

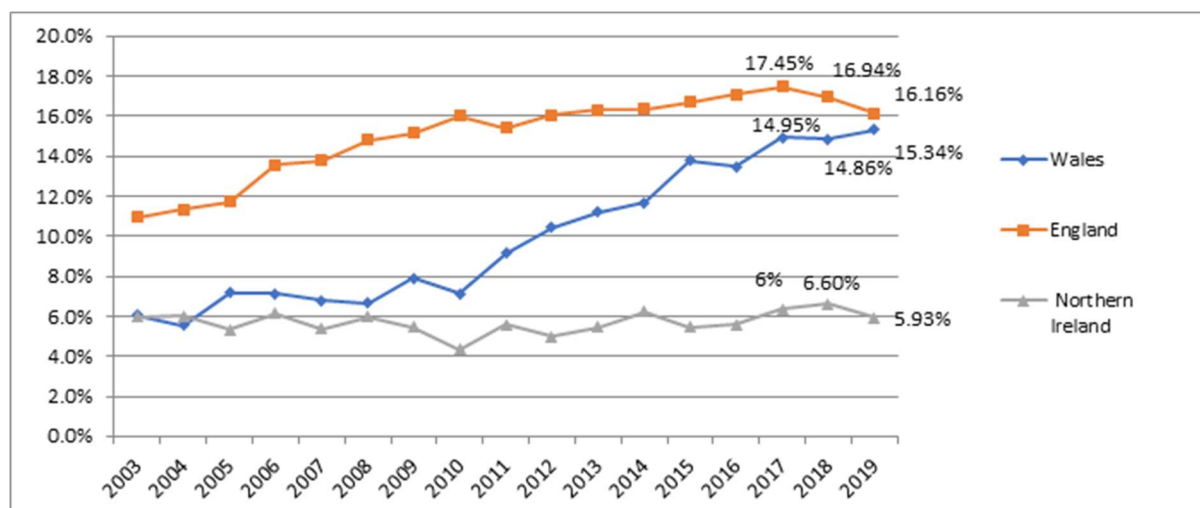
DATGANIAD NEWYDDION I YSGOLION A CHOLEGAU, *Awst 2019*

Y gyfran uchaf erioed o fyfyrwyr Mathemateg Safon Uwch yn ennill cymwysterau Mathemateg Bellach Safon Uwch yng Nghymru.

Eleni cafodd Cymru'r gyfran uchaf erioed o fyfyrwyr Mathemateg Safon Uwch yn ennill cymwysterau Mathemateg Bellach Safon Uwch, a gyrhaeddodd 15.3%. Mae hyn er gwaethaf gostyngiad yn nifer y myfyrwyr sy'n cymryd Mathemateg a Mathemateg Bellach Safon Uwch. Mae nifer y myfyrwyr a gymerodd unrhyw bwnc Safon Uwch hefyd wedi gostwng 3% ers 2018 yng Nghymru. Yn ôl y Cyd-Gyngor Cymwysterau (2019) digwyddodd y newidiadau canlynol yn nifer y cymwysterau Mathemateg a Mathemateg Bellach a ddyfarnwyd yng Nghymru er 2018:

- Mae niferoedd Mathemateg Safon Uwch wedi gostwng o 3950 i 3585, gostyngiad o 9%;
- Mae niferoedd Mathemateg Bellach Safon Uwch wedi gostwng o 587 i 550, gostyngiad o 6%;
- Mae niferoedd Mathemateg UG wedi gostwng o 4767 i 4627, gostyngiad o 3%;
- Mae niferoedd Mathemateg Bellach UG wedi gostwng o 599 i 457, gostyngiad o 24%.

Graff 1. Canrannau'r myfyrwyr Mathemateg Safon Uwch sy'n cymryd Mathemateg Bellach Safon Uwch yn Lloegr, Gogledd Iwerddon a Chymru er 2003 (<http://www.jcq.org.uk/examination-results/a-levels>)



Gwelodd y DU ostyngiad tebyg yn nifer y myfyrwyr Mathemateg Safon Uwch o 6% a myfyrwyr Mathemateg Bellach Safon Uwch o 10% o gymharu â 2018. Fodd bynnag, o gymharu â Chymru, gwelodd Lloegr ostyngiad sylweddol yn niferoedd Mathemateg Bellach UG (o 93%) yn ogystal â Mathemateg UG (70%) o'i gymharu â 2018, sy'n wahanol i Gymru

