

Cambridge Outlook

THE MAGAZINE FOR CAMBRIDGE SCHOOLS WORLDWIDE

Issue 41, September 2022

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The extra-curricular competition that puts skills into practice



College credits
How our qualifications are fast-tracking university students



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One principal explains why Cambridge complements his school's ethos



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Building a pathway to student success

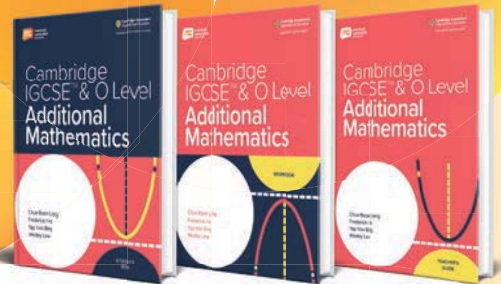


Cambridge Assessment International Education

MCE Cambridge IGCSE™ Mathematics Series*



MCE Cambridge IGCSE™
Mathematics Core and Extended*



MCE Cambridge IGCSE™ & O Level
Additional Mathematics*

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1

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2

3

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practice pathway

* We are working with Cambridge Assessment International Education towards endorsement of this series.

**These resources will not go through the Cambridge International endorsement process.

Welcome

ISSUE 41, SEPTEMBER 2022



On 1 August 2022, we marked the first anniversary of Cambridge University Press & Assessment – the new organisation that brings together all parts of the Cambridge publishing and assessment family. We also marked the start of a new journey for Cambridge International, which I have the privilege of leading. Together with other parts of Cambridge, we are forming a new International Education group to strengthen our support to schools worldwide. You can read more about our future plans in this issue of *Cambridge Outlook* (see page 4).

I am really looking forward to getting to know Cambridge schools over the coming months, and I hope to meet some of you at the Cambridge Schools Conference in September – our first face-to-face conference since 2019.

I'm delighted to say that Christine Özden, former Chief Executive of Cambridge International, will continue to work for Cambridge University Press & Assessment. She has taken up an exciting new role as Global Director of Climate Education. We know schools want more support in this important area, so watch this space!

In this issue of *Cambridge Outlook* we are focusing on the work we do to ensure our syllabuses continue to be world class. We also hear from schools about their experiences of teaching Cambridge, and we bring you university insights and news of our latest resources.

Thank you to everyone who has contributed to this issue. If you have a story to share, please get in touch at outlook@cambridgeinternational.org



Rod Smith

Group Managing Director,
International Education

About us

Cambridge Assessment International Education prepares school students for life, helping them develop an informed curiosity and a lasting passion for learning. We are part of the University of Cambridge.

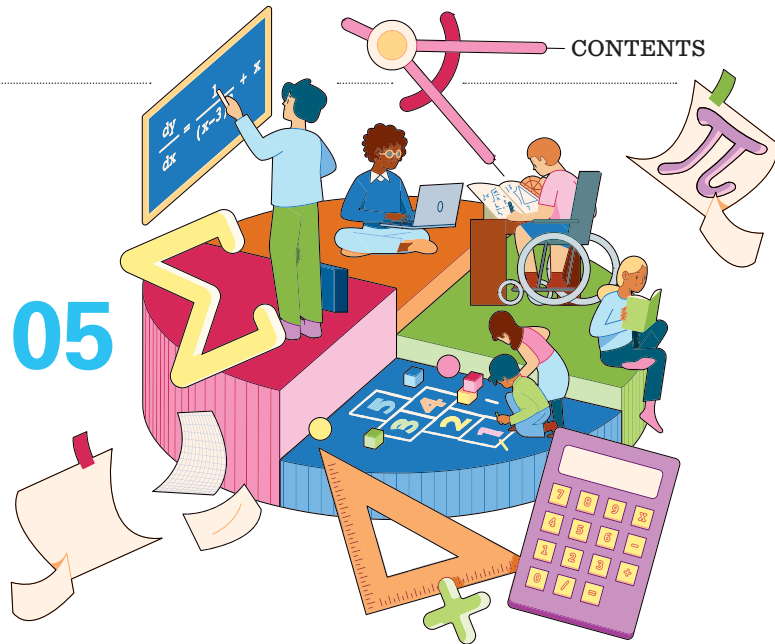
Any feedback on this issue? Anything you would like to read about in the next issue? Contact us at:

Cambridge Outlook magazine, Cambridge Assessment International Education, The Triangle Building, Shaftesbury Road, Cambridge CB2 8EA, UK
t: +44 1223 553261 f: +44 1223 553558
e: outlook@cambridgeinternational.org



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www.johnbrownmedia.com info@johnbrownmedia.com
For John Brown: Sarah Kovandzich, Editor
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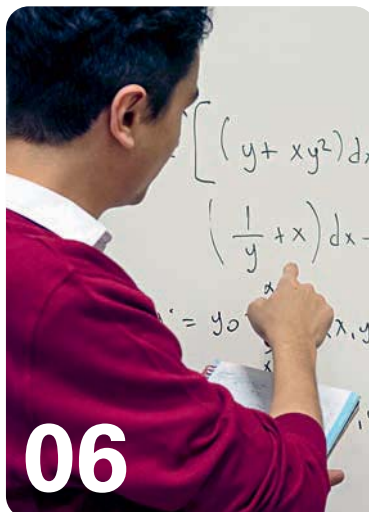
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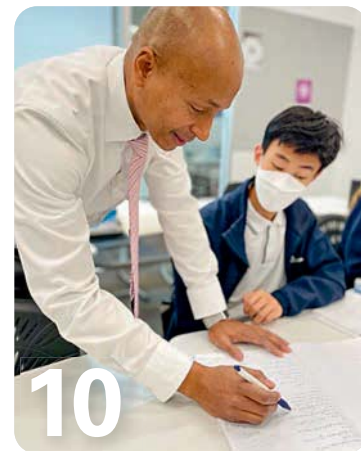
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Working together

Cambridge University Press & Assessment has established a new International Education group, which includes Cambridge International. Here we explain how the new group will benefit Cambridge International Schools

On 1 August 2021, Cambridge Assessment and Cambridge University Press merged to form Cambridge University Press & Assessment – still part of the University of Cambridge and a not-for-profit organisation, but now working as one to offer a better service to schools worldwide.

