



IGCSE Extended Mathematics at Winchester College

Numbers

Revision of long multiplication and division
 Percentages
 Errors and approximation
 Standard form
 2.998×10^2
 6.63×10^{-34}
 Units & conversions
 Number facts
 π , $\sqrt{2}$, e ...

How to use a calculator
 Add multiply memory use
 P(A), P(B), P(A|B), P(B|A) ...
 Tree diagrams
 independent vs conditional P(A|B), P(B|A) ...
 Averages (mean, median, mode)
 Lower & upper Quartiles
 IQR
 Box & whisker
 cumulative frequency
 Bar charts & histograms
 Function transforms
 Pascal's triangle and the Binomial Expansion of $(a+b)^n$
 Introducing calculus
 Trapezium rule
 Sine and cosine rules
 Any angle

Statistics and probability

Display of data
 Standard deviation
 Graphing
 Sketching
 \sqrt{x} , x^3 ...
 Logarithms
 Arithmetic and geometric series
 Similar as multipliers

Sets and logic

Venn diagrams
 Set notation
 Vectors
 Solving equation?
 Applications

n , U , C
 $n(A)$, E , ϕ

Matrices and transformations

Inverse & determinant
 Addition & multiplication
 + translation
 Geometrical transforms
 Stretch/shear/rotation/reflection
 Areas and volumes of basic shapes*

Algebra

Iteration
 $x_{n+1} = \dots$
 Functions $f(x)$
 Pythagoras theorem
 Rearranging equations
 Brackets / Grouping / Simplification
 Factorization
 linear
 quadratic
 Solution of equations $f(x) = 0$
 Inequalities
 Simultaneous equations
 linear x^2 x^3 ?

Trigonometry

Bearings
 3D problems

Geometry, volumes and areas

Construction
 Area theorems
 Proportion / Similarity
 Scale factors
 $y = mx + c$
 Sine and cosine curves and tangent curves

Graphs

Linear programming
 Laws of indices and surds
 Inverse proportion
 Quadratics
 (Roots, vertex, y intercept)
 Kinematics
 Verbal, time graph (t, v)
 Displacement \rightarrow Area of (t, v)
 Acceleration \rightarrow gradient of (t, v)

- Triangles
- * Circles
- polygons
- Rectangles
- Trapezia
- spheres
- cones
- cylinders
- conoids
- Trapezoids

POSTERS
 + MENTAL ARITHMETIC
 INVESTIGATIONS &
 PUZZLES
 PRACTICAL APPLICATIONS
 programming

