Post 16 Induction - Mathematics.

Year 11 Preparing for A-level Maths: Helpful videos and resources for working from home and mymaths tasks to complete to check understanding.

We would highly recommend downloading the CGP booklet 'Headstart to A Level Maths' from Amazon. The Kindle version is currently free! This is a great booklet to help support you recap and review of the key elements from GCSE to support your A Level studies in Year 12.

We've suggested specific tasks to do on a week by week basis over 11 weeks – some to keep your skills up to scratch and some just for the love of maths! Enjoy, and don't hesitate to contact Mr Molyneux or Mrs Pearce if you have any questions. We have set the mymaths tasks on your account for all those students we knew had opted for A Level maths next year. If they are not there and you would like to be added to this group, just drop us an email.

Extra support:

Underground Mathematics
> This resource is FULL of lots of tasks and challenges. If you are feeling less confident with a topic then use the '*building block'.* If you want more of a challenge then carry out one of the '*fluency exercise'.*
> https://undergroundmathematics.org/

Complete the A Level transition questions.
> https://gryphonmaths.wordpress.com/a-level/transition/task-1/

	Topics to Prepare	Mymaths task to complete	Corbett Maths Videos and Resources (No subscription required)	Extending mathematical experience
1	**Algebra and Proof**	Identities Proof Rearranging 2	111 - Equations: involving fractions 112 - Equations: fractional advanced 112 - Equations: cross multiplication 365 – Algebraic proof 366 – Geometric proof	The Wizard standoff riddle. https://ed.ted.com/lessons/can-you-solve-the-wizard-standoff-riddle-daniel-finkel
2	**Quadratics**	Factorising quadratics 1 Quadratic equations 1 Properties of quadratics Sketching quadratic graphs	119a - Factorisation: splitting the middle 120 - Factorisation: difference of 2 squares 10 - Algebra: completing the square 266 - Quadratics: solving (factorising) 267 - Quadratics: formula 267a - Quadratics: solving (completing the square) 265 - Quadratic graphs: sketching using key points 371 - Quadratic graphs (completing the square)	Choose one of the reading suggestions from the Summer reading list below, or the maths section of the Academic reading list sent by Mr Fonseca.
3	**Algebraic fractions 1**	Cancelling algebraic fractions Adding algebraic fractions	21 - Algebraic Fractions: addition 24 - Algebraic Fractions: Simplifying	**Read the notes on the page and carry out the algebraic investigation. Complete the worksheet included.**

				https://www.teachmathematics.net/page/7566/oxo
4	**Algebraic fractions 2**	Multiply algebraic fractions Solving equations with fractions	22 - Algebraic Fractions: division 23 - Algebraic Fractions: Multiplication 111 - Equations: involving fractions 112 - Equations: fractional advanced 112 - Equations: cross multiplication	**Create a PINTREST board with images of maths in nature. Investigate the maths behind some of the images you have found.**
5	**Simultaneous Equations**	Simultaneous equations 3 Simultaneous negative Solving simultaneous equations graphically	295 - Simultaneous equations (elimination) 296 - Simultaneous equations (substitution, both linear) 297 - Simultaneous equations (graphical) 298 - Simultaneous equations (advanced)	**Maths Magic.** Can you create your own version of the problem? Investigate other magic tricks which are based around maths. https://nrich.maths.org/1051
6	**Cubics, circles and Pythagoras**	Sketching cubic graphs Equations of circles Pythagoras' theorem	344 – Types of graph: cubics 346 - Types of graph: reciprocal 12 - Algebra: equation of a circle 259 - Pythagoras: 3D 260 - Pythagoras: rectangles/isosceles triangles 263 - Pythagoras: distance points	Choose one of the reading suggestions from the Summer reading list below, or the maths section of the Academic reading list sent by Mr Fonseca.

7	**Trigonometry**	Trig missing angles Trig missing sides Cosine rule sides Cosine rule angles	332 - Trigonometry: 3D 338 - Trigonometry: Sine graph 339 - Trigonometry: Cosine graph 340 - Trigonometry: Tangent graph 333 - Trigonometry: sine rule (sides) 334 - Trigonometry: sine rule (angles) 334a - Trigonometry: sine rule (ambiguous case) 335 - Trigonometry: cosine rule (sides) 336 - Trigonometry: cosine rule (angles)	**Golden Ratio Day** Golden ratio day is 1st June 2018. Investigate the golden ratio and its history. https://www.teachengineering.org/activities/view/nyu_phi_activity1 https://www.quora.com/How-is-the-golden-ratio-useful-to-students Find more articles on this and create a poster all about the golden ratio.
8	**Tangents & Vectors**	Tangents and chords of curves Vectors 1 Vectors 2	194 - Linear graphs: find equation of a line 195 - Linear graphs: equation through 2 points 196 - Linear graphs: parallel lines 197 - Linear graphs: perpendicular lines 372 - Equation of a Tangent to a Circle 353 – Vectors 354 – Vectors: Column	**Complete module 1- Advanced Problem Solving** https://nrich.maths.org/10209
9	**Sequences**	Arithmetic sequences Geometric sequences 1 Geometric sequences 2	287a – Fibonacci sequences 288 – Sequences: nth term	Choose one of the reading suggestions from the Summer reading list below, or the maths

			289 - Sequences: nth term for fractional sequences 375 – Geometric progressions	section of the Academic reading list sent by Mr Fonseca.
10	**Surds & Indices**	Surds 1 Surds 2 Indices 2 Indices 3 Indices 4	305 - Surds: intro, rules, simplifying 307 - Surds: rationalising denominators 308 - Surds: expanding brackets 173 - Indices: fractional 174 - Indices: laws of 175 - Indices: negative	Solve the false positive riddle. https://ed.ted.com/lessons/can-you-solve-the-false-positive-riddle-alex-gendler
11	**Inequalities**	Inequalities worksheet (4 & 5) Inequalities worksheet (6 & 7) Inequalities worksheet (8 & 9)	180 - Inequalities: graphical y>a or x>a 181 - Inequalities: graphical y>x+a 182 - Inequalities: region 378 - Inequalities: quadratic	Choose one of the reading suggestions from the Summer reading list below, or the maths section of the Academic reading list sent by Mr Fonseca.

Summer Reading list

•Fermat's Last Theorem (Singh)

•Does God Play Dice and Nature's Numbers (Stewart)

•Easy as Pi (Ivanov)

•The Music of the Primes (du Sautoy)

•Just Six Numbers (Rees)

- In Code (Flannery)

- Numbers, Sets and Axioms (Hamilton)

- The Universe and the Teacup –the Maths of Truth and Beauty (K.C. Cole)

- Algebra and Geometry (Beardon)

- Hidden Connections, Double Meanings (Wells)

- Elastic Fishponds. The Maths that Governs our World (Elwes)

- The Norm Chronicles (Blastland and Spitgethaltes)

- Our Mathematical Universe (Max Tegmark)

- Updates for 2018 are Beyond Infinity (Cheng)

- Weapons of Math Destruction (O'Neill)

- Ian Stewart's 17 equations that Changed the World and Thinking in Numbers (Temmet)