e.g. 500cm=5m. *Measure in grams and kilograms.**

It's great to do things practically, like keeping a height chart at home of your child and any siblings, and comparing their height over time. You might track how far you've walked on an app, and you can covert from metres to kilometres etc. Weigh things whilst cooking and baking and look at the weather on your phone or the news to support their understanding of the temperature

Glossary of key terms:

Array	A pictorial representation of a multiplication sentence, set out in rows and columns:  2 x 4 4 +4 4 x 2 2 + 2 + 2 + 2
Aggregation	The adding together of two or more quantities. You might say "how many are there altogether/in total?"
Augmentation	Where one quantity is increased by another. "Hannah had 16 sweets, then she was given 4 more".
Bar models	Pictorial representation of a number sentence or word problem, allowing a visual representation to help select the correct operation needed. It shows a part, part, whole relationship. 
Commutative law	Maths that can be calculated in any order and gives the same answer. Eg 3 x 5 = 5 x 3.
Concrete Pictorial Abstract	Concrete: things children can touch and manipulate, often used to represent numbers. Pictorial: things children can draw or pictures they can use to help

	with number. Abstract: using numbers/symbols to represent the calculation.
Denominator	The bottom part of the fraction shows how many equal parts to split into. $\frac{3}{5}$ ← numerator ← denominator
Dienes	Concrete apparatus to show place value, and to help with addition and subtraction.
Dividend	The quantity that you want to divide. In 15 ÷ 5, 15 is the dividend.
Divisor	What you divide a number by. In 15 ÷ 5, 5 is the divisor.
Equivalent fractions	Fractions that look different but show exactly the same amount. $\frac{1}{2} = \frac{2}{4}$
Expanded notation	Numbers written as a sum of their 1's, 10's, 100's, 1000's. 1532 = 1000 + 500 + 30 + 2
Fact families	Like a number bond, but with the subtraction facts too. Using the same numbers as part of that 'family'. One fact family for 6: 1 + 5 = 6 6 – 5 = 1 5 + 1 = 6 6 – 1 = 5
Inverse	The opposite operation. It can be used to check if you are right, or complete a missing number problem. E.g.: 4 + 5 = 9 helps with 9 – 4 =__ 8 x 7 = 56 helps with 56 ÷ 7
Multiplicand	The number to be multiplied. E.g. 2 x 4 , the multiplicand is 2: 
Multiplier	The multiplier is what you times it by. E.g. 2 x 4, the multiplier is 4.
Product	The result of multiplying. The product of 2 and 4 is 8.
Place value	The value of each digit depends on its position in a number. The 6 in 645 represents six hundred, whereas it represents 6 ones in 776.

Place value mat	A3 sheet showing columns to represent the value of each digit in a number. Often used with cubes, straws Dienes or place value counters. 
Number bonds	Pairs of numbers that add together to make another number, with the expectation that we learn these by heart from instant recall. Eg number bonds to 5: 1 + 4 3 + 2 2 + 3 4 + 1 0 + 5 5 + 0
Numerator	The top part of the fraction shows how many of the parts we have. $\frac{3}{5}$ ← numerator ← denominator
Partition	To break a number down into smaller numbers. Often we partition into tens and ones.
Quotient	The answer when dividing,. Eg: in 12 ÷ 3 = 4, 4 is the quotient.
Regrouping	This may have been referred to as borrowing or grouping previously. For example, when we take a number of tens and move them into the ones so we can subtract for column method. E.g. for 57 – 39.
Repeated addition	The same number added a number of times. 3 x 4 = 4 + 4 + 4
Sum	Only to be used when referring to adding numbers. 28 – 13 = is referred to as a **calculation/number sentence**.