Mathematics Policy

‘Love bears all things, believes all things, hopes all things, endures all things.’

1 Corinthians 13:7

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THE NATURE OF MATHEMATICS

"Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject."

(The National Curriculum for Mathematics 2014)

MATHEMATICAL INTENT

At All Saints Primary we believe that Mathematics is a tool for everyday life. It is a whole network of concepts and relationships which provide a way of viewing and making sense of the world. It is used to analyse and communicate information and ideas and to tackle a range of practical tasks and real life problems. Our pupils experience maths in a range of contexts and within other subjects by providing a rich and broad curriculum. Mathematics provides the materials and means for creating new imaginative worlds to explore. We want our pupils to be confident mathematicians who are not afraid to take risks, be fully prepared for their next stage in education and ultimately, function effectively in the wider world.

This journey begins in the EYFS where the children explore mathematical patterns and begin to understand the importance of number and learn foundational key skills and knowledge. They are encouraged to investigate, question and taught how to problem solve when exploring different concepts. This is built upon throughout KS1 and KS2 through the National curriculum by following the White Rose maths smalls steps which encourage the pupils to be fluent in key skills and knowledge to enable them to problem solve and reason about maths with confidence.

MATHEMATIC IMPLEMENTATION

Using the Programmes of Study from the National Curriculum for Mathematics we aim to develop:

- An enjoyment and curiosity of mathematics and for children to feel confident to become successful;
- Children's abilities to use and apply mathematics to solve problems in both the classroom and in 'real life' contexts;
- A confidence to communicate ideas in written form and orally;
- Independent and collaborative ways of working, encouraging children to share ideas and solve problems together;
- A wide range of mathematical vocabulary to be modelled and used in the classroom environment;
- The children's ability to recall mental facts accurately and quickly and using effective written calculation methods;
- Children's logical thinking, reasoning and ability to problem solve as transferable life skills.

Teaching 'Quality first teaching' linked to teaching standards:

All teachers:

1. ‘Know where their children are’ through the use of concise summative assessment, prior learning, assessment, maths talk
2. ‘Understand where their children need to be’ through a secure understanding of year group expectations and/or pre key stage expectations and incisive, ongoing, formative assessment
3. ‘Know how they are going to get them there’ through the use of a range of strategies to promote independence, mastery and high expectations of ALL. Work is differentiated and appropriate support and interventions are deployed at the earliest stage.
4. Effectively deploy adults, specifically during introductions, plenaries & catch-up sessions
5. Plan for progression during and between lessons.

Learning ‘Quality first learning’
We work as a team to ensure all of our children:
1. are school ready
2. feel safe & secure
3. are supported by effective classroom routines
4. are emerged in an engaging environment
5. have a clear understanding of the high expectations set for them
6. have high expectations of themselves
7. are confident in their mathematical learning
8. feel ready and excited to be challenged
9. are independent learners
10. are effective critical friends

MATHEMATICAL IMPACT

We our nurturing and supporting our children to become mathematically literate and we aim to develop confident learners who can apply knowledge and skills to a wide variety of concepts within lessons and real-life contexts. Children develop the flexibility and fluidity to move between different contexts and representations of mathematics and the ability to recognise relationships and make connections. A mathematical concept or skill has been *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 also learn the importance of maths in further education, in employment and living in the real world to enable them to have the necessary knowledge and skills to function effectively in real life.

Through the implementation of our maths curriculum design, we want all children to make good progress from their starting points and have the confidence to complete tests and achieve well in them. Disadvantaged and SEND pupils make accelerated progress through the effective and timely implementation of early targeted support and interventions.

TEACHING AND LEARNING

Each class teacher is responsible for the mathematics in their class in consultation with and with guidance from the mathematics subject leader. There is a daily mathematics lesson of between 45 and 60 minutes or KS1 and KS2 and a daily focussed 15-minute session for EYFS. A typical lesson involves all classes following the White Rose Scheme of learning which focuses on core topics and small steps learning to build deep understanding. Although, in key year groups (Y2 and Y6), teachers

need to be fully aware of the Teacher Assessment Framework objectives and ensure coverage of these throughout the year in addition to the White Rose timetable of coverage.

