Wallington
County Grammar School

Maths

Recommended Pre work 2025/26

NAME OF SUBJECT	
Name and email address of Subject Leader to be contacted if you have any issues with this Bridging Work:	Mr Connor dconnor@wcgschool.co.uk (ASL in charge of KS5)
Time required to complete this task:	• 3 hours maximum for Maths • 6 hours maximum for students also taking Further Maths • Spread the work out over several days, doing a little each day. This will be much more effective than doing it all in one go.
Task details:	Completion of past paper questions on a variety of topics – see the following pages and make sure you read the introduction before you start
Resources required:	Internet access – see links
Submission details:	1) Hand in hard copy on the first day of the school year or your first Maths lesson. Your teacher will look at how you have set your work out, not just the fact that you have done it. Work needs to be marked clearly in red before being handed in. 2) Test at some point in the first two weeks of term, most likely on the 2nd Friday of term.

Maths (and Further Maths) Bridging work 2024

Most students are rusty in September so this work is designed to limber you up and ensure your skills are back up to standard before we start teaching you new concepts. For this reason, this work should be completed during the two weeks before the start of term, not earlier. Once lessons start, the pace will be very fast, and we will not revisit GCSE concepts other than using them as expected prior knowledge when learning other concepts, so you need to be properly ready.

There are a lot of questions here; **you are expected to spend a total of 3 hours if you are taking just Maths and up to 6 hours if you are also taking Further Maths, as these are two subjects. We recommend spreading the work out over several days, doing a maximum of 1 hour** per day, rather than doing it all in one go.

This could mean thoroughly covering a couple of topics each day, or answering one or two questions only from a range of topics each day and then answering one or two more questions from the same topics another day.

You probably won't have time to do all the questions, so please choose some from EACH SECTION. Questions are of varying difficulty levels. Many are quite straightforward (as this is intended to be practice), but some require you to think your strategy out and are a bit more challenging. Do the most challenging questions you can cope with. If you are taking Further Maths, you should also have a go at one of the STEP questions in the DTC. Look at them all and choose one, then spend around 45 mins on it.

You will have a test on this material at some point in the first two weeks of term. The results of this test will be used to place you in sets.

The questions come from past exam papers from the old Edexcel A-level syllabuses on topics that you should be familiar with from GCSE. You must follow the links to the exam papers on the Physics and Maths tutor website: https://www.physicsandmathstutor.com/a-level-maths-papers/. This is a website you will be expected to use extensively during your A Level course, so take a look around it.

If there are any topics you are unsure of, you should look on the TLMaths website (https://sites.google.com/view/tlmaths/home/gcse-to-a-level-maths-bridging-the-gap or https://sites.google.com/view/tlmaths/home/a-level-maths) for video support.

You need to do this work on lined paper, showing full working, mark it in red pen and bring it to your first maths lesson, where your teacher will check you have done it.

C1 Edexcel Papers are here: https://www.physicsandmathstutor.com/a-level-maths-papers/c1-edexcel/

C1 OCR MEI Papers are here: https://www.physicsandmathstutor.com/a-level-maths-papers/c1-ocr-mei/

C2 Papers are here: https://www.physicsandmathstutor.com/a-level-maths-papers/c2-edexcel/

C2 OCR MEI Papers are here: https://www.physicsandmathstutor.com/a-level-maths-papers/c2-ocr-mei/

C1 papers are non-calculator, C2 papers are calculator

Examples of how to set work out and rationalise a surd
Fractions should be written on two lines, the numerator on one and the denominator on the next
Work down the page with the = signs in a column

5)

a. $\frac{1}{\sqrt{3}} = \frac{1}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$

$= \frac{\sqrt{3}}{3}$

b. $\frac{1}{3+\sqrt{2}} = \frac{1}{3+\sqrt{2}} \times \frac{3-\sqrt{2}}{3-\sqrt{2}}$