(gweler y ffigurau uchod). Mae'r cymwysterau UG diwygiedig newydd wedi'u datganoli o'r cymwysterau Safon Uwch yng Nghymru, tra'u bod yn parhau i gyfrannu at y cymhwyster Safon Uwch cyffredinol yng Nghymru ar gyfer Mathemateg a Mathemateg Bellach

Mae myfyrwyr Mathemateg Bellach Cymru yn parhau i gyflawni graddau uchel, gyda 33.6% yn cyflawni gradd A*, 60.7% yn cyflawni gradd A o leiaf ac 80% yn cyflawni gradd B o leiaf. Canrannau tebyg ar lefel y DU yw 24.7%, 53.5% a 73.7% yn y drefn honno. Er bod nifer y bechgyn y dyfarnwyd Mathemateg Bellach Safon Uwch iddynt yng Nghymru wedi gostwng 9% ers 2018, arhosodd cyfranogiad merched mewn Mathemateg Bellach Safon Uwch ar yr un lefel yng Nghymru â'r llynedd (172 o fyfyrwyr), sy'n cynrychioli cynnydd o 27% o'i gymharu â 2015. Arhosodd nifer y merched sy'n cymryd Safon Uwch lawn mewn Mathemateg oddeutu 170 ers 2016.

Dywedodd Elin Evans o Ysgol Glan Clwyd a astudiodd Fathemateg Bellach gyda'r RhGMB ac a dderbyniwyd i astudio Peirianeg yng Nghaergrawnt: *"Mae Astudio Mathemateg Bellach wedi fy helpu llawer wrth i mi wneud cais i Brifysgol gan iddo roi platfform ychwanegol imi arddangos fy ngallu mathemategol a oedd uwchlaw llawer o fyfyrwyr eraill. Fel merch, er fy mod yn betrusgar yn wreiddiol i astudio STEM yn y brifysgol, roedd yr hyder a gefais wrth astudio mathemateg bellach wedi helpu i'm gwthio i wneud cais i astudio peirianeg yn y brifysgol, gan roi'r hyder imi weithio'n agos gyda myfyrwyr gwrywaidd a benywaidd."*

Lansiwyd y Rhaglen Gymorth Mathemateg Bellach (RhGMBC) yng Nghymru yn 2010 ac mae'n cynnig cyrsiau datblygiad proffesiynol athrawon, adnoddau dysgu ar-lein, rhaglenni cyfoethogi ar gyfer myfyrwyr CA4 a Safon Uwch yn ogystal â hyfforddiant byw ar-lein ac wyneb yn wyneb. Er mis Awst 2016, gyda chefnogaeth cyllid pellach gan Lywodraeth Cymru, mae'r rhaglen wedi gweithredu ym mhob sir yng Nghymru. Er mwyn cefnogi ysgolion a cholegau yng Nghymru ymhellach i gryfhau eu darpariaeth ar gyfer Mathemateg Bellach, cyflwynwyd prosiectau ymchwil gweithredu athrawon i ddull ystafell ddosbarth wyneb i waered a chynhadledd athrawon flynyddol yn 2018/19.

Dywedodd y Gweinidog Addysg, Kirsty Williams: *"Mae Mathemateg a Rhifedd yn sgil allweddol ar gyfer bywyd ac mae'n cael ei wreiddio fel un o'r Meysydd Dysgu a Phrofiad allweddol yn y cwricwlwm newydd. Dyna pam rydym yn parhau i fuddsoddi yn y Rhaglen Gymorth Mathemateg Bellach."*

Roeddwn yn falch o glywed bod y gyfran uchaf erioed o fyfyrwyr Mathemateg Safon Uwch yng Nghymru eleni yn cymryd Mathemateg Bellach Safon Uwch. Roedd hefyd yn galonogol iawn bod Cymru, unwaith eto, yn parhau i gyflawni cyfran uwch o raddau A ac A mewn Mathemateg Bellach na gweddill y DU.*

Mae'r ffaith bod pedwar o'r myfyrwyr ar y rhaglen wedi cael eu derbyn i Rydychen neu Gaergrawnt yn dyst i'r gwaith caled a wnaed gan athrawon a dysgwyr fel ei gilydd. Roeddwn yn falch iawn o glywed bod hyn yn cynnwys dwy ferch."

