Maths

How has our curriculum been constructed?

Why have we done it this way ?

How has our curriculum been constructed?

We follow the National Curriculum!

- We have specified the learning for each year group and for each half term throughout KS1 and KS2…

It's a 'Spiral Curriculum':

- Topics get significant time and get revisited each year
- Topics grow in complexity
- New learning related to previous learning
- Mathematical understanding increases.

How?

- **Maths – No Problem!** – DfE-approved textbook schemes. Teachers have adapted the scheme to suit the needs of our individual children eg adding starter activities, extension tasks etc….. **MNP enables a scaffolded approach 'Concrete Pictoral Abstract approach' to secure the learning of new knowledge. MNP encourages Maths Mastery / Mathematical thinking.**
- **Concrete – children use 'things' to learn a concept**
- **Pictoral – children draw out the concept**
- **Abstract – they apply their knowledge of the concept mentally**

- **WhiteRose – To further support the needs of all pupils the 'Maths – No Problem!' scheme is supplemented with White Rose.** The aim is for pupils to become fluent in the fundamentals of mathematics, to be able to reason and to solve problems. Pupils use their mathematical thinking books to secure conceptual understanding and deepen mathematical thinking.

Also…

- In addition, other materials such as NCETM Maths Mastery, Test Base materials, TimesTable Rockstars, numicom are also used.

- **Know more, remember more** – **OFSTED Cognitive Science.**
- Pupils build on knowledge each lesson begins with a 'know more, remember more task' – a starter activity in the form 3-4 question retrieval quiz, which, requires pupils to use prior knowledge:
- Q1 – A question from last lesson, Q2 – A question from the previous topic, Q3 – A question from last term

- Wider curriculum – **Cultural capital maths – raise mathematical curiosity,** parent workshops, celebrating London Maths Week, cross curricular links (STEM science , Geography Field work coordinates) , maths displays interactive- maths learning zone.

How does content taught in previous lessons/topics/years prepare pupils for subsequent learning?

Maths Curriculum Thread
Place Value

- Place value is a fundamental mathematical concept that lays the groundwork for understanding numbers, their magnitude, and their relationships. It is a critical thread that runs through our maths curriculum, impacting various aspects of numerical understanding.
- Here's how our curriculum ensures that place value progresses across different year groups, from nursery to Year 6, aligning with the Maths National Curriculum:

Place Value:

Nursery and Reception (Early Years Foundation Stage – EYFS)

- **Understanding Quantity:** Children start to recognise and count objects, understanding that numbers represent quantities. They begin to understand the concept of one-to-one correspondence.
- **Comparing Numbers:** Children start comparing groups of objects, identifying which group has more or fewer items.
- **Simple Counting:** They start to count sequentially and begin to recognise numerals.

Place Value:
Key Stage 1 (Years 1 and 2)

- **Place Value of Two-digit Numbers:** Children learn to recognise the tens and ones place in two-digit numbers (e.g., understanding that 32 consists of 3 tens and 2 ones).
- **Comparing and Ordering Numbers:** They compare and order numbers within 100, understanding the significance of tens and ones in determining larger or smaller values.
- **Addition and Subtraction:** Understanding place value is crucial for performing addition and subtraction, where regrouping and exchanging are based on place value principles (e.g., carrying in addition or borrowing in subtraction).

Place Value:
Lower Key Stage 2 (Years 3 and 4)

- **Understanding Hundreds:** Children extend their understanding to three-digit numbers, recognising the hundreds, tens, and ones places (e.g., 347 consists of 3 hundreds, 4 tens, and 7 ones).
- **Expanded Notation:** They learn to represent numbers in expanded form (e.g., 300 + 40 + 7) to deepen their understanding of place value.
- **Mental Arithmetic:** Place value is crucial in mental arithmetic strategies such as rounding numbers to the nearest ten or hundred.

