St Anthony's Catholic Primary School

An Academy within The Catholic Academy Trust in South Hampshire

'Children in our heart, Christ at the centre'
'We love, we learn and we live'

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Headteacher	Katrina Straker
Maths Lead Governor	Dan Hobin
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Maths Policy

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The St Anthony's mission statement is 'Children in our heart, Christ at the centre. We love, we learn and we live.' To live out this mission, we are guided and led by our Catholic ethos that places the Catholic Social Teaching principles of Human Dignity and the Common Good at the heart of our school. We recognise that each of us is unique and loved by God and we are called to lead by example, as Christ did, to show respect and love to every person because each of us is made in the image of God.

Introduction:
Maths introduces children to concepts, skills and thinking strategies that are essential in everyday life and support learning across the curriculum. It helps children make sense of the numbers, patterns and shapes they see in the world around them, offers ways of handling data in an increasingly digital world and makes a crucial contribution to their development as successful learners. Studying mathematics stimulates curiosity, fosters creativity and equips children with the skills they need in life beyond school (D. Haylock 2010).

Curriculum Intent:
The intent of our maths curriculum at St Anthony's Catholic Primary School is to deliver a fun and interactive curriculum whereby all children develop secure mathematical knowledge and skills, which are utilised and applied across the curriculum. The progression through concrete, pictorial and abstract (CPA) stages of learning together with careful sequencing within each year group, equips children with the mathematical understanding, skills and knowledge reducing maths anxiety in the future.

In addition to building mathematical fluency, our curriculum supports the personal development of each child by promoting perseverance, confidence and a growth mindset - qualities that are deeply rooted in our Catholic values and high expectations. Through collaborative problem-solving and engaging, hands-on activities, children learn to support one another, communicate effectively and take pride in their achievements. Our extensive outdoor space provides further opportunities to apply mathematical thinking in real-world contexts, encouraging exploration and creativity beyond the classroom. This holistic approach ensures that children not only become competent mathematicians but also resilient, reflective learners prepared for future challenges.

The key intentions for the maths curriculum are:

- Intention 1: To nurture and develop **fluency** in the fundamentals of mathematics and the ability to recall and apply knowledge rapidly and accurately through varied and frequent practise.
- Intention 2: To develop **secure conceptual understanding** with clear progression through Concrete, Pictorial and into Abstract stages.

- Intention 3: To teach children to **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing justification using mathematical language.
- Intention 4: To support children to **solve problems** by applying their mathematical skills to a variety of problems breaking them down into a series of simpler steps and persevering in seeking solutions.

Curriculum Implementation:
Equipping children with the skills to be successful is the key purpose behind the sequencing of our curriculum from the Early Years through to Year 6. The order in which we teach the children allows for successful progression in skills and knowledge whilst also providing children with meaningful opportunities to test and reason their thinking. Written methods of calculation will be supported by 'Maths No Problem' and taught in accordance with the School Calculation policy.

The four key curriculum intentions are used to drive the curriculum alongside appropriate evaluated research. The school implements the maths curriculum intentions in the following way:

Curriculum Intent	Research Link	Curriculum Implementation	Curriculum Impact
To nurture and develop **fluency** in the fundamentals of mathematics and the ability to recall and apply knowledge rapidly and accurately through varied and frequent practise.	Disrupted forgetting approach (based on Ebbinghaus' research) - Distributed practice and retrieval practice – research shows these are the two best techniques for transferring information into children's long-term memory. A blog by Cordonia University Portland (2018) stated that as an alternative approach to subject areas that require memorisation with disdain and conflict, teachers can build higher-level critical thinking skills with rote learning (times table facts) as the foundation.	➢ Arithmetic features as part of our daily curriculum to ensure children are offered opportunities to practise discrete skills and overlearn in order to master. These sessions ensure skills are not forgotten, but provide children with the time in order to commit knowledge to their long-term memory. ➢ Times tables are practised daily from Years 2 to 4 with informal teaching in Year 1 and teaching to gaps in table knowledge in Years 5 and 6. ➢ Home Learning Books and TTRS help the children continue to develop fluency at home. ➢ The Big Maths calculation scheme including weekly 'Learn Its' and 'Beat That!' tests support children in developing rapid recall of number facts which supports their mental calculations in lessons.	The curriculum intentions will be met by the children's increasing confidence in mathematics through a process of enquiry and experiment. Our aims will be evident in their ability to express ideas fluently, to talk about the subject with assurance and to use the language of mathematics confidently.
To develop **secure conceptual**	Simon Francis (2018) concluded that recent studies in Hampshire	➢ MNP provides clear steps in teaching Concrete, Pictorial and Abstract stages.	The curriculum intentions will be met by the

