



St. Andrew's Primary School & Nursery Class



Maths Policy

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Purpose

“...teachers’ knowledge of mathematics for teaching must be like an experienced taxi driver’s knowledge of a city, whereby one can get to significant places in a wide variety of ways, flexibly and adaptively.” (Ma, 1999, p. 123)

We want to ensure teaching is consistent; making all lessons at least good with many outstanding, so that every pupil receives a good mathematics education. Our ambition is to raise attainment significantly with equitable approaches to bridge the poverty gap that exists with some of our children.

Aim

We aim for all of our children to be strong mathematicians because they:

- Have a strong conceptual understanding of maths; its structures and its relationships
- Can recall and apply their knowledge confidently and efficiently
- Are secure in using written methods for which they have a clear understanding

We aim to place problem solving and investigative skills at the heart of our mathematics teaching.

We recognise that collaboration and communication are crucial life skills and should be developed in our mathematics teaching.

The expectation is that all children welcome challenge and that teachers foster the attitude that we all, even the most able among us, should expect to struggle.

Through careful assessment, planning and preparation we aim to ensure that all children progress when they are ready. New knowledge and skills should be secured before new material is introduced. For those who grasp new material quickly, they should apply this to rich problem solving tasks.

Teaching and Learning

All teaching must be at least good and in many cases outstanding.

Underpinning all good or outstanding teaching in mathematics is the expertise and sound subject knowledge of the staff.

Clear policies and regular professional development from a range of sources will develop the expertise of staff to help:

- in delivering the school’s curriculum thoroughly and consistently
- in enhancing staff subject knowledge
- in weaving mathematical ideas into a coherent whole
- in choosing practical resources, visual images and information and communication technology that promote inclusive teaching and a deeper understanding for all
- in using good Assessment for Learning techniques to listen flexibly to children and to check and probe their understanding throughout

See also our Teaching and Learning policy.



Inclusion

The following principles inform and guide our policy and practise:

- meeting the diverse and complex needs of each and every individual is embedded in everything that we do as a whole staff
- it is the responsibility of the school to enable the child to access and make progress through the curriculum
- equal opportunities is not the same as equal provision
- **Bridging the poverty gap through targeted support using informed data and creating next steps**

For every child to be able to participate we must know each of them as individuals. For children with 'Additional Needs' teaching must be closely linked to their ASP targets.

We respond to children's diverse learning needs by:

- Creating effective learning environments
- Securing their motivation and concentration
- Providing equality of opportunity through a range of teaching approaches and modifying these for individual needs
- Using appropriate assessments
- Setting targets for learning
- Teaching more able children with their own class and extending their learning through differentiated group work, extra challenges and opportunities for independent learning.

Where appropriate, special arrangements are made for an exceptionally gifted child e.g. they may be taught with children from a higher age range or may follow an individualised programme with more challenging problems to tackle.

See also our Inclusion policy.

Curriculum

The school works to the expectations set out the Curriculum for excellence document and Benchmarks set as well as the NLC Mathematics pathway. We do not follow a specific scheme of work, rather St. Andrew's curriculum for mathematics is tailored to meet the individual needs of each cohort and to fulfil our ambition for the children by the time they leave us.

The school's curriculum places an emphasis on rich, applied mathematical tasks which allow the children many opportunities to persevere with problem solving. While some maths needs to be taught discretely, there is an emphasis on giving the maths a context so there is purpose for learning.

Using the school environment and the wider world, the curriculum ensures children explore, make connections, seek patterns, recognise relationships and are creative with mathematics. A good understanding of place value and key number facts is extremely important therefore we encourage use of a wide range of practical equipment to support this conceptual development including Numicon, Base Ten, Counting Sticks, number lines, one hundred squares and much more.

Throughout all stages, children play with numbers, measures, shapes and patterns to develop numerical awareness and explore the idea of 'proof.' We promote mathematical games that involve point scoring and personal bests (both electronic, and 'hands on') as we know that if managed properly this is highly motivating.