During these lessons children engage in:

- The development of mental strategies
- Written methods
- Practical work
- Investigational work
- Problem-solving – including regularly choosing challenges linked to the topic. These are differentiated through providing the children with bronze, silver or gold levels, which they then decide themselves which level they want to complete.
- Mathematical discussion using precise mathematical language.
- Consolidation of basic skills and routines

In addition to the daily maths lessons, teachers will provide daily opportunities to practice key mental strategies to develop the confident, instant and fluent recall off key facts – *Fast Maths*. In EYFS this is covered through verbal questioning through the day and at the beginning of each lesson. KS1 follow a White Rose Maths scheme called *Fluency Bee* which is a programme designed to cover key skills and knowledge that the children need to be able to recall instantly, therefore, allowing more time to be spent on working out how to solve the problem. KS2 classes adapt a different approach to promote independent learning and will have a choice of completing either bronze, silver or gold level of mental maths activities.

Teachers of the EYFS ensure the children learn through a mixture of adult led activities and child initiated activities both inside and outside of the classroom. Areas of provision within the classroom support maths, ensuring children are able to access throughout the day to practise and develop skills being taught. This is done through a teaching and learning strategy called ‘In the moment planning’. This is a cycle of observation, assessment and planning. Observations will be carried out on a moment by moment basis, with a few focus children each week who receive extra attention. However, all children will be busy and learning all the time through the areas of provision provided.

Children’s Records of Work

Children are taught a variety of methods for recording their work and they are encouraged and helped to use the most appropriate and convenient method of recording. Children are encouraged to use mental strategies before resorting to a written method. All children are encouraged to work tidily and neatly when recording their work. When using squares one square should be used for each digit.

EYFS record informally within the setting. For example: - on the playground - on whiteboards - using jigsaws - physically ordering numbers. Staff in Foundation use photos and annotations to ensure records of each child’s achievements are maintained and cross referenced with the new framework. This is recorded on an app called Family and can be shared with parents . They move towards a squared book to record their work when the teacher feels is an appropriate time. This can be used when working with an adult, or when working independently.

In EYFS 2cm exercise books are used. In KS1 and LKS2 1cm square exercise books are to be used. This changes to 7mm square exercise books in UKS2

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Planning

The National Curriculum for Mathematics 2014, Development Matters and the EYFS Framework(2021) provide the long term planning for mathematics taught in the school. Teachers will

also follow the calculation policy appropriate to their year groups stage of development, to ensure consistency and effective teaching methods across the school.

EYFS use the Reception White Rose long and medium term planning, with Years 1-6 using the mixed –age White Rose schemes of learning. This provides a detailed, structured curriculum which is mapped out across all phases, ensuring continuity and supporting transition. Staff in Y2 and Y6 are also fully aware of the Teacher's Assessment Frameworks, which they need to ensure are covered throughout the year alongside National Curriculum objectives.

Short term planning is recorded on an Interactive Whiteboard flipchart (Activ Inspire). These plans identify the areas of learning and lesson objectives; key vocabulary; teaching input and independent activities. They are placed on the planning file on the server each week.

Resources

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In order to support the delivery of maths lessons to all children the school has a large range of resources available. Within the classroom maths resources are available to children at all times, these include basic resources such as number lines, 100 squares, rulers, counters, numicon, etc. Other specific resources (eg, balance scales, metre rulers) are made available as required.

We recognise the importance of a stimulating learning environment. The school provides an environment, which is rich in a wide variety of print, pictures, diagrams, charts, tables, models and images. Each classroom has a mathematical display area, which includes a working wall with mathematical vocabulary, visual aids and interactive activities where appropriate. This is updated regularly in accordance with the area of maths being taught at the time.

Assessment, Feedback and Record Keeping

- Short term
  Children's classwork is assessed frequently through regular marking, analysing children's errors, questioning and discussion. Children's work is marked and feedback is given with next steps as in line with the marking and feedback policy.
- Medium Term
  Each term children in each class are assessed. In years 1- 6 teacher judgements against the skills grids –' learning journeys' (stuck in the back of books) are recorded at the end of each term with NTS tests being used alongside to attain a standardised score. The standardised scores are recorded at this time for progress to be measured. These materials are used alongside judgements from class work to form a teacher assessment for each child. Assessment grids are used to track progress against each objective. In the EYFS, teachers use their observations to make a judgement against the mathematics area of learning and development. These judgements are then fed into the whole school tracking system. A moderating meeting to review the accuracy of these judgements is held each term with the other staff members at scheduled staff meeting time. Governors are given a written report of analysis of results at their next meeting.
- Long Term
  The following tests are also carried out annually:
  - SATs at the end of Y2 and Y6
  - Multiplication check at the end of Y4
  - The children are assessed in the early years using the Foundation Stage Profile

Contribution of Maths to teaching in other curriculum areas

Mathematics is a tool for everyday life. It is a network of concepts and relationships and is used to analyse and communicate information and ideas in practical tasks and problems. By making links to other subjects at the initial planning stage we aim to provide real context in which to apply skills taught during the maths lessons.

