**Year 8 Challenge Work**

**Curriculum Challenge**

These links are all based on topics you have studied since September.

**Corbett Maths website**

Below is a list of videos and worksheets using the Corbett maths website based on the topics we have studied this year. Each set of worksheets contains questions that may appear in GCSE papers, they generally get more challenging as you work through them. All the links are given below and you will be able to “click for answers”

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| **Unit 1** | **Factors and Powers** |
| Corbett videos and worksheets | Number: Square Numbers and Square Roots  <https://corbettmaths.com/2012/08/11/1336/>  <https://corbettmaths.com/wp-content/uploads/2013/02/square-numbers-and-square-roots-pdf1.pdf> |
|  | Cube Numbers  <https://corbettmaths.com/2012/08/20/cubing-a-number/><https://corbettmaths.com/2013/03/24/cube-roots/>  <https://corbettmaths.com/wp-content/uploads/2013/02/cube-numbers-and-cube-roots-pdf.pdf> |
|  | Product of Primes  <https://corbettmaths.com/2012/08/20/lcm-and-hcf-using-product-of-primes/>  <https://corbettmaths.com/wp-content/uploads/2013/02/product-of-primes-pdf1.pdf> |
|  | Indices  <https://corbettmaths.com/2012/08/20/powers-indices/>  <https://corbettmaths.com/wp-content/uploads/2013/02/indices-pdf.pdf>  Fractional and Negative Indices  <https://corbettmaths.com/2013/03/03/fractional-indices/>  <https://corbettmaths.com/wp-content/uploads/2013/02/fractional-negative-indices-pdf1.pdf> |
|  | Standard Form  <https://corbettmaths.com/2013/04/28/standard-form/>  <https://corbettmaths.com/wp-content/uploads/2013/02/standard-form-pdf.pdf> |
|  | Number: estimation  <https://corbettmaths.com/2012/08/21/approximation-to-calculations/>  <https://corbettmaths.com/wp-content/uploads/2013/02/estimation-pdf.pdf> |
|  | Rational and Irrational Numbers (extra topic)  <https://corbettmaths.com/2013/05/15/rational-and-irrational-numbers/>  <https://corbettmaths.com/wp-content/uploads/2013/02/rational-irrational-pdf.pdf> |
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| **Unit 2** | **Working with powers** |
| Corbett videos and worksheets | Algebra: forming expressions  <https://corbettmaths.com/2013/03/12/forming-algebraic-notation/>  <https://corbettmaths.com/wp-content/uploads/2013/02/forming-expressions-pdf1.pdf> |
|  | Laws of indices  <https://corbettmaths.com/2013/03/13/laws-of-indices-algebra/>  <https://corbettmaths.com/wp-content/uploads/2013/02/laws-of-indices-algebra-pdf.pdf>  Fractional and Negative Indices  <https://corbettmaths.com/2013/03/03/fractional-indices/>  <https://corbettmaths.com/2013/03/24/negative-indices/>  <https://corbettmaths.com/wp-content/uploads/2013/02/fractional-negative-indices-pdf1.pdf> |
|  | Algebra: Expanding two brackets (extra topic)  <https://corbettmaths.com/2013/12/23/expanding-two-brackets-video-14/>  <https://corbettmaths.com/wp-content/uploads/2013/02/expanding-two-brackets-pdf1.pdf> |
|  | Algebra: Changing the subject of  <https://corbettmaths.com/2013/12/23/changing-the-subject-video-7/>  <https://corbettmaths.com/wp-content/uploads/2013/02/changing-the-subject-pdf.pdf> |
|  | Equations: solving  <https://corbettmaths.com/2012/08/24/solving-equations/>  <https://corbettmaths.com/2012/08/24/solving-equations-with-letters-on-both-sides/>  <https://corbettmaths.com/wp-content/uploads/2013/02/equations-pdf.pdf>  Equations: involving fractions  <https://corbettmaths.com/2013/05/25/algebraic-equations/>  <https://corbettmaths.com/wp-content/uploads/2013/02/equations-fractional-pdf.pdf>  Equations: angles and perimeter to form equations  <https://corbettmaths.com/2013/04/20/forming-equations-involving-perimeter-or-angles/>  <https://corbettmaths.com/wp-content/uploads/2013/02/forming-and-solving-equations-pdf1.pdf>  Equations: cross multiplication (challenging/extra)  <https://corbettmaths.com/2013/05/19/equations-cross-multiplication/>  <https://corbettmaths.com/wp-content/uploads/2013/02/cross-multiplication-pdf.pdf> |
|  | Equations: Trial and Improvement  <https://corbettmaths.com/2013/04/04/trial-and-improvement/>  <https://corbettmaths.com/wp-content/uploads/2013/02/trial-and-improvement-pdf1.pdf> |
