



At Porthleven Primary School, we are committed to providing our children with a curriculum that has a clear intention and impacts positively upon their needs.

Curriculum statement for the teaching and learning of Mathematics 2021/2022

National Curriculum Aims

The national curriculum for mathematics intends to ensure that all pupils:

1. Become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
2. Reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.
3. Can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions. Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas.

The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. Through our work with the CODE Maths Hub and NCETM resources, we aim that pupils master key concepts by making connections using the 5 Big Ideas (Representations, Variation, Fluency, Reasoning and by following a Coherent mathematical journey.) Our curriculum follows the White Rose sequence of learning, however teachers develop and deepen lessons using NCETM resources, Testbase and Maths Shed. Links with the maths curriculum are being made across foundation subjects to encourage the transfer of skills and to embed Maths knowledge. The expectation is that most pupils will move through the programs of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly will deepen their understanding through sophisticated problems with an expectation that pupils can reach solutions using a range of strategies and given clear explanations for their choices. Those who are not sufficiently fluent with earlier material should consolidate their understanding. The Ready to Progress Statements and support materials help teachers to identify the key learning points required to move on in the most efficient and effective way.

Our Maths curriculum is founded on the National Curriculum aims of fluency, reasoning and problems solving. Through quality first teaching, children receive a rich learning experience through carefully planned, small step lessons. Using a concrete, pictorial and abstract approach, all children are expected to explain their thinking and challenge ideas, using specific mathematical language.

We recognise the importance of fluency to reduce cognitive load. To this end children have daily fluency recall practice and follow a structured programme which strives to embed key skills through the schools KIRFs and Number Sense. In addition, we recognise that frequent revisiting of previous learning will support retention of knowledge and skills. To promote this, daily morning maths activities are presented to pupils.

Pupils needing additional support are identified during lesson, morning maths sessions and end of unit assessments. We ensure suitable strategies are put in place to support these pupils, through 1:1 or small group work and re-teaching of key concepts or skills. Our aspiration is for every child to see themselves as a mathematician - demonstrating a confident attitude towards tackling problems, both in and out of the classroom and understanding the importance of maths in the wider world.

INTENT

I N T E N T	<p>At Porthleven, we believe every pupil should leave school being numerate. Our math's curriculum takes pupils on a coherent journey to ensure that pupils have a sound understanding of the structure of mathematics and how this can be used to solve problems and challenges in different contexts. When teaching mathematics, we intend to provide a curriculum which caters for the needs of all individuals and sets them up with the necessary skills and knowledge for them to become successful. Lesson weave fluency, reasoning and problem solving throughout, providing opportunities to make links with prior knowledge and to challenge pupil understanding.</p> <p>Our aim is for pupils to deepen their resilience and enjoy the process of reasoning and problem solving. They are taught to explain their choice of methods and use mathematical terms with accuracy. We encourage resilience, adaptability, and acceptance that struggle is often a necessary step in learning. We aim for them to leave our school equipped with required mathematical skills to thrive in later life.</p>
----------------------------	---

U n d e r p i n n e d B y	The teaching of skills	High expectations	Identifying Relationships	Vocabulary
	The calculation policy sets out a progression of formal and informal calculations, along with associated concrete and visual representations, which enable children to build on key skills taught in previous years.	All children are expected to succeed and make progress from their starting points.	All children will have opportunities to identify patterns and connections in their math's; founded in the mathematical structures of addition and multiplication. The conservation of number is a fundamental learning point from foundation onwards. Children are encouraged to predict, reason, and explain patterns and relationships.	We intend to create a vocabulary rich environment, where talk for maths is a key learning tool for all pupils. All lessons refer to key vocabulary, and this continues to develop through a teaching sequence. All participants use accurate and appropriate mathematical terms.
	Declarative Knowledge	The teaching of Procedural Knowledge	The teaching of Conditional Knowledge	Mastery

<p>We intend for all pupils to become fluent in the fundamentals of mathematics to reduce cognitive load and promote flexible thinking.</p> <ul style="list-style-type: none"> • Daily Number Sense Sessions (EYFS and Keys Stage 1) Secures rapid recall of number bonds to 10 and deepens understanding using a range of fluency strategies. • Multiplication Tables • KIRFS - a progression of key number facts is followed from Nursery to Year 6. • Daily, morning math's challenges embed previous learning and keep recall of knowledge to the fore. 	<p>We intend for all pupils to be able to use the informal and formal strategies set out in our calculation policy, at an age-appropriate level. There is an understanding that pictorial representations are applicable for both KS1 and KS2. Pupils need to develop an understanding of efficiency, when selecting a particular approach. At times, mental or informal strategies can be the most efficient.</p>	<p>We intend for all pupils to reason mathematically by following a line of enquiry, conjecturing and through exploration, reach generalisations. They should be able to explain how they have reached their generalisations using sound mathematical language and evidence of different approaches to support their justification.</p>	<p>All children secure long term, deep and flexible understanding of key math's concepts and structures, which they can apply across different contexts.</p> <p>We intend that pupil will do more, learn more and remember more</p>
---	--	---	---

