



Maths Staff Handbook 24-25

At Knights Enham Schools, we want children to enjoy mathematics and feel confident in using their skills and knowledge independently. We want our children to be the best they can be and have a can-do attitude to their learning. We want children to know that mistakes are part of the process of learning and we will provide rich opportunities for them to make sense of the maths through explaining and reasoning together.

Intent

The National Curriculum for Mathematics (2014) aims to ensure that all pupils:

1. 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.
2. **Reason** mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
3. Can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

In addition to achieving the learning outcomes and statutory requirements set out in the National Curriculum, at Knights Enham Schools we also aim to:

- Curriculum is based on the HIAS scheme for learning (2023) and provides full coverage of the National Curriculum,
- Deliver a mathematical curriculum using the CPA approach (concrete, pictorial and abstract),
- Provide opportunities that are linked to real life context,
- Ensure children have developed mental strategies that can be applied in all areas of problem solving and have learnt the key facts vital for Maths,
- Prioritise the teaching and learning of times tables through-out the school using Times Tables Rockstars from Years 3 to 6,
- Promote a positive attitude to Mathematics,
- Cater for a range of learning and teaching styles, giving children a wide range of experiences,
- Develop initiative and an ability to work both independently and in collaboration with others,
- Use mathematical language with confidence and ease.



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 Inclusive and ambitious learning experiences where our school community feels safe and motivated to achieve their best.
 'Together We Achieve'

Implementation

Staff

- All staff to plan weekly maths lessons in accordance with the HIAS scheme of learning, using the set planning template and following the CPA approach.
- Tasks and questions to be used from a variety of resources found in the maths shared folder, for example, 'I see reasoning' and 'White Rose' written in context with learning.

HIAS MOODLE+ RESOURCE

HIAS Scheme of Learning for Mathematics
 Year 1 – Year 6

Long Term Overview Plans for Single Year Group Classes

Hampshire Maths Team
 September 2023
 Final version

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Mathematics Planning Year group: 6 Domain: Fractions, Decimals and Percentages

<p>Objectives Year 5 Sub-division</p> <ul style="list-style-type: none"> - Identify, name, and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. - Compare and order fractions whose denominators are all multiples of the same number. - Add and subtract fractions with the same denominator and multiples of the same number. - Recognise mixed numbers and improper fractions, and convert from one form to another and write mathematical statements > 1 as a mixed number. <p>Key Vocabulary:</p> <table border="1" style="width: 100%;"> <tr> <td>fraction</td> <td>equal</td> <td>denominator</td> <td>numerator</td> </tr> <tr> <td>part</td> <td>equivalent</td> <td>whole</td> <td>simplify</td> </tr> </table>	fraction	equal	denominator	numerator	part	equivalent	whole	simplify	<p>Year 6 Objectives:</p> <ul style="list-style-type: none"> * Use common factors to simplify fractions, use common multiples to express fractions in the same denominator. * Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. * Y6: add and subtract fractions with the same denominator and multiples of the same number. * Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. * Compare and order fractions, including fractions > 1
fraction	equal	denominator	numerator						
part	equivalent	whole	simplify						

<p>C</p>	<p style="text-align: center;">P</p> <p style="text-align: center;">ADDING FRACTIONS</p> $\frac{3}{12} + \frac{8}{12} = \frac{11}{12}$	<p style="text-align: center;">A</p> <p style="text-align: center;">Problem Solving</p> <p>Here are some fraction cards. All of the fractions are equivalent.</p> <table border="1" style="width: 100%;"> <tr> <td>$\frac{4}{8}$</td> <td>$\frac{B}{C}$</td> <td>$\frac{20}{50}$</td> </tr> </table> <p>$A + B = 10$ Calculate the value of C.</p> <hr/> <p style="text-align: center;">Reasoning</p> <p>In Key Stage 1, there are 30 boys and 18 are girls. How many more girls are there than boys? Explain how you know.</p>	$\frac{4}{8}$	$\frac{B}{C}$	$\frac{20}{50}$
$\frac{4}{8}$	$\frac{B}{C}$	$\frac{20}{50}$			