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| **Unit 3** | **2D shapes and 3D solids** |
| Corbett videos and worksheets | Circles: Area  <https://corbettmaths.com/2013/12/22/area-of-a-circle-video-40-and-59/>  <https://corbettmaths.com/wp-content/uploads/2013/02/area-of-a-circle-pdf.pdf>  Circles: Arc length  <https://corbettmaths.com/2013/03/26/arc-length/>  <https://corbettmaths.com/wp-content/uploads/2013/02/arc-length.pdf>  Circles: Perimeter – semicircle  <https://corbettmaths.com/2012/08/02/perimeter-of-a-semi-circle/>  <https://corbettmaths.com/wp-content/uploads/2013/02/circumference-pdf.pdf> |
|  | Surface Area: L-shaped prism  <https://corbettmaths.com/2013/03/29/surface-area-of-an-l-shape-prism/>  <https://corbettmaths.com/2013/03/29/surface-area-of-an-l-shape-prism/>  Surface Area: Cylinders  <https://corbettmaths.com/2013/04/04/surface-area-of-a-cylinder/>  <https://corbettmaths.com/wp-content/uploads/2013/02/surface-area-of-a-cylinder-pdf.pdf> |
|  | Volume: Prism  <https://corbettmaths.com/2013/04/20/volume-of-a-prism/>  <https://corbettmaths.com/wp-content/uploads/2013/02/volume-of-a-prism-pdf.pdf>  Volume: Cylinder  <https://corbettmaths.com/2013/02/15/volume-of-a-cylinder/>  <https://corbettmaths.com/wp-content/uploads/2013/02/volume-of-a-cylinder-pdf.pdf>  Volume: L-shaped prism  <https://corbettmaths.com/2013/03/24/volume-of-an-l-shape-prism/> |
|  | Pythagoras: Rectangles / Isosceles triangles and Show a triangle is right-angled  <https://corbettmaths.com/2013/06/22/pythagoras-rectangles-and-isosceles-triangles/>  <https://corbettmaths.com/2013/06/22/showing-a-triangle-is-right-angled/>  <https://corbettmaths.com/wp-content/uploads/2013/02/pythagoras-other-pdf.pdf>  Pythagoras: 3D  <https://corbettmaths.com/2012/08/19/3d-pythagoras/>  <https://corbettmaths.com/wp-content/uploads/2013/02/3d-pythagoras-pdf.pdf>  Pythagoras: Distance between 2 points  <https://corbettmaths.com/2013/05/03/distance-between-two-coordinates/>  <https://corbettmaths.com/wp-content/uploads/2013/02/distance-between-2-coordinates-pdf.pdf>  Pythagoras: Area of a regular hexagon  <https://corbettmaths.com/2013/06/22/area-of-a-hexagon/>  <https://corbettmaths.com/wp-content/uploads/2013/02/area-of-a-regular-hexagon-pdf.pdf> |
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| **Unit 4** | **Real Life Graphs** |
| Corbett videos and worksheets | Graphs: Conversion Graphs  <https://corbettmaths.com/2013/05/07/drawing-conversion-graphs/>  <https://corbettmaths.com/2012/08/09/conversion-graphs/>  <https://corbettmaths.com/wp-content/uploads/2013/02/conversion-graphs-pdf.pdf> |
|  | Graphs: Distance-Time  <https://corbettmaths.com/2013/05/25/travel-graphs/>  <https://corbettmaths.com/wp-content/uploads/2013/02/travel-graphs-pdf.pdf> |
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| **Unit 5** | **Transformations** |
| Corbett videos and worksheets | Reflections:  <https://corbettmaths.com/2012/08/19/reflections/>  <https://corbettmaths.com/2013/06/23/describing-reflections/>  <https://corbettmaths.com/2013/03/29/finding-the-mirror-line/>  <https://corbettmaths.com/wp-content/uploads/2013/02/reflections-pdf.pdf> |
|  | Translations:  <https://corbettmaths.com/2012/08/10/transformations-translations/>  <https://corbettmaths.com/2012/08/10/transformations-translations/>  <https://corbettmaths.com/wp-content/uploads/2013/02/translations-pdf.pdf> |
|  | Rotations:  <https://corbettmaths.com/2013/05/19/rotations/>  <https://corbettmaths.com/wp-content/uploads/2013/02/rotations-pdf.pdf> |
|  | Enlargement: <https://corbettmaths.com/2012/08/19/enlargements/>  <https://corbettmaths.com/2012/08/19/enlargements/>  <https://corbettmaths.com/2013/05/12/describing-enlargements/>  <https://corbettmaths.com/2013/03/29/finding-the-centre-of-enlargement/>  <https://corbettmaths.com/2013/03/31/enlargments-fraction/>  <https://corbettmaths.com/2013/04/24/enlargements-with-negative-scale-factor/>  <https://corbettmaths.com/wp-content/uploads/2016/02/enlargements-pdf.pdf>  <https://corbettmaths.com/wp-content/uploads/2013/02/enlargements-negative-scale-factors-pdf.pdf> |

