Wardley CE Primary School Curriculum Inclusion Strategies - Mathematics

Quality First Teaching – Promoting independence, providing suitable adaptation and challenge, meeting learners needs and overcoming barriers.

At Wardley CE Primary School, wherever possible, all pupils work on the same curriculum in maths. If necessary, adaptations are made to meet individual needs, making learning accessible for all pupils. Provision will depend on the particular barrier to learning pupils face.

Key Stage	Strategies for inclusion
Whole School	- All adults are aware of individual children's barriers to learning, so they can best meet their needs. - A quiet, calm working environment, to minimise distractions. - Adaptive, responsive teaching e.g. knowing when to revisit concepts, move on or provide an intervention. - Deploy all adults strategically, to achieve the best pupil outcomes. - All adults modelling accurate and precise mathematical language. - Regular opportunities to revisit prior learning in science. - A teaching sequence based on links to previously taught skills and knowledge and repetition is utilised to scaffold new learning. *At Wardley, this takes the form of a link- it, learn-it, check-it, show-it and know-it teaching structure.* - Adults use Blank Level Questioning, appropriate to each child. - Adults facilitate group work and provide in the moment feedback, to both support and challenge pupils' scientific understanding. - Plenty of speaking and listening opportunities for pupils to articulate their understanding of scientific concepts and listen to their peers. - Provide extra time to allow children to process questions, think about their answers and respond. - Hands-on practical experiences, wherever possible, to observe science in action/real life. - Resources on the interactive board are displayed on pale coloured backgrounds to support our dyslexic and colour-blind pupils. - Overlays are used for those pupils who can see and read maths more confidently with the use of one. - When sheets are used, pupils who require it, are given a copy on pale blue or pale yellow paper. - cm squared maths books with blue paper available for those children who require one. **The use of a concrete, pictorial, abstract teaching & learning progression:** <u>Use of Manipulatives</u> - Model the mathematics using a variety of concrete resources, e.g. money, Base 10, Abacus, counters etc - Multi-sensory: allow children to feel different representations, e.g. the spaces in the Numicon; the size difference in each Cuiseniare rod; in Base 10, one cube, the grooves that separate the ones in a ten, a hundred etc.

	- Pupils to experiment and make their own connections, e.g. pouring liquid to compare/ measure liquid; comparing objects by weight using balancing scales. - Role play contextualised problems, e.g. going to the shops, packing eggs in boxes <u>Images and Representations</u> - Model the mathematics' learning using pictorial representations, e.g. images of the concrete resources, place value counters, tens frame - Utilise number lines, 100 squares and egg box maths to support learning. - Make jottings and draw, e.g. bar model. <u>Language Support</u> - Regularly model language and stem sentences and provide ample opportunity for pupils to practise until fluent. - Teach whole class lessons in mixed ability groups. - Strategically pair pupils so that reasoning skills and problem solving can be modelled by a peer.
Early Years Foundation Stage	<u>Within a Maths lesson</u> - Break down mathematical skills into further key steps to secure key learning. *In Nursery, this may involve exploring the number 1 in various contexts before moving onto the next numeral to ensure an understanding of value is secured for all numbers 1-5 .For example, representing 1 with Numicon, marks, numbers in environment, 1:1 counting of objects, counting and performing movements, listening to discrete sounds.* - Overlearn skills through the mental & oral session, in familiar contexts to reduce cognitive load. *In Reception, this may involve mental oral practises such as counting along a number line or the use of egg box maths* - Regularly use physical and familiar mathematical models e.g. tens frames, abacuses - Scaffold stem sentences when encouraging children to see small numbers within a larger collection *When teaching 'composition', model the language, e.g. 'There are 5 spots altogether on the ladybird. I can see 4 and 1, I can see 3 and 2, and I can see 1 and 1 and 1 and 1 and 1.'* - Offer questioning opportunities which can facilitate a variety of response types. - Ensure sessions are engaging and offer a multisensory approach to learning to meet the sensory needs of learners. *In Nursery and Reception, this may involve exploring the number through music, movement and exploration of concrete objects.* <u>Within the continuous provision</u> - Apply mathematics within real life contexts *When teaching 'cardinality and counting', ask children to count real objects e.g. stones in the playground, steps on the stairs, numbers on the front doors, cars on the road, animals in the zoo.*