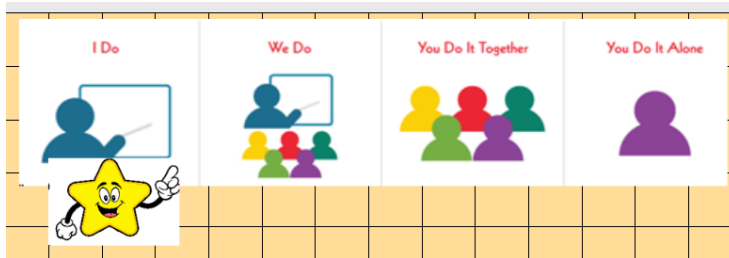
Maths	Monday 30th Oct	Tuesday 31st Oct	Wednesday 1st Nov	Thursday 2nd Nov	Friday 3rd Nov
Starter:	1. POWER				
Objective	I can represent fractions.		I can compare and order fractions.	I can add and subtract fractions with the same denominator.	I can add and subtract fractions with different denominators
I do	<p>INSET</p> Introduce that a fraction is an equal part of a whole. Model with foam fractions % Discuss what the numerator and denominator represent. Explain difference between unit/non-unit fraction. Model with foam fractions and bar models how to find equivalent fractions/simplify fractions.		Explain that denominators need to be the same when ordering/comparing. Model finding common denominator/sum/diff. www.inmaths.com order 1/8 and 2/4, 100/100. Model comparing two fractions using inequality symbols.	Model adding and subtracting where the denominator is the same. Show representation on a bar model to represent this.	Model adding and subtracting where the denominator is different. Re-cap equivalent fractions to support this. Show representation on a bar model to represent this.
We do	Show $\frac{3}{9}$ a fraction on the board $\frac{3}{9}$ to represent it on a bar model. $\frac{3}{9}$ to find 2 equivalent fractions for $\frac{3}{9}$ as a class with CT.		As a class, $\frac{3}{9}$ to order 3 fractions on board. (Model representations on a bar model)	$\frac{3}{9}$ to use bar model representations on their tables to show adding/subtraction of fractions.	
You do (AFL)	$\frac{3}{9}$ to represent $\frac{4}{5}$ using a bar model. $\frac{3}{9}$ to find 2 equivalent fractions and also represent on bar model.		$\frac{3}{9}$ to order 3 fractions on board And compare 2 given fractions.	$\frac{3}{9}$ to solve an addition and subtraction question (1st time in pair, 2nd independently).	
SEND Support WHEN REQUIRED	I can represent Fractions. Children to use foam fractions to show representations. $\frac{3}{9}$ to also create equivalents from this.		I can compare and order fractions. Using foam fraction representations to support comparisons.	I can add and subtract fractions with the same denominator. Focus upon fluency.	I can add and subtract fractions with different denominators. Greater opportunities for problem solving.
ARE	Fluency, reasoning and problem solving questions, using concrete example to show understanding.		Fluency and reasoning style questions to establish depth/breadth of understanding.	Always. Always . You can never add two fractions together that would result in the numerator being larger than the denominator.	Problem solving style question to broaden depth/breadth of understanding.
60	Build conceptual links from multiplication & division unit. (If I know 6 is my denominator, what other multiples do I know to find equivalent fractions?)		$\frac{3}{9}$ to explain the steps they would have to follow when ordering fractions with different denominators.	Always. You can never add two fractions together that would result in the numerator being larger than the denominator.	$\frac{3}{9}$ to write their own problem-solving question for a peer to solve.

- All staff to use and refer to the calculation policy when planning and delivering lessons,
- Lessons in KS2 to start with arithmetic 'precision teaching' to activate prior learning, address identified misconceptions and improve mental arithmetic.


