

Working at level 8 and Exceptional Performance in maths

Children will be able to do many of the following:

- tackle problems in unfamiliar contexts by selecting from a range of techniques such as algebra and graphs, often exploring alternative strategies, for example, investigating the path of a basketball when shot at the net
- use mathematical symbols consistently to communicate precise meanings
- apply mathematical reasoning and logic and construct simple proofs
- calculate with powers, roots and numbers in standard form
- solve problems involving proportional change, for example, if you have a credit card with a monthly interest rate of 2% you can calculate the amount owed at the end of three months by multiplying by 1.02^3
- evaluate and manipulate formulae, equations and expressions
- solve inequalities in two variables
- use and interpret linear, quadratic, cubic and reciprocal graphs
- understand and use congruence and similarity when solving problems
- use trigonometric functions (sine, cosine and tangent) to solve problems in two dimensions
- understand cumulative frequency, and use the interquartile range to compare sets of data
- solve probability problems involving compound events, for example, in a box of 35 chocolates there are five toffees, the probability of getting a toffee changes each time a chocolate is taken from the box.



What you can do at home to help your child make progress beyond level 6

At level 6 and above the nature of maths becomes more algebraic and abstract. This involves making and using formulae and developing knowledge of sequences and graphs. You could ask your child to explain their understanding of some of the maths problems they are working on and solving at school. This will help reinforce and consolidate what they know.

You could also encourage your child to:

- attend a maths event at school with you
- work out the best value for money when shopping
- watch documentaries and discuss the maths involved in climate change or other environmental concerns
- talk about their work with reference to a textbook or online resource such as BBC Bitesize or MyMaths
- watch the Royal Institution (RI) Christmas Mathematics Lectures, designed for children and young

people, that offer exciting ways of looking at maths problems

- listen to maths programmes such as 5 numbers, Pi, Golden Ratio, Imaginary number, Infinity.

Higher attaining children could be encouraged to:

- consider the maths involved in modelling real-life situations, such as building a bridge or the arc a ball makes when thrown
- find out why gambling is likely to cost you money
- explore the interest earned on a range of savings accounts, the cost of obtaining money for a mortgage or the cost involved in using credit, for example, children can be encouraged to use an ICT spreadsheet to calculate and compare interest rates
- join a maths club (at school or online, for example, NRICH), or take part in master classes (for example, RI) and other enrichment activities.