



MATHEMATICS – KEY CONCEPTS

Concepts in Mathematics	Year Groups	Descriptor
Number		
KS3 AO1 Use and apply standard techniques	7, 8, 9	Students will be able to demonstrate understanding of simple numerical formulae and will be able to use these in specific cases.
KS4 AO1 Demonstrate knowledge and understanding	10, 11	Students will be able to demonstrate an understanding of complex numerical formulae.
KS3 AO2 Reason/Interpret/Communicate	7, 8, 9	Students will begin to be able to apply their knowledge in step by step working through numerical problems.
KS4 AO2 Apply knowledge and understanding	10, 11	Students will be able to apply knowledge of calculations to problem solving situations showing full understanding.
KS3 AO3 Problem Solve	7, 8, 9	Students will be able to analyse simple numerical facts and offer their ideas about improving numerical solutions
KS4 AO3 Analyse information and ideas	10, 11	Students will be able to, not only problem solve, but analyse their solutions to reach decisions.
Algebra		
KS3 AO1 Use and apply standard techniques	7, 8, 9	Students will begin to be able to demonstrate algebraic knowledge in progressively more complex situations.
KS4 AO1 Demonstrate knowledge and understanding	10, 11	Students will be able to form and solve complex algebraic equations and formulae
KS3 AO2 Reason/Interpret/Communicate	7, 8, 9	Students will be able to apply their knowledge through given theorems and algebraic rules
KS4 AO2 Apply knowledge and understanding	10, 11	Students will be able to prove mathematical knowledge algebraically
KS3 AO3 Problem Solve	7, 8, 9	Students will begin to solve algebraic problems with simple expressions and equations
KS4 AO3 Analyse information and ideas	10, 11	Students will be able to use algebraic information to express ideas about situations
Shape, Space and Measure		
KS3 AO1 Use and apply standard techniques	7, 8, 9	Students will be able to use mathematical equipment accurately and efficiently for geometry drawings.
KS4 AO1 Demonstrate knowledge and understanding	10, 11	Students will be able to use geometric properties and theorems to solve problems
KS3 AO2 Reason/Interpret/Communicate	7, 8, 9	Students will be able to communicate mathematically properties of shape both 2 and 3 dimensional





KS4 AO2 <i>Apply knowledge and understanding</i>	10, 11	Students will be able to use mathematical knowledge to prove geometric properties
KS3 AO3 Problem Solve	7, 8, 9	Students will be able to solve problems using basic shapes both 2 and 3 dimensional using learned shape knowledge.
KS4 AO3 <i>Analyse information and ideas</i>	10, 11	Students will be able to analyse similarities and differences in geometric problems and use these to inform their decisions.
Data and Statistics		
KS3 AO1 Use and apply standard techniques	7, 8, 9	Students will be able to produce simple mathematical diagrams to represent collected data. They will also be able to calculate averages of data sets.
KS4 AO1 Demonstrate knowledge and understanding	10, 11	Students will be able to construct diagrams and graphs to present statistical information from a range on sources
KS3 AO2 <i>Reason/Interpret/Communicate</i>	7, 8, 9	Students will be able to interpret simple statistical data and communicate their findings from their interpretation.
KS4 AO2 <i>Apply knowledge and understanding</i>	10, 11	Students will be able to apply statistical knowledge to compare data
KS3 AO3 Problem Solve	7, 8, 9	Students will be able to use data collection to problem solve with both primary and secondary data.
KS4 AO3 <i>Analyse information and ideas</i>	10, 11	Students will be able to analyse statistical data and provide critical conclusions

