



Mathematics at High Hazels

We follow a mastery approach and use the White Rose Schemes of Learning for long- and medium-term planning. Our teaching is guided by Rosenshine's principles to ensure effective instruction and a high success rate for children.

Our maths provision is made up of four parts: basic skills, retrieval, new learning and keep up. See the overviews for detail about what this looks like in each year group.

Maths in FS2	
Basic Skills	
Purpose:	for children to be confident and fluent with their number bonds.
Process:	5 minute number bonds programme is completed daily. Children learn one set of number bonds per half term. Friday checker is tracked over time.
Retrieval	
Purpose:	To practise retrieving skills and knowledge over time to ensure that it is stored in the long-term memory and can be accurately and speedily retrieved.
Process:	Provision is designed to give children opportunities to retrieve skills and knowledge over time. Teachers plan to consolidate learning over time through the provision. Children have daily access to the provision.
New Learning (Children working pre-key stage will follow a separate curriculum)	
	<ol style="list-style-type: none"> Share LO <i>Children know what they are learning and can articulate it.</i> Review prior learning <i>Children can connect new learning to prior learning.</i> Expose new concept/ skill/ procedure/ vocabulary in a real-life context using concrete resources <i>Children have a concrete understanding and can see important structures and patterns.</i> Model the carpet activity using an I, We, You structure <i>Children are explicitly taught what they need to do</i> <i>Teachers assess children's understanding and respond</i> Carpet Activity- Give children the opportunity to practise the small step <i>Children achieve procedural fluency and gain declarative knowledge.</i> Provision Activity - Give children opportunities to work independently and apply their learning in a different way. <i>Children will develop conditional knowledge.</i> Be responsive: if children have misconceptions or lack understanding, give additional support and opportunities to practise during provision time. <i>Misconceptions are addressed <u>early</u> and children keep up over time.</i>
Keep Up	
Purpose:	To ensure gaps are closed and children make progress over time.
Process:	Children's progress is tracked and discussed in weekly planning meetings Children who require consolidation are identified and next steps are planned These children are targeted and engaged in an adult led activities in the provision

Maths in Y1			
Basic Skills			
Purpose:	for children to be confident and fluent with their number bonds.		
Process:	5 minute number bonds programme is completed daily. Children learn one set of number bonds per half term. Friday checker is tracked over time.		
Retrieval			
Purpose:	To practise retrieving skills and knowledge over time to ensure that it is stored in the long-term memory and can be accurately and speedily retrieved.		
Process:	Children answer Flashback 4 questions with a partner. Teacher elicits answers using strategies to ensure all children are actively participating (show me on your fingers, vote with your hands etc.)		
New Learning (Children working pre-key stage will follow a separate curriculum)			
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Keep Up			
Purpose:	To ensure gaps are closed and children make progress over time.		
Process:	During target time, children complete activities planned to address gaps and consolidate learning. Teachers use target time to consolidate learning with target groups.		

Maths in Y2			
Basic Skills			
Purpose:	for children to be confident and fluent with their number bonds.		
Process:	7 minute number bonds programme is completed daily. Children learn one set of number bonds per half term. Friday checker is tracked over time.		
Retrieval			
Purpose:	To practise retrieving skills and knowledge over time to ensure that it is stored in the long-term memory and can be accurately and speedily retrieved.		
Process:	Children spend 5 minutes completing 'Flashback 4' at the start of every lesson. Teachers go through answers using thinking out loud.		
New Learning (Children working pre-key stage will follow a separate curriculum)			
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Keep Up			
Purpose:	To ensure gaps are closed and children make progress over time.		
Process:	Children complete summative assessments Gaps are identified Whole class strategies are put in place Children not 'on track' or not making sufficient progress are identified. Small group interventions are formed using SHINE		

01 DAILY REVIEW




Daily review is an important component of instruction. It helps strengthen the connections of the material learned. Automatic recall frees working memory for problem solving and creativity.

Flashback 4 Year 4 | Week 1 | Day 2

1) Work out 11×7

2) What is $63 \div 7$?

3) What is nine multiplied by zero?

4) Find the perimeter of the square.  4 cm

Revisit time daily

A question from yesterday

A question from last week

A question from 2-3 weeks ago

A question from last term/year

Daily Review

- At the start of each lesson, children review prior learning by completing 'Flashback 4'.
- Teachers have 'Flashback 4' ready as a 'Do Now' activity.
- Children have 5 minutes to complete it independently – they may not finish.
- Y1, 2, 3 complete this on white boards, Y4, 5, 6 complete it in books.
- Teachers use 'Thinking out loud' to go through the answers.
- Children write notes and correct their answers (Y4, 5, 6).
- Teachers make note of topics that need reviewing further in Weekly Review sessions.

02 NEW MATERIAL IN SMALL STEPS



Our working memory is small, only handling a few bits of information at once. Avoid its overload — present new material in small steps and proceed only when first steps are mastered.

03 ASK QUESTIONS



The most successful teachers spend more than half the class time lecturing, demonstrating and asking questions. Questions allow the teacher to determine how well the material is learned.

04 PROVIDE MODELS



Students need cognitive support to help them learn how to solve problems. Modelling, worked examples and teacher thinking out loud help clarify the specific steps involved.

08 SCAFFOLDS FOR DIFFICULT TASKS



Scaffolds are temporary supports to assist learning. They can include modelling, teacher thinking aloud, cue cards and checklists. Scaffolds are part of cognitive apprenticeship.