Inclusion
Children with special educational needs and Provision Plans:

- Within the daily mathematics lesson teachers provide activities to support children who find mathematics difficult. Children with SEN are taught their year group's objectives within the daily mathematics lesson and are able to take part at their level through supported scaffolding, modelling and appropriate activities and resources.
- Where applicable children's Provision Plans will incorporate suitable objectives from the Maths curriculum.
- Intervention Groups will take place at times throughout the year, in order to give further support to children working below national expectations.

All children at All Saints Primary, have an equal entitlement to access the Maths curriculum and make progress in order to attain the best they can in the subject.

Monitoring Teaching and Learning
This will be undertaken by the Subject Leader and the Headteacher.
Areas to be monitored will be decided and discussed with members of staff before monitoring week (of which there are one a term) .Results of any monitoring will be fed back to staff quickly at the next staff meeting so that any action required can be carried out effectively. Results of monitoring should also be shared with the Governors.

Roles and Responsibilities

1. **Subject Leader:**
   - Supports teachers in their planning and teaching;
   - Lead by example in the way they teach in their own classroom;
   - Prepare, organise and lead INSET, with the support of the Head teacher;
   - Monitor different aspects of maths teaching and learning feeding back to the Headteacher and staff on findings and future actions.
   - Complete a yearly Action Plan, taking into consideration: OFSTED recommendations; analysis of data, results of previous monitoring. This Action plan will be assessed, added to or amended, where necessary, throughout the year. A review will be made at the end of the 12 months and a new set of actions will be written.
   - Attend Updates provided by LA consultants and Maths Hubs;
   - Be available to discuss with the head teacher, class teachers, parents and governors the progress of maths in the school.

2. **Class Teachers:**
   - To deliver a Daily Maths lesson to their children which is engaging and motivating, is informed by the National Curriculum for Mathematics 2014 and is accessible to all children.

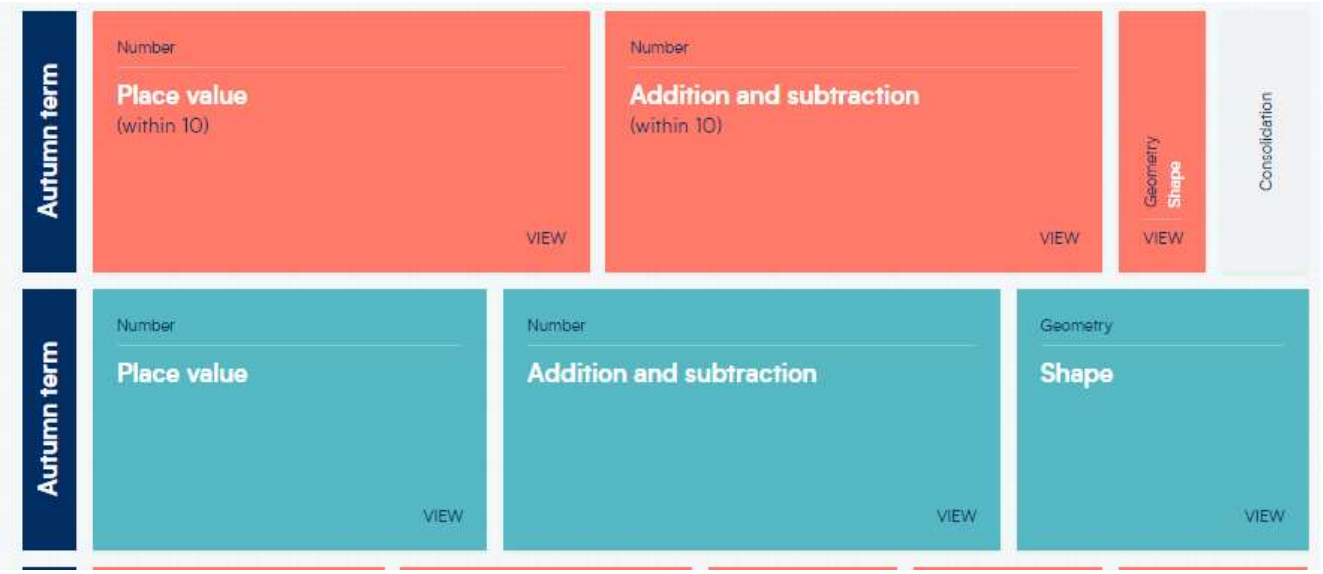
3. **Children:**
   - To develop their skills, understanding and attainment in Maths through engagement with the lesson, behaviour conducive to learning, independent work and thought and confidence to challenge or ask for help.

