Maths in a Nutshell

Grange Junior School

Intent: What do we want children to learn?

At Grange Junior School, we use a mastery approach to maths.

What is out intent behind this approach?

We do this to encourage a deeper understanding of the key skills in order to enable them to have a better understanding of mathematical concepts and application of these skills to develop problem solving across the curriculum.

The key aims of are approach are:

- to develop **fluency** in the fundamentals of mathematics so that they can develop a conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- to develop **mathematical reasoning** through following lines of enquiry, justifying and explaining using accurate mathematical vocabulary.
- to develop the ability to **solve problems** through applying maths in a range of contexts with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios.

Implementation: How do we do it at Grange Juniors?

As a school, we use the mastery learning model which forms the basis our approach to teaching maths.

Each class has an hour lesson each day that will focus on new learning. Lessons focus on one key learning objective which is linked to the key aims of the national curriculum for the relevant year group. Lessons include the use of precise mathematical language, which is explained and explored. Language is modelled by staff and children are expected to talk in full sentences. Manipulatives and pictorial representations are used within a lesson to support the children's depth of learning and support them in their explanations. Pupils will spend time becoming true masters of content, applying and being creative with new knowledge in multiple ways.

What Maths looks like at Grange Junior School...

Our unit planning is based on National Curriculum Statements and we use Can Do Maths to give us our manageable, small steps for daily teaching. Challenge is visible throughout the whole session, where children are asked to reason and prove their understanding at a deeper, secure level.

Maths meetings are used at Grange Junior School but are dependent on individual teacher's assessment and judgement of skills that are needed to be revisited, through both daily AFL and formal assessments. They are also be used for explicit teaching of timetables or pre-teaching an upcoming skill.

A typical Maths lesson:

'Learning together'

Teach it!

Practise it!

Do it!

Secure it!

Deepen it!

Impact: On leaving Grange Junior School children will...

By the end of KS2, we aim for the children to:

- be fluent in the fundamentals of mathematics with a conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.

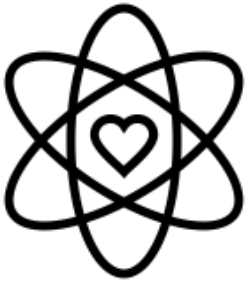
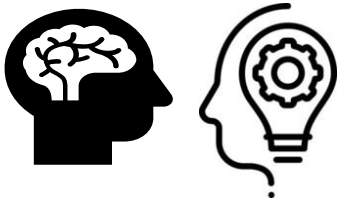
- have developed enjoyment and a sense of curiosity about maths.

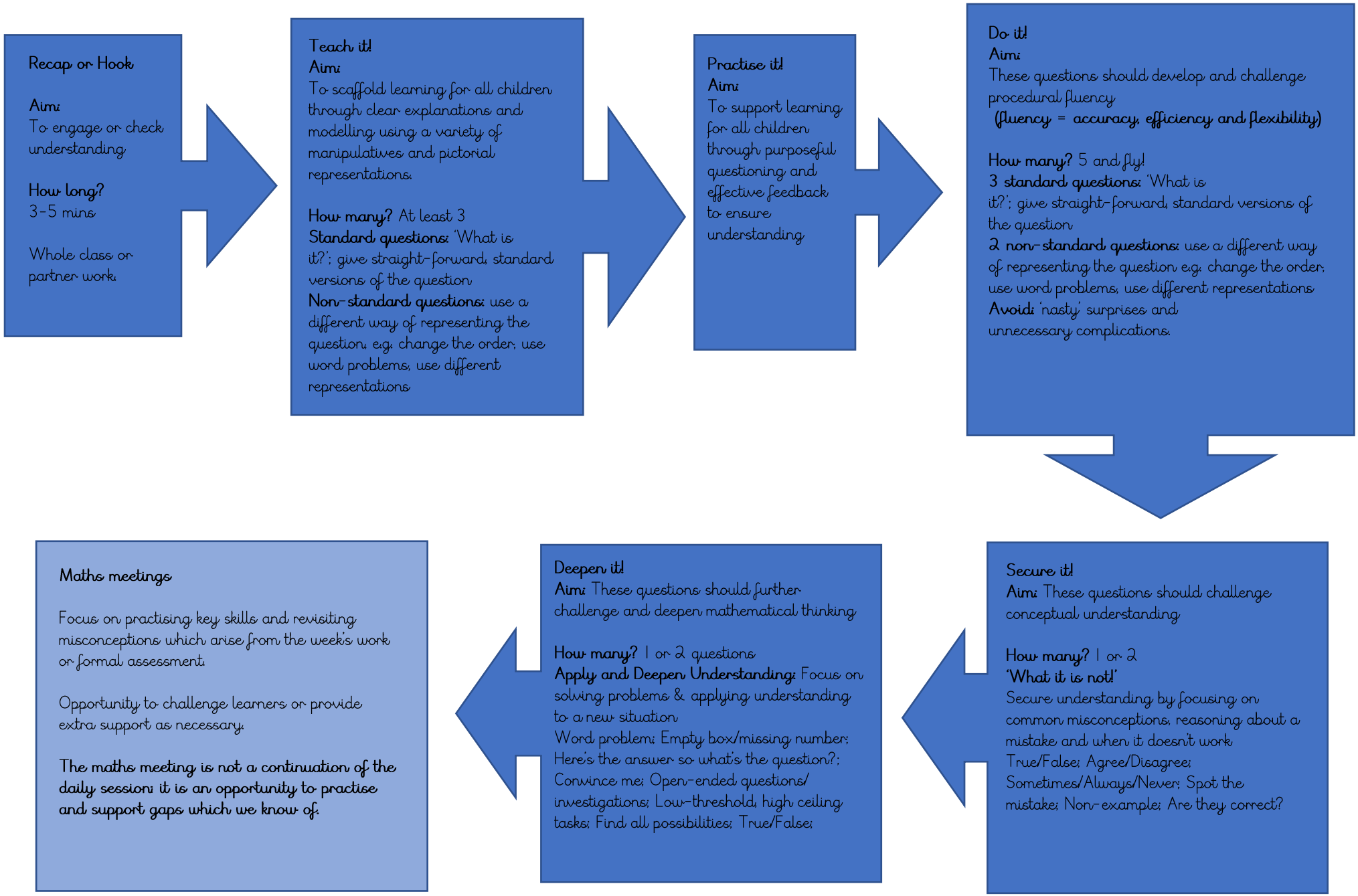
- have a 'Can Do' attitude and the belief that everyone can achieve.