New Learning

Guided Practice

- A CPA approach is used to develop children's understanding of mathematical concepts.
- New learning is introduced in small steps.
- After each small step, children have the opportunity to practise.
- Teachers use this time to assess and support those that need it, prioritising key groups.

Teachers plan to include...

- different representations and models to develop a robust understanding of a concept,
- sentence stems to scaffold and develop reasoning,
- a sequence of questions that encourage children to notice patterns and relationships (intelligent practice),
- challenges to stretch early graspers.

Assessment:

Teachers continuously assess children and respond.

Teachers will consider 4 things:

1. Who needs verbal feedback?
2. Who needs additional teaching?
3. Are there any misconceptions?
4. Who is ready to move on?

05 GUIDE STUDENT PRACTICE



Students need additional time to rephrase, elaborate and summarise new material in order to store it in their long-term memory. More successful teachers built in more time for this.







06 CHECK STUDENT UNDERSTANDING



Less successful teachers merely ask "Are there any questions?" No questions are taken to mean no problems. False. By contrast, more successful teachers check on all students.

Challenge Sheet



Draw it	
Show it	
What mistakes could you make?	
What do you notice?	
Answer it a different way.	
Write your own problem.	

Challenge Yourself

1. Prove it.

Do

Show

Explain

2. Show it practically.

You could use counters, Dienes, cubes, Numicon, a number line etc.

3. Represent it another way.

You could use words, digits, partitioning, a number line, a bar model, a diagram etc.

4. What mistakes might you make?

Which bit might be confusing? Why?

What might you forget to do?

5. What do you notice?

Can you spot a pattern?

6. Can you work out the same answer using a different method?


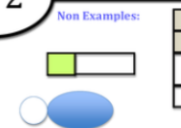
7. Which is the best method? Why?

8. Write a similar question.

9. Write a number story.

10. Write a word problem.

11. Complete a Frayer Model:

<p>Definition: A fraction is usually part of a whole number. $\frac{1}{2}$ is another way of saying 1 out of 2 equal parts. If we had 1 item and divided it equally into 2, it would leave us with $\frac{1}{2}$.</p>	<p>Characteristics:</p> <ul style="list-style-type: none"> - Equal parts of a whole or a set shared into 2 equal pieces - A numerator, which is half the denominator
<p>Examples:</p> 	<p>Non Examples:</p> 

These challenge sheets can be used to stretch early graspers in KS1 and KS2.

Teachers may choose a challenge to deepen a question, or children may select a challenge independently.

Fluency and Problem Solving

- Children who are **secure** will complete 'Fluency' and 'Problem Solving' questions independently.
- They will apply skills learnt in 'Guided Practice' to varied questions.
- Children use the models taught (sentence stems and representations) to reason and problem solve.

- Children who are **not yet secure** will receive additional teaching to address misconceptions or areas of weakness.
- They will have further practice.
- Children will then complete 'Fluency' and 'Problem Solving' questions independently or with support.

By the end of the learning journey most children will have had the opportunity to work independently. Most children will have applied their knowledge to a range of questions and will have accessed reasoning and problem-solving questions.

07 OBTAIN HIGH SUCCESS RATE



A success rate of around 80% has been found to be optimal, showing students are learning and also being challenged. Better teachers taught in small steps followed by practice.

Assessment: Deep Marking

At the end of a learning journey, children's books are fully marked in line with the marking policy.

As much of this as possible is done within the lesson.

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09 INDEPENDENT PRACTICE



Independent practice produces 'overlearning' — a necessary process for new material to be recalled automatically. This ensures no overloading of students' working memory.

Meeting the Needs of all Pupils

At High Hazels we follow a mastery approach. This means we start from a low access point when teaching new content and then teach for depth. As a result, the vast majority of children should be able to access the core learning. For a small number of pupils with SEND needs or language difficulties, this may not be possible. Teachers plan alternative resources for these children.

Children who are working towards or below the age expected level

These children may need adaptations in order to access the learning.

Children work towards the same LO

Teachers will make adaptations based on the needs of their class.

Strategies include:

- working with manipulatives
- giving additional representations as scaffolds
- using Kagan structures
- pre-teaching
- increased adult support
- additional modelling
- reducing cognitive load by giving worksheets or partially completed questions

Children working two year or more below the age expected level

These children need a bespoke curriculum. Birmingham Toolkit is used to assess and track children's progress.

Children work towards a different LO appropriate for their level

Children are only introduced to one small step per lesson.

Within a lesson, children follow a CPA approach.

Children have lots of opportunities to practise.

Children may apply their learning to different questions and complete 'Problem Solving' questions in a lesson.

Children should always have access to concrete resources.

Children have daily focus time to fill gaps using Birmingham Toolkit.

See 'Supporting SEND Across the Curriculum' document for more detail.

The collage illustrates various adaptations for SEND pupils. It includes:

- Working practically:** Worksheets with large numbers and equations, such as $225 + 108 = 333$ and $333 + 108 = 441$, alongside photos of children using physical objects like dice and blocks.
- Use of pictorial representations and models:** A grid with numbers 359 and 712, and a diagram showing the doubling of 20 to 40.
- Simple ways to record to reduce cognitive load:** A worksheet with a grid and simple numbers like 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
- Enlarged questions:** A worksheet with large text and numbers, including a number track from 9 to 12.
- Increased opportunities for repeated practise of a new skill:** A worksheet with multiple instances of a simple addition problem, such as $2 + 2 = 4$.