

# PORT·REGIS



## Why Maths Counts...

Iolo Savill

Head of Maths

Mr Savill started his career at Cargilfield Prep School in Edinburgh, before spending five years at St. Martin's School in Northwood, teaching both maths and science to Year 8 scholarship level. He enjoys teaching problem solving and is interested in mathematical approaches to cryptology and sport.

Outside of school, he enjoys playing and watching most sports, but particularly rugby and cricket.

A lot of maths goes on at Port Regis. In fact, any child who has completed the full journey from Nursery to A Form at Port Regis will have had more hours of maths teaching than in any other subject. Along with English and science, it is one of the core ISEB subjects compulsorily tested at 13+, and rightly so. Challenging Common Entrance and academic scholarship syllabi lead smoothly onto GCSE level work at senior school, and children who have followed the ISEB curriculum as we do at

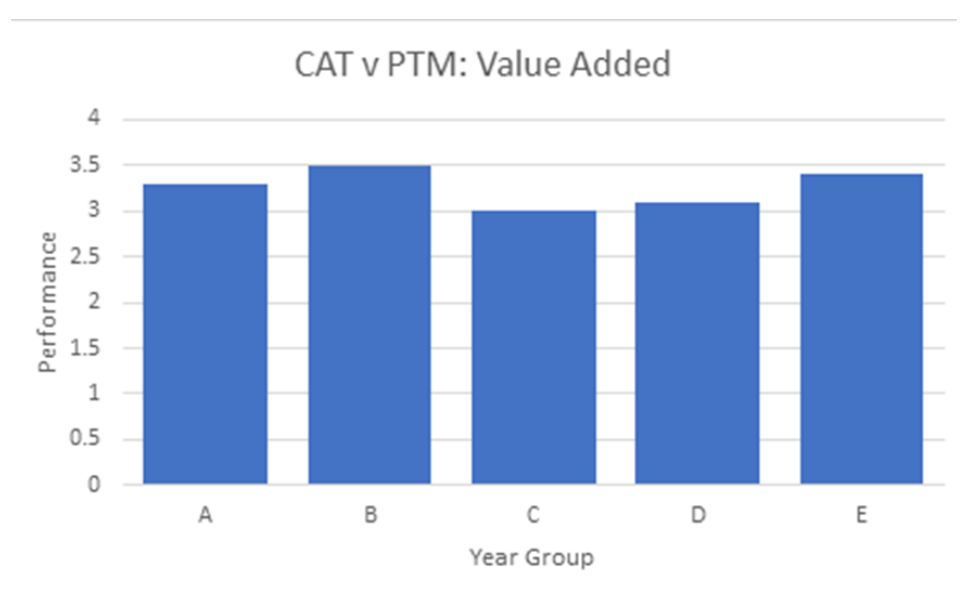
Port Regis have an advantage when they enter Year 9 as they have been exposed to so many key topics and concepts already - and been formally examined on them, of course. The last few years have also highlighted the central role of mathematics in modern life, whether in the algorithms which decide what we see when online; the COVID modelling which decides how often we are allowed out of our front door; or the statistical analyses which decide the players our favourite team should sign. At Port Regis our aim is to build both the interest and the crucial foundations that will allow pupils to understand, evaluate and be involved in making these pivotal decisions.

## Progress and Performance

But how do we benchmark Port Regis's performance against the rest of the country? Though our children do not do SATS or sit any public exams like GCSEs, it is in fact quite straightforward: we use standardised testing software and analyse the data.

Since last year, our pupils from Y2 to A Form have been sitting the nationwide test known as the Progress Test in Maths (PTM). This test is taken by over half a million pupils each year in both state and independent schools, providing standardisation against national norms and reliable feedback on pupil progress both individually and for each cohort. It also allows us to see how well particular topics are being taught, including which year groups are making the most progress.

As we don't specifically practise for this test - we follow a different syllabus and sit the test earlier than intended - and in order to avoid the distortions that happen to public measures (e.g. the temptation to teach to the test), we hadn't planned to share this particular information with



parents. However, with the necessary caveats in place, we think it is worth sharing.

