

## Year 11 Autumn Term Maths Curriculum

Students in Year 11 study different content dependent upon their class. Mrs Josephs class will be on a separate sheet. The classes will spend approximately two weeks studying each topic.

| Mr Hammond, Mr McClusky, Mr Bullock |  | Miss Robinson                                    |   | Mr Storey-Scott/Mr Ahluwalia                                    |   |
|-------------------------------------|--|--|---|---|---|
| Area and perimeter                  | Students will revise perimeter and area before looking more carefully at composite shapes. They will work with circles and look at circumference and area in order to solve problems.  | Rational and irrational numbers                  | After being introduced to the definition of irrational numbers students are taught what a surd is and how to solve problems involving simplify, adding, subtracting and multiplying them. | Further quadratic and simultaneous equations                    | Students will review completing the square and look at more complex expressions. They will review solving simultaneous equations by elimination, and then look at using substitution. This will allow them to solve equations including when one equation is a quadratic. |
| Volume and surface area             | The concepts of volume and surface area of 3d solids are defined. Students then apply these ideas by looking at problems involving cuboids, prisms and cylinders.  | Completing the square                            | After reviewing previous work on quadratics, students are shown how a quadratic can be written in 'completed square form' and how this equation links to its graph                        | Vectors and similarity  | Students will use their geometry skills to solve vector problems and look at harder problems including ratio. They will then look at the relationship between scale factors for length, area and volume.  |
| Percentage change                   | Students look at how multipliers can be used to increase/decrease a quantity by a percentage. This skill is then used to solve compound percentage problems and calculate percentage change.   | Circle theorems                                  | Using an investigational style approach, students look at how the angles created by drawing chords, tangents, diameters and radii onto circles are linked.                                | Equations of parallel lines and coordinate geometry             | Students will look at the gradients of parallel and perpendicular lines and use these to solve problems. They will then study the equation of a circle and use circle theorems to help solve coordinate geometry problems.  |
| Indices and standard form           | Students are introduced to the indices laws which they use to simplify expressions and develop an understanding of negative powers. This is followed by looking at standard form   | Speed/time graphs and kinematics                 | Building on understanding of motion graphs students derive constant acceleration formulae which they are then shown how to use to solve kinematic problems.                               | Fractional sequences, complex quadratic sequences and iteration | Students will review sequences and look at the nth term of more complex quadratic sequences and fractional sequences. Students will be introduced to iteration and look at how it can be used to find roots.  |
| Inequalities and expanding brackets | By first using real world constraints, students use the mathematical notation of inequalities. These are described both graphically and algebraically and then will be used to solve problems. They will then look at expanding double brackets. | Probability diagrams and conditional probability | Students spend time looking at the different diagrams which can be used to solve probability questions before going on to solve problems involving conditional probability.               | Rates of change and areas under curves                          | Students will look at speed/time graphs in order to consider the rate of change for both linear and non-linear functions. They will also look at finding approximations to area under a curve.  |
| Pythagoras' theorem                 | By first investigating the relationship of the sides of a right-angled triangle, students develop Pythagoras' theorem. This is then used to solve problems in context.   | Algebraic fractions                              | Firstly students are taught how to simplify algebraic fractions before looking at problems involving operations and algebraic fractions.  |   |   |

Students will sit a full set of mock papers at their expected tier of entry in November