

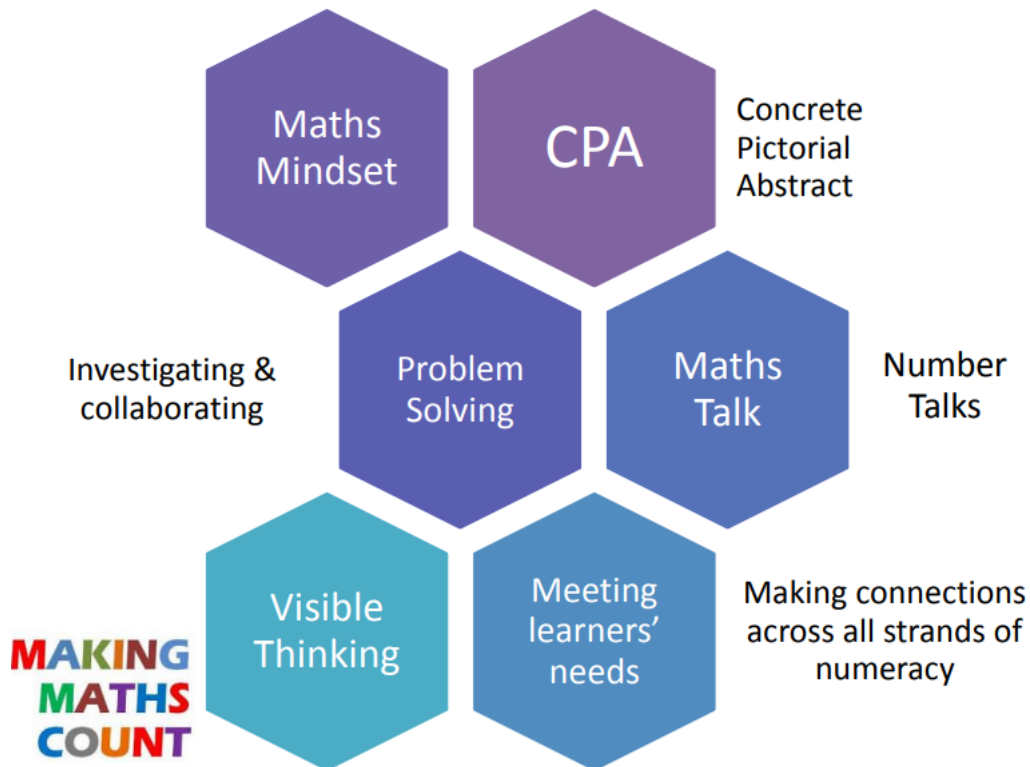


# Mathematics & Numeracy

## Rationale

All staff at St. Patrick's Primary School are committed to educating children to the highest possible standard and ensuring each individual realises and fulfils their potential. We have embraced and continue to embed the, 'Glasgow Counts' approach to Numeracy and Mathematics throughout all stages in our school.