One year on, and we have just taken another step in our integration by establishing a new International Education group. This group has been created to bring together the teams from Cambridge International, Cambridge University Press Education and the Cambridge Partnership for Education to create a powerful and coherent suite of educational products and services to support schools and education systems around the world.

Rod Smith, former Global Managing Director of Cambridge University Press Education, will lead this International Education group. He will build on the work of Cambridge International's former Chief Executive, Christine Özden, to support Cambridge schools worldwide.

Rod has worked closely with Cambridge International since joining Cambridge University Press Education in 2015. As we go to press on this issue of *Cambridge Outlook*, he has only been in the role for a few weeks, but we've asked him to share a few thoughts about his new position.



Introducing... Rod Smith

I have worked in the education sector for 30 years but I have been involved in education all my life. My mother owned and ran a school for 35 years, so I grew up on school premises. She is a huge inspiration to me and has impressed on me that teachers are at the heart of what we do as an organisation – we support them in making a difference in the classroom and helping prepare students for life.

I enjoy the diversity of international education. Working in international education with Cambridge means working in over 160 countries, with different priorities and contexts. Developing and customising our education services for so many types of school is a challenge, but an incredibly interesting one. We all share a desire to collaborate and learn from each other, and the same beliefs around what education does to enable young people to succeed.

The new International Education group has extraordinary centres of excellence in many areas – publishing, curriculum, qualifications, professional development, government partnerships. Bringing these different areas together is a real opportunity for us to increase the coherence of our offer to schools worldwide and help them improve even more the quality of teaching, learning and assessment in their establishments.

It's about combining our strengths – not only within the International Education group, but across the whole of Cambridge University Press & Assessment. We are looking at the challenges that educators are facing now, and how we can, as a broader and more diverse organisation, support them even more. So, for example, Cambridge University Press & Assessment is accelerating its digital programme to respond to the increased demand for online learning and assessment post-pandemic – and Cambridge International Schools will reap the benefits of this investment. Concern about student wellbeing has also risen in many schools worldwide, and so we are working with other parts of Cambridge to develop tools to help schools support the whole child, such as the Cambridge Wellbeing Check (see page 17). Plus, as the International Education group evolves, we will be developing innovative products for schools and students that combine our expertise in learning and assessment.

But continuity is key. We will continue to build on the excellent relationships with schools we've forged over many years. We are emerging from a very difficult few years and are very proud of how the Cambridge community has worked together to make sure students could continue their education.

We are still Cambridge International. Our name and logo are not changing at this time. They are likely to evolve in the future to reflect better our joined-up offer,

IN FOCUS

MATHS FOR *every learner*

but we will give schools plenty of notice and carefully consider the impact of any changes.

It's an exciting time to be leading an international education organisation.

Strong foundations for my new role have already been laid by Cambridge International's former Chief Executive, Christine Özden. Her part in bringing teams together over the past few years, so that we could continue to support schools and learners during the biggest disruption and challenge of our generation, is something she can look back on with enormous pride. Christine has always been utterly passionate about climate education and she is now leading our overall strategy in this area as Global Director for Climate Education, a brand-new role. I can think of no one better to do that.

We'll soon embark on our biggest ever listening exercise.

We are going to be even more ambitious with how we support schools, teachers and learners, so we need to find out what the broader issues are: where do schools think we can be more helpful and where do we need to do things differently? Over the coming months, we will engage with schools, higher education institutions and individuals through a wide range of research. We'd really like Cambridge schools to help shape our new International Education group, so you'll be hearing from us soon about how to take part in focus groups or questionnaires.

How do you get learners to really think like mathematicians? A few years ago, this question guided the development of a new feature in our Cambridge Primary and Lower Secondary Mathematics programmes called 'Thinking and Working Mathematically', aimed at nurturing problem-solving skills and an enjoyment of maths.

Now our curriculum developers have moved to the next stage – and September sees the launch of revised syllabuses for all our Cambridge IGCSE™ and O Level Mathematics qualifications, including the Additional and International Mathematics syllabuses. In this issue's In Focus section, two members of our maths team explain what's involved in redeveloping syllabuses – from consulting with schools through to communicating the changes – and how to help every learner fulfil their maths

potential (pages 6–7).

There is incredible maths expertise across the different parts of Cambridge, which we are bringing closer together. One example is Cambridge Mathematics. This organisation has joined the new International Education group (page 4), with Cambridge International, to help us develop world-leading maths qualifications and resources. You can learn more about Cambridge Mathematics on page 9 and how we are working together. And of course, the University of Cambridge itself is renowned for the

excellence of its maths programmes. On page 13, we talk to Dr Ems Lord, Director of a maths outreach project at the University, who is committed to enabling every child to experience engaging problem-solving resources for free.



In this section

- 6** A behind-the-scenes look at the redevelopment of Cambridge IGCSE and O Level Mathematics
- 9** The framework from Cambridge Mathematics that is enhancing our curricula
- 10** Two schools talk about their experiences of teaching maths
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SHAPING A *syllabus*



Ali Melville-Cline (far left) is Cambridge International's Head of Mathematics, Science and Technology (Qualifications Development). She oversees the development managers who were involved in the recent redevelopment of our Cambridge IGCSE and O Level Mathematics syllabuses. *Alice Creswick* (left), Group Manager, Mathematics and ICT, oversees the assessment managers who run the live exams. They tell us how and why syllabuses are redeveloped

Cambridge International has around 350 international syllabuses. Our qualifications are taken all over the world in different education settings and contexts. Redevelopment ensures they stay relevant.

Over the past two years, we have redeveloped all of our Cambridge IGCSE and O Level Mathematics syllabuses, including the Additional and International Mathematics syllabuses.

Redeveloping the syllabuses in parallel gave us the opportunity to look across the whole suite and ask, what does a good body of mathematical knowledge for upper secondary look like, regardless of who you are and where you come from?

Information gathering

A syllabus needs to be consistent, easy to teach and clear. Before redevelopment, the syllabus development manager, assessment manager and a member of the Assessment Standards & Quality team meet to identify how the syllabus and assessments can be updated and amended, based on a range of research from different sources. They are guided by a set of assessment principles to achieve consistency and best practice across syllabuses.

Subject experts and examiners feed into the review process, and feedback from schools, universities, training sessions and ministries of education is also discussed.

