

Year 10 Foundation - Autumn Term

Topic	Students should be able to.....	Mathswatch clips
y=mx+c	<ul style="list-style-type: none"> • Identify the gradient and y intercept from an equation written in the form $y=mx+c$ • Identify the gradient and y intercept (and therefore equation) from a straight line graph • Calculate the gradient of a line from two coordinates • Know and use the fact that parallel lines have the same gradient • Work out the equation of a line given the gradient and a point • Deduce whether a point lies on a line or not • Deduce whether a point lies above or below a line • Match graphs of straight lines to possible equations • Interpret the gradient and y intercept, for example if the graph of the cost of hiring a bouncy castle is shown what is the fixed charge and what is the hourly rate? • Work out the points of intersection with the axes from an equation of a straight line such as $2x+4y=10$ 	<p>96</p> <p>97</p> <p>159</p>
Transformations	<ul style="list-style-type: none"> • transform 2D shapes using rotations • describe a transformation as a rotation with the centre of rotation, angle and direction • transform 2D shapes using reflections • describe a transformation as a reflection with the equation of the reflection line • understand and use column vectors • transform 2D shapes using translations • describe a transformation as a translation using a vector • enlarge a shape on a grid (centre not specified) • transform 2D shapes using enlargements by a positive scale factor • describe a transformation as an enlargement with a scale factor and centre of enlargement • understand that lengths and angles are preserved under rotations, reflections and translations, so that any figure is congruent under any of these transformations • understand that angles are preserved under enlargements, so that any figure is similar under enlargement 	<p>49</p> <p>48</p> <p>50</p> <p>148</p>

Standard form	<ul style="list-style-type: none"> • Understand and use place value (e.g. when working with very large or very small numbers) • Convert between conventional numbers and standard form • order and calculate with numbers written in standard form • solve simple equations where the numbers are written in standard form • interpret calculator displays • use a calculator effectively for standard form calculations • solve standard form problems with and without a calculator. 	83
Simultaneous equations	<ul style="list-style-type: none"> • solve simultaneous linear equations by elimination or substitution or any other valid method • find approximate solutions using the point of intersection of two straight lines. • set up a pair of simultaneous linear equations to solve problems • interpret solutions of equations in context 	162 140
Construction and loci	<ul style="list-style-type: none"> • measure and draw angles to the nearest degree • construct a triangle given SSS, SAS or ASA • construct an equilateral triangle with a given side • construct a perpendicular bisector of a given line • construct a perpendicular at a given point on a given line • construct a perpendicular from a given point to a given line • construct an angle bisector • construct an angle of 60° • draw circles or part circles given the radius or diameter • construct loci, for example, given a fixed distance from a point and a fixed distance from a given line • construct loci, for example, given equal distances from two points • construct loci, for example, given equal distances from two line segments • construct a region that is defined as, for example, less than a given distance or greater than a given distance from a point or line segment • describe regions satisfying several conditions. 	46 147 146 145 165
Sequences	<ul style="list-style-type: none"> • generate simple sequences derived from diagrams and complete a table of results that describes the pattern shown by the diagrams 	

	<ul style="list-style-type: none"> • describe how a sequence continues. • generate sequences from a term to term rule • generate sequences from the nth term rule • work out the value of the nth term of a linear sequence • work out the nth term rule of a linear sequence • know the difference between an arithmetic and geometric progression • work with Fibonacci-type sequences (rule will be given) • know how to continue the terms of a quadratic sequence • work out the value of a term in a geometrical progression of the form r^n where n is an integer > 0 	<p>102</p> <p>103</p> <p>141</p> <p>163</p>
Indices	<ul style="list-style-type: none"> • Evaluate powers • Simplify expressions with indices • Use index notation and index laws for positive and negative powers such as $w^3 \times w^5$ and $\frac{w^3}{w^7}$. • Use index notation and index laws for positive and negative powers such as $3w^3y \times 2w^5y^2$ and $\frac{8w^5z}{2w^3z^2}$. • Use index notation and index laws for expressions with multiple indices such as $(2w^3)^4$ • Use index notation and index laws for a mixture of indices 	<p>29</p> <p>82</p> <p>131,154</p>