

# MATHEMATICS – EXCEED AND EXCEL

## Be Fully Prepared

Good quality drawing instruments, including:

- a pair of compasses;
- a transparent ruler;
- a protractor;
- a scientific calculator

## Recommended Reading

Oxford Mathematics Study Dictionary (F. Tapson)

Oxford Maths Challenges (T. Gardiner)

## Experience Statistics

Experience of different types and uses of statistical charts would be beneficial: newspapers, the news and websites such as <http://www.statistics.gov.uk/> all can be a great source of information and discussion.

Many sites relating to sport display a great deal of statistics to interpret

Maths and Football <http://sport.maths.org/content/afc>

Maths and the Olympic and Paralympics games <http://sport.maths.org/content/>

## Experience of 3D Drawing

Experiences in observing different uses of 3D drawing would be beneficial.

This includes:

- design plans (such as an architect);
- and art (such as the use of perspective in Renaissance art and the work of M.C. Escher)

## Use of a calculator

Make sure your child reads the calculator's reference manual and spends some time learning some of the operations

## Percentages

Experience of the use of percentages in different contexts will be beneficial. This includes:

- In the newspapers and on the news
- On food packaging
- In the shops – sales and % amounts free/discounted

Discuss percentages when you see these in your daily lives.

## Probabilities

It would also be beneficial to encounter probabilities in a number of contexts, such as:

- Playing simple games of chance (eg in Monopoly, what are the chances of landing on Pall Mall from the start?)
- Looking at chance in card games
- Looking at chance displayed as odds

Discussing the use of probabilities in weather forecasts

## Places to Visit

Museum of Science and Industry

Anywhere but get your child to plan the route – cost it, work out the distance, work out the times, can they read a train or bus timetable and work out a journey?

Get your child to look at the different architectural features of the buildings that you pass

When abroad why not get your child to work out the exchange rate of different currencies

Bletchley Park – to look at codes and ciphers

Jodrell Bank

Cambridge Science Festival in March

MAD Museum – Mechanical Art and Design Museum in Warwickshire

Techniquist in Cardiff

CAT Centre for Alternative Technology Snowdon, Wales

## Television, Film or Podcast

Countdown

A Beautiful Mind

Good Will Hunting

Enigma

The Theory of Everything

The Man who Knew Infinity

<http://themathsfaculty.org/podcasts/> A website of online podcasts

## Wider Reading

+Plus – online Maths Magazine <https://plus.maths.org/content/>

The 'Uncle Albert' series by Russell Stannard

The Code Book by Simon Singh

The Penguin Dictionary of Curious and Interesting Numbers by DG Wells

The Curious Incident of the Dog in the Nighttime by Mark Haddon

Chaos by James Gleick

Mathematics and the Physical World by Morris Kline

An Introduction to Mathematical Reasoning by Peter Eccles

Mathematical Challenge by Tony Gardiner

The Number Devil Book by Hans Magnus Enzensberger

Murderous Maths Series by Kjartan Poskitt

Math Hysteria by I Stewart

1089 and all that by D Acheson

### Websites

<http://wild.maths.org/>

<http://www.nrich.maths.org/public/index.php>

<http://nrich.maths.org.uk>

<http://www.worldclassarena.org>.

<http://www.pass.maths.org>.

<http://www.cut-the-knot.org/index.shtml>

[www.murderousmaths.co.uk](http://www.murderousmaths.co.uk).

<http://mathworld.wolfram.com>

<https://undergroundmathematics.org/>

<http://www.familymathstoolkit.org.uk/>

### Extracurricular and Competitions

UKMT

Sudoku

BBC 3, 2, 1 Go Video Challenges <http://sport.maths.org/content/BBC-3-2-1-GO>

STEM Club

Alan Turing Cryptogram Challenge

5 a day [www.corbettmaths.com](http://www.corbettmaths.com)