For these maths syllabuses, we also worked with our colleagues at Cambridge Mathematics



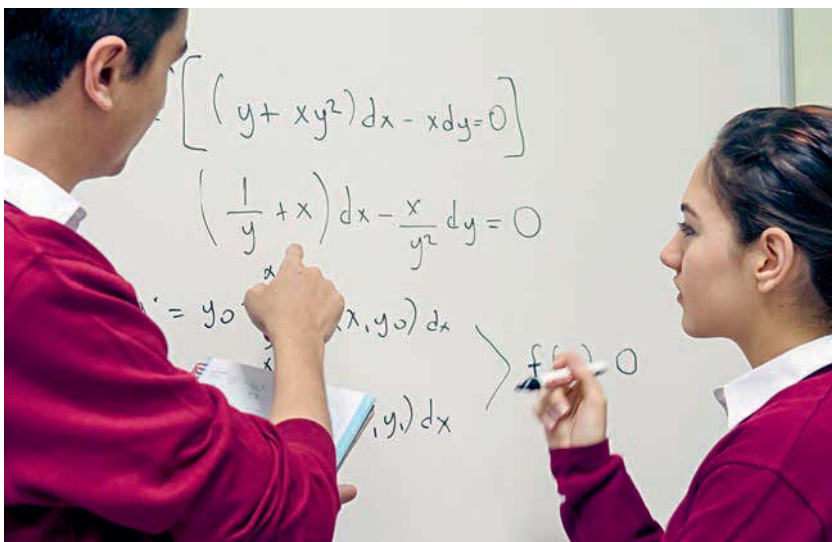
“The focus groups added real-life input into the process”

to sense check our programmes against their research-based maths framework (see page 9).

Consultation with schools

As part of the consultation for Cambridge IGCSE and O Level Mathematics, we ran a series of focus groups with teachers around the world – this added real-life input into the process. Teachers were given a presentation on the proposed changes, then they gave feedback and asked questions.

This told us more about how different schools teach mathematics, what matters to them, what they find easy, what they find difficult, how well resourced they are, how the syllabus interacts with local curricula, how they plan lessons and differentiate in their classrooms and what they worry about for their students.



Key changes

The main changes proposed (and now implemented) were:

- **the introduction of a non-calculator paper** for Cambridge IGCSE Mathematics, IGCSE Additional Mathematics and Cambridge O Level Additional Mathematics (see column – right). A non-calculator paper already exists for Cambridge IGCSE International Maths and O Level Mathematics.
- **the introduction of a formula sheet.** Working out which formula you need and applying it is a very important skill as part of mathematical literacy and problem solving, and supports good practice when students move into Cambridge International AS & A Level study for a range of subjects.
- **re-alignment of content across the suite** to make sure everything in the syllabuses is well connected and supports progression. The process includes mapping progression from Cambridge Primary and Lower Secondary through to Cambridge International AS & A Level.
- **refinement of content to ensure it is clear and purposeful.** When content is super-focused, teachers have more time to make sure students have a deep understanding of that content.
- **a consistent approach.** Where syllabuses have a shared concept or skill, the language for assessment objectives and content should be the same so schools find it easier to co-teach qualifications.

Producing new materials

Once the proposals have been agreed internally, the development manager commissions examiners and subject experts to write the new materials, which will go through different checks and review stages.

We look at language and format layout to make sure the syllabuses and question papers are as accessible as possible. We cut out unnecessary words, turn sentences from a negative into a positive and make sure the language is in an active rather than a passive voice.

We have a long and rigorous question paper setting process. The paper is worked through by various subject experts to check it from both a technical and a candidate perspective.

All the documents are then finalised, which includes final quality assurance checks, proofreading, typesetting and final examiner reviews of the materials.



Preparing for release

As we get ready to release the syllabuses on the website and in the world, we focus on making sure that our regional teams and trainers are aware of the changes so they can help communicate them to schools.

First assessment of the new mathematics syllabuses is in 2025 – schools in countries such as Pakistan and Italy, where the syllabuses are taught over three years, have just introduced them.

During the next year, we will be providing additional support for schools, including practice questions, schemes of work, teacher guides and specimen answers, as well as mapping documents that help teachers understand what the changes are.

To find out more, visit www.cambridgeinternational.org/maths-changes

Spotlight on the new non-calculator paper



For students to be fluent mathematicians, they need to be ready to deal with any mathematical problem – they need to know what they're doing and why they're doing it.

One of the things students need to understand is that different methods are appropriate at different times.

The non-calculator paper gives us the flexibility to ask questions that require students to decide on a method, use mental maths or different written methods and make connections. For example:

A bus has 25 seats and six of the seats are full – what percentage of seats on the bus are full?



If students are only taught that to do a percentage, you divide the top number by the bottom number then multiply by 100, without a calculator that is a much more difficult question.

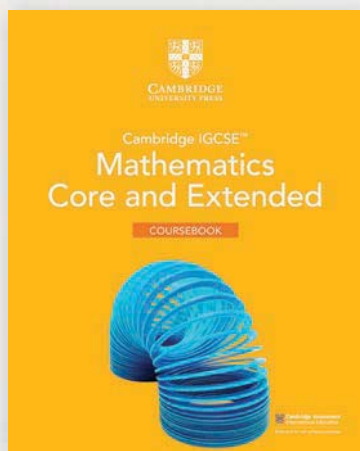
If, however, students understand that 'per cent' means 'out of 100' and they also have an understanding of equivalent fractions, they will be able to work out that, instead of the problem being out of 25, they can make it out of 100 by multiplying by 4 and get the answer of 24 per cent.



CAMBRIDGE
UNIVERSITY PRESS

NEW Cambridge IGCSE™ Mathematics resources

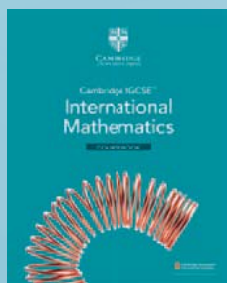
Full support with a digital focus to enhance any classroom



Cambridge IGCSE™ Mathematics Core and Extended, third edition

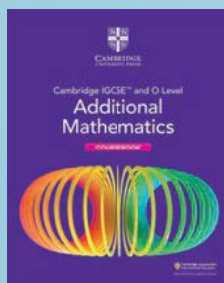
Underpinned by the 'spiral' learning approach with:

- Investigations to enrich and extend learning
- Project activities created by NRICH to put students' learning into practice
- Numerous practice opportunities to help prepare for assessment
- Access to our popular digital teaching and learning platform, *Cambridge Online Mathematics*
- Additional support available - a core practice book with digital version, extended practice book with digital version and a digital teacher's resource



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third edition



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Brighter Thinking

Better Learning

Building Brighter Futures **Together**

Mapping it out



Rachael Horsman is Deputy Director and Partnership Lead for Cambridge Mathematics, which has spent the past eight years developing a new research-based maths framework



What is Cambridge Mathematics?