	- Explicitly draw children's attention to mathematical links and offer opportunities to consolidate skills in different areas of their learning. *When teaching 'comparison', pose questions such as 'Are there more orange leaves or green leaves?', 'Are there more cats or dogs in this picture?'* - Practise and consolidate mathematical skills which mirror practises in focussed groups to develop fluency. - Use visuals to support children's understanding of the changing of time throughout the day. - Display numerals in the environment and regularly draw their attention to them.
Key Stage 1 & 2	**<u>Maths Lessons</u>** - Allow children to utilise the concrete resources later on in the teaching cycle if required. *If older pupils still find it useful to have a 100 square, number lines, coins, dean blocks etc to support their learning, they must be readily available for them.* - When moving to the pictorial stage, model the previously learnt concrete next to it to support pupils making links. - Model the abstract alongside the pictorial and/or concrete to link each stage of learning. <u>Procedural</u> - Break learning down into manageable chunks, *for example: record numbered steps for them to follow more independently reduce the words on the steps take the steps away, but allow them to check it if needed until they no longer need to rely on it.* - <u>Reasoning and language</u> - Encourage the children to notice patterns. Ask: what is the same? What is different? - Pose open questions. - Model and support verbal and written responses. <u>Problem Solving</u> - Role play the context of the problem. *In Year 1 and 2, when exploring money, they can role play being the shopkeeper and customer.* - Use concrete resources to support learning, to allow pupils to focus on solving the problem. - For children entering the school who have recently come from a non-English speaking country, translate worded problems for them, to allow them to focus on the maths, whilst building language simultaneously. - Build up the complexity of a problem slowly, removing scaffolds when appropriate. <u>Learning environment</u> - Symbols: display related symbols together e.g. + with – and x with ÷ on the class Working Wall. - Check that the Working Wall is accessible to all pupils and that it is purposeful, up-to-date and not overwhelming. *Current vocabulary and steps/teacher models that mirror the current learning in class should be displayed for children to use as a support or a reminder.* - Individual and easy to access place value charts and number lines for pupils to refer to. *For example, in Year 5, number lines may vary: decimal increments; numbers to 1,000,000 and negative numbers, through zero.*

- Maths' books provided with blue pages for those who require them.
- Provide a distraction-free space (such as a workstation) for pupils if they need it.

Planning
- Use the NCETM progression grid to prioritise the most important objectives and maths skills.
- Use the Annotated Maths Teaching Cycle to ensure skills not taught in Maths No Problem are covered in specific year groups.
- Cover age related learning within lessons and adapt the outcomes when and where necessary.

Counting
- Build up counting in various numbers slowly, *e.g. In Y2 count in steps of 2, 5 and 10, in Y4 count in steps of 4 and 8 and in steps of 3 and 6 to make links and number sense, in Y6 count in steps of 0.1 and 0.2.*
- Begin with direct modelling to develop conceptual understanding using representations and models.
- Count unitarily (one-by-one) and then group together using manipulatives.
- Use pictorial representations such as a number square.
- Explore patterns and count rhythmically.

Maths Starters
- Each lesson to start with a range of questions/problems relating to all 4 number operations and a range of areas within the key skills of mathematics to draw on prior knowledge to maximise time in the lesson, support revision through repetition and build flexibility and fluency.

Multiplication and Division Facts
- Spend ample time securing the 'counting' and 'relationships' elements of mathematics by starting each lesson with chanting and number games involving the times tables and inverse operations from Y2 - Y6. *eg in Y2 focus on the 2, 5 and 10 times tables and grouping using visual and pictorial representatives for the inverse, in Y3 chant the 3, 4, 6 and 8 times tables looking at the relationship between 3 and 6, and 4 and 8 and in Y6 count in steps of 0.7, 0.8, 0.9 using times tables knowledge to make the link between the place value of digits. Fact families and pictures will be used to represent and visualise the number groups to support visual learners.*

Adaptive, Responsive Teaching
- Quality first teaching, including deploying staff strategically, with specific focuses that are tailored to the pupils based on specific needs on a adhoc basis as well as pre-planned focuses when identified by the class teacher.
- Set up interventions to ensure that pupils catch up and then keep up. Time-limited, highly targeted, quality intervention but only when necessary.

	- Give pupils a number of instructions/ questions to complete or a set time before allowing them to have a brain break. - Explicitly draw children's attention to maths in the real world, *e.g. In measure: What time is it/ how long until lunch? Money, Measuring length, mass, capacity.*