Maths at Robin Hood Junior School

Our Teaching Principles

We aim, through creative, focused, inclusive lessons to create a sense of excitement and curiosity about mathematics. We aim to ensure all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language

When children are fluent and are able to reason mathematically, they will then be able to s**olve problems (**see pyramid).

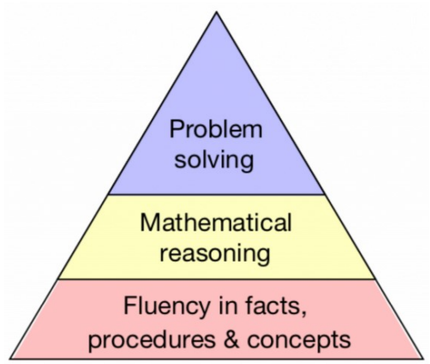
We aim to ensure all pupils can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including working systematically and displaying a positive growth mindset in seeking solutions.

Fluency

- We follow a Concrete-Pictorial-Abstract (CPA) approach that develops secure understanding of concepts.
- New learning is introduced using a mastery approach, breaking skills down into small achievable steps (explicit instruction).
- Lessons are sequenced to move from prior learning to new learning with the children applying these skills in a variety of ways.
- Connections both to prior learning and related concepts are make explicit in lessons.
- Opportunities for retrieval practice of prior learning are planned for and built into every lesson.
- Vocabulary is developed throughout the school and consistently used in all classes across the curriculum.
- Reflection time is built into lessons to enable children to think about the progress made/next steps.
- Fluent in 5 is completed daily by all children to focus on fluency of arithmetic skills. Bi-weekly arithmetic and reasoning activities are used to identify areas of strength and areas for development.
- Mathletics is completed both at school and at home to reinforce current learning; to revisit prior learning and to pre-teach new learning. Times Tables Rock Stars is also used in Years 3 and 4 to re-inforce multiplication tables.
- Children not achieving the expected standard are identified in lessons and additional support is put into place by the class teacher either during the lesson, later that day or as pre-teaching the following day.

Reasoning

- Reasoning processes are taught explicitly (linked to the 5 stages of Deliberate Practice).
- The children use 'APE' (answer-prove-explain) consistently across the school in order to develop reasoning skills; RUCSAC is used to develop the ability to work through problems.
- There is a clear focus on the quality of learning in lessons—time is taken to explore different possibilities before agreeing on efficient strategies.
- Key learning is often presented as a question, encouraging children to make conjectures, and reflect on their work.
- A range of approaches is used to encourage children to follow their own lines of enquiry (including 'low floor, high ceiling' tasks; 'goal free' questions and 'same surface, different deep' activities).
- Children are encouraged to look beyond the context of a problem to see the maths content; links are made with similar questions and previous learning.
- Our children are grouped flexibly and will work with different partners and in different group sizes (including independent work) throughout a week to ensure they experience a range of approaches.
- Feedback focuses on processes rather than solutions.
- The emphasis on growth mindset develops the children's resilience, perseverance, grit and determination. Incorrect answers are seen as a valuable part of the learning process.
- Children are taught how to choose their own level of challenge as they progress through the school to ensure they are taking responsibility for their learning.



Maths at Robin Hood Junior School

Assessment

Performance:

- Assess children's understanding throughout the lesson (previous learning/questioning/ looking at work rather than 'hands up') to identify children requiring support
- Children should evaluate their learning daily— use these to help pitch the next day's work
- Learning Journeys can be used to record performance as 'met with support', 'met independently' or 'met GDU'. Remember—these do not necessarily reflect the long-term learning.

Long-term learning:

- Retrieval Practice activities (starters; Mathletics; Fluent in 5; arithmetic; reasoning) are more reliable indicators of learning. These should not be completed as tests, but as learning activities. Both strengths and weaknesses should be monitored and used to inform planning/judgements of attainment.
- Books—work over the year builds on prior learning. Looking back at previous work is a useful way to judge progress.
- Monitoring—both within year groups during PPA and across the school in staff meeting

Pupil Voice (May 2021)

Positive Areas:

93% children enjoy maths lessons

89% feel they are making good progress

96% feel supported in maths lessons

Areas for Development/Discussion:

75% feel challenged in maths lessons

79% feel proud of the work they produce

SMSC in Maths

Spiritual: Higher order questions/investigations promote the spiritual growth of the children; all year groups promote a sense of wonder in the exactness of maths in the real world; lessons show how maths has developed over time; maths in art and nature is taught in year 6; all year groups examine patterns and sequences and learn how the different aspects of maths are inter-connected.

Moral: Within all maths classes, discussion about mathematical understanding is promoted. Through RUCSAC a systematic approach is demonstrated and pupils are discouraged from jumping to conclusions. Statistics are used to highlight real-life issues, such as representing climate data in science. Children are involved in choosing their own level of challenge in lessons.

Social: We teach the importance of risk-taking to develop as a learning; we teach that mistakes are part of the learning process and that an appropriate level of challenge will always result in mistakes. We include activities where there is no single 'right' answer to promote self-esteem and build self-confidence. We encourage collaborative learning. We seek out team challenges such as outdoor maths.

Cultural: We share the appreciation that maths, its language and symbols have developed from many different cultures around the world. We investigate and research cross-cultural patterns. Where appropriate we look to make explicit reference to specific mathematicians' contributions to the subject.