Cambridge Mathematics is a long-term programme run by a small team of writers and researchers who are committed to improving mathematics education for students of all ages. It is part of the Cambridge University Press & Assessment family (as is Cambridge International) and works in partnership with the University of Cambridge Faculties of Education and Mathematics.

What does your work involve?

We offer support in all areas of maths education including curriculum review and design, professional development, policy formation and thought leadership. A lot of our work involves reading around particular areas of mathematics, summarising that research and putting it in a variety of formats for different audiences.

Who do you support?

We work with Cambridge International and we also work directly with teachers, schools, districts, jurisdictions, ministries of education and research institutions around the world. We're currently supporting Cambridge Partnership for Education, which is also part of Cambridge University Press & Assessment, in mapping the Ukrainian curriculum to aid support for displaced learners.

What's your most useful tool?

Our Cambridge Mathematics Framework is a digital map that covers the mathematical concepts a learner might encounter from age 3 to 19. In research, this is called a boundary object – something that everyone can refer to that has a common

understanding. The Framework is a complex structure designed as a nodes and edges diagram with thousands of circles of information (see extracts from the Framework in images below). It explains what the maths content is, what it might mean for the classroom, and the research and evidence behind it. The circles are connected by lines to show some of the pathways between them and why they are important.

Is the Framework a curriculum?

The Framework is not a curriculum and it is not written with a specific curriculum in mind. It is an agnostic map of maths that can help institutions make informed decisions about how they word their learning objectives and what they put in textbooks or exams, depending on their priorities.

What value can you add to a curriculum?

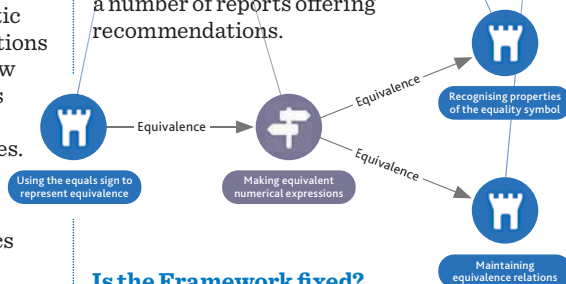
Part of the Cambridge Mathematics philosophy is to think about mathematics as a learning story where content is coherent and connected. We can add coherence in terms of the order in which learners meet new concepts so that they build a secure structure rather than looking at discrete sets of things. This is sometimes missing in maths curricula.

How have you supported Cambridge International?

We were involved at an early stage in the redevelopment of Cambridge Primary and Lower Secondary Mathematics. Less of our Framework had been written then, so we provided a mix of research and mapping support.

We reviewed learning statements and offered suggestions based on research. For some areas, such as fractions, we were also able to map them into the Framework and show how the learning progressed. This helped to identify any gaps. We also did a lot of consultation on the 'Thinking and Working Mathematically' strand of the new curricula, advising on how to embed problem solving, for instance.

For the recent redevelopment of Cambridge IGCSE and O Level Mathematics syllabuses we wrote a number of reports offering recommendations.



Is the Framework fixed?

Research obviously doesn't stand still so we are constantly thinking about how we are going to incorporate a new perspective, a new idea or new findings, so the Framework is always moving. Stability in teaching is important so, just because the Framework changes, it doesn't mean schools have to change overnight – we help them think about what small changes can happen to gradually move towards a curriculum that's better.

Find out more at cambridgemaths.org

New resource for primary teachers

Cambridge Mathematics recently released *The Primary Teacher's Maths Journeybook* (published by Cambridge University Press). This write-in book is based on the research that has informed the Framework and offers teachers an opportunity to explore their own subject knowledge and to understand the ways in which mathematics fits together. It makes the research accessible so that teachers can take their own journey to implementing research in their classroom.



Putting maths

INTO PRACTICE

TWO MATHS TEACHERS TELL US HOW MATHS IS TAUGHT IN THEIR SCHOOLS AND WHY CAMBRIDGE WORKS FOR THEIR STUDENTS

ACG Parnell College, Auckland, New Zealand



ACG Parnell College has 1500 students from Early Learning to Senior, spread across four campuses.

Malcolm McLean (pictured below) has been Senior Mathematics Faculty Curriculum Coordinator for six years and he is in his second year as Senior Dean. He joined ACG in 2005, having previously taught in the UK, where he is from. He teaches Cambridge IGCSE and Cambridge International AS & A Level Mathematics in the Senior School to both domestic and international students.

“This school is an environment in which students can follow their passion and thrive,” he says. “Cambridge works well for us. Several of our students intend to study at an overseas university and Cambridge qualifications are recognised by universities worldwide.

“Students studying the Cambridge mathematics curriculum acquire a range of skills, particularly those that enable them to use applications of mathematics in the context of everyday situations and other subjects they may be studying.

“They develop their mathematical knowledge and skills in a way that encourages confidence and provides satisfaction and enjoyment. They gain

a feel for numbers, patterns and relationships in mathematics. There is a strong emphasis on problem solving and on presenting and interpreting results. They are encouraged to communicate clearly and reason logically using mathematical concepts.

“The assessment criteria are straightforward and easy for



students and parents to understand. There is also very good support for teachers in the form of online resources as well as opportunities for professional development.”

ACG’s students study Cambridge IGCSE Mathematics (0580). Most of them take the Extended syllabus content and one class takes the Core content. The syllabus is tiered to take into account differing abilities.

In 2021, 72 per cent of their Cambridge IGCSE Mathematics Extended tier students achieved A* or A and a total of 91 per cent achieved A*–C.

At the next stage, students can take Cambridge International AS & A Level Mathematics (9709). At AS Level, they take the Pure Mathematics 1 and Probability & Statistics 1 components. Those wishing to obtain a full A Level go on to study Cambridge International A Level Pure Mathematics 3 and Probability & Statistics 2. [Note: schools design the course from a range of options.]

In 2021, 54 per cent of the school’s Cambridge International AS Level students achieved Grade A and there was a 100 per cent pass rate at Cambridge International A Level (A*–E).

