Maths Policy

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1. Aims

Our aim at Alfred Street Junior School (ASJS), is for all children to enjoy mathematics and have a secure and deep understanding of fundamental mathematical concepts and procedures when they leave us to go to secondary school. We want children to see the mathematics that surrounds them every day and enjoy developing vital life skills in this subject.

In September 2019, Alfred Street Junior School began transitioning towards a mastery approach to the teaching and learning of mathematics. The principles of Mastery are in line with our views of how we want our children to learn: high expectations for all children, with well planned and structured lessons, leading to the development of fluent and able users of mathematics. As a school, we follow the blocking sequence from the White Rose Hub [1], to build children's depth of understanding when teaching each mathematical skill.

We are on a journey based on these key principles:

- **Problem solving:** Mathematical problem-solving is at the heart of our approach. Pupils are encouraged to identify, understand and apply relevant mathematical principles and make connections between different ideas. This builds the skills needed to tackle new problems, rather than repeating routines without grasping principles.
- **High expectations:** We believe no child should be left behind. We are moving towards a focus on pupils 'keeping up over catching up'. By making high expectations clear – and emphasising the high value of mathematics education – learners are encouraged to build confidence and resilience.

- **Concrete, pictorial, abstract (CPA):** Objects, pictures, words, numbers and symbols should be used in all classrooms. Our approach incorporates all of these to help pupils explore and demonstrate mathematical ideas, enrich their learning experience and deepen understanding. Together, these elements help cement knowledge so pupils truly understand what they have learnt.
- **Depth before breadth:** All learners benefit from deepening their conceptual understanding of mathematics, regardless of whether they've previously struggled or excelled. We believe pupils must be given time to fully understand, explore and apply ideas - rather than accelerate to quickly through new topics. This approach enables learners to truly grasp a concept; the challenge comes from investigating it in new, alternative and more complex ways.
- **Growth mindset:** We believe our 'abilities' are neither fixed nor innate, but can be developed through practice, support, dedication and hard work. 'Natural talent' is just a starting point and does not determine who has more or less potential to achieve. This belief encourages a love of learning and resilience enabling everyone to achieve.
- **Mathematical language:** The way pupils speak and write about mathematics transforms their learning. We always ask pupils to explain the mathematics in full sentences (not just what the answer is, but how they know it's the right answer). This is key to building mathematical language and reasoning skills.

2. How we teach

We teach maths skills in two different ways:

- Time Tables
    - All classes work on PiXL [2] Times Tables at least 3 times a week. This is monitored by the teacher to ensure children are focusing on the times tables relevant to them.
    - Children use the apps at home on a regular basis to improve their knowledge and recall of times tables – this is expected as part of their homework. Teachers monitor this and if children are not accessing the website at home they are asked to attend homework club to do this.
    - Assessment using times table (144) are used to assess children at the start of every half term. The same assessment is used at the end of term to show progress.
- Arithmetic
    - This is completed in books using the same standard of presentation as in their other books. The children mark their own work using purple pen and this is checked regularly by teachers.
    - Teachers use a 'walk and talk' approach to develop key strategies.
    - Teachers follow an overview to plan these sessions:
        - Mondays session – number of the week
        - Fluent in five – 2 x weekly in year 3/4 and 4 x weekly in year 5/6
        - Key instant recall facts 2 x weekly
        - Whole class gaps identified from ongoing assessments
        - Revisiting previously taught skills / skills the children may need in future units of learning
    - These lessons are pacey, where children are expected to work quickly to complete questions.