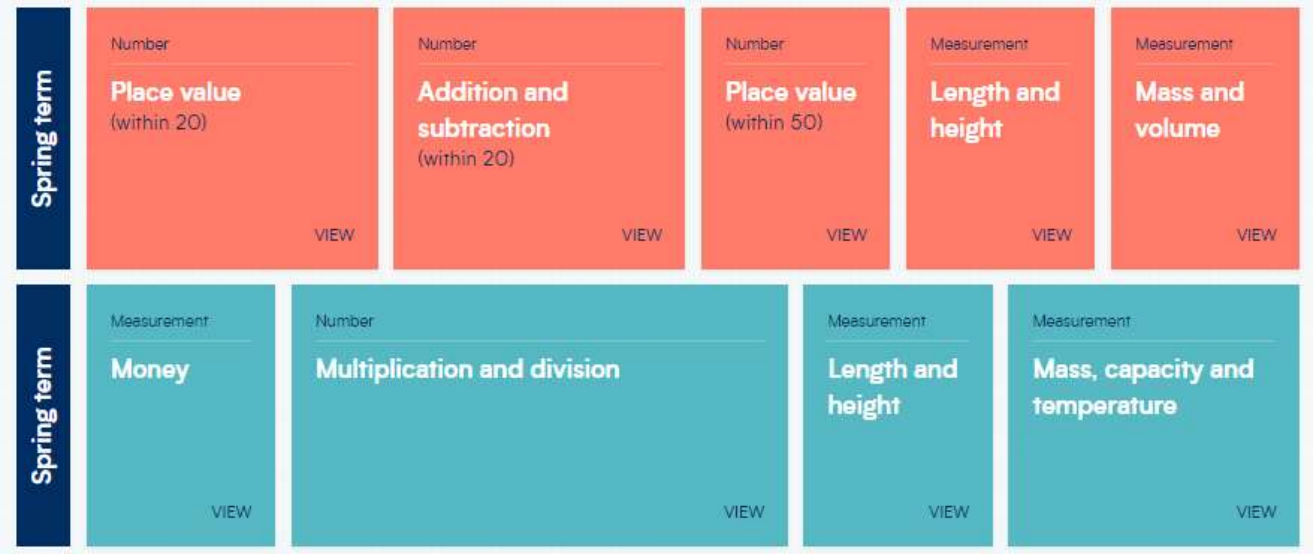
4. **Parents / Carers:**
   - To support their children's learning in maths by taking an interest in their child's progress, encouraging the children to complete maths homework and having a good relationship with the class teacher so that queries and problems regarding maths can be dealt with easily.

Appendix 1 – Curriculum Intent

At All Saints we are **beginning** our journey towards finding our place in the world and discovering faith. We are **becoming** those who fulfil our unique potential as lifelong learners. We accept that we flourish only as those who **belong** to our family, school, community and God's family. We seek to **believe** in ourselves, each other and in God, who helps in all things.

Appendix 2: yearly overview example
One colour per year group





Appendix 3: - learning journey example

Year 1 – Maths Learning Journey **Name:**

	Number: Place Value (within 10)	Number: Addition & Subtraction (within 10)	Geometry: Shape	Measurement: Money	Measurement: Length and height
Autumn Term	Small Steps of Learning: 1. Sort objects 2. Count objects 3. Count objects from a larger group 4. Represent objects 5. Recognise numbers as words 6. Count on from any number 7. 1 more 8. Count backwards within 1 9. 1 less 10. Compare groups by matching 11. Fewer, more, same 12. Less than, greater than, equal to 13. Compare numbers 14. Order objects and numbers 15. The number line	Small Steps of Learning: 1. Introduce parts and wholes 2. Part-whole model 3. Write number sentences 4. Fact families – addition facts 5. Number bonds within 10 6. Systematic number bonds within 10 7. Number bonds to 10 8. Addition – add together 9. Addition – add more 10. Addition problems 11. Find a part 12. Subtraction – find a part 13. Fact families – the eight facts 14. Subtraction – take away/cross out (How many left?) 15. Take away (How many left?) 16. Subtraction on a number line	Small Steps of Learning: 1. Recognise and name 3-D shapes 2. Sort 3-D shapes 3. Recognise and name 2-D shapes 4. Sort 2-D shapes 5. Patterns with 2-D and 3-D shape	Small Steps of Learning: 1. Measure and record values of coins	Small Steps of Learning: 1. Use and compare different types of amounts and measures using non-standard units. 2. Beginning to use the correct maths language for measurement when comparing amounts and objects 3. Measure and record length as heights