“Each stage builds on the previous stage of the Cambridge Pathway,” says Malcolm. “Cambridge IGCSE Mathematics Extended tier provides students with a good foundation in preparation for Cambridge International AS Level Mathematics.

“There is still a significant progression from IGCSE to AS Level, so we specify a prerequisite of at least an A at Cambridge IGCSE Mathematics.

“The Cambridge syllabuses provide a firm foundation for further study of mathematics and other disciplines, giving students excellent preparation for university.”





Lahore Grammar School 1A1 Senior, Lahore, Pakistan



Lahore Grammar School 1A1 Senior is one of the flagship campuses of Lahore Grammar School.

Located in the heart of Lahore, it is exclusively for girls and has 1200 learners.

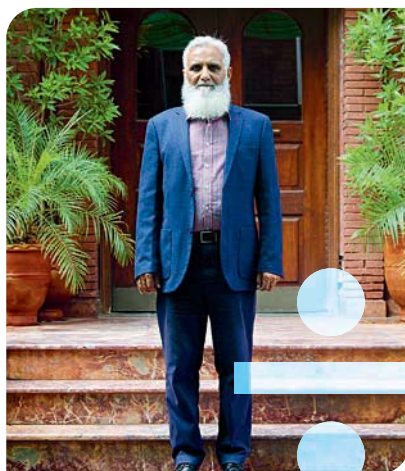
Javed Ghuman (right) has been Head of the Mathematics department in the Cambridge International A Level faculty since 2012. He previously taught Cambridge O Level Mathematics and Additional Mathematics at the school.

“I have the pleasure to work alongside a dream team of colleagues and support staff that has created a learning space which every year helps students get into top universities around the world.

“The Cambridge curriculum offers students the opportunity to think logically and be creative with their methods. One of its key strengths is that each stage is designed with the gradual increase in depth and difficulty of a concept.

“Cambridge’s testing is ideal for assessing students on their knowledge, concepts and creativity. Students feel encouraged knowing weight is given to using the right methodology rather than just to the accurate answer. These factors prepare them for advanced learning and ingrain confidence in their ability to achieve their goals.”

Javed says that the Cambridge syllabuses and testing methods in the earlier stages of the Cambridge Pathway provide a strong foundation for Cambridge O Level and Cambridge International A Level exams: “There is a smooth transition, ensuring the healthy progress of our students. Different stages of the Cambridge Pathway are well integrated with one another and provide a wholesome insight into mathematics.”



He welcomes the recent changes made to Cambridge Primary and Lower Secondary Maths: “Better resources are available, making it more accessible to students so they can work on base concepts that are frequently called on in Cambridge O Levels. Topics not covered at Cambridge O Level have been removed from Cambridge Lower Secondary Checkpoint, which helps learners recognise the practicality and worth of the learning beyond this point.”

The school has just introduced the redeveloped Cambridge O Level Mathematics syllabuses, which are taught over three years ready for first assessment in 2025. The school offers Cambridge O Level Mathematics D (4024) and Additional Mathematics (4037).

“All our maths teachers attended the Cambridge International webinar ‘Getting ready to teach Cambridge O Level Maths changes’. The discussion not only helped us learn about teaching trends in the Cambridge network but also helped us plan our path ahead.

“The revised 4037 syllabus is well supported by concepts taught in 4024. The inclusion of topics in 4024 such as simple and compound interest has resulted in clearer concept building for our students. Similarly, indices and surds will be part of the 2025 assessment, which are a necessary addition. The inclusion of circles in coordinate geometry for 4037 is a pertinent addition as it provides students with the foundation for Cambridge International AS Level Mathematics.”

Javed supports the introduction of formula sheets too: “This provides the opportunity to focus on the practical aspects of the questions and to draw connections between various concepts and methods.

“Language in the syllabuses and question papers is also more accessible to learners of all levels, making goals more achievable.”

HODDER EDUCATION WITH CAMBRIDGE INTERNATIONAL



In 2022 we are celebrating 30 years of working with Cambridge International, a partnership which has enabled us to visit Cambridge schools worldwide, to really get to the heart of what teachers need for support and what students need to maximise their potential.

For 30 years our resources have gone through a rigorous quality-assurance process to ensure they are internationally appropriate for Cambridge schools and we cater for almost all subjects and levels along the Cambridge Pathway.

▶ CAMBRIDGE PRIMARY



- English
- ESL
- Mathematics
- Science
- Computing

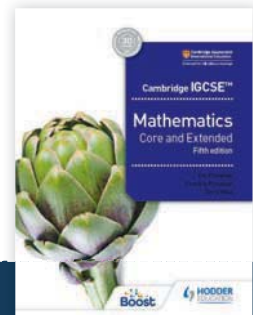
▶ CAMBRIDGE LOWER SECONDARY

- English • ESL
- Mathematics • Science
- Computing



▶ CAMBRIDGE UPPER SECONDARY


An extensive range of subjects through Cambridge IGCSE™ and O Level, including Mathematics resources coming March 2023 for the revised 2025 syllabuses.



▶ CAMBRIDGE ADVANCED

A wide choice of subjects at Cambridge International AS & A Level.



Print, digital and mixed media titles.
Scan this QR code to find out more. 

7 FACTS YOU NEED TO *know about NRICH*

As part of the Cambridge family, Cambridge International supports the University of Cambridge in its mission to contribute to society through education. Here, we tell you more about the NRICH project and how it can help you support your maths students

Happy anniversary

1 NRICH is a maths outreach project run by the Faculties of Mathematics and Education at the University of Cambridge. It is now in its 25th year of supporting schools, teachers, students and parents.



Free resources

2 The NRICH website (<https://nrich.maths.org>) provides thousands of free online mathematics resources for ages 3 to 18. In the 2020/21 school year, the website attracted nearly 33 million page views from all over the world.



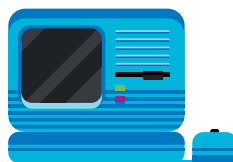
Problem solving

3 The NRICH team aims to enhance the mathematical experiences of all learners and develop their mathematical thinking. The project focuses on problem solving and on creating opportunities for students to learn mathematics through exploration and discussion.