Mae cymwysterau Mathemateg Bellach yn parhau i fod yn ofynnol neu'n cael ei ffafrio ar i gael fewn i rai rhaglenni gradd yn y DU ac mae rhai prifysgolion yn gofyn i fyfyrwyr sefyll arholiadau ychwanegol a mwy datblygedig mewn mathemateg. Dywedodd arweinydd prosiect RhGMBC, Dr Sofya Lyakhova, "Mae'n wych gweld bod cyfran y myfyrwyr Mathemateg Safon Uwch sy'n cymryd Mathemateg Bellach yn parhau i gynyddu er gwaethaf yr heriau o ddarparu manyleb Mathemateg Safon Uwch a Mathemateg Bellach. Yn y RhGMBC rydym yn gweld mwy o fyfyrwyr eisiau astudio Mathemateg Bellach wrth ddewis ystod ehangach o raddau STEM a STEMM. Eleni, dewisodd myfyrwyr RhGMBC sy'n mynd i Brifysgol Caergrawnt neu Rydychen astudio pynciau mor amrywiol â Mathemateg, Peirianeg Gemegol neu Wyddor Filfeddygol. Ond mae cyrsiau gradd Ffiseg, Cemeg a Chyllid hefyd ymhlith cyrchfannau'r myfyrwyr. Mae RhGMB wedi ymrwymo i weithio gydag ysgolion a cholegau i adeiladu gallu i ganiatáu i ragor o fyfyrwyr astudio mathemateg ôl-16."

Nodiadau i olygyddion

1. Ariennir Rheolir RhGMBC Cymru gan Lywodraeth Cymru ac maen cael ei reoli gan Brifysgol Abertawe, Sefydliad Gwyddorau Cyfrifiadurol a Mathemategol Cymru (WIMCS) ac mae mewn partneriaeth â Mathemateg mewn Addysg a Diwydiant (MEI, www.Mei.org.uk).
2. Ceir rhagor o wybodaeth am Raglen Gymorth Mathemateg Bellach Cymru yn: <http://furthermaths.org.uk/wales>. Ar gyfer astudiaethau achos gan fyfyrwyr, rhiennu ac ysgolion ewch i <http://www.furthermaths.org.uk/wales-case-studies>
3. Mae Sefydliad Gwyddorau Cyfrifiadurol a Mathemategol Cymru (WIMCS) yn bartneriaeth gydweithredol rhwng prifysgolion Aberystwyth, Bangor, Caerdydd, De Cymru ac Abertawe. Fe'i sefydlwyd gan Lywodraeth Cymru drwy Gyngor Cyllido Addysg Uwch Cymru. Nod WIMCS yw gwella statws Mathemateg a Chyfrifiannu yng Nghymru, meithrin cysylltiadau â diwydiant, masnach a busnes, cynhyrchu cyllid ymchwil sylweddol a darparu fforwm ar gyfer addysg ac ymwybyddiaeth y cyhoedd o'r Gwyddorau Mathemategol (www.wimcs.ac.uk).
4. Mae cyhoeddiadau dethol gan y grŵp Ymchwil mewn Addysg Fathemateg (Prifysgol Abertawe, Adran Fathemateg) yn cynnwys

- (1) Oakes, D., Davies, A., Joubert, M., & Lyakhova, S. (2018). Archwilio ymatebion athrawon a myfyrwyr i'r defnydd o ddull addysgu Ystafell Ddosbarth Wyneb i Waered mewn mathemateg. *Trafodion Cymdeithas Ymchwil i Fathemateg Prydain*.
 - (2) Joubert, M., Oakes, D., & Lyakhova, S. (2019). Golwg fanwl ar brofiadau myfyrwyr o, a meddyliau am, 'ystafell ddosbarth wyneb i waered' mewn mathemateg. *Trafodion Cymdeithas Ymchwil i Fathemateg Prydain*.
 - (3) Oakes, D., Joubert, M. & Lyakhova, S. (cyflwynwyd) Archwilio defnydd athrawon o'r amser a enillwyd oherwydd y defnydd o ddull ystafell ddosbarth wyneb i waered mewn mathemateg.
 - (4) Lyakhova, S. & Joubert, M. (cyflwynwyd) Mathemateg Bellach Ôl-16: hunanreoleiddio, gwynnwch mathemategol a thechnoleg.
5. Cymerwyd yr holl ffigurau yn yr adroddiad o www.jcq.org.uk
 6. Am ragor o wybodaeth cysylltwch â gweinyddwr RhGMB Cymru ar 01792 606609 neu drwy e-bost adminwales@furthermaths.org.uk