Appendix 4: Medium term planning example KS1/KS2

Sort objects

Notes and guidance

In this small step, children learn that collections of objects can be sorted into sets based on attributes such as colour, size or shape. Sorting enables children to consider what is the same about all the objects in one set and how they differ from the objects in other sets.

Children need to understand that the same collection of objects can be sorted in different ways and should be encouraged to come up with their own criteria for sorting objects into sets.

Practical activities should be used to support the learning in this step and ideas are suggested in Key learning. The concept of sorting can also be reinforced during daily activities such as lining up. Children could be asked to line up based on certain criteria, for example whether they have a sister.

Things to look out for

- Children may think that a group of objects can only be sorted in one way.
- Children may not focus on a single similarity, but instead on different attributes, leading to incorrect placement of objects in some sets.

Key questions

- What is the same about all the objects in the set?
- What is different about the sets?
- Can you find an object that belongs to this set?
- Can you find an object that does not belong to this set? Why does it not belong?
- Can you think of a different way to sort the objects?

Possible sentence stems

- This set of objects has been sorted by _____
- I could also sort the objects by _____
- _____ does belong in the set because ...
- _____ does not belong in the set because ...

National Curriculum links

- Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least

Year 1 | Autumn term | Block 1 – Place value | Step 1

Sort objects

Key learning

Find some seeds and leaves to represent Autumn.

Ask children to sort the objects in three different ways and then compare their answers with a partner.

Read *The Button Box* by M Reid.

Give children a selection of buttons and ask them to sort the buttons in as many different ways as they can.

Encourage them to think about size, shape, colour and number of holes.

Give children a selection of 3-D shapes.

Ask children to sort the objects into two groups and then challenge a partner to say how the objects have been sorted.

- Sort the fruit into groups.

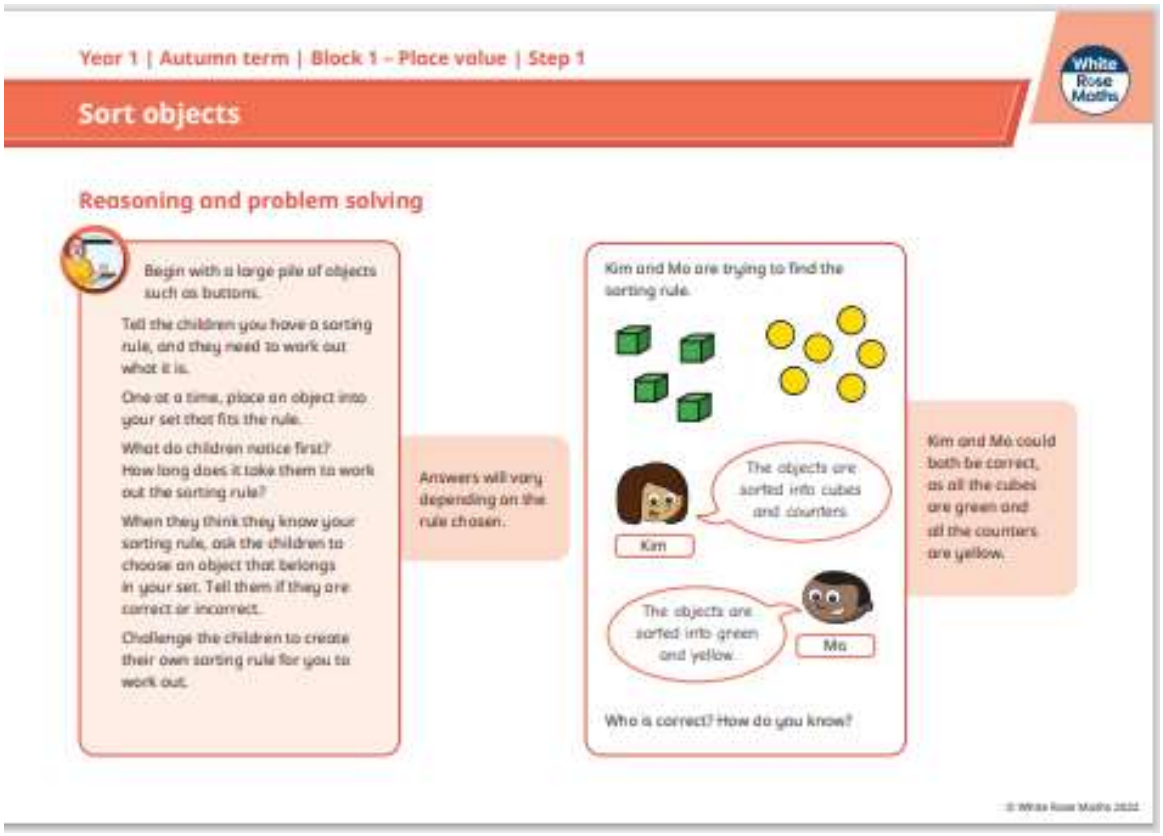
Explain how you have sorted them.