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| **Unit 6** | **Fractions, decimals and percentages** |
| Corbett videos and worksheets  96 | Recurring decimals  <https://corbettmaths.com/2013/03/29/recurring-decimals-to-fractions/>  <https://corbettmaths.com/wp-content/uploads/2013/02/recurring-decimals-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/recurring-decimals.pdf> |
| 238 | Using percentages  <http://corbettmaths.com/2012/08/21/increasing-or-decreasing-by-a-percentage/>  <https://corbettmaths.com/wp-content/uploads/2013/02/percentage-of-an-amount-calculator-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2016/02/percentages-answers.pdf> |
| 233 | Percentage change – increasing/decreasing  <http://corbettmaths.com/2013/03/31/percentage-change/>  <https://corbettmaths.com/wp-content/uploads/2013/02/percentage-change-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/percentage-change-answers.pdf> |
| 240 | Percentage change – reverse percentages  <http://corbettmaths.com/2013/02/15/reverse-percentages/>  <https://corbettmaths.com/wp-content/uploads/2013/02/reverse-percentages-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/reverse-percentages-answers.pdf> |
| 236 | Repeated percentage change  <http://corbettmaths.com/2012/08/21/compound-interest/>  <https://corbettmaths.com/wp-content/uploads/2013/02/compound-interest-pdf1.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/compound-interest-answers.pdf> |

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| **Unit 7** | **Constructions and loci** |
| Corbett videos and worksheets  81  82 | Accurate drawings – triangles using a protractor  triangles ASA  <http://corbettmaths.com/2013/03/29/constructing-asa-triangles/>  <https://corbettmaths.com/wp-content/uploads/2013/02/constructing-triangles-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/constructing-triangles-answers.pdf>  triangles SAS  <http://corbettmaths.com/2013/03/28/constructing-sas-triangles/>  <https://corbettmaths.com/wp-content/uploads/2013/02/constructing-triangles-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/constructing-triangles-answers.pdf> |
| 4 | Constructing Shapes – nets  <http://corbettmaths.com/2013/12/23/nets-2/>  <http://corbettmaths.com/wp-content/uploads/2013/02/nets-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/nets.pdf3> |
| 73 | Constructions – equilateral triangle  <http://corbettmaths.com/2012/08/24/constructing-equilateral-triangles-and-60-degree-angles/>  <https://corbettmaths.com/wp-content/uploads/2013/02/constructions-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/constructions.pdf> |