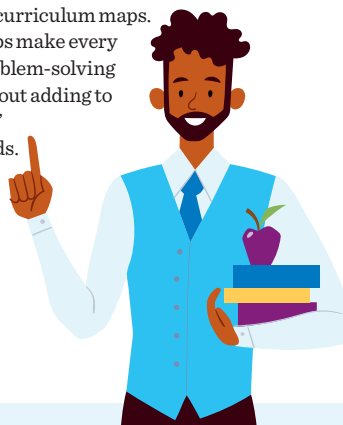
Ahead of its time

4 NRICH was one of the earliest adopters of the internet for schools outreach. It was originally set up as an online maths club for children so they could send in their answers to problems online rather than using the slow process of posting a letter.



Supporting teachers

5 As the NRICH project grew, it became apparent that teachers needed more help with how to make the most of the resources, so the team started writing more teacher notes, leading teacher events and making curriculum maps. This helps make every day a problem-solving day without adding to teachers' workloads.



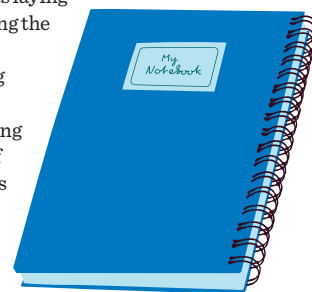
Help at home

6 Maths at Home (<https://nrich.maths.org/14606>) was created in 2020 for parents, carers and teachers to support homeschooling during the pandemic. Resources for primary children include activities using everyday bits and pieces – from buttons and scraps of paper to sweets and building bricks.



Understanding maths

7 One aim of NRICH is to help children apply maths skills to solving unfamiliar problems once they leave school – such as laying a patio or sorting the family budget. Understanding maths is also crucial to solving a wide range of world problems from climate change to biodiversity.



Meet Dr Ems Lord *NRICH Director*



Dr Ems Lord has been NRICH Director since 2015. She has taught mathematics from Early Years to A Level and has worked in a variety of settings, including in a hospital school. She is a research fellow at Clare Hall College, Cambridge and supervises students following the Master's programme for the

Faculty of Education. She is also a regular contributor to the UK's All Party Parliamentary Group for the Teaching Profession.

Her interest in maths started with advent calendars – as a child she would save the cardboard doors displaying the numbers to create her own number pack of cards and use them to play and invent games. Ems believes that every child deserves the very best education we can give them, no matter where they live or where they go to school. NRICH offers free, high-quality resources so that every child can experience inspiring, engaging problem solving wherever they might be. Visit: <https://nrich.maths.org>

From studying Cambridge to helping Cambridge students



Daniel Saud is Director of International Programme Admissions at Washington State University so it is not surprising that he knows a lot about how Cambridge qualifications equate to college credits in US higher education – but his realisation of the benefits of Cambridge came long ago

Daniel Saud was born in Pakistan. In 1994, at the age of six, he joined the public–private all-boys school Aitchison College in Lahore.

“At the time, the senior school ran two curricula – the National Curriculum for Pakistan and the Cambridge curriculum,” he says. “My parents learned about the benefits of Cambridge from my primary school teachers and from other parents – so when I was progressing through middle school, my mother decided to prepare me for the Cambridge curriculum.

“That was the first time I heard about Cambridge and it was at that stage that I understood the value of past papers as a preparatory model. It took me a year during my 8th grade to come to



“That was when I recognised that the work you do in high school really matters”

terms with what the curriculum would look like in Year 9, which would be my first Cambridge O Level year. The biggest change I experienced was when we started to focus on composition – I remember my English teacher saying, you need to start thinking critically about this.”

The impact of moving home

In 2001/02, Daniel’s father and mother made the decision to move to Canada, starting that process slowly so Daniel could complete his Cambridge O Levels at Aitchison.

After the exams, Daniel’s family permanently moved to Toronto – but the high school didn’t offer Cambridge International AS & A Level.

“In science, I was bored – we were doing experiments I’d already done at Cambridge O Level. Luckily my chemistry teacher had been a Cambridge student so she realised she needed to motivate those of us who had been exposed to Cambridge – she gave us work from higher grade chemistry classes and used Cambridge International A Level books.”

Learning about college credits

Daniel planned to pursue a career in medicine and applied to various US universities, accepting a place on a course at State University of New York at Buffalo: “I showed the international admissions advisor my Cambridge O Levels – and



found out that if I'd done Cambridge International A Levels, I could have avoided taking the first-year courses.

"I declared my major as biology and biochemistry but once again, the courses repeated what I'd learnt in my Cambridge O Levels. I told my chemistry professor and he spoke to my advisor – I was moved to an advanced level chemistry class and it reduced the number of courses because I got credits. It's a great testament to the role professors can play in students' lives."

A year later, Daniel transferred to Hawai'i Pacific University: "This time when I submitted my credits from Buffalo and recognition of my Cambridge O Level courses, I came in as a third-year student.

"That was when I recognised that the work you do in high school really matters – not only in your preparation to be successful, but in terms of your degree coordination. Post 9/11, I had started developing an interest in political science – the course credits and advanced standing meant that in five years, I was able to do two degrees. I graduated in both Biochemistry and International Studies."

After doing a Master's, Daniel worked at Chicago Medical School as director for admissions, while he completed a doctorate in education policy at Vanderbilt University, Nashville. His research looked at

achievement and accessibility of US students to US higher and secondary education, particularly financial accessibility.

Recognising Cambridge

"I've been in my current job at Washington State University for two years and it has been a nice way to meld all of that together, including my own personal experience as a student.

"I was attracted to the university because of its engagement abroad and because it really believes in internationalising the university. Its International Programs office serves each student who is coming from abroad and reviews their prior academic curriculum to place them at the proper level.

"Not only is Cambridge IGCSE/O Level coursework seen as proof of high school completion, students coming in take a placement exam to make sure they are not in a first-year uniform maths course just because they have to be.

"Students with three Cambridge International AS Levels and three Cambridge International A Levels are automatically awarded 24 credits, which equate to their entire first year at university. For students from impoverished backgrounds and low socio-economic status, that makes a big difference. Students should recognise that what they've completed has value and find an institution that does that too."

What are college credits?

College credits shorten the time it takes students to earn a degree and, as a result, save on tuition costs.

Cambridge International's US recognition team works with colleges and institutions to make sure students get the credit they deserve for completing Cambridge International AS & A Level courses and exams. Legislation adopted in Washington State makes public college and university systems consistent and transparent in applying credit and placement policies for advanced academics. All two- and four-year public higher education institutions in Washington State (36 universities and community and technical colleges) post their policies on publicly accessible websites. For Washington State University's website page go to: <https://admission.wsu.edu/apply/ap-ib-and-running-start/cambridge-equivalency-chart>

Search US recognition and credit policies at: www.cambridgeinternational.org/recognition-search

The benefits of Cambridge

Three students share their university experiences.