Planning

Teachers plan for deep coverage and mastery of the school's curriculum through both daily maths lessons and additional opportunities to develop mental maths skills.

Plans for daily maths lesson include teaching, practising, applying, and reviewing and cater for all learning styles (Visual, Aural and Kinaesthetic). Children's targets are at the forefront of all planning and are clearly linked to and reviewed through regular assessments.

Lessons include opportunities for

- practical activities and mathematical games
- problem solving
- individual, small group and whole class discussions
- open and closed tasks
- a range of methods of calculating e.g. mental, paper and pencil and calculator
- working with ICT
- outdoor learning

Plans should follow our school forward planners from early to 2nd level. Daily lessons should follow the format in appendix 1.

Classes are mixed ability and the groups within classes are fluid. Teachers will use a range of grouping methods when planning. **No children miss out on the daily mathematics lesson for the class as it is crucial they have access to Quality First Teaching.**

Resources

Children become fluent in mathematics when they have lots of 'hands on' experiences. Therefore, children and staff draw on a wide range of practical resources in order to develop the conceptual understanding of maths; its structures and its relationships. This then helps children move smoothly to abstract representations and recorded methods. Good use of resources also helps make the learning more interesting.

The number talks toolkits is used throughout the school. This is a short, ongoing daily routine that provides students with meaningful ongoing practice with computation. Number Talk is a powerful tool for helping students develop computational fluency because the expectation is that they will use number relationships and the structures of numbers to add, subtract, multiply and divide.

Number Talks should be structured as short sessions alongside (but not necessarily directly related to) the ongoing math curriculum. It is important to keep Number Talks short, as they **are not intended to replace current curriculum or take up the majority of the time spent on mathematics**. In fact, teachers need to spend only 15 minutes on Number Talks. Number Talks are most effective when done every day. Key vocabulary for the stages is included in Appendix 2-4 and should be displayed in class.

See Number Talks Procedure

Although there is no core resource generally teachers use Scottish Heinamm Textbooks and workbooks in P1-2 and teacher files to support written calculation activities. TJ maths is used to support or extend and enrich learning. Active Maths is also used to support practical work.



Assessments

All assessment is used to inform teaching and learning. We identify children's understanding and then swiftly focus interventions to overcome misconceptions.

At St Andrew's we assess children in six main ways:

- Assessment for learning: continuous ie Marking: daily/weekly
- Termly monitoring and tracking of experiences and outcomes – leading evaluations
- Self/peer/teacher assessment
- Termly Assessing Pupil Progress (holistic assessments) – kept in assessment file
- Authority, government testing
- Teacher judgement Assessments: annually – SMT Monitoring & tracking meeting

Teachers, monitor and track against the curriculum for excellence experiences and outcomes. All assessment results are kept in the year group assessment file and progression is monitored over 9 years. That is nursery to P7. Towards the end of the school year we assess and review pupils' overall progress and attainment by drawing upon holistic assessments and their class record of attainment against the benchmarks.

Accurate information is then reported to parents and the child's next teacher.

See also our assessment policy

The role of teaching assistants

We have two of our classroom assistants trained in 'Catch Up Numeracy' who work one-to-one with children struggling with mathematical processing.

As well as this Teaching Assistants are actively involved in teaching small groups within lessons and in providing intervention sessions. They support all groups in the classroom, enabling the teacher to also work with all groups on a weekly basis. They offer sensitive support and are expected to modify tasks, materials and teaching resources as required.

They demonstrate initiative in using practical resources to support learning and help pupils overcome difficulties, for example by using strings of counting beads to aid early multiplication. They are careful not to over-direct pupils' learning.

They spot misconceptions and gaps in learning, and take responsibility for assessing pupils in their groups, and help to identify the next steps and plan subsequent activities with the class teachers. They participated in reviewing pupils' progress and were particularly effective in identifying and supporting personal problems that presented barriers to learning.