09.09.24

- 1) $232 + 130 =$
- 2) $4,728 + 3,200 =$
- 3) $2,300 - 300 =$
- 4) $648 - 71 =$
- 5) $5 \times 4 =$
- 6) $50 \times 4 =$
- 7) $36 \div 3 =$
- 8) $360 \div 3 =$
- 9) Write the number 4,783 in words.
- 10) How many tens in the number 4,873?
- 11) What's the value of the underlined digit? 5,682
- 12) Write the number forty two thousand, eight hundred and seventy three.

- All lessons to focus upon 'I do, we do, you do approach', clearly displayed at the top of each page of the Maths flip.



- All children to be provided with problem solving and reasoning opportunities, irrespective of ability, presented in the following format.

Fluency	<p>I can represent fractions</p> <p>Use the foam fractions to represent the following, as well as an equivalent fraction (photos required):</p> <ol style="list-style-type: none"> $\frac{1}{2}$ $\frac{1}{4}$ $\frac{3}{4}$ 	Problem Solving	<p>★ is a prime number. ♥ is a multiple of 10</p> <p>The fraction $\frac{\star}{\heartsuit}$ can be simplified. Find a pair of possible values.</p> <p style="text-align: right;">★ = <input type="text"/> ♥ = <input type="text"/></p>
Fluency	 <p>Use the fraction wall to write each fraction in its simplest form.</p> <p>a) $\frac{6}{10} = \frac{\square}{\square}$ c) $\frac{8}{10} = \frac{\square}{\square}$</p> <p>b) $\frac{9}{10} = \frac{\square}{\square}$ e) $\frac{4}{10} = \frac{\square}{\square}$</p>	Reasoning	<p>Mo, Eva and Ron are trying to simplify $\frac{5}{10}$.</p> <p>Mo: "I cannot simplify this, because one number is odd and the other is even."</p> <p>Eva: "I cannot simplify this, because only one number can be halved."</p> <p>Ron: "I can simplify any fraction."</p> <p>Do you fully agree, partly agree or completely disagree with each person?</p>

- Children's progress to be continually assessed using: daily and weekly assessment, Insight tool and end of phase data drops,
- High impact teaching to be employed to ensure gaps are closed in children's learning,
- Next steps are used to consolidate and further understanding,
- Times Table Rockstars used by all classes to support learning and retention of Times Tables.
- Class teachers to work with SENDCo and use diagnostic tools to identify and deliver focused interventions,
- Staff to mark in accordance with school's marking policy.



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Weekly Lesson Expectations

- Maths to be taught daily
- Arithmetic precision teach to be delivered 4 times a week in the first 15 minutes of each lesson.
- 1 x 15 minutes slot to be used for explicit times table teaching (resource packs are available in Maths folder).
- At least one **practical** lesson to be taught each week, using Teach Active, providing the children with an opportunity to explore concepts and concrete resources.
- Lessons to be delivered in accordance with the progress of the pupils – informed via Insight.
- TTRS gigs run once per month to update baseline.
- TTRS used during morning task time
- Staff to update Times Tables progress at the end of each unit.



Book Expectations

I can calculate percentages of amounts.

Match the fractions to the equivalent percentages.

$\frac{1}{2}$	25%
$\frac{1}{100}$	1%
$\frac{1}{10}$	50%
$\frac{1}{4}$	10%

Complete the calculations:

a) 50% of 3,000
 b) 10% of 100
 c) 25% of 2,000
 d) 1% of 3,000

NS Now try a reasoning question

Ben lost 20% of his sweets when the bag burst open and 12 of them fell on the floor.

Ben thinks that he had 45 sweets in his bag before losing some.

Is Ben correct? Explain how you know.

Ben is incorrect. I know this as he had 20% drop on the floor which was $\frac{1}{5}$ I needed to multiply this amount by 5 to find 100% which was his original amount. He should have started with 60 sweets, not 45.

A thorough explanation
 NS Now show represent this on a bar model.

