

Sixth Year October Revision List

Section	What I need to know/be able to do
1 - Algebra 1	Perform algebraic long division Factorise expressions using HCF, grouping, difference of two squares and quadratics Simplify algebraic fractions (write as as single fraction using common denominator) Rearrange formulae Solve linear equations including equations with fractions Solve simultaneous equations in 2 and 3 variables (Binomial exapansions)

Section	What I need to know/be able to do
2 - Algebra 2	Solve quadratic equations including those requiring the -b formula Solve quadratic equations that require substitution Determine whether roots are real and different ($b^2 - 4ac > 0$), real and equal ($b^2 - 4ac = 0$) or imaginary ($b^2 - 4ac < 0$) Solve simultaneous equations where one equation is linear and one is a quadratic Form quadratic equations given their roots Perform operations using surds Use the Factor Theorem to show whether something is a factor of an expression or not Perform algebraic long division

Section	What I need to know/be able to do
9 - Algebra 3	Solve linear inequalities and graph solutions on number lines Solve equations involving the use of modulus Solve linear inequalities involving the use of modulus Use indice rules Solve exponential equations

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	Prove abstract inequalities
	Use the laws of logs to solve logarithmic equations

Section	What I need to know/be able to do
Co-ordinate geometry of the line	Find the slope and midpoint between two points Find the equation of a line including lines parallel and perpendicular to other lines Find the perpendicular distance between a point and a line Find the area of a triangle when given co-ordinates Find the acute angle between two lines

Section	What I need to know/be able to do
Co-ordinate geometry of the circle	- I can find the radius and centre of a circle given the equation in the following formats: $x^2 + y^2 = r^2$ $(x - h)^2 + (y - k)^2 = r^2$ $x^2 + y^2 + 2gx + 2fy + c = 0$ - I can use the centre and radius of a circle to find the equation in the following formats: $x^2 + y^2 = r^2$ $(x - h)^2 + (y - k)^2 = r^2$ $x^2 + y^2 + 2gx + 2fy + c = 0$ - I can find the equation of a circle when given three points that the circle passes through. - I can find the equation of a circle when given the equation of a tangent, the point of contact and one other point. - I can find the equation of a circle through two given points with its centre on a given line. - I can find the equation of the tangent to a circle at the point P on the circle. - I can find the equation of a tangent to a circle parallel or perpendicular to a given line. - I can find the equation of the tangent to a circle from a point P not on the circle. - I can find the length of a tangent to a circle from a given point not on the circle. - I can find the point of intersection of a line and a circle.

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	• I can find the length of the intercept a circle makes with the x or y axis. • I can find the equation of a common chord or common tangent between two circles. • I can prove that two circles touch internally or externally. • I can find the equation of a circle that touches the x or y axis at a given point.
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Section	What I need to know/be able to do
Trig 1	• I can convert radians to degrees and vice versa. • I can find the length of an arc and the area of a sector of a circle. • I can use SOH CAH TOA to solve for missing angles and sides in a right angled triangle. • I can use Pythagoras' Theorem to find missing sides in a right angled triangle. • I can use the unit circle and understand the four quadrants. • I can find a reference angle and know where the value is positive or negative on the unit circle. • I can use the Sine rule to find missing sides and angles on a triangle. • I can find the area of a triangle using the sine rule derivation. • I can use the Cosine rule to find missing sides and angles on a triangle. • I can use Pythagoras' Theorem, SOH CAH TOA, the sine rule and cosine rule to solve 3D trig problems. • I can graph trig functions and understand the period, range, domain. • I can find the general solution of trigonometric equations. • I can prove the Sine Rule and Cosine Rule.

Section	What I need to know/be able to do
Trig 2	• I can prove the following Trig Identities • $\cos^2 \theta + \sin^2 \theta = 1$ • $\cos(A - B) = \cos A \cos B - \sin A \sin B$ • $\cos(A + B) = \cos A \cos B + \sin A \sin B$ • $\cos 2A = \cos^2 A - \sin^2 A$

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	• $\sin(A + B) = \sin A \cos B + \cos A \sin B$ • $\tan(A + B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$ • $\tan(A - B) = \frac{\tan A - \tan B}{1 + \tan A \tan B}$ • I know what sec, cot and cosec are • I can use the double angle formulas for $\cos 2A$, $\sin 2A$ and $\tan 2A$ to solve problems and simplify expressions • I can use formulas such as $2 \sin A \cos A = \sin(2A)$ to change products to sums & differences and use this to simplify expressions and complete proofs • I can use formulas such as $\cos A \cos B = \frac{1}{2} [\cos(A+B) + \cos(A-B)]$ to change products to sums & differences and use this to simplify expressions and complete proofs I can use inverse trig functions such as $\sin^{-1} \theta$, $\cos^{-1} \theta$, $\sec^{-1} \theta$ etc to solve problems
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Section	What I need to know/be able to do
Complex Numbers	• I understand that $i = \sqrt{-1}$ • I can label the real part and the imaginary part of a complex number • I can add, subtract and multiply complex numbers and show the solutions on an Argand Diagram • I can find the complex conjugate and understand its symbol is $\bar{z}$ • I understand what the modulus is and that its symbol is z • I can divide complex numbers by real numbers and by complex numbers • I understand that multiplying by i equals a 90 degree rotation anticlockwise on an Argand Diagram • I understand that adding a complex number to another complex number acts like a translation on an Argand Diagram • I know the Conjugate Roots Theorem and I can use it to find the roots of an equation such as $z^3 + 2z^2 - 30z + 13 = 0$ • I can convert a complex number from the cartesian form to the Polar form

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	• I understand that multiplication and division in the polar form is related to adding or subtracting of the polar angle and I can show this on an Argand Diagram • I can write a complex number in General Polar Form • I understand how to use DeMoivre's Theorem to work out high powers of a complex number such as $(3 + 2i)^6$ • I can use DeMoivre's Theorem to find the solutions of an equations such as $z^3 = 8$ • I understand that the complex roots of an equation when plotted on an Argand Diagram will form a circular pattern • I can use DeMoivre's Theorem to express $\cos 3\theta$ in terms of θ
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Section	What I need to know/be able to do
Patterns	• Given a number sequence, I can tell whether it is arithmetic, geometric or quadratic/cubic. • I can find the general term of an arithmetic sequence. • I can find the general term of a geometric sequence. • I can find the general term of a quadratic/cubic sequence using simultaneous equations. • I can use the general term of a sequence to find given terms, e.g. T5, T26 etc.