- know that the use of mistakes and misconceptions is an essential part of learning and provides challenge through rich and sophisticated problems.

- be able to use a range of manipulatives effectively to explain their thinking using mathematical language.

Our Golden Threads in Maths

 Values Rich	 Language Rich	 Connections Rich	 Knowledge and Skills Rich	 Active and Enriched
This subject supports our values by...	This subject supports children's vocabulary use and acquisition by...	This subject let children make connections by...	This subject provides children with knowledge and skills by...	This subject allows for active and enriched learning by...
developing a 'Can Do' attitude where everyone can achieve.	teaching key mathematical language connected to each key learning point and embedding this within and across lessons.	linking mathematical skills and knowledge to real-life contexts.	clearly planning and sequencing the content of the maths curriculum throughout and across the years to allow for the progression of knowledge and skills.	children 'doing' the maths throughout the session and assessment for learning throughout the lesson.
learning from misconceptions and celebrating these learning opportunities.	using stem sentences to support children to talk like a mathematician and make connections with their learning.	making cross-curricular links between subjects such as the use of maths within science.	using key learning points to map out the particular knowledge which is taught, used and applied throughout the lesson and progression of lessons.	using manipulatives and visual images to support the children in 'seeing' the maths alongside 'doing' it.
	using generalisations within and across lessons to support the children in the application of their skills.		teaching, assessing and then practising knowledge in order to ensure it is embedded.	having active and engaging problem solving sessions to ensure that children are engaged in applying the knowledge and skills.


Recap or Hook
Aim:
To engage or check understanding
How long?
3-5 mins
Whole class or partner work
Teach it!
Aim:
To scaffold learning for all children through clear explanations and modelling using a variety of manipulatives and pictorial representations.
How many? At least 3
Standard questions: 'What is it?'; give straight-forward, standard versions of the question
Non-standard questions: use a different way of representing the question, e.g. change the order, use word problems, use different representations
Practise it!
Aim:
To support learning for all children through purposeful questioning and effective feedback to ensure understanding
Do it!
Aim:
These questions should develop and challenge procedural fluency
(fluency = accuracy, efficiency and flexibility)
How many? 5 and fly!
3 standard questions: 'What is it?'; give straight-forward, standard versions of the question
2 non-standard questions: use a different way of representing the question e.g. change the order, use word problems, use different representations
Avoid: 'nasty' surprises and unnecessary complications.
Secure it!
Aim: These questions should challenge conceptual understanding
How many? 1 or 2
'What it is not!'
Secure understanding by focusing on common misconceptions, reasoning about a mistake and when it doesn't work
True/False; Agree/Disagree; Sometimes/Always/Never; Spot the mistake; Non-example; Are they correct?
Deepen it!
Aim: These questions should further challenge and deepen mathematical thinking
How many? 1 or 2 questions
Apply and Deepen Understanding: Focus on solving problems & applying understanding to a new situation
Word problem; Empty box/missing number; Here's the answer so what's the question?; Convince me; Open-ended questions/ investigations; Low-threshold, high ceiling tasks; Find all possibilities; True/False;
Maths meetings
Focus on practising key skills and revisiting misconceptions which arise from the week's work or formal assessment.
Opportunity to challenge learners or provide extra support as necessary.
The maths meeting is not a continuation of the daily session: it is an opportunity to practise and support gaps which we know of.