Use of ICT

The role of technology in the our mathematics curriculum is to motivate and engage children and support children in analysing and communicating. This may include, IPad, interactive ‘smartboards’, computers, bee-bots, programming tools and devises etc.

Calculators should be used throughout the school to promote play, exploration and fun with number. They may also be used at the teacher’s discretion for children to check their own work.

Where there are barriers to learning / children who find mathematics difficult

At St Andrew’s we have the highest expectations for all children. We act early to secure the essential knowledge and skills of the least able. In conjunction with the leadership team, notably the principal teachers and class teachers are encouraged to reflect on why these barriers exist in the first place, what can be done to prevent them arising in future.

Where gaps need to be closed for individuals or groups, we run a programme of interventions. The intervention used will depend on the nature of the difficulty for the child/ren.

However, our principal interventions are *CatchUp Numeracy and TJ maths*. The impact of these is monitored and regularly reviewed.

Leadership

Developments in maths are the focus of School Improvement Planning Working Groups. Our Maths Champion must always be an outstanding practitioner in their own right in order to lead by example. To tackle barriers and ensure consistency.

SMT are responsible for:

- Monitoring teaching and learning through lesson observations, work scrutinise and pupil progress reviews
- Using the information gathered from data analysis to improve teaching and the curriculum
- Robustly challenging weak teaching and identifying what support or development is needed.
- Mapping interventions and deploying support staff effectively
- Assisting with individual and group target setting and ensure progress against these targets is effectively shared with parents
- Preparing and organising INSET as necessary
- Raising standards in Mathematics across our school and maintaining the high profile of mathematics in the School Improvement Plan.
- Involvement in implementing new initiatives
- Involvement in moderation within cluster and across the authority as well as nationally.



Appendix 1

Mathematics lesson Structure Guide

Monday – Thursday Mathematic Planning				
Approx. Time	Activity			Suggested Resources
5min	Learning Intentions Displayed and Discussed			
10min	Mental Maths			Mental maths books Mental maths planners Have a go boards markers Number fans Clock faces Songs, Rhymes, Raps Flashcards
15mins	Number Talks Mental Agility			Number Talks Book Strategy Posters Displayed SmartBoard, Whiteboard, Hands-On resources, Jottings Jotter, Empty Number Lines, DreamBox Website has interactive mental agility strategies (*see link below)
	Group 1	Group 2	Group 3	<ul style="list-style-type: none"> • Maths Recovery/ SEAL – Direct Teaching resource • Number Box – 15 min every day can be out with maths time – red group. Teacher must monitor progression through blue planner. • Heinemann Teaching book must use teacher file • Extension books • Active maths – practical activities
	Revisit Learning Intention & Prior Learning			
15min	Practical Activities	Recording activities	Direct teaching	
15min	Recording activities	Direct teaching	Recording activities	
15min	Direct teaching	Practical Activities	Practical Activities	
15min	Plenary Teacher/peer/self assessment To include what we have learned What we will be learning Discuss Homework Can be taken outside should vary throughout the week			Word Problem, Use of Formative Assessment techniques, Blooms-style Questioning, Plenary Dice

Friday Mathematic Planning		
Approx. Time	Activity	Suggested Resources
5min	Learning Intentions Displayed and Discussed	
15min	Mental Maths tests 2 groups Tables test	Recorded at the Back of jotters
15mins	Number Talks Mental Agility	Number Talks Book
10min	Problem Solving Teaching skills – RACE CAR	RACE CAR Display PP
15min	Problem Solving/ Word problems – training for holistic assessments	Problem Solving disks Holistic assessments
Fast Finishers	Extension Tasks Available	Extension books Maths cards
15min	Plenary Teacher/peer/self assessment To include what we have learned What we will be learning Discuss Homework Can be taken outside should vary throughout the week	

N.B ICT must be include at some stage in the lesson.

