WINCHESTER
COLLEGE

**Winchester Entrance and Election Mathematics Syllabus**

Candidates for Winchester Entrance and Election come from a wide variety of schools, and we do not expect them to be prepared to any specific syllabus. We want them to have spent as much time as possible doing interesting, enjoyable and challenging work. Things that have featured in recent Entrance and Election exams include:

- Simple arithmetic (usually involving shorts cuts that we hope candidates will spot)
- Substitution of numbers into algebraic expressions
- Simple equations in one unknown
- Manipulation of simple expressions
- Angles in a polygon, and parallel lines
- Length, area and volume of simple shapes (including circles and prisms)
- Arithmetic with percentages, fractions and powers
- Ratio and proportion (including area and volume scale factors); similar figures; symmetry
- Pythagoras (including problems in 3-D)
- Prime factorisation
- Mean and median
- Speed, distance and time
- Sequences (sometimes from patterns)
- Combinatorics (the number of ways of doing things).

Although some of the harder questions in our Entrance and Election papers require some algebra, we place a much stronger emphasis on numerical work. Time spent doing mental arithmetic is never wasted. Our junior boys are told that they do not need to bring a calculator to lessons; on the rare occasions when we require their use (for example, when generating random numbers), we hand calculators out. All our internal exams in the first two years are non-calculator. Were all candidates prepared for Winchester without calculators, we would be delighted.

We can usually determine whether a candidate has done well in the Entrance paper by looking at his answers to the first two questions; there is a good correlation between the quality of layout and the percentage score. We think that we can accelerate progress by encouraging good presentation, and insisting on good habits of style. If a boy has learned good practice before he arrives, and understands the importance of careful working, he will have been given an important advantage: we will be able to teach him more efficiently from the start of his time at Winchester.

Recent past papers provide excellent preparation. We suggest that candidates do not sit many of these papers under exam conditions, but instead spend plenty of time on each question. Getting stuck and then trying things is a critical part of problem-solving. Candidates should know this and be encouraged by it. A boy with strong arithmetic who has been encouraged to notice things will fare well in Entrance. We do not ask that candidates are highly proficient in algebra; there is heavy emphasis on algebra in their first term here, and we assume little experience. We strongly recommended the large body of material produced by the UKMT. A year of work based mostly on this would be excellent preparation for Winchester.