$= \frac{3-\sqrt{2}}{(3+\sqrt{2})(3-\sqrt{2})}$

$= \frac{3-\sqrt{2}}{9-3\sqrt{2}+3\sqrt{2}-2}$

$= \frac{3-\sqrt{2}}{7}$

c. $\frac{\sqrt{5}+\sqrt{2}}{\sqrt{5}-\sqrt{2}} = \frac{\sqrt{5}+\sqrt{2}}{\sqrt{5}-\sqrt{2}} \times \frac{\sqrt{5}+\sqrt{2}}{\sqrt{5}+\sqrt{2}}$

$$= \frac{5+\sqrt{5}\sqrt{2}+\sqrt{2}\sqrt{5}+2}{5-2}$$

$$= \frac{7+2\sqrt{10}}{3}$$

Topic	AS Level Exam PPQs (Old syllabus)	Notes	Support video links https://sites.google.com/view/tlmaths/home/gcse-to-a-level-maths-bridging-the-gap or more specific ones as below
Surds	C1 Edexcel June 2019 Q1 C1 Edexcel June 2018 Q1(i) C1 Edexcel June 2016 Q3 C1 Edexcel June 2006 Q6	Some of these questions involve rationalising a denominator of the form a + √b. See the examples in the previous page	https://sites.google.com/view/tlmaths/home/a-level-maths/as-only/b-algebra-functions/b2-surds
Indices	C1 Edexcel January 2011 Q1 C1 Edexcel January 2013 Q2 C1 Edexcel June 2014 Q2 C1 Edexcel June 2016 Q2 C1 Edexcel June 2018 Q1(ii)		https://sites.google.com/view/tlmaths/home/a-level-maths/as-only/b-algebra-functions/b1-indices
Basic algebra (expanding, factorising, rearranging, solving basic equations)	C1 Edexcel January 2006 Q1 C1 Edexcel June 2006 Q2 OCR MEI C1 Jan 2006 Q5 OCR MEI C1 June 2006 Q1 OCR MEI C1 Jan 2007 Q3 OCR MEI C1 Jan 2007 Q10 OCR MEI C1 June 2007 Q2 OCR MEI C1 June 2007 Q7		https://sites.google.com/view/tlmaths/home/gcse-to-a-level-maths-bridging-the-gap
Quadratics (graphs, factorising, formula)	OCR MEI C1 Jan 2006 Q9ii OCR MEI C1 Jan 2007 Q2 OCR MEI C1 Jan 2007 Q9ii OCR MEI C1 June 2007 Q9i OCR MEI C1 June 2007 Q10	The roots of a quadratic are the numbers that satisfy the equation, i.e. they give the correct value (usually 0) when substituted into the equation. On a graph they are the places where the curve crosses the x axis. If a question refers to real roots you can ignore the word real at the moment. If you are taking Further Maths you will learn about the roots that are not real as part of your course. Some of the quadratics here don't initially look like quadratics. Try to spot the quadratic in disguise and write it like this ( )² + b( ) + c = 0 where the expression in the two brackets is the same. You can substitute y for the expression in brackets if it makes the quadratic easier to solve. Eg $x^6 + 5x^3 + 6 = 0$ can be written as $(x^3)^2 = 5(x^3) + 6 = 0$ and then as $y^2 + 5y + 6 = 0$ Work out what y is, and then what x is.	https://sites.google.com/view/tlmaths/home/a-level-maths/as-only/b-algebra-functions/b3-quadratics