### GLASGOW COUNTS



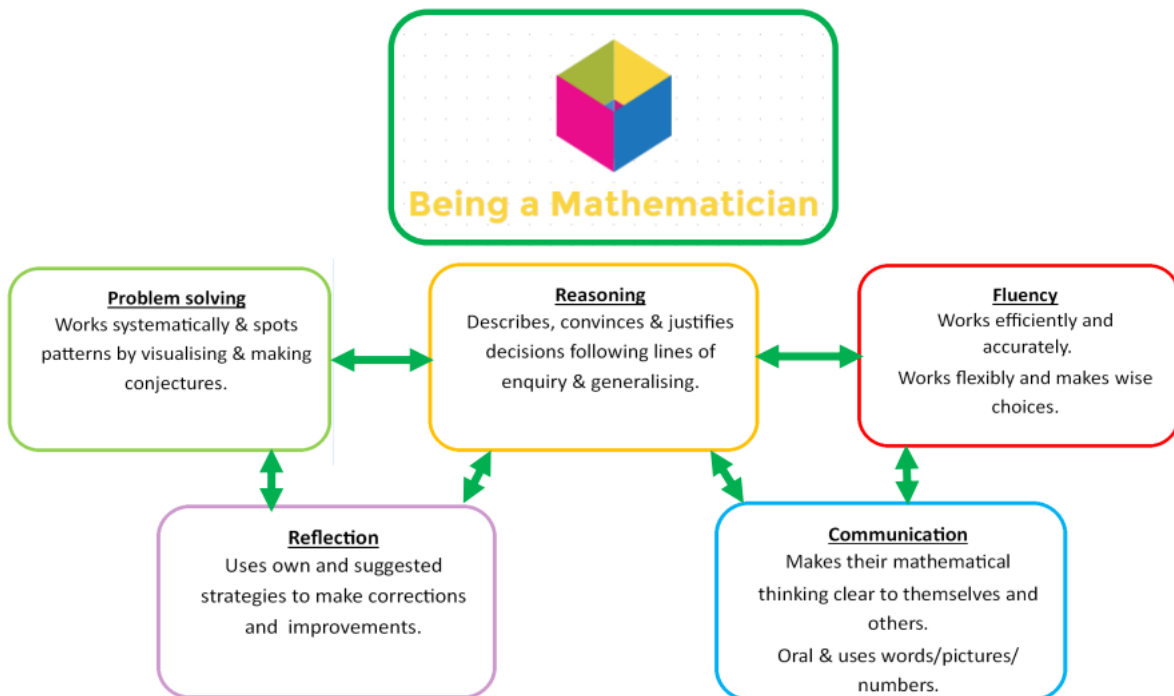
*"Our fundamental aim is to fill our young minds with a sense of agency and endow them with the motivation, courage and belief in their power to influence their own futures. We are driven by a commitment to create pathways to enable all stakeholders to possess skills for life, learning and work."*

Glasgow Counts



# Guiding Principles of Policy

Society requires young people who are sophisticated mathematical thinkers, pattern spotters and problem solvers. At St. Patrick's Primary, we aim to empower our young people as mathematicians and to provide opportunities for learning that promote deep knowledge, understanding, curiosity and engagement.



*“Children and young people have the right to education no matter who they are.”*  
*“Children’s education should help them fully develop their personalities, talents and abilities.”*

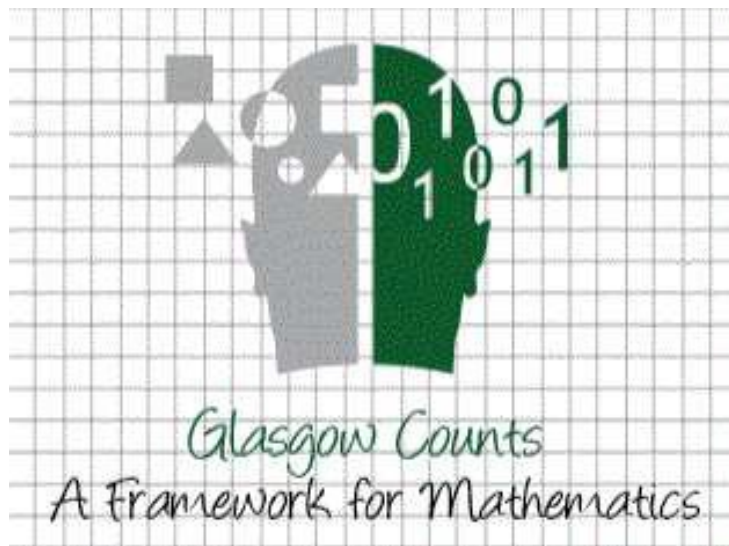
(UNCRF, Article 2,3, 28 & 29 online)



# Aims

At St. Patrick's Primary, our aims are:

- ✓ to use the CPA approach to develop conceptual understanding
- ✓ to develop problem solving, reasoning and fluency
- ✓ to create mathematical mindsets
- ✓ to develop mastery learning
- ✓ to engage in Maths Talk
- ✓ to meet the needs of all learners
- ✓ to encourage family learning in the area of Numeracy and Mathematics



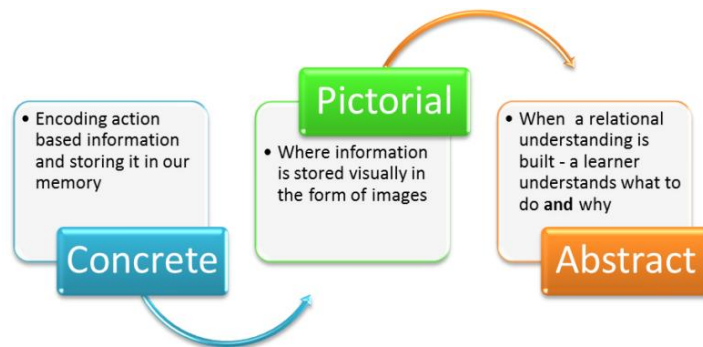
At St. Patrick's Primary, we utilise the Glasgow Counts framework to carefully and coherently plan Numeracy and Mathematics lessons. The framework has been divided into curriculum organisers, in line with the Curriculum for Excellence Experiences and Outcomes.

Progression in Numeracy relies on learners developing an understanding of the intrinsic links across each of these organisers and as such, links can readily be made to other areas of the curriculum when teaching and developing numeracy and mathematics skills.



# Concrete Pictorial Abstract (CPA) Approach

At St. Patrick's Primary, we adopt a Concrete Pictorial Abstract (CPA) approach to teaching Numeracy and Mathematics. CPA is an approach based on the work of Jerome Bruner (1960). Bruner's premise was that children's conceptual understanding develops from being actively engaged in their learning and making sequential process through three stages of representation: Enactive, Iconic and Symbolic (mapped onto Concrete, Pictorial, Abstract respectively). Each stage builds upon the previous one and ensures our children do not simply rote learn concepts: they actively demonstrate understanding of a concept through concrete materials and pictorial representations leading to a fluent abstract approach characterised by efficient methods.

