

### Core Maths: Benchmark 1 Topic List

Topic	Self-Score 0-5?
Estimation (Fermi): Making and justifying assumptions (powers of 10) to make an estimation. Knowing how to improve the estimate and how changing assumptions would affect the estimation	
Critically examining data in newspapers: Are they sufficiently accurate in their claims?	
Types of Data: Primary, Secondary, Qualitative, Discrete, Continuous	
Measures of Average: Mean, Median and Mode from lists, frequency tables, grouped tables, (using cumulative frequency for median) or stem and leaf diagrams. Use of calculator and knowing which measure is best used in different situations	
Measures of Spread: Range, Inter Quartile Range, Standard Deviation, and Variance. Use of calculator and knowing which measure is best used in different situations	
Use of Mean and Standard deviation or Median and Quartiles to identify outliers (extreme values) and decide what to do about them	
Sampling Techniques: Random, Stratified, Cluster and Quota (advantages and disadvantages)	
Bounds: Lower and Upper bounds of a number rounded with decimal places or significant figures. (Difference between discrete and continuous data)	
Percentages from GCSE: Increase/Decrease, Percentage change, reverse percentage, expressing one number as a percentage of another	
Simple Interest: Using year by year, in a table or spreadsheet, and the formula: $A = P + \frac{r}{100} \times P \times n$	
Compound Interest p.a: Using year by year, in a table or spreadsheet, and the formula: $A = P \left(1 + \frac{r}{100}\right)^n$	
Compound Interest p.a. compounded more regularly: Using the formula $A = P \left(1 + \frac{r}{n}\right)^n$ to find amount at end of year, where $r$ is a decimal Using the formula for AER (Annual Equivalent rate) $r = \left(1 + \frac{i}{n}\right)^n - 1$ , where $i$ and $r$ are decimals	
Loans: Using the formula for APR (Annual Percentage Rate): $C = \frac{A_1}{(1+i)^{t_1}} + \frac{A_2}{(1+i)^{t_2}}$ paying a loan back in 2 payments, or $C = \frac{A_1}{(1+i)^{t_1}} + \frac{A_2}{(1+i)^{t_2}} + \frac{A_3}{(1+i)^{t_3}}$ for paying a loan back in 3 payments etc	