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| 83 | Constructions – any triangle SSS  <http://corbettmaths.com/2013/03/26/constructing-sss-triangles/>  <https://corbettmaths.com/wp-content/uploads/2013/02/constructing-triangles-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/constructing-triangles-answers.pdf> |
| 78 | Constructions – perpendicular bisector  <http://corbettmaths.com/2012/08/24/perpendicular-bisector/>  <https://corbettmaths.com/wp-content/uploads/2013/02/constructions-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/constructions.pdf> |
| 72 | Constructions – angle bisector  <http://corbettmaths.com/2013/03/26/angle-bisector/>  <https://corbettmaths.com/wp-content/uploads/2013/02/constructions-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/constructions.pdf> |
| 75  76  77 | Loci  <https://corbettmaths.com/wp-content/uploads/2013/02/loci-pdf1.pdf>  <http://corbettmaths.com/2013/03/31/loci-part-2/>  <http://corbettmaths.com/2013/03/06/loci-part-3-2/>  <https://corbettmaths.com/wp-content/uploads/2013/02/loci-pdf1.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/loci-answers.pdf> |
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| **Unit 8** | **Probability** |
| Corbett videos and worksheets  245 | Comparing probabilities  <http://corbettmaths.com/2013/06/15/probability/>  <https://corbettmaths.com/wp-content/uploads/2013/02/probability-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/probability.pdf> |
| 244 | Mutually exclusive events [OR rule]  <http://corbettmaths.com/2013/06/15/the-or-rule/>  <https://corbettmaths.com/wp-content/uploads/2013/02/probability-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/probability.pdf> |
| 248 | Estimating probability and Experimental probability  <http://corbettmaths.com/2013/06/20/relative-frequency/>  <https://corbettmaths.com/wp-content/uploads/2013/02/relative-frequency-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/relative-frequency-answers.pdf> |
| 246 | Probability diagrams  <http://corbettmaths.com/2013/06/18/sample-space-diagrams/>  <https://corbettmaths.com/wp-content/uploads/2013/02/sample-spaces-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/sample-space-answers.pdf> |
| 252 | Probability tree diagrams  <http://corbettmaths.com/2013/05/07/tree-diagrams/>  <http://corbettmaths.com/wp-content/uploads/2013/02/tree-diagrams-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/tree-diagrams-answers.pdf> |
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| **Unit 9** | **Scale drawings and measures** |
| Corbett videos and worksheets  283 | Maps and scales  <http://corbettmaths.com/2013/11/13/maps-scales/>  <https://corbettmaths.com/wp-content/uploads/2013/02/scales-and-maps-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2019/01/Scales-and-maps.pdf> |
| 26  27  27a | Bearings  <http://corbettmaths.com/2013/03/27/bearings/>  <http://corbettmaths.com/2013/03/27/position-given-bearings-from-two-points/>  <https://corbettmaths.com/2018/08/31/back-bearings/>  <http://corbettmaths.com/wp-content/uploads/2013/02/bearings-pdf1.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/bearings-answers.pdf> |
| 271c | Scales and ratio  <https://corbettmaths.com/2018/12/31/expressing-as-1n/> |
| 67 | Congruent and similar shapes – triangles  <http://corbettmaths.com/2013/04/15/congruent-triangles/>  <https://corbettmaths.com/wp-content/uploads/2013/02/congruent-triangles-pdf1.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/congruent-triangles.pdf> |
| 66 | Solving geometry problems – Congruent and similar shapes <http://corbettmaths.com/2012/08/10/congruent-and-similar-shapes/>  <https://corbettmaths.com/wp-content/uploads/2013/02/congruent-shapes-and-similar-shapes-pdf1.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/congruent-and-similar.pdf> |
| **Unit 10** | **Graphs** |
| Corbett videos and worksheets  186 | Plotting linear graphs – from a table  <http://corbettmaths.com/2012/12/23/drawing-graphs-using-xy-tables/>  <https://corbettmaths.com/wp-content/uploads/2013/02/drawing-linear-graphs-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/drawing-linear-graphs.pdf> |
| 189  190 | The gradient – linear graphs  <http://corbettmaths.com/2013/05/15/gradient-of-a-line/>  <http://corbettmaths.com/2013/05/28/gradient-between-two-points/>  <https://corbettmaths.com/wp-content/uploads/2013/02/gradient-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/gradient-answers.pdf> |
| 187  188  191  194  195 | y = mx + C  <http://corbettmaths.com/2013/04/20/drawing-graphs-using-gradient-and-intercept/>  <http://corbettmaths.com/2013/04/20/finding-equation-of-a-linear-graph/>  <http://corbettmaths.com/2013/05/29/ymxc/>  <http://corbettmaths.com/2013/05/29/finding-the-equation-of-a-straight-line/>  <http://corbettmaths.com/2013/05/29/finding-the-equation-passing-through-two-points/>  <https://corbettmaths.com/wp-content/uploads/2013/02/equation-of-a-line-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/equation-of-a-line.pdf> |
| 196 | Parallel lines  <http://corbettmaths.com/2013/06/06/graphs-parallel-lines/>  <https://corbettmaths.com/wp-content/uploads/2013/02/parallel-perpendicular-linear-graphs-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/parallel-perpendicular-answers.pdf> |
| 197 | Perpendicular lines  <Http://corbettmaths.com/2013/06/06/perpendicular-lines-2/>  <https://corbettmaths.com/wp-content/uploads/2013/02/parallel-perpendicular-linear-graphs-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/parallel-perpendicular-answers.pdf> |
| 160 | Non-linear graphs  <http://corbettmaths.com/2013/05/22/line-graphs/>  <https://corbettmaths.com/wp-content/uploads/2013/02/line-graphs-pdf.pdf>  Answers  <https://corbettmaths.com/wp-content/uploads/2015/03/line-graphs-answers.pdf> |