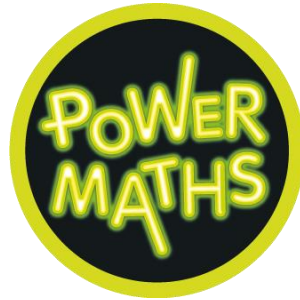


Concrete	Pictorial	Abstract
		$3 + 2 = \boxed{5}$



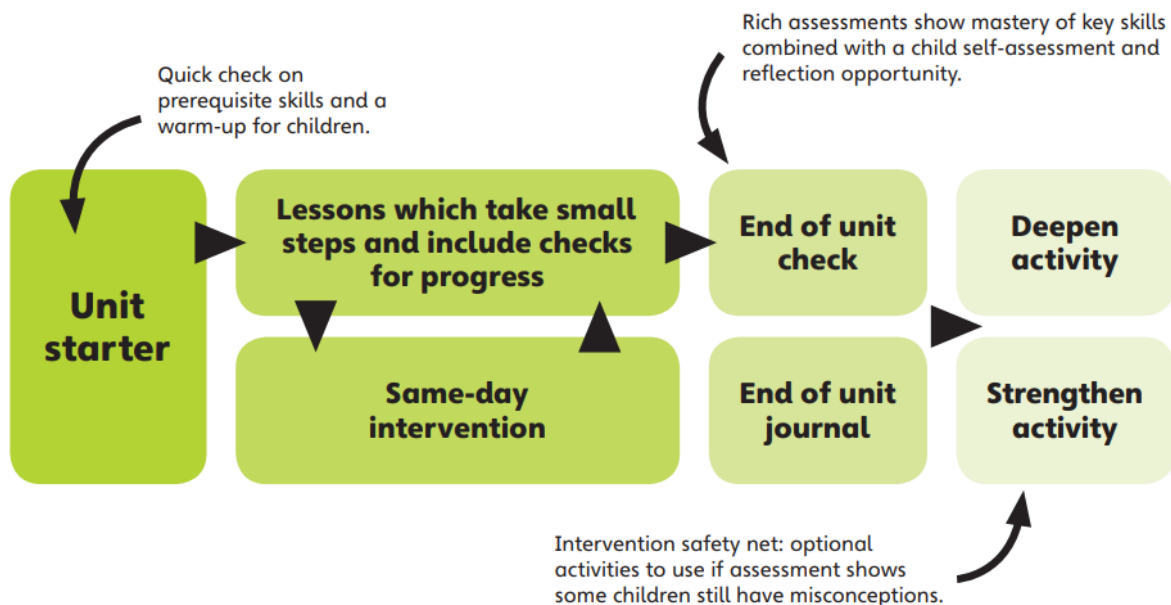
# Power Maths

To support our Glasgow Counts CPA Approach to teaching Numeracy and Mathematics, we currently utilise, Power Maths, across all stages of the school.



*'Power Maths is a mastery resource that empowers every child to understand and succeed. Power Maths rejects the notion that some people simply 'can't' do maths. Instead, it develops growth mindsets and encourages hard work, practice and a willingness to see mistakes as learning tools.'*

At the heart of Power Maths is a clearly structured teaching and learning process which aims to enable educators to ensure each child masters concepts deeply and securely.





# Growth Mindset

At St Patrick's Primary, we are firm believers in nurturing a, 'Growth Mindset' with our children. Mindset – the thinking that determines our beliefs and behaviours – therefore has a fundamental impact on teaching and learning. Power Maths and the CPA approach focus on the distinction between 'fixed' and 'growth' mindsets (Dweck, 2007). We actively encourage and celebrate mistakes within our establishment, as this allows our children to freely express and openly share their thinking, therefore promoting rich mathematical discussion and reasoning.

## Roles and Responsibilities of Parents



*"Governments must respect the rights and responsibilities of parents and carers to provide guidance and direction to their child as they grow up, so that they fully enjoy their rights. This must be done in a way that recognises the child's increasing capacity to make their own choices".* (UNCRC, Article 5, online)

**Parents can support the school in the promotion of a growth mindset in Numeracy and Mathematics by using the following as a guide:**

Fixed mindset	Growth mindset
"I'm not good at maths – I've never been good at maths"	"I'm finding maths hard now, but I can improve with time and effort"
"I give up – I can't make this any better"	"I can improve if I keep trying"
"If I fail I am a failure"	"Most successful people fail along the way"
"I can't do this – I keep making mistakes"	"Mistakes help me learn"

Outlined on the following pages, are some of the approaches and resources we use to teach Addition, Subtraction, Multiplication and Division.

# ADDITION

+	Concrete	Pictorial	Abstract
Part Whole Models			
Number lines			
Ten Frames			
Base-ten blocks			
Place Value Counters			



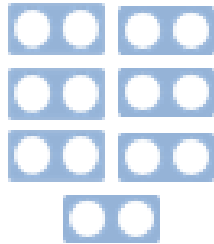

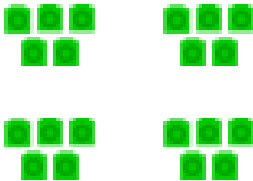
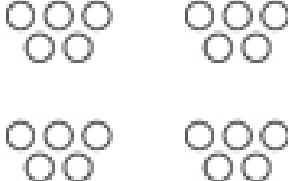
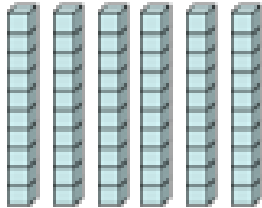
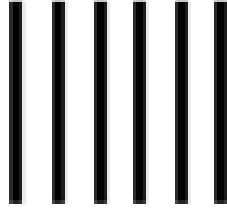