3. Daily Maths Lesson

- At the beginning of each new unit all children complete a short White Rose assessment. This enables the teacher to gauge where the children are at and informs planning.
- **Whole class together** – we teach mathematics to whole classes and do not label children. Lessons are planned based on what pupils already know and we include all children in learning mathematical concepts. At the planning stage, teachers consider the scaffolding that may be required for children struggling with concepts in the lesson and suitable challenge questions for those who may grasp the concepts rapidly.
- **Longer but deeper –** in order to ensure children have a secure and deep understanding of the content taught, our plans have been adjusted to allow longer on topics and we move more slowly through the curriculum. Lessons are based on the use of high quality materials and tasks **(White Rose** [1]**, Power Maths** [3]**, NRICH** [4]**, NCETM Mastery** [5] **etc.)** to support learning and provide access to the mathematics which is integrated into lessons.
- **Key learning points** are identified during planning and a clear journey through the maths developed.
- **Questions** are used to probe pupil understanding throughout and responses are expected in full sentences, using precise mathematical vocabulary.

4. Lesson structure

- **Revisit** – To ensure children continue to regularly practice topics they have studied earlier in the year, White Rose Flashback slides are used at the beginning of each lesson to reinforce key concepts from: last week, last month and last year.
- **Exploration** – Maths lessons start with a real life context question linked to the learning in the lesson. This is a short introduction to put the new learning in context not a big problem solving activity. Children are encouraged to explore the problem themselves to see what they already know. Lessons are sharply focused with one new objective introduced at a time - this is shared verbally each lesson.
- **Develop reasoning and deep understanding** (contexts and representations of mathematics) – problems are often set in real life contexts and carefully chosen pictorial representations are used to explore concepts. These pictorial representations will appear in books as children show their understanding, rather than answers to a series of calculations. The use of practical resources, pictorial representations and recording takes place in every lesson (the CPA approach).
- **Step by step approach** – there is a journey through the mathematics by means small carefully crafted steps to support deep understanding to ensure children are clear about how learning builds up and that they understand the new learning taking place. During teacher input, there is lots of talking in mixed ability pairs, talking in full sentences, repeating of ideas and practising the skills being taught in different ways to ensure understanding. There is a range of different activities to complete so the children can see and apply the new learning in different ways. Teachers adapt each lesson to meet the needs of their children and add extra questioning / tasks which will allow children to learn the content more deeply.
- **Questions** – teachers use questioning throughout every lesson to check understanding and to challenge thinking. These questions are chosen carefully by the

teacher and link to tasks the children are completing to ensure the children have a depth of knowledge about the new learning. A variety of questions are used, but you will hear the same ones being repeated:

- How do you know?
- Can you prove it?
- Are you sure?
- Can you represent it another way?
- What's the value?
- What's the same/different about …?
- Can you explain that?
- What does your partner think?
- Can you imagine?

- **Identifying misconceptions -** difficult points and potential misconceptions are identified in advance and strategies to address them planned prior to the lesson.
- **Use of language -** teachers encourage children to use the correct mathematical vocabulary in all maths lessons. Teachers provide stem sentences throughout lessons which allow children to talk in full sentences to express their understanding of the mathematics. Teachers also model full sentences to the children and regularly ask them to repeat ideas in full sentences, so it becomes a fact they know.
- **Differentiation -** Differentiation is not working on a different objective. It is working on the same objective by allowing children to work at their own pace with the support they need. Formative assessment is carried out throughout the lesson; the teacher regularly checks pupils' knowledge and understanding and adjusts the lesson accordingly. This leads to flexible seating to ensure all children are getting the support they need from the adults in the room.
- **Discussion and feedback** – teacher-led discussion is interspersed with short tasks involving pupil to pupil discussion and completion of short activities. Teacher modelling is a key aspect of this and is really clear for children to ensure they grasp the new skills being taught. Children have opportunities to talk to their partners and explain/clarity their thinking.
- **Practising** – not drill and practice but "intelligent practice" characterised by variation. Independent practice includes reasoning, problem solving and higher-order thinking activities.
- **Rapid intervention (same day catch up wherever possible) –** in mathematics new learning is built upon previous understanding, so in order for learning to progress and to keep the class together pupils need to be supported to keep up and areas of difficulty must be dealt with as and when they occur.
- **SEND pupils** – may be supported by additional adults, different resources, differentiated activities. They may also complete additional activities outside of the mathematics lesson. We do not label our children. We have high expectations of all children and strongly believe that all children are equally able in mathematics. Some may take longer to grasp concepts and may need careful scaffolding or extra time/support (guided groups, same day catch-up, additional homework, pre-teaching, intervention group).
  See Inclusion Policy [6]**.**
- **EAL pupils** – may be supported by additional adults, different resources, differentiated activities. They may also complete additional activities outside of the mathematics lesson. We do not label our children. We have high expectations of all children and strongly believe that all children are equally able in mathematics. Some may take longer to grasp concepts and may need careful scaffolding or extra