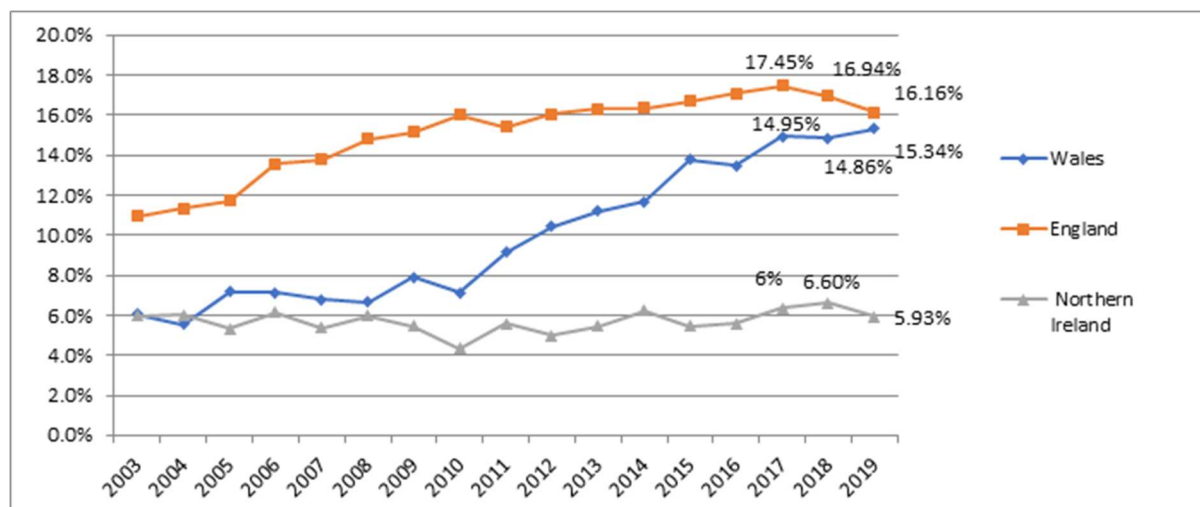
NEWS RELEASE TO SCHOOLS AND COLLEGES, *August 2019*

A record high proportion of A-level Mathematics students awarded A-level Further Mathematics qualifications in Wales.

This year Wales has achieved the highest ever proportion of A-level Mathematics students awarded Further Mathematics A-level qualifications, which reached 15.3%. This is despite a reduction in the numbers of students taking A-level Mathematics and Further Mathematics. The number of students that took any subject at A-level has also decreased by 3% since 2018 in Wales. According to the Joint Council for Qualifications (2019) the following changes took place in the number of Mathematics and Further Mathematics qualifications awarded in Wales since 2018:

- A-level Mathematics numbers have declined from 3950 to 3585, a 9% decrease;
- A-level Further Mathematics numbers have declined from 587 to 550, 6% decrease;
- AS Mathematics numbers have declined from 4767 to 4627, a 3% decrease;
- AS Further Mathematics numbers have declined from 599 to 457, a 24% decrease.

Graph 1. Percentages of A-level Mathematics students taking A-level Further Mathematics in England, Northern Ireland and Wales since 2003 (<http://www.jcq.org.uk/examination-results/a-levels>)



UK saw a similar decrease in the numbers of A-level Mathematics students by 6% and A-level Further Mathematics students by 10% when compared with 2018. However, in comparison with Wales, England saw a significant drop in the numbers of AS Further Mathematics (by 93%) as well as AS Mathematics (by 70%) in comparison with 2018, which is different from Wales (see figures above). The new reformed AS qualifications are devolved from the A-level qualifications in England, while they continue contributing to the overall A-level qualification in Wales for both Mathematics and Further Mathematics.

Welsh Further Mathematics students continue achieving high grades, with 33.6% achieving an A*, 60.7% achieving at least an A-grade and 80% achieving at least a B grade. Similar percentages at the UK level are 24.7%, 53.5% and 73.7% respectively. While the number of boys awarded an A-level Further Mathematics in Wales has dropped by 9% since 2018, girls' participation in A-level Further Mathematics remained at the same level in Wales as last year (172 students), which represents an increase of 27% when compared with 2015. The number of girls taking a full A-level in Mathematics remained around 170 since 2016.