understanding with clear progression through Concrete, Pictorial and into Abstract stages.	show the trend of underperformance at age 5 are directly related to underperformance at age 16 and that early mastery is crucial. Michio Kaku (2016) concluded that teaching to a test is not effective. Teaching conceptual understanding promotes success in all areas. Brown & Kane (1989) proved this many years ago in their case study involving pre-school children. Similar to pre-teaching, many studies back up this approach by teaching skills to disadvantaged children ahead of the main lesson. Babcock (2017) recently ran a study to measure the positive effects of teaching pre-skills.	➢ Mathematics in the Early Years exposes children to numbers zero to ten. Children practically explore the four operations within this range of numbers developing clear concepts e.g. "The fiveness of five". ➢ Lessons follow the needs of the children. They generally include both teaching input and pupil activities and a balance between whole class, grouped, paired and individual work. ➢ Underperforming children work on pre-skills for the lesson instead of completing the class input, although there are times when this is appropriate for these children. ➢ The teaching of mathematics will be in line with the whole school Curriculum policy. It will also be compatible with the School aims and mission. The expectation is that the majority of children will move through the programmes of study at broadly the same pace. However, decisions about when to progress should be based on the security of children's understanding and their readiness to move on.	children's increasing confidence in mathematics through a process of enquiry and experiment. Our aims will be evident in their ability to express ideas fluently, to talk about the subject with assurance and to use the language of mathematics confidently.
To teach children to **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing justification using mathematical language.	The quality of children's **mathematical** reasoning and conceptual understanding is significantly enhanced if they are consistently expected to use correct **mathematical** terminology (e.g. saying 'digit' rather than 'number') and to explain their **mathematical** th inking **in complete sentences**. (NCTEM 2018) Where students are encouraged to participate verbally and given space and	➢ Mini plenaries are used with the whole class to address misconceptions, identify progress, summarise key facts and ideas, make links to other work and discuss next steps. ➢ Teachers take every opportunity to ask open questions and encourage children to speak in full sentences. ➢ Teachers make links between relationships and patterns drawing children's attention to similarities, whilst looking at differences in both method and calculation. ➢ MNP provides clear mathematical sentences linked to the learning intention.	The curriculum intentions will be met by the children's increasing confidence in mathematics through a process of enquiry and experiment. Our aims will be evident in their ability to express ideas fluently, to talk about the subject with assurance and to use the language of

	time to reflect upon and discuss complex ideas, **Cognitive gains** include improved results in English, maths and science, the retention of subject-specific knowledge, and 'transference' of reasoning skills across subject areas (Jay et al., 2017)	➢ Teaching staff highlight key mathematical sentences with the children and on the planning.	mathematics confidently.
To support children to **solve problems** by applying their mathematical skills to a variety of problems breaking them down into a series of simpler steps and persevering in seeking solutions.	Alistair Smith (2017) stated that real learning only happens when a learner experiences the feeling of being 'stuck'. He went on to state that good learners practise getting unstuck every day. 'Going Deeper' Andrew Jeffery (2018) also stresses the importance of testing children's conceptual understanding in carried situations to secure their knowledge. Encouraging our children to "**go deep**" in **math** can increase motivation, help them learn how to think and reason, and yes, even make **math** fun! ... Research suggests that the **depth** at which concepts are taught has much to do with a student's competence, confidence, and general attitude toward **math.** Jean Soyke (2016)	➢ Teaching staff will challenge answers and, where appropriate, ask for alternative strategies or explanations. ➢ Teaching staff will seek to ensure that every child has the opportunity to use and apply their mathematical knowledge in challenging contexts on a regular basis. ➢ Teaching staff will respond to individual needs with carefully targeted questioning and feedback. ➢ Teaching staff will use a range of published resources in addition to MNP, TTRS and Number Sense (e.g. nrich and NCETM sites) to enhance their Maths teaching. The children will be given access to ICT to reinforce and consolidate their Mathematical learning. ➢ Pupils who grasp concepts rapidly are challenged through being offered rich and sophisticated problems before any acceleration through content. In line with the High Attainers policy, able learners will attend weekly 'Challenge' maths groups.	The curriculum intentions will be met by the children's increasing confidence in mathematics through a process of enquiry and experiment. Our aims will be evident in their ability to express ideas fluently, to talk about the subject with assurance and to use the language of mathematics confidently.