time/support (guided groups, same day catch-up, additional homework, pre-teaching, intervention group).
See Inclusion Policy [6].

5. Books

- Books show a journey of the maths lesson from beginning to end.
- Children need to use their own pictures and jottings in their book to show their understanding.
- Children write helpful sentence stems in their book and they are encouraged to look back at these as the unit of maths progresses.
- Children write in full sentences to explain and prove their thinking; stem sentences are provided by teachers for children to write these.
- Children set their work out neatly, using a ruler for any straight lines and putting one digit per box.

6. Marking

- Marking informs the next lesson. After marking, teachers group the books to ensure children who need more support the next day are identified.
- Teachers use green, Teaching Assistants (TAs) red and children purple to mark the books.
- Teachers will use a pink highlighter if they feel that the children are able to edit the mistakes on their own. Children need to be given time to look back at these pink marks and edit them.
- Where an adult has supported a child during the lesson S (for support) is written in the book.
- If there are lots of misconceptions teachers write, 'we will go through this tomorrow', and make sure this child is part of focus group the next day and that this is evident in future learning.

7. Working wall

- There will be different parts to the working wall:
    - Vocabulary - key vocabulary for the unit is displayed for children to refer to.
    - Sentence stems – important sentences are written up on the working wall for children to refer to. These need to be repeated and referred to by the teacher and children on a regular basis.
    - Representations – draw or put up representations which might help the children during this unit.
    - Key Facts - key facts which they forget and need to practise e.g. 1kg = 1000g
- Teachers build up things on the working wall over a unit and ensure it is referred to regularly. Key things the children need to practise after a unit remain on display.
- Key facts may be moved from the main working wall to another area in the classroom at the end of a unit so children can still refer to this during facts if needed.

8. References

[1] White Rose Maths, “About White Rose Maths,” 2020. [Online]. Available: https://whiterosemaths.com/who-we-are/about-white-rose-maths/. [Accessed 3 May 2020].

[2] PiXL, “PiXL partners in excellence,” 2017. [Online]. Available: https://www.pixl.org.uk/. [Accessed 3 May 2020].

[3] White Rose, “White Rose - Power Maths,” 2020. [Online]. Available: https://whiterosemaths.com/resources/power-maths/. [Accessed 3 May 2020].

[4] NRICH, “NRICH Primary,” NRICH, 2020. [Online]. Available: https://nrich.maths.org/primary. [Accessed 3 May 2020].

[5] National Centre for Excellence in the Teaching of Mathematics, “NCETM Mastery,” [Online]. Available: https://www.ncetm.org.uk/resources/47230. [Accessed 3 May 2020].

[6] Alfred Street Junior School, “Inclusion Policy including SEND,” 2020.

[7] Alfred Street Junior School, “Child Protection and Safeguarding Policy,” 2020.

[8] Alfred Street Junior School, “Equality Policy,” 2018.

[9] Alfred Street Junior School, “Homework Policy,” 2020.

9. Safeguarding

Safeguarding our children is our priority – see Child Protection and Safeguarding Policy [7]. All concerns must be reported to our Designated Safeguarding leads:

Mrs K O’Connor, Mr C Butler, Mrs S Smith, Mrs W Watts