Formative Feedback should be evident throughout and in assessments using 2 stars and a wish



Mental Strategies P1-2



When working with numbers, I can use...

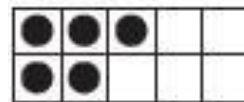
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

✓ Counting All

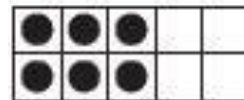
✓ Counting On



✓ Dot Images

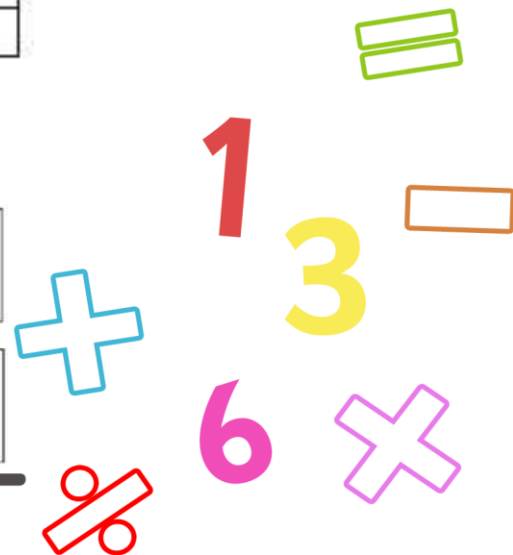
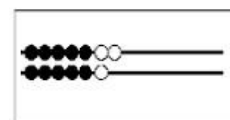
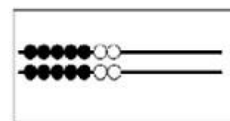


✓ Ten-Frames



✓ Double Ten-Frames

✓ Rekenreks



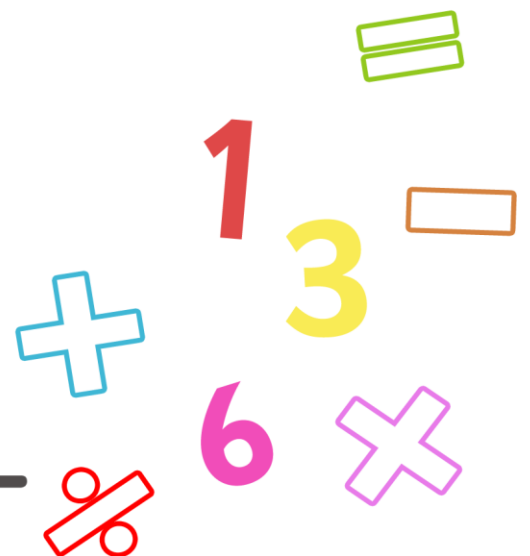


Mental Strategies P3



When working with numbers, I can use..

- ✓ Counting All/On
- ✓ Doubles/Near Doubles
- ✓ Making Tens
- ✓ Friendly Numbers
- ✓ Break into Place Value
- ✓ Compensation
- ✓ Adding Up in Chunks
- ✓ Adding Up to Subtract
- ✓ Counting Back





Mental Strategies P5-7



When working with numbers, I can use...

Addition



- ✓ Doubles/Near Doubles
- ✓ Making Tens
- ✓ Friendly Numbers
- ✓ Break into Place Value
- ✓ Compensation
- ✓ Adding Up in Chunks

Subtraction



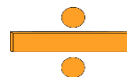
- ✓ Adding Up
- ✓ Counting Back
- ✓ Place Value & Negative Numbers
- ✓ Adjusting one number to Create an Easier Problem

Multiplication



- ✓ Repeated Addition
- ✓ Friendly Numbers
- ✓ Partial Products
- ✓ Doubling/Halving
- ✓ Breaking Factors into Smaller Factors

Division



- ✓ Repeated Subtraction
- ✓ Sharing Out
- ✓ Partial Quotients
- ✓ Multiplying Up
- ✓ Proportional Reasoning