- Look at the pictures of Alex.

How many different ways can you find to sort them?

- How have the shapes been sorted?

How else could you sort them?



Appendix 5: Medium Term planning example EYFS

Match

Guidance

Provide opportunities for the children to find and match objects which are the same.
Ask: Can you find one exactly like mine?
How do you know it is the same?
Can you find one that is different to mine?
Why is this one not like mine?

Other Resources

Noah's Ark

Monkey Puzzle – Julia Donaldson

Snap card games and jigsaws

Number shapes or Pattern Block base-boards

Prompts for Learning

You will need a collection of objects made up of identical pairs. These could be socks, wellington boots, Noah's ark animals etc. Muddle up the items so that the pairs are not together and ask the children to match the objects into pairs.

Paint a collection of pebbles or wooden discs to resemble creatures such as ladybirds, bees or fish in matching pairs. Secretly hide one of the creatures and spread the rest out for the children to see. Ask the children to match the remaining creatures and work out whose partner is missing.

Picture cards in pairs are a great resource for matching, sorting and comparing and can be used in many ways. One group activity is to give each child a card and ask them to find someone who has a matching card. Once they find their partner they sit down together. This activity could also be done with number shapes or compare bears before the provision tasks on the next page.

Reception – Autumn Phase 1 – Match & Sort

Match

Enhancements to areas of learning

Outside

Give each child a different compare bear. Have matching compare bears placed around the outside area. Ask the children to find a bear that matches theirs.
How do they know it matches?
Are their bears big or small?

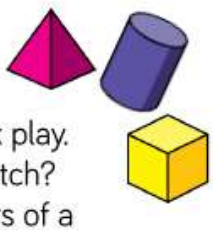
Maths area

Put out a selection of number shapes in matching pairs. Choose a shape and ask the children to find the shape that matches yours. Alternatively hide one of the shapes and ask the children to match the rest to find which shape is missing.

Loose parts

Provide a selection of different sized lids. Have a large sheet of paper with outlines of the lids drawn on. Ask the children to match each lid to the correct outline on the paper.

Construction



Join the children in their block play.
Can we build towers that match?
Challenge them to build towers of a matching height.
Do they look the same? Do the towers always need exactly the same blocks?

In the main cupboard

- Timers and stopwatches - Sand and digital. We can also use IPADs for timers and stopwatches
- Bee Bots
- Analogue clocks inc One large one and a large digital clock
- Brand new place value flipcharts TH.H.T.O
- Calculators
- Mirrors
- 3D shapes and some 2D with sorting circles
- Large and small peg boards
- Foam dice – symbols and numbers

Class 1

- Counting / number resources appropriate to EYFS
- Shapes – 2D and 3D plus folding sorting circles
- Money -coins and resources appropriate to EYFS
- Measure -balance scales and containers / non standard units to measure

Class 2

- Small measuring tapes / 2x surveyor tapes
- KS1 time resources
- 2D shapes
- Fractions – dominoes and fraction wheels and walls
- Money – coins and KS1 resources
- Dominoes
- Counting and number resources appropriate to KS1

Class 2.5

- Number resources appropriate to LK2
- Small number of protractors
- Coins

Class 3

- Number resources appropriate to SEN and UKS2
- Tray of protractors and compass

Art cupboard

- Weights / balance scales
- Bag of mixed measuring containers with scales and a box of mixed non- scaled containers
- Newton metres
- Thermometers
- Trundle wheels and metre sticks

Staff room

- Polydron for making 3D shapes and structure