The graph shows us the average performance of each year group when compared with their CAT results, with 3 representing average progress. Thus in 2020-2021, despite the significant disruptions encountered, each year group either performed at expectations based on their CAT score (C Form) or above average expectations (A, B, D and E Forms).

The above data shows that pupils are performing above expectations in relation to their potential, but we also know that our pupils at the top end of the school go on to perform at national levels of excellence in an absolute sense too. In each of the last Junior Maths Challenges, entered by around 250,000 pupils, we have had pupils qualify for the Junior Maths Olympiad, with 2019 resulting in a Gold Medal (top 30 pupils nationally) and 2021 a Bronze Medal (top 200 pupils nationally). In 2020 we had two pupils achieve above the usual threshold for the JMO, but the competition was not held.

## Methods and Resources

From Year 1 to A Form, pupils undertake our own in-house maths

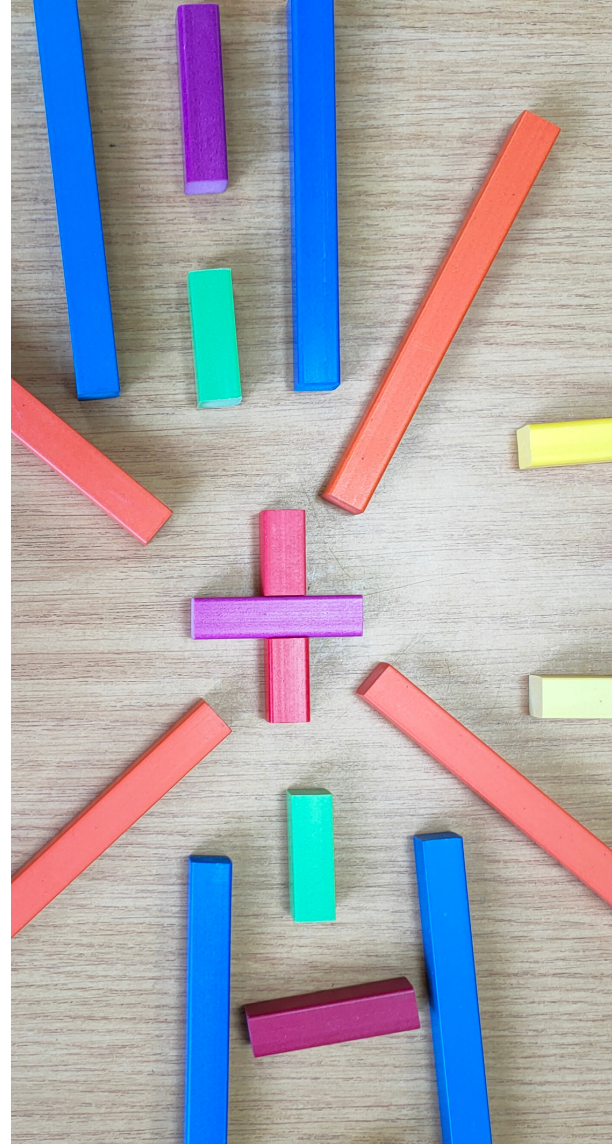
assessment twice a year. These reviews are based on our own syllabus and allow us to regularly measure the effectiveness of our teaching and resources and to ensure that individuals are receiving the appropriate level of stretch and support.

## Building the Foundations

Continuity is the key to success in the earlier years, and from Y1-E Form we have been using 'Maths No Problem!', a programme used by many leading schools and recommended by the Department for Education.







This scheme uses what's known as concrete-pictorial-abstract progression, with pupils gradually building up to the abstract level of understanding. We have also just confirmed our intention to start following the multi-award-winning 'White Rose' programme of study, a scheme which is influenced, inspired and informed by the work of leading maths researchers and practitioners across the world.

