S5 Maths Higher Level

TERM 1 (Aug 13th – Nov 14th, 2020)

Weeks	Topic	Subtopic
Week 1 (August 13 -15)	System of Equations	Intersection of a line and a parabola Intersection of a line and a circle
Week 2, 3 (Aug 17 -29)	Equation of a Line	Collinearity The angle between a line and the *x*-axis The distance formula
Week 4, 5 (Aug 31 – Sep 12)	Equation of a Line	Perpendicular lines The median The altitude
Week 6 (Sep 14 – 19)	Equation of a Line	The perpendicular bisector *Exam Preparation Section* - Higher Exam Type Questions
Week 7, 8 (Sep 21 – Oct 3)	Functions and graphs	Graphs of functions Composition of functions

Week 9 (Oct 5 – 10)	Functions and graphs	Inverse of a function *Exam Preparation Section* - Higher Exam Type Questions
Week 10 (0ct 12 – 17)	**MID-TERM HOLIDAY**	
Week 11 (Oct 19 – 24)	Calculus	Summary and rules for differentiation Further differentiation - negative and rational indices Leibnitz notation
Week 12 (Oct 26 – 31)	Calculus	Practical uses for Calculus The equation of a tangent to a curve
Week 13 (Nov 2 – 7)	Calculus Transformation of graphs	*Exam Preparation Section* - Higher Exam Type Questions The graph of $y = f(x) + c$ and sketching The graph of $y = f(x + b)$ and sketching
Week 14 (Nov 9 - 14)	Transformation of graphs	The graph of $y = -f(x)$ and of $y = f(-x)$ and sketching The graph of $y = kf(x)$ and sketching The graph of $y = f(kx)$ and sketching
Nov 14 - 15	**END OF TERM 1**	

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TERM 2 (Nov 16th 2020 – Feb 27th 2021)

Week 1 (Nov 16 – 21)	Transformation of graphs	The graph of $y = f^{-1}(x)$ and sketching Summary and mixed exercise *Exam Preparation Section* - Higher Exam Type Questions
Week 2 (Nov 23 – 28)	Trigonometry	Trig graphs Solving basic trig equations Solving multiple angle trig equations
Week 3 (Nov 30 – Dec 5)	Trigonometry	Solving compound angle trig equations Contextualised questions *Exam Preparation Section* - Higher Exam Type Questions

Week 4 (Dec 7 – 12)	Quadratic Theory	Quadratic inequalities Completing the square for *y = ax* 2 + *bx + c* for any value of *a* *Parabolic functions of the form y = ±(x – a) 2 + b and y = kx 2*
Week 5 (Dec 14 -19)	Quadratic Theory	The discriminant The tangent to a curve using the discriminant *Exam Preparation Section* - Higher Exam Type Questions
Week 6 (Dec 21 – 23)	Calculus	Increasing and decreasing functions Stationary points Curve sketching
Week 6 - 7 (Dec 24 – Jan 5)	**WINTER BREAK**	
Week 8 (Jan 6 – 9)	Calculus The Circle	Maximum and minimum in a closed interval Optimisation The graph of the derived function *Exam Preparation Section* - Higher Exam Type Questions

		The equation of a circle $x^2 + y^2 = r^2$ The equation of a circle $(x - a)^2 + (y - b)^2 = r^2$
Week 9 (Jan 11 – 16)	The Circle	The general equation of a circle $x^2 + y^2 + 2gx + 2fy + c = 0$ The intersection of a straight line and a circle The tangent to a circle
Week 10 (Jan 18 – 23)	The Circle	Mixed exercise *Exam Preparation Section* - Higher Exam Type Questions
Week 11 (Jan 25 – 30)	Recurrence Relations	The General Term of a sequence Recurrence Relations Developing an explicit formula from a recurrence relation
Week 12 (Feb 1 – 5)	Recurrence Relations	Linear recurrence relations Finding the limit (L) for a recurrence relation Determining a recurrence relation knowing some of its terms

Feb (6 – 9)	**MID-TERM HOLIDAY**	
Week 13 (Feb 10 -13)	Recurrence Relations Calculus	*Exam Preparation Section* - Higher Exam Type Questions Integration as anti-differentiation or the inverse of differentiation Application of integration - solve $dy/dx = 3x2$ through (2, 12) Integration explained as a means of finding areas Definite integration with limits Area between curve and x-axis (all above or below)
Week 14 (Feb 15 -20)	Calculus	The area between two curves Mixed exercise *Exam Preparation Section* - Higher Exam Type Questions
Week 15 (Feb 22 – 27)	Polynomials	Evaluating polynomials using nested method Division by $(x – a)$ Remainder Theorem

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TERM 3 (March 1st – June 26th, 2021)

Week 1 (March 1- 6)	Polynomials	Solving problems involving missing coefficients in polynomials Solving polynomial equations *Exam Preparation Section* - Higher Exam Type Questions
Week 2 (March 8 - 13)	Trig Addn Formulae	Expanding $sin(\alpha + \beta) = sin\alpha cos\beta + cos\alpha sin\beta$ Expanding $sin(\alpha - \beta) = sin\alpha cos\beta - cos\alpha sin\beta$ Expanding $cos(\alpha \pm \beta) = cos\alpha cos\beta \; sin\alpha sin\beta$
Week 3 (March 15 - 20)	Trig Addn Formulae	Trig Identities and problems The double angle formulae *Exam Preparation Section* - Higher Exam Type Questions
Week 4 (March 22 - 27)	Vectors	Working with Vectors in 3-dimensions Collinearity The section formula Unit vectors Defining the scalar product
Week 5 (March 29 – April 1st)	Vectors	The scalar product and angles Properties of the scalar product *Exam Preparation Section* - Higher Exam Type Questions

Week 5 - 7 (April 2– 17)	**APRIL HOLIDAY**	Differentiation of trig functions Integration of trig functions Differentiation of (*x* + *a*)*n* and (*ax* + *b*)*n*
Week 8 (April 19 - 24)	Calculus	Differentiation of trig functions Integration of trig functions Differentiation of (*x* + *a*)*n* and (*ax* + *b*)*n* The chain rule Three special integrals *Exam Preparation Section* - Higher Exam Type Questions
Week 9 (April 26 – May 1)	The wave function	Express *acosx* + *bsinx* in the form *ksin*(*x* – α) or *kcos*(*x* – α) Solving equations of the form *acos*x + *bsinx* = *c* *Exam Preparation Section - Higher Exam Type Questions*
Week 10 (May 3 - 8)	**MAY DAY, RAMADHAN/EID HOLIDAY**	
Week 11 (May 10 - 15)	**RAMADHAN/EID HOLIDAY**	

Week 12 (May 17 – 22)	Logs and Exponentials	The logarithmic function Evaluating logs Using logs to determine a connection between two variables *Exam Preparation Section* - Higher Exam Type Questions
Week 13 (May 24 -29)	*Exam Preparation*	
May 28th – May 31st, 2021	**MID-TERM HOLIDAY**	
Week 14 (May 31 – June 5)	*Exam Preparation*	
Week 15 (June 7 – 12)	*Exam Preparation*	
Week 16 (June 14 – 19)		
Week 17 (June 21 – 26)		
	END OF TERM 3	