Maggie Jiang attended Juanita High School, US, and is now studying Computer Science at the University of Washington: "I was awarded 45 credits for my Cambridge

qualifications – the equivalent of a year's studies. The rigour of the Cambridge programme greatly prepared me for college and helped me get a head start."



Tom Stubbs attended Peterhouse School, Zimbabwe. He graduated from the University of Saskatchewan, Canada in 2020 with a degree in Mechanical Engineering and is now

building a career in agricultural engineering: "Cambridge gave me an advantage throughout my degree course. Every day, I still use the skills I gained as a Cambridge student."



Madhumita Varma attended Christ Nagar International School in India and applied to study Psychology at the University of British Columbia (UBC), Canada, later switching to

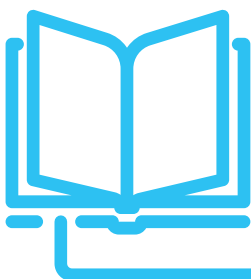
International Relations. Her Cambridge International A Levels in Psychology and Chemistry earned her course credits: "UBC recognised that the knowledge I had gained in both subjects was equivalent to the first year of the university course. Cambridge also helped instil academic curiosity and critical thinking. These are skills on which I still rely."





Support for schools

THE LATEST RESOURCES AND DEVELOPMENTS TO SUPPORT YOU AND YOUR LEARNERS



Cambridge Schools Conferences 2022/23

We're holding three Cambridge Schools Conferences in 2022/23 – two in person and one online so that more Cambridge teachers and school leaders can take part.

The theme for this series is 'Creating a positive environment for learning', which we'll be exploring through keynote presentations, workshops and breakout sessions.

The first conference takes place in Cambridge in September 2022, followed by an online conference in March 2023 and a face-to-face conference in North America in June 2023.

Look out for more details at www.cambridgeinternational.org/csc



Inspire future scientists with Everyday Science

Our new Everyday Science investigations are a fantastic way to promote practical science almost anywhere.

Practical science isn't just for the laboratory, and not all experiments require expensive lab equipment or dangerous chemicals. This new digital resource helps learners carry out scientific investigations using materials that are readily available in their homes or local area. The investigations reinforce learning about the scientific method and cover the key concepts we expect learners to grasp as part of their Cambridge IGCSE, O Level and International AS & A Level Science studies.

Because the investigations use everyday materials, students can complete them independently, for example as a homework task, or in a normal classroom when lab time is limited or schools don't have a lab facility.

Cambridge schools can access Everyday Science through the relevant science syllabus pages on our School Support Hub at www.cambridgeinternational.org/support

New resource for teaching oracy skills

Many researchers and teachers now believe oracy education – the explicit teaching of spoken language skills – should constitute a significant part of every child's educational experience. Our latest Education Brief explores different aspects of oracy and includes tips and resources to help schools develop oracy skills. Find it at www.cambridgeinternational.org/education-briefs



Plan ahead for professional development

We offer a variety of professional development opportunities for teachers and school leaders, with early bird discounts available for advance bookings. Take a look at our calendar to see what's coming up in your region or online.

Go to www.cambridgeinternational.org/training

Introducing the Cambridge Wellbeing Check



As part of Cambridge's ongoing work to help schools promote positive student wellbeing, we have introduced a new student-led assessment: the Cambridge Wellbeing Check for learners aged 7 to 18.

Developed by our colleagues at Cambridge CEM and researchers at the University of Cambridge, the Cambridge Wellbeing Check is designed specifically to work as part of schools' existing wellbeing or pastoral care teaching. The test takes about 20 minutes of screen time and will help teachers monitor students' wellbeing at key milestones during the learning journey – such as the run-up to exams or starting a new school year.

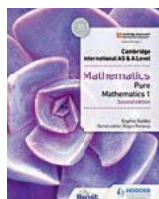
You can find out more about this new assessment at www.cem.org/wellbeing

Look out for more information about the Cambridge Wellbeing Check, and other tools to support schools with teacher and student wellbeing, in future issues of Cambridge Outlook magazine.



Endorsed resources

We work with publishers to endorse resources to support your teaching. Our subject experts thoroughly evaluate each of these titles to make sure that they are highly appropriate for Cambridge programmes.



CAMBRIDGE INTERNATIONAL AS & A LEVEL MATHEMATICS

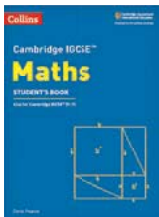
RESOURCE: Student's Books

PUBLISHED BY: Hodder Education

Take mathematical understanding to the next level with this accessible series written by experienced authors and examiners. Improve confidence as a mathematician with clear explanations, worked examples, diverse activities and engaging discussion points. The full range includes five Student's Books covering Mechanics, Probability and Statistics, and Pure Mathematics.

Website: www.hoddereducation.com/cambridgeasalevelmathematics

Email: international.team@hoddereducation.com



CAMBRIDGE IGCSE MATHS

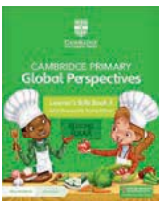
RESOURCE: Student's Book, Teacher's Guide and eBooks

PUBLISHED BY: Collins

This course provides in-depth coverage of every aspect of the revised Cambridge IGCSE Mathematics syllabuses (0580/0980) for examination from 2025. It supports and challenges students and aids transition with the Core and Extended content together in one book.

Website: www.collins.co.uk/cambridge

Email: collins.international@harpercollins.co.uk



CAMBRIDGE PRIMARY AND LOWER SECONDARY GLOBAL PERSPECTIVES

RESOURCE: Learner's Skills Books with Digital Access and Teacher's Resource with Digital Access

PUBLISHED BY: Cambridge University Press

Explore global issues and help your learners develop the key skills of analysis, collaboration, communication, evaluation, reflection and research. The second edition of this series is adaptable to any Cambridge Global Perspectives™ topic, including 'Looking after planet Earth' and 'Health and wellbeing', and is currently available for Stages 4–9.

