Year 3 – Becoming an 'exceeding Mathematician'

We have put together the following guide to help our parents and carers support their children at home with Maths and help them become an 'exceeding Mathematician'! An 'exceeding Mathematician' is a child that has mastered the content of their year group curriculum beyond that of the 'expected' standard. When assessing children in school, we have found that often children master the procedures and are fluent, but find applying the concepts more difficult.

A child working at 'exceeding' will be able to:

- access maths problems presented in a wide range of different, complex ways;
- be able to justify and prove their mathematical thinking when reasoning;
- Ask their own mathematical questions and follow their own lines of enquiry when exploring an open-ended maths problem.

One of the most important ways children can be supported is to encourage their reasoning about maths – can they explain why they think they have found the answer? Can they prove something is true or false? Can they say how things are similar/ different? Reasoning includes being able to explain verbally or in written form, using the correct mathematical vocabulary.

If a child is working at an 'exceeding' level in Maths they need to be able to complete most of the 'exceeding' statement this list and the 'expected 'statements will be embedded. If you have any concerns about your child's maths learning please book an appointment with their class teacher to discuss their maths level further.

Exceeding statements	How I can help at home…
Number and Place Value: **Show fluency in the use of number facts and are able to make generalisations based on these to find unknown facts.** **Demonstrate a secure understanding of place value and have fluency when working with numbers up to and above 1000.** **Apply place value and number facts knowledge to solving problems involving number and place value in a range of familiar and unfamiliar contexts.**	Discuss numbers in everyday contexts. Practice counting in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number. Discuss the value of each digit in three-digit numbers. Compare numbers – which is greater than/ less than? Estimate numbers – e.g. how many cornflakes are in the bowl? Encourage them to explain how they know using the correct language.
Addition and Subtraction: **Demonstrate rapid recall of number facts which they can use to generate new unknown facts.** **Use rapid recall of number facts to support their repertoire of calculation strategies, both mental and written.** **Use a range of efficient written and mental calculation strategies to use in calculation.** **Draw on their repertoire of calculation strategies in problem solving, explaining their choices and communicating their reasoning.** **Communicate their ideas as well as following a reasoned argument.**	Practice adding and subtracting numbers mentally to encourage fluency (include adding and subtracting up to 3-digit numbers). Encourage them to use physical objects when completing addition and subtractions problems. Encourage them to draw their methods and talk about how they know they have the right answer. Practice adding and subtracting numbers with up to three digits, using formal written methods of column addition and subtraction. Encourage them to explain why they might need to carry for addition and borrow for subtraction.
Multiplication and Division: **Demonstrate rapid recall of multiplication and division facts and the ability to use these to derive related facts to solve problems.** **Show a repertoire of written and mental calculation methods to solve problems that involve multiplication and division. They are able to communicate their reasoning and explain their thinking.** **Apply their understanding of multiplication and**	Practice multiplication and division facts for the 4, 6, 8 and 9 multiplication tables (continue to revise 2s, 3s, 5s, and 10s). Encourage them to use physical objects when completing multiplication and division problems. Encourage them to draw their methods and talk about how they know they have the right answer.

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division to a wider range of problem solving contexts such as shape and measures.	
Fractions: **Apply knowledge of fractions to solving problems of increasingly complexity.** **Show understanding of the connections between areas of learning in fractions such as the ability to recognise equivalency. And links to decimal place value** **Use fractions in problems solving, explaining reasoning in problems involving measures shape and statistics.**	Practice counting up and down in tenths. Discuss fractions related to everyday situations e.g. eating dinners/ snacks – if you have eaten 2/5 of your snack how much do you have left? If I have 6 sweets and give away 3/4 how many have I given away/ got left? Practice adding and subtracting fractions with the same denominator [for example, 5/7 + 1/7 = 6/7]. Encourage them to explain how they know and why they use the method they used.
Measures: **Use a wide range of tools when working with measures and can more fluently between different units.** **Use understanding of other areas of the curriculum to solve problems and calculations involving measures e.g. multiplication.** **Apply their understanding to solving problems of increasing complexity and can reason about their choices.**	Cooking is one of the best ways to support measures – weighing ingredients and asking questions that encourage them to compare amounts. Ask questions such as – if I have put 20ml of juice into 6 cups how much juice is that altogether? Encourage them to pay for things with money in shops – how much do you need to give? What change will you get? (Hopefully shop assistants will play along with this!) Practice telling the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. Practice time facts - the number of seconds in a minute and the number of days in each month, year and leap year. Discuss time in relation to the daily routine and time intervals – how long is your favourite TV programme etc. Encourage them to explain how they know.
Properties of Shapes: **Apply knowledge and understanding of the properties of shapes to a wider range of regular and irregular 2D and 3D shapes.** **Work with an increasing level of accuracy describing the properties of shapes.** **Apply their knowledge and understanding to solving problems of increasingly complexity as well as communicating their reasoning.**	Talk about objects at home and what shapes they are – encourage them to explain how they know using correct vocabulary (a list is available if needed). Encourage them to explain what is the same/ different about shapes. Discuss angles in shapes and as a description of a turn including right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn. Encourage them to compare the size of angles. Get them to find examples of horizontal and vertical lines and pairs of perpendicular and parallel lines around the house.
Position and Movement: **Apply knowledge of position and movement to solving problems.** **Use mathematical vocabulary to describe the position and movement of a given unit.**	Play games involving arranging objects in patterns and sequences. Get them to move in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise).
Statistics: **Interpret data to answer questions related to problems across the curriculum.** **Interpret data and read scales with increased accuracy with different divisions using knowledge of number.** **Pose their own questions and formulate hypothesis and make decisions about how to collect data to solve problems.** **Reason and explain their decisions.**	Look at tables on food labels and discuss them. Ask comparison questions such as, how many grams of salt are there compared to carbohydrate etc. Encourage them to explain how they know. Look at examples of graphs in newspapers etc and ask questions such as: How many more?' and 'How many fewer?' Encourage them to explain how they know.

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Please do not feel compelled to complete all the suggestions all the time. Any support, however small, will help your child to make progress.