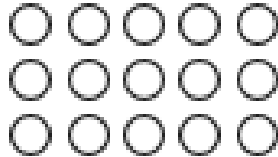
# SUBTRACTION

I	Concrete	Pictorial	Abstract
Numicon			$\boxed{5} - \boxed{3} = \boxed{2}$
Number lines			$\boxed{4} - \boxed{3} = \boxed{1}$
Ten Frames			$\boxed{12} - \boxed{3} = \boxed{9}$
Base-ten blocks			$\boxed{34} - \boxed{13} = \boxed{21}$
Place value Counters			$\boxed{40} - \boxed{10} = \boxed{30}$ $\boxed{3} - \boxed{1} = \boxed{2}$ $\boxed{43} - \boxed{11} = \boxed{32}$



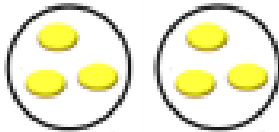
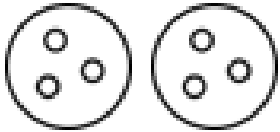
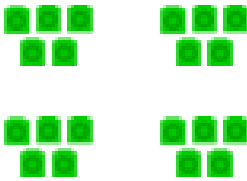
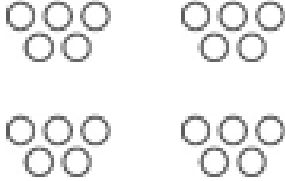
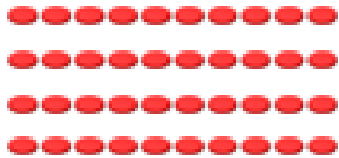



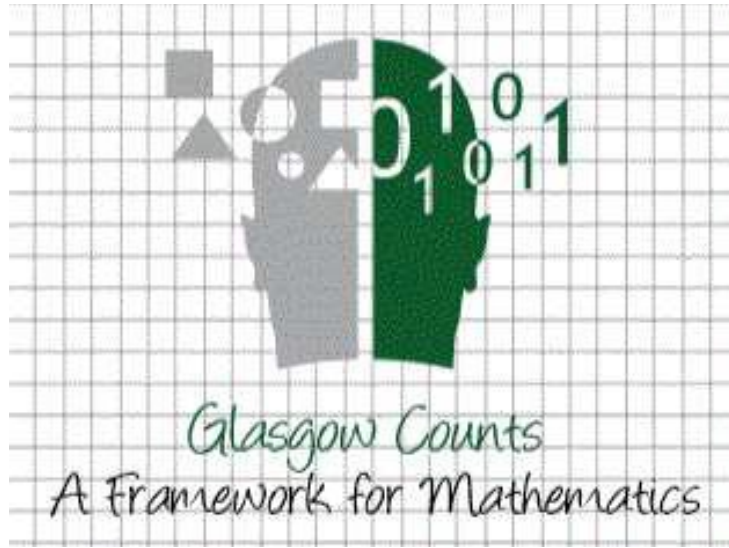
# MULTIPLICATION

✖	Concrete	Pictorial	Abstract
Numicon			$\boxed{7} \times \boxed{2} = \boxed{14}$
Cubes			$\boxed{4} \times \boxed{5} = \boxed{20}$
Base-ten blocks			$\boxed{6} \times \boxed{10} = \boxed{60}$
Arrays			$\boxed{3} \times \boxed{5} = \boxed{15}$



# DIVISION

+	Concrete	Pictorial	Abstract
Sharing			$\boxed{6} \div \boxed{2} = \boxed{3}$
Grouping			$\boxed{20} \div \boxed{5} = \boxed{4}$
Arrays			$\boxed{40} \div \boxed{10} = \boxed{4}$



mindset

empowered

progression

number talks

reason

problem solve

cpa

active

collaborative

justify

choice

growth

clarify

consistent