		Optional DTC: If you are up for a challenge, try the following STEP question at the end, which links in with this: 2013 STEP 1 Q1. The link is at the end.	
Quadratics 2 – completing the square	For single maths students: C1 Edexcel June 20015 Q3a C1 Edexcel June 2010 Q4a,b OCR MEI C1 Jan 2006 Q11 i&ii *For Further Maths students only:* C1 Edexcel January 2013 Q10 OCR MEI C1 June 2007 Q12		As above, just scroll down the page
Simultaneous equations (2 linear or one linear and one quadratic)	C1 Edexcel June 2013 Q6b* C1 Edexcel June 2011 Q4 C1 Edexcel June 2015 Q2 C1 Edexcel June 2016 Q5		https://sites.google.com/view/tlmaths/home/a-level-maths/as-only/b-algebra-functions/b4-simultaneous-equations
Inequalities	C1 Edexcel June 2017 Q6 C1 Edexcel June 2019 Q5		https://sites.google.com/view/tlmaths/home/a-level-maths/as-only/b-algebra-functions/b5-inequalities
Coordinate geometry – straight line graphs, gradients including parallel and perpendicular gradients, length of a line between two points	C1 Edexcel January 2006 Q3 C1 Edexcel January 2011 Q9 C1 Edexcel June 2019 Q7 C1 Edexcel June 2013 Q6a* C1 Edexcel January 2013 Q5		https://sites.google.com/view/tlmaths/home/a-level-maths/as-only/c-coordinate-geometry/c1-coordinate-geometry
Graph transformations	C1 Edexcel June 2005 Q4 C1 Edexcel June 2013 Q8 C1 June 2017 Q10(a)		https://sites.google.com/view/tlmaths/home/a-level-maths/as-only/b-algebra-functions/b9-graph-transformations
Basic trig in right-angled triangles	OCR MEI C2 June 2006 Q3 OCR MEI C2 Jan 2007 Q3		https://sites.google.com/view/tlmaths/home/a-level-maths/as-only/e-trigonometry/e1-trigonometry
Simple trig equations & graphs	OCR MEI C2 Jan 2007 Q6		https://sites.google.com/view/tlmaths/home/a-level-maths/as-only/e-trigonometry/e7-trig-equations
Sine & Cosine rules, area of a triangle, bearings	OCR MEI C2 June 2006 Q10i OCR MEI C2 Jan 2007 Q11i&ii	Bearings: draw a north line up from the point where you are taking the bearing FROM, ie the bearing of P from Q needs a north line going up from Q. Draw a line connecting P and Q. Measure the angle CLOCKWISE round Q between the north line and the line connecting P.	https://sites.google.com/view/tlmaths/home/a-level-maths/as-only/e-trigonometry/e1-trigonometry

For Further Maths students only: Factor theorem and factorising cubics	C2 Edexcel June 2005 Q3 C2 Edexcel January 2006 Q1 OCR MEI C1 June 2006 Q12 OCR MEI C1 June 2007 Q4 OCR MEI C1 June 2007 Q13	This topic is on AQA L2 Further Maths and Additional Maths	https://sites.google.com/view/tlmaths/home/a-level-maths/as-only/b-algebra-functions/b6-polynomials
For Further Maths students only: Differentiation	C1 Edexcel June 2006 Q5 C1 Edexcel January 2007 Q1 C1 Edexcel June 2014 (R) Q4a C1 Edexcel June 2013 (R) Q1 OCR MEI C2 Jan 2007 Q1	This topic is on AQA L2 Further Maths and Additional Maths f'(x) is another way of writing $\frac{dy}{dx}$	https://sites.google.com/view/tlmaths/home/a-level-maths/as-only/g-differentiation/g2-differentiation https://sites.google.com/view/tlmaths/home/a-level-maths/as-only/g-differentiation/g3-gradients
For Further Maths students only: Binomial expansions	C2 Edexcel June 2005 Q4 C2 Edexcel January 2006 Q2 OCR MEI C1 Jan 2006 Q3 OCR MEI C1 Jan 2007 Q5 OCR MEI C1 June 2006 Q8	This topic is on AQA L2 Further Maths and Additional Maths	

DTCs: STEP (Sixth Term Entrance Paper) are the university entrance test papers set by Cambridge and used by a number of the top universities such as Imperial, Warwick and UCL for their Maths courses and some other subjects eg Computer Science. There are 3 papers, with paper 1 the easiest and paper 3 the hardest. Most questions will be too challenging at the moment but many papers have a question or two that could be tackled by students at the start of their A Level course. You could try 2005 STEP 1 Q1, or 2006 STEP 1 Q1 or 2009 STEP 1 Q1 - most students should be able to do at least a bit of each of these and the most able will be able to complete them. They are substantial questions designed to take a while to complete.

https://www.physicsandmathstutor.com/admissions/step/