In Maths, the following approaches will be used, and be evident in pupil discussion, observations and work in books, in order to ensure that the learning opportunities are as effective as possible and that pupils progress throughout the year and across year groups during their maths experiences in school:

Teaching Sequence in Maths:	Big picture: Look at and recap previous knowledge; what have they mastered in this concept previously.
	Allow children to explore concepts with concrete apparatus before moving to pictorial and finally abstract stages of maths calculation and processing.
	Specify key vocabulary to be used and explore its meaning; allow children to speak in full sentences in order to support understanding
	Provide opportunities for the children to work interactively with peers and teaching staff in order to justify and reason mathematically.
	Individual reflection on the learning; what have they mastered? What next?

In Maths, like all other subjects, we recognise the importance of the methods and practice of teaching (the pedagogy) we choose to use in enabling pupils to know more, understand more and remember more.

Possible pedagogical approaches used in Maths:	**Behaviourism**	Direct teacher instruction; modelling of skills and techniques; demonstration (including manipulating concrete resources).
	Constructivism	Inquiry-based learning; open ended problem solving
	Social Constructivism	Teacher modelling; questioning; mix of individual, paired and group instruction
	Liberationism	Pupil-led learning; opportunities
	Learning, working and talking about Maths:	Being introduced to the key vocabulary relating to maths so that all children can confidently articulate their ideas, knowledge and skills.

ROLES AND RESPONSIBILITIES:
The role and responsibilities of the Maths leader is to:

- allocate and monitor the effective use of resources within a delegated budget
- monitor standards to ensure high quality teaching and learning. This may include staff training, pupil discussion, work scrutiny, learning walks and moderation of work
- involve staff in the development of the subject within school

- keep staff informed of developments within maths
- ensure the school follows National Curriculum guidelines
- support the needs of staff and parents in regards to maths
- evaluate the needs of the school and develop plans to meet those needs
- promote a positive attitude to maths across school
- liaise with external groups and individuals in relation to standards in the maths
- be accountable for the standards within the maths.

The role and responsibilities of class teachers are to:

- identify opportunities to embed maths across the curriculum as appropriate
- provide opportunities for all pupils to use a range of concrete resources in the classroom and across the school
- ensure reasonable adjustments are taken to ensure all pupils can access the maths curriculum through resourcing, scaffolding and deployment of teaching staff
- evidence teaching and learning as appropriate to the Maths No Problem scheme of work
- make informed judgements of pupil attainment in maths.

Maths Non-negotiables:

Non-negotiables for each year group are set out and class teachers must ensure every child meets these before moving into the next year group/key stage.

Maths across the curriculum:
In order to prepare pupils for using maths in the wider world, we actively encourage them to make use of their skills within their wider learning. Maths skills are consolidated and enhanced when pupils have opportunities to apply and develop them across the curriculum. Poor maths skills hold back pupils' progress and can lower their self-esteem. Improving these skills can be tackled on a whole school basis by ensuring mathematical skills are used across the curriculum so that pupils become confident at tackling maths in any context.
Gary Hall (2017) Using maths across the curriculum could range from data handling in Geography, pattern spotting in art, reading scales and measurements in science and DT. It is the role of class teachers to find these opportunities wherever they may arise in their planning.

Monitoring and Assessment
Maths summative assessments take place each term. Years 1, 2, 3, 4 and 5 complete Maths no Problem assessments in the autumn, spring and summer terms to assess their reasoning and arithmetic capabilities.
Year 6 pupils sit past SATs papers at 3 intervals across the autumn and spring term, before their SATs tests in May.
These summative assessments along with on-going teacher assessments inform pupil progress discussion and interventions.

Children complete weekly arithmetic style tests from 'Big Maths Beat That' and have the opportunity to access TTRS, which help teachers to track and evaluate gaps in their arithmetic fluency. These gaps are addressed in daily arithmetic teaching and help teachers write Action Plans for maths, interventions for individuals or groups of children, as well as how to extend higher-achieving pupils.

In addition, children practise their retrieval practice arithmetic fluency through daily home overlearning and TTRS. Parents are invited to coaching sessions on mathematical fluency skills to enable them to support their child/ren at home. Achievements on TTRS are celebrated in the weekly Assembly.

Related policies:
This mathematics policy also relates to the school's: Equal Opportunities; SEND; Curriculum; High Attainers; Marking; Homework and Assessment policies as well as other guidance issued to teachers, for example the Staff Handbook, and should be read in conjunction with these.