**Year 11 Preparing for A-level Maths: Helpful Videos and Resources for Working From Home**

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|  | **Topics to Prepare for A-level Maths** | **Hegarty Maths Videos and Resources**  | **Cortbett Maths Videos and Resources** **(No subscription required)** |
| 1 | **Manipulating algebraic expressions** | 166 - Expanding Triple Brackets172 - Expressions with Algebraic Fractions | 15 - Algebra: expanding three brackets21 - Algebraic Fractions: addition22 - Algebraic Fractions: division23 - Algebraic Fractions: Multiplication |
| 2 | **Surds** | 115 - Simplifying Surds117 - Brackets Involving Surds 2119 - Rationalising Surds 2 | 305 - Surds: intro, rules, simplifying307 - Surds: rationalising denominators308 - Surds: expanding brackets |
| 3 | **Rules of indices** | 104 – Index form 3 (power of negative integers)109 – Index form 8 (powers of non-unit fractions)174 - Indices With Algebraic Expressions 2175 - Indices With Algebraic Expressions 3 | 173 - Indices: fractional174 - Indices: laws of 175 - Indices: negative |
| 4 | **Factorising expressions** | 227 - Factorising Quadratic Expressions 5228 - Factorising Quadratic Expressions 6229 - Simplifying Algebraic Fractions (involving quadratics) | 119a - Factorisation: splitting the middle120 - Factorisation: difference of 2 squares24 - Algebraic Fractions: Simplifying |
| 5 | **Completing the square** | 235 - Completing the Square 1236 - Completing the Square 2237 - Completing the Square 3 | 10 - Algebra: completing the square |
| 6 | **Solving quadratic equations** | 232 - Solving Quadratic Equations (by Factorising) 3238 - Solving by Completing the Square 1242 - Solving using the Quadratic Formula244 - Quadratic Equations from Algebraic Fractions | 266 - Quadratics: solving (factorising)267 - Quadratics: formula 267a - Quadratics: solving (completing the square)  |
| 7 | **Sketching quadratic graphs** | 252 - Finding the y-intercept of a Quadratic Graph253 - Finding the x-intercept (Roots) of a Quadratic Graph256 - Finding the Turning Point of a Quadratic Graph 2257 - Sketch a Fully Labelled Quadratic Graph | 265 - Quadratic graphs: sketching using key points371 - Quadratic graph (completing the square) |
| 8 | **Solving linear simultaneous equations** | 193 - Simultaneous Equations by Elimination 4194 - Simultaneous Equations by Substitution | 295 - Simultaneous equations (elimination)296 - Simultaneous equations (substitution, both linear) |
| 9 | **Solving quadratic simultaneous equations** | 314 - Equation of a Circle 1246 - Simultaneous Equations Involving Quadratics | 12 - Algebra: equation of a circle298 - Simultaneous equations (advanced) |
| 10 | **Solving simultaneous equations graphically** | 259 - Simultaneous Equations Using Graphs (Quadratic & Linear) | 297 - Simultaneous equations (graphical) |
| 11 | **Linear inequalities** | 273 - Linear Inequalities as Graph Regions 1274 - Linear Inequalities as Graph Regions 2275 - Linear Inequalities as Graph Regions 3 | 180 - Inequalities: graphical y>a or x>a181 - Inequalities: graphical y>x+a182 - Inequalities: region |
| 12 | **Quadratic inequalities** | 277 - Solving Quadratic Inequalities | 378 - Inequalities: quadratic |
| 13 | **Sketching cubic and reciprocal graphs** | 298 - Cubic Graphs (from a Table of Values)299 - Cubic Graphs (Recognising)300 - Reciprocal Graphs 1 | 344 – Types of graph: cubics346 - Types of graph: reciprocal |
| 14 | **Translating graphs** | 307 - Graph Transformations 1 f(x)+a308 - Graph Transformations 2 f(x+a)  | 323 - Transformations of graphs |
| 15 | **Straight line graphs** | 210 - Straight Lines Graphs 5213 - Straight Lines Graphs 8 | 194 - Linear graphs: find equation of a line 195 - Linear graphs: equation through 2 points  |
| 16 | **Parallel and perpendicular lines** | 214 - Straight Line Graphs (Parallel)216 - Straight Line Graphs (Perpendicular) 2320 - Circle Normals and Tangents | 196 - Linear graphs: parallel lines197 - Linear graphs: perpendicular lines372 - Equation of a Tangent to a Circle |
| 17 | **Pythagoras’ Theorem** | 506 - 3D Pythagoras 2501 - Pythagoras (Applied) 1502 - Pythagoras (Applied) 2 | 259 - Pythagoras: 3D260 - Pythagoras: rectangles/isosceles triangles263 - Pythagoras: distance points |
| 18 | **Direct and inverse proportion** | 344 – Algebraic Direct Proportion 2346 – Algebraic Inverse Proportion 1 | 254 - Proportion: direct255 - Proportion: inverse |
| 19 | **Circle theorems** | 604 - Circle Theorems (Multi Step) 1605 - Circle Theorems (Multi Step) 2606 - Circle Theorems (Multi Step) 3 | 64 - Circle theorems – theorems65 - Circle theorems – examples |
| 20 | **Trigonometry** | 585 - 3D Trigonometry 5303 - Sine Graph304 - Cosine Graph305 - Tangent Graph521 - Sine Rule (Find Side) 1523 - Sine Rule (Find Angle) 1525 - Singe Rule (Ambiguous Case)527 - Cosine Rule (Find Side) 1529 – Cosine Rule (Find Angle) 1 | 332 - Trigonometry: 3D338 - Trigonometry: Sine graph339 - Trigonometry: Cosine graph 340 - Trigonometry: Tangent graph333 - 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)  |
| 21 | **Rearranging equations** | 186 - Solve Equations With x on Both Sides 3187 - Solve Equations With Algebraic Fractions | 111 - Equations: involving fractions112 - Equations: fractional advanced112 - Equations: cross multiplication |
| 22 | **Volume and surface area of 3D shapes** | 576 - Cones (Volume) 1578 - Frustums (Volume)579 - Rectangular Based Pyramids (Volume)580 - Spheres (Volume) 1 | 359 - Volume: cone360 - Volume: pyramid360a - Volume: Frustum361 - Volume: sphere313 - Surface area: sphere314 - Surface area: cone315 - Surface area: cylinders |
| 23 | **Area under a graph and gradients** | 892 - Area Under a Curve 2893 - Area Under a Curve 3889 - Gradient at a Point on a Curve890 – Instantaneous Rate of Change | 389 - Area under a Graph390a - Instantaneous Rate of Change |