

Askwith Primary School

Mathematics rationale

The purpose of mathematics at Askwith Primary School is to equip children with the knowledge, skills and understanding to become confident mathematical problem solvers.

Children are taught to think and reason mathematically, apply skills fluently and efficiently, and arrive at the accurate answer. Mathematics education at Askwith Primary School provides children with an understanding of the world around them and a curiosity and enjoyment of the subject. At Askwith Primary School, we are passionate about ensuring that all children receive a sequenced, knowledge rich mathematical education.

It is very important that we do as much as possible to remediate the learning loss suffered by the missed months of schooling. In the first instance, assessment information should enable us to answer the following questions:

1. Have our pupils lost knowledge gained pre COVID-19? If so, how can this learning loss be mitigated?
2. Have our learners lost knowledge during closure/non-attendance? If so, how can this learning loss be mitigated?

In mathematics, we have long term plans for 2020-2021 that address these areas of learning loss. Our aim is to use recalls of essential knowledge to assess knowledge gained pre COVID-19 in each prior knowledge assessment, before starting a new area of mathematics. We aim to address any forgotten knowledge and misconceptions diagnosed from the pre COVID-19 knowledge recalls and ensure essential lost learning from school closure is secure before moving onto the teaching and learning of new knowledge.

Intent	Implementation	Impact: to be reviewed at the end of each year
<ul style="list-style-type: none">• Mitigate any learning loss of knowledge gained pre COVID-19• Mitigate any learning loss of knowledge due	<ul style="list-style-type: none">• Recalls of knowledge gained pre COVID-19 prior to starting any new unit in mathematics	

to school closure/non-attendance

- The planning, teaching and assessment of the mathematics curriculum is informed by the nine principles of cognitive science (Daniel Willingham)

- Recalls of knowledge lost during school closure/non-attendance at the beginning of each unit in mathematics
- Prior knowledge assessments including connected knowledge will revisit knowledge lost that was gained pre COVID-19 and knowledge lost due to school closure/non-attendance
- Planning and learning journeys consider the essential knowledge and how to guide pupils' thinking
- Factual essential knowledge is taught before the skill
- Working memory capacity and the alteration of long term memory is considered when planning and teaching (planned thinking time, recalls)
- Connected knowledge, particularly knowledge of vocabulary is built on to deepen understanding
- Prior knowledge is assessed, misconceptions addressed and new knowledge builds on pupils' connected knowledge

<ul style="list-style-type: none"> • Mathematics is taught throughout the school through deliberate practice in a supportive environment which enables children to develop fluency and make alterations to their LTM. The mathematics curriculum is planned in a sequenced way to build knowledge, skills, understanding and mathematical vocabulary from Early Years to Year 6 • Mathematics lessons will not overload working memory to ensure children know more and have a broad and deep 	<ul style="list-style-type: none"> • Pupils have opportunities to deliberately practice newly acquired knowledge • Pupils articulate how they know more, remember more and therefore do more • Instil a growth mindset ethos by talking about successes and failures in terms of effort not ability • The school curriculum ladders build on knowledge from one year to the next. Recalls are carefully planned to ensure knowledge is retained in the long term memory and any gaps in knowledge are filled with appropriate intervention. For mathematical components covered at the end of a school year, the recalls are planned for the following school year • Daily lesson plans show the key aspects for long term memory and stem sentences are planned in and used every mathematics lesson 	
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<p>understanding of mathematical concepts</p> <ul style="list-style-type: none"> The mathematics curriculum will equip children with a deep and embedded understanding of mathematical components 	<p>to ensure children are clear about the mathematical knowledge to be acquired in that lesson</p> <ul style="list-style-type: none"> Teachers will plan lessons to create deeper understanding rather than accelerate children to new content. Concrete, visual and abstract resources will support children's learning ensuring components are embedded. Variation will be planned into each lesson to develop children's confidence when reasoning 	
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Substantive and disciplinary knowledge in mathematics

The mathematical curriculum is one in which substantive knowledge and skills merge in a way that does not happen in any other subject area. Children need substantive knowledge in mathematics such as, the composition of a number or the column method. They are taught to make links across different mathematical components to build this substantive knowledge in their long term memory.

Creativity in mathematics

Creativity is a strong thread that permeates our mathematics curriculum. Opportunities for children to approach mathematics in different ways and to solve problems are carefully planned into each unit of work. Mathematics problem solving is a creative process and children are encouraged to show their thinking and mistakes are embraced as a part of the problem solving journey. By

using this approach, children become empowered and they learn what can be possible with a strong mathematical understanding.

Mathematical creativity allows children the opportunity for collaborative learning and communication through carefully planned learning activities. Children can investigate, pose questions and become creative decision makers and mathematical risk takers in an environment where it is ok to make mistakes, developing resilience and confidence.

"Creative mathematics is all about developing problem-solving skills which enable pupils to solve unfamiliar mathematical problems creatively. Pupils realise that there might be more than one possible solution to solving a given situation and learn how to adopt diverse strategies towards problem-solving which best suit their learning styles, capabilities and situation. Pupils are also given the time, space and resources to explore mathematical skills and concepts and can devise their own path to a solution."

Elaine Muscat, Scientix Deputy Ambassador

British Values

Mathematics provides many opportunities for children to learn about British Values. Children learn to follow rules and structures and apply this to a range of problem solving scenarios. They develop an appreciation of the importance of rules in keeping order and structure in maths and can apply this to their day to day lives.

In mathematics at Askwith, children work collaboratively to solve open-ended problems working through their errors to improve their learning. This not only teaches them collaboration and problem solving skills but they learn to mutually respect one another and other people's opinions and methods.

Assessment in mathematics

Assessment, both formative and summative, is an integral part of day-to-day mathematics planning, teaching and learning at Askwith Primary School.

We ensure that children are provided with age appropriate, formative feedback allowing them to move their learning on in a sequential way. This gives children the opportunity to demonstrate any connected knowledge held in the long term memory. A balance of verbal and written feedback is provided and children use this to move on in their learning, referring to this connected knowledge. As a

school, we feel it is important that the children engage with this feedback and that they are able to articulate their own progress.

After a unit has been completed, the children will have low stakes recalls to ensure the knowledge has been retained in the long term memory. These recalls are carefully planned by the teachers and can take many forms, including quizzes or whole class discussions.

We use summative assessments to monitor the children's progress with three data collection points throughout the year.

Reviewed September 2020