**Year 8 Challenge Tasks**

Use the links below to find problems which will deepen your understanding of this year’s topics and provide you with a challenge!

Each of these links will take you to a series of short problems, with the option to investigate longer problems.

Enjoy!

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| **Unit 1 Factors and Powers** | Factors, multiples and primes | <https://nrich.maths.org/8705>  <https://nrich.maths.org/9257> |
|  | Powers and roots | <https://nrich.maths.org/9324> |
| **Unit 2 Working with Powers** | Equations and formulae | <https://nrich.maths.org/9331> |
| **Unit 3 2D shapes and 3D solids** | Perimeter, area and volume | <https://nrich.maths.org/9374> |
|  | Pythagoras’ theorem | <https://nrich.maths.org/9344> |
| **Unit 4 Real Life Graphs** |  |  |
| **Unit 5 Transformations** |  | <https://nrich.maths.org/9350> |

**Junior Maths Challenge Questions**

Here are questions from the Junior Maths Challenges from the last few years. They have been split up into Number, Algebra and Shape and Space. There are some Data Handling questions mixed in. Answers are attached at the end – ENJOY!

      

**Extra-Curricular Challenge**

These websites have lots of puzzles and challenges so if you want to get your brain around something different try the following websites:

* NRICH for puzzles, games and problem solving. Website nrich.maths.org
* Junior Maths challenge past papers can be found at

<https://www.ukmt.org.uk/competitions/solo/junior-mathematical-challenge/archive>

* Parallel Maths by Simon Singh. Website parallel.org.uk

This is a website for pupils wanting to stretch themselves. It sets challenges involving ideas outside of the Maths curriculum. They may involve videos, history, songs, lectures or Maths in the headlines. Every Thursday at 3pm you can access a new set of challenges. You have until midnight on Sunday to complete and submit. You will need to set up an account to use parallel maths. If you would like to link your account to Ribston Hall then use the teacher coder g4ujo when prompted.