60
12 12 12 12 12

Handwritten calculations:

$1 = 50\%$
 2
 $1 = 1\%$
 100
 $1 = 10\%$
 10
 $1 = 25\%$
 4
 a) $3000 \div 2 = 1500$
 b) $100 \div 10 = 10$
 c) $2000 \div 4 = 500$
 d) $3000 \div 100 = 30$

- All books in years 4,5 and 6 to have margins on each page (3 squares wide)
- Each lesson to have a date and 'I can' written (or on printed sheet) and underlined
- Children to cut and stick in each question individually then show the working out beside before advancing to another question.
- Questions to be individually marked
- Next steps used to consolidate and to challenge.
- Expectation sheet in the front of each book (see below).



Presentation Expectations

I can calculate percentages of amounts.

Match the fractions to the equivalent percentages.

$\frac{1}{2}$	25%
$\frac{1}{100}$	1%
$\frac{1}{10}$	50%
$\frac{1}{4}$	10%

Complete the calculations:

- 50% of 3,000
- 10% of 100
- 25% of 2,000
- 1% of 3,000

Answers to questions written to the right of question and continued underneath if extra room required.

1 = 50% ✓
 2 = 1% ✓
 100 = 10% ✓
 10 = 25% ✓

Write one digit in each square.

Adults to use next steps to consolidate learning, or to extend where appropriate.

a) $3000 \div 2 = 1500$
 b) $100 \div 10 = 10$
 c) $2000 \div 4 = 500$ ✓
 d) $3000 \div 100 = 30$ ✓

Reasoning questions answered in full sentences.

Stick in task sheet along 3-square margin.

Ben lost 20% of his sweets when the bag burst open and 12 of them fell on the floor.
 Ben thinks that he had 45 sweets in his bag before losing some.
 Is Ben correct? Explain how you know.

$12 \times 5 = 60$
 Ben is incorrect. I know this as he had 20% drop on the floor which was $\frac{1}{5}$ needed to multiply this amount by 5 to find 100% which was his original amount. He should have started with 60 sweets, not 45.

A thorough explanation
 Now show represent this on a bar model.

Adult to respond using marking code using green/ orange pen.

Pupil to respond to marking using purple pen.

Marking Symbols

- ✓ Correct answer - well done!
- ✓✓ Great work - followed 'I can'!
- Ⓜ Next steps required for the adult/ question.
- Ⓢ Verbal discussion in lesson.
- Ⓢ Reason given by adult in class.
- ⓈⓈ Study Teaching in MFL.
- Ⓢ Highlighting achievement by the adult.
- ⓈⓈ Please Pupil for excellent work.



Subject Leader

- Ensure progression in attainment from all year groups
- Monitor planning, teaching and assessment
- Teach demonstration lessons when appropriate
- Ensure teachers are familiar with the framework and help them to plan lessons
- Lead by example in the way they teach in their own classroom
- Prepare, organise and lead INSET, with the support of the Headteacher
- Work co-operatively with the SENCO
- Observe colleagues, when appropriate, with a view to identifying the support they need
- Purchase mathematical equipment that will raise attainment;
- Attend INSET provided by LA mathematics consultants and feedback important information to staff
- Analyse children's test results to measure attainment and improve mathematics within the school
- Conduct an annual review of mathematics and the production of a report for the governors

Impact

- Teaching and learning is consistent across all years and classes,
- High standards and quality of teaching and learning across the school in Maths,
- Improved outcomes for all pupils,
- Improved SEND and GD outcomes through appropriate scaffolding and challenge,
- A variety of tasks that are in accordance with the 3 National Curriculum aims of Mathematics,
- Lessons and teaching that show real life context,
- Children can be seen to use a variety of problem-solving strategies including the CPA approach.

School Values

Resilience – 'mathematical resilience' is how pupils in our school approach Mathematics with confidence, persistence in the face of difficulty and a willingness to discuss, reflect and apply.

Collaboration – Children are regularly provided with opportunities to work with others to complete mathematical challenges.

Nurture – All children are provided with work at their level so that they can achieve and have a sense of success in their learning.

Respect – Children understand and respect each other's opinions, mathematical thinking and strategies. Children accept that there is more than one way to solve a problem.

Independence – Children have the skills and knowledge to feel confident to tackle problems independently, using the mathematical tools and equipment provided.