We supplement this with 'Number Sense Maths', which aims to build secure foundations in pupils' addition and subtraction within 20. One of the key aims of Key Stage 1 education is to move children away from counting as the method of choice (effective though it may appear at this stage) to derived fact strategies (for example,  $6 + 7 = 6 + 4 + 3 = 10 + 3 = 13$ ). Moving to these more effective strategies then facilitates

understanding of more complex maths in a way that counting does not: for example, understanding of what is happening with column methods for addition and subtraction. These complementary methods provide superb foundational maths learning for our younger pupils and facilitate good understanding of what's to come. By the time pupils get to the Lower School, pictorial representations have become bar models and pupils are learning how to adapt these to problems involving both additive and multiplicative reasoning.

We do not sit still, however, and together with Rebecca Liddington (Head of Pre-Prep) and Rebecca Eves (Head of Lower School), we regularly review our methods to ensure we are selecting the most effective ones for the children.

### Developing Fluency

Since the introduction of the ISEB Pre-Test - which has now become the main entry assessment for the majority of Port Regions' destination senior schools - C Form and D Form have each gained an extra maths lesson each week. This has facilitated a weekly fluency lesson, where pupils work through a mixture of questions requiring recall of past topics. Research shows that learning key facts and techniques to automaticity is important in maths, particularly where these are embedded in a more complex question. (It is in this way that problem solving is facilitated by a broad and secure bank of background knowledge).

Our D Form scheme of work was rewritten in response to this opportunity to exploit increased classroom time, and new textbooks were purchased with the aim of



achieving a greater level of detail of understanding in each topic.

### Established Understanding

In the Upper School we have also been busy developing our provision, in this case partly in response to the changes to Common Entrance which will affect the current B Form and below. These changes, which have again led to changes in our scheme of work, include:

- A slight reduction in the number of topics to be studied, with scale drawings, in the form of constructions and bearings excised, as well as some smaller aspects of other topics.
- A remodelling of the previous Level 1/2/3 system. The intention is that nearly all pupils will now sit Core (roughly the old Level 2) calculator and non-calculator papers, with far fewer needing to sit the new Foundation paper (old money Level 1). Those pupils who would have sat the old Level 3 will now sit both the Core and the aptly titled Additional paper.



- The mental arithmetic paper will now be a written, rather than aural, featuring 40 questions to be answered in 10 minutes. This should particularly help those pupils for whom 10 seconds is just that little bit too short, but whom otherwise could answer the question. It also brings to greater prominence understanding of the fundamental principles of arithmetic, such as commutativity and distributivity.

### Applied Learning

As you can see from this brief overview, one of the key themes of our development plan is ensuring that there is continuity of good practice throughout the school. In each year group we aim to teach for both understanding and fluency, recognising that understanding is the key to appreciation of the subject, but that a lack of fluency can impair enjoyment and performance. Outside of the developments mentioned above, I am pleased to say that we also offer:

- External team maths competitions from E Form to A Form. My personal favourite is B Form's Dauntsey's Dodecahedron, mostly for the name!
- External individual competitions from Lower School (First Mathematics Challenge) to Middle School (Primary Mathematics Challenge) to Upper School (Junior and Intermediate Mathematical Challenges).
- A wide range of outside class mathematical activities, from small group maths clubs/hobbies from F to A Form, to Common Entrance "clinics" and small group and individual interventions for those who need a boost.



### Maths with Meaning

I would like to finish by mentioning the role of learning outside the classroom. One of my B Form classes recently had a double lesson in which we were continuing with our topic of probability. One pupil mentioned that he had been looking at TED talks on patterns in randomness, which led to another pupil mentioning Benford's law, which states when measuring real life phenomenon, the first digit of the number is much more likely to be 1 than 2 and much more likely to be 1 than 9, which has been used to prove fraud in court and casts doubt on certain countries' COVID statistics.

This is the ultimate aim of our dedicated and enthusiastic teaching staff: to bring maths to life in our pupils' lives outside of the classroom and after Port Regis.

Discover more about our methods and resources:

[Maths No Problem](#)

[White Rose Maths](#)

[Number Sense Maths](#)

[Numeracy Ninjas](#)

[Times Table Rock Stars](#)

[UK Mathematics Trust](#)

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