Website: www.cambridge.org/education/globalperspectives



CAMBRIDGE IGCSE MATHEMATICS CORE AND EXTENDED SERIES

RESOURCE: Student's Book, Workbook, Teacher's Guide, Digital Resources*

PUBLISHED BY: Marshall Cavendish Education (MCE)

This series adopts both the guided inquiry and direct instructional approach to support learners with their study of the Cambridge IGCSE and IGCSE (9–1) Mathematics syllabuses (0580/0980). It promotes logical thinking and deduction to enhance learners' analytical skills and deepen their conceptual understanding.

Website: <https://www.mceducation.com/cambridge-international/cambridge-igcse-maths>

* These resources will not go through the Cambridge International endorsement process

SPARKING A passion for SCIENCE

Following a break during the pandemic, we are pleased to announce that the Cambridge Upper Secondary Science Competition has just been relaunched.

The competition is an extra-curricular activity that helps students build their passion for science and complements their academic studies.

Students work in teams to investigate a topic of interest through practical work, using the scientific method.

Through their projects, learners develop key skills that are widely considered essential for success in education and employment, such as critical thinking, problem solving, collaboration and communication.

Almost 260 schools from around the world took part in our first competition in 2019 and the overall global winner was Jayshree Periwal International School in India (pictured above). The winning project was titled 'Live or Dye? Negative impacts of synthetic dyes'. The school's chairperson Jayshree Periwal said: "Winning the competition has electrified and invigorated the students."

Find out more at:
[cambridgeinternational.org/science-competition](https://www.cambridgeinternational.org/science-competition)



What's involved?



"Winning the competition has electrified and invigorated the students"

- The Cambridge Upper Secondary Science Competition is for teams of three to six learners who are studying Cambridge IGCSE or O Level.
- Teams choose a topic and work on a scientific investigation over 20 to 25 hours.
- The competition runs twice a year. The first entry period starts in January – teams must complete their investigations by the end of April. The second starts in July, and teams must complete their investigations by the end of October.
- At the end of the project, students will present their findings, giving them the opportunity to communicate their work to a wider audience. This could be in the form

of a science fair at school, individual presentations or posters.

Finding the winners

- Teachers mark the competition, awarding Gold, Silver, Bronze or Participation to each team's investigation.
- Teachers submit any Gold investigations to Cambridge International and our judges will consider them for a Best in Country or Best in Region award.
- At the end of the year, all the winners are put forward to be judged for the Best in World award. All the winners will receive a certificate, and the overall winning team will be showcased in Cambridge International's communications and receive a plaque to display in their school.

A view from...



SWITZERLAND

Jose Antonio Parra, Principal and owner of International School of Central Switzerland (ISCS), outlines why Cambridge is right for the school

1 How long has your school been providing Cambridge programmes?

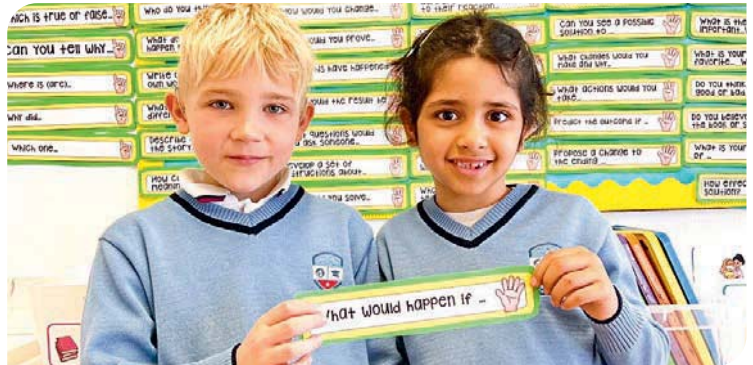
We have been running Cambridge programmes for three years and teach all four stages of the Cambridge Pathway. We are the only school in the region offering the Cambridge curriculum. With 70 subjects at Cambridge IGCSE and Cambridge O Level, and 55 subjects at Cambridge International AS & A Level, this allows us to build a curriculum that offers real choice – both of subject and subject combination.

2 How does Cambridge fit with the ethos of your school?

ISCS's ethos is to provide an outstanding international education to our students of more than 30 nationalities. Cambridge offers an academically rigorous British curriculum adapted to an international environment.

3 What recent developments are you excited about?

We are introducing a new computing pathway at the beginning of the new academic year starting from Cambridge Primary, so that by the time students get to Cambridge IGCSE Computer Science, they are digitally literate. Computer



Science develops highly in-demand skills required across a range of disciplines worldwide, and complements almost any academic area, giving learners a competitive advantage when pursuing sought-after opportunities.



“We are also passionate about exciting teaching techniques such as enhancing higher order thinking, which we use at Cambridge Primary level”

4 What makes your school special?

ISCS offers a family-centred environment with a unique mix of personalised education, academic excellence and access to global universities. We are also passionate about exciting teaching techniques such as enhancing higher order thinking, which we use at Cambridge Primary level.

5 How does the Cambridge team support you?

The team advises on design and implementation of the curriculum, as well as on the protocols to be followed in Cambridge IGCSE and Cambridge International A Level exams. When we first acquired ISCS in early 2019, we wanted to implement Cambridge starting in the 2019/20 school year. This required completely redesigning the school's curriculum, which we were able to achieve in record time with Cambridge's invaluable guidance and consultancy.

Jose Antonio Parra

is an aeronautical engineer by training and lived in China for 14 years. In 2015, he moved to southern Spain with his family and served as Chair of the Executive Committee at Sotogrande International School. In 2018, he and his wife acquired two Cambridge schools:

ISCS in Zug, Switzerland, and Sage College in Jerez, Spain. He has been based at ISCS since 2019. In his free time, he likes to play chess, especially with students.



If you'd like to be featured on this page, email outlook@cambridgeinternational.org

Collins

Collins Endorsed Resources for Cambridge Global Perspectives™

At every stage of the Cambridge Pathway help students progressively build and develop transferable skills such as research, analysis, evaluation, reflection, collaboration and communication to thrive and succeed at school and beyond.



Cambridge Primary
(0838)

Cambridge Lower
Secondary (1129)

Cambridge Upper
Secondary (0457/2069)

Cambridge Advanced
(9239)

Collins endorsed resources for the Cambridge Global Perspectives™ programme are available from Cambridge Primary all the way up to Cambridge Advanced level.

We are working with Cambridge International towards endorsement of these resources.

For more information, to request a sample or place an order contact collins.international@harpercollins.co.uk



www.collins.co.uk/cambridge

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