Elin Evans from Ysgol Glan Clwyd who studied Further Mathematics with the FMSP and was accepted to study Engineering in Cambridge, commented: *“Studying Further Maths has helped me a lot as I applied for University as it gave me an additional platform to showcase my mathematical ability which was above many other students. As a female, although I was originally hesitant to study a STEM at university, the confidence I gained while studying further maths helped to push me to apply to read engineering at university, giving me the confidence to work closely with both male and female students.”*

The Further Mathematics Support Programme (FMSPW) was launched in Wales in 2010 and offers teacher professional development courses, online learning resources, enrichment programmes for KS4 and A-level students as well as live online and face-to-face tuition. Since August 2016, supported with further funding from the Welsh Government, the programme has operated in all counties in Wales. To further support schools and colleges in Wales in strengthening their provision for Further Mathematics, teacher action research projects into flipped classroom approach and an annual teacher conference were introduced in 2018/19.

Education Minister, Kirsty Williams, said:

“Mathematics and Numeracy is a key skill for life and is being embedded as one of the key Areas of Learning and Experience in the new curriculum. That’s why we are continuing to invest in the Further Maths Support programme. I was pleased to learn that this year saw the highest ever proportion of A-level Maths students in Wales take A-level Further Mathematics. It was also extremely encouraging that, again, Wales continues to achieve a higher proportion of A and A grades in Further Mathematics than the rest of the UK.*

The fact that four of the students on the programme have been accepted to Oxford or Cambridge is a testament to the hard work put in by teachers and learners alike. I was delighted to learn that this included two girls.”

Further Mathematics qualifications remain required or preferred for entering some degree programmes in the UK and a few universities require students to take additional and more advanced examinations in mathematics. FMSPW project leader Dr Sofya Lyakhova said, *“It is great to see that the proportion of the A-level Mathematics students taking Further Mathematics continues to rise despite the challenges of delivering a new A-level Mathematics and Further Mathematics specification. At the FMSPW we are seeing more students wanting*

to study Further Mathematics while choosing a wider range of STEM as well as STEM degrees. This year, FMSPW students entering Cambridge or Oxford University chose to study subjects as diverse as Mathematics, Chemical engineering or Veterinary Science. But Physics, Chemistry and Finance degree courses are also among the students' destinations. FMSP is committed to working with schools and colleges in building capacity to allow more students to study mathematics post-16."

Notes for Editors

1. The FMSPW is funded by the Welsh Government and is managed by Swansea University, Wales Institute of Mathematical and Computational Sciences (WIMCS) and is in partnership with Mathematics in Education and Industry (MEI, www.mei.org.uk)
2. More information regarding the Further Maths Support Programme Wales can be found at: <http://furthermaths.org.uk/wales> . For case studies from students, parents and schools please visit <http://www.furthermaths.org.uk/wales-case-studies>
3. The Wales Institute of Mathematical and Computational Sciences (WIMCS) is a collaborative partnership between the universities of Aberystwyth, Bangor, Cardiff, South Wales and Swansea. It has been set up by the Welsh Government through the Higher Education Funding Council for Wales. WIMCS aims to enhance the standing of Mathematics and Computation in Wales, to foster links with industry, commerce and business, to generate substantial research funding and to provide a forum for education and public awareness of the Mathematical Sciences (www.wimcs.ac.uk).
4. Selected publications by the Research in Mathematics Education group (Swansea University, Mathematics Department) include:
 - (1) Oakes, D., Davies, A., Joubert, M., & Lyakhova, S. (2018). Exploring teachers' and students' responses to the use of a Flipped Classroom teaching approach in mathematics. *Proceedings of the British Society for Research into Learning Mathematics.*
 - (2) Joubert, M., Oakes, D., & Lyakhova, S. (2019). An in-depth look at students' experiences of, and thoughts about, 'flipped classroom' in mathematics. *Proceedings of the British Society for Research into Learning Mathematics.*

Rhaglen Gymorth Mathemateg Bellach Cymru /Further Mathematics Support Programme Wales

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(3) Oakes, D., Joubert, M. & Lyakhova, S. (submitted) Exploring teacher's use of time gained due to the use of a flipped classroom approach in mathematics.

(4) Lyakhova, S. & Joubert, M. (submitted) Post-16 Further Mathematics: self-regulation, mathematical resilience and technology.

5. All the figures in the report are were taken from www.icq.org.uk
6. For more information please contact the FMSP Wales Administrator on 01792 606609 or by email adminwales@furthermaths.org.uk

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