I m p l e m e n t a t i o n	<p>Curriculum Approach The curriculum is organised in a linear way, using the White Rose structure. Teachers also refer NCETM PD and RTP materials along with the Maths Shed resources to plan carefully, structured learning journeys.</p> <ul style="list-style-type: none"> • The first part of a lesson the children will complete a set of fluency questions. • In the second part we follow a 'Recap it!' and 'Learn it!' structure. Teachers refer back to previous learning, to assess that the class is ready to move on and then take the children to the next stage of their learning journey. • Pupils then 'Practise' their new learning in the 'Guided Practice' session by tackling carefully structured questions which deepen understanding. A ping-pong approach helps teachers to assess pupil understanding. • Finally, pupils work independently (or with support as required) to complete work on material that have been taught in the lesson. • Pupils who have reached the expected target have opportunities to deepen their understanding further, through carefully chosen challenges. 	<p>Online maths tools In order to advance individual children's maths skills in school and at home, we utilise Times Tables Rock Stars for multiplication practise, application and consolidation and Numbots in ks1.</p> <p>Regular Chromebook practice prepares pupils for National Assessments.</p>	<p>Fluency We start the day with a maths fluency activity based on the Key Instant Recall Facts (KIRFs) and elements which the teacher has assessed needs further practice. These activities are an opportunity for children to consolidate calculation strategies, and to revisit areas already taught.</p>
--	--	--	--

<p>Resources (Manipulatives)</p> <p>We implement our approach through high quality teaching delivering appropriately challenging work for all individuals. To support us, we have a range of mathematical resources in classrooms including Numicon, Dienes and counters (manipulatives). When children have grasped a concept using manipulatives, images and diagrams are used (pictorial) prior to moving to abstract questions. Abstract maths relies on the children understanding a concept thoroughly and being able to use their knowledge and understanding to answer and solve maths without equipment or images</p>	<p>Thoughtful Questioning that encourages deeper thinking about aspects of mathematics. Teachers can refer to the NCETM progression in reasoning to support their question planning.</p> <ul style="list-style-type: none"> • Convince me • Sometimes, always, never • What do you notice? • What is the same and what is different? • Prove it • Spot the mistake 	<p>Continuing Professional Development (CPD)</p> <p>School based Maths professional development continues throughout the year. The Maths lead has been working with a Mastery Specialist from the CODE Maths Hub and shares the collaborative work she has participated in. In addition, Trust Network meetings strive to establish a consistency across the MAT. We recognize the importance of collaboration and the sharing of ideas, for effective professional development.</p>
---	---	---

Assessment

Through our teaching we continuously monitor pupils' progress against expected attainment for their age, making formative assessment notes where appropriate and using these to inform our teaching. Summative assessments are completed at the end of each half term; their results help to update our summative termly school tracker. The main purpose of all assessment is to always ensure that we are providing excellent provision for every child.

We assess and track maths progress using White Rose assessments at the end of each term; teacher assessment for learning occurs on a daily basis as well as the White Rose end of block assessments and the NCETM ready to progress materials. We assess times table knowledge through Times Table Rockstars in Key Stage 2, and number bond/times table knowledge through daily fluency in Reception and Key Stage 1.

Cross Curricular

Maths is taught across the curriculum ensuring that skills taught in these lessons are applied in other subjects.

<p>PUPIL VOICE</p> <p>Through discussion and feedback, children talk enthusiastically about their maths lessons and speak about how they love learning about maths. They can articulate the context in which maths is being taught and relate this to real life purposes. Children show confidence and believe they can learn about a new maths area and apply the knowledge and skills they already have.</p>	<p>EVIDENCE IN KNOWLEDGE</p> <p>Pupils know how and why maths is used in the outside world and in the workplace. They know about different ways that maths can be used to support their future potential. Mathematical concepts or skills are mastered when a child can show it in multiple ways, using the mathematical language to explain their ideas, and can independently apply the concept to new problems in unfamiliar situations. Children demonstrate a quick recall of facts and procedures. This includes the recollection of the times table.</p> <p>Triangulation: Maths Planning - maths books - Foundation planning - foundation stage books - reference to foundation contexts in maths lessons.</p>	<p>EVIDENCE IN SKILLS</p> <p>Pupils use acquired vocabulary in maths lessons. They have the skills to use methods independently and show resilience when tackling problems. The flexibility and fluidity to move between different contexts and representations of maths. Children show a high level of pride in the presentation and understanding of the work. The chance to develop the ability to recognise relationships and make connections in maths lessons.</p> <p>Triangulation: Vocabulary - planning/lesson slides/ pupil books - written recording/pupil conferencing - pupil oracy. (maths books and foundation books)</p> <p>Triangulation: Flexibility Morning maths - choice of strategies- books choice of strategies and explanations - pupil conferencing and lesson observations. Presentation: Book scrutiny</p>	<p>OUTCOMES</p> <p>At the end of each year we expect the children to have achieved Age Related Expectations (ARE) for their year group. Some children will have progressed further and achieved greater depth (GD). Children who have gaps in their knowledge receive appropriate support and intervention.</p> <p>Mastery</p> <p>All children secure long-term, deep and adaptable understanding of math's concepts, which they can apply in different contexts - in line with the 3 aims of the national curriculum, fluency, reasoning and problem solving.</p>
---	---	---	--