Place Value:
Upper Key Stage 2 (Years 5 and 6)

- **Decimal Place Value:** Pupils explore decimal place value, understanding the significance of tenths, hundredths, and thousandths.
- **Operations with Larger Numbers:** They apply place value understanding to perform operations with larger numbers, including multiplication and division.
- **Fractions and Decimals:** Understanding the relationship between fractions and decimals relies on a solid grasp of place value principles

What does it look like in the classroom?

Maths Lesson Structure follows a set lesson cycle linked to Rosenshine's Principles

1. Know more, Remember more – Quizzing/retrieval
2. Learning Objective shared
3. Vocabulary – Links to Oracy
4. Explore task – new concept introduced, use of manipulatives linked to real life context
5. Teaching modelling – Live modelling/scaffold learning
6. Partner Practise – build confidence for new concept
7. Independent Practise
8. Independent Task from the workbook – Silent focused work/fluency
9. Green Pen 'Check and Correct!' – Feedback/AfL
10. Amaze ME! – Challenge task linked new concept independent for those ready for challenge/ New concept revisited for those needing more time to secure new concept

HOW THIS PLANNING WORKS

Teaching slides

Partner work

Independent Work

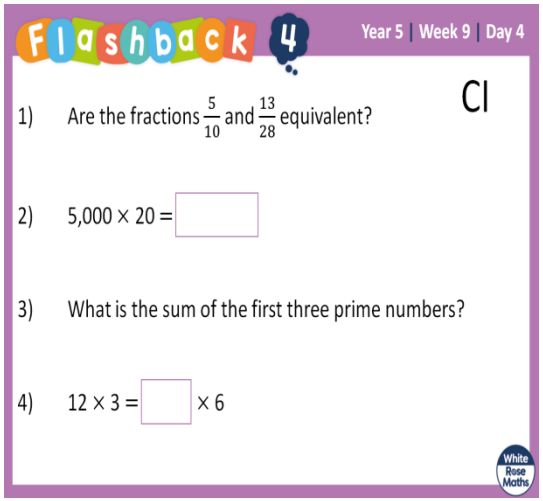
Amaze Me

Maths Lesson Structure

- What's the purpose of this part of the lesson? (teaching with intention)
- How should it be taught? (consistency in high quality teaching)
- What outcome for the children? (identify progression/AfL)

Know more, remember more

1)Last lesson
2)Last week
3) Last topic



Use White Rose Flashback to support.
White board work

Know more, remember more (Previously 'Starter')- Children given opportunity to revise previous learning building on knowledge each lesson.

I say, you say, we say!

We are learning to find equivalent fractions using pictorial methods.

Vocabulary

equivalent
equal parts
equivalent fractions
whole number
proper fraction
improper fraction
numerator
denominator
half
quarter
sixth
hundredth
divide into

Sentence starters

Sentence starters
Each piece is a ____ of the whole plot.
When ___ equal parts become ___ equal parts, ___ equal parts become ___ equal parts.

Vocabulary –Depth of understanding is developed through pupils' being able to communicate using the correct mathematical language. We ask pupils to explain, justify and prove their ideas so that they are deepening their understanding of a concept (with use of mathematical language). Key Vocabulary is therefore referred to and revised throughout the lesson.

Let's Explore

Explore

Sam and his mum are planting vegetables in a vegetable plot.

Teacher opportunities

- Promote curiosity – buzz for maths
- Understanding of the world – Build on cultural capital for maths
- Explore problem solving strategies
- Assess existing calculations methods
- Conceptual understanding

Explore (Previously 'In Focus')– Each lesson begins with an 'In Focus' task (with real life application where appropriate). Children often work in groups using concrete materials to solve the problem. The teacher then leads a discussion, using questioning to challenge and move learning forward.

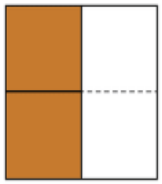
Let's Learn

1 Divide $\frac{1}{2}$ of the plot into 2 equal pieces.

When $\frac{1}{2}$ is divided into 2 equal parts, $\frac{1}{2}$ becomes $\frac{2}{4}$.

$\frac{1}{2}$ and $\frac{2}{4}$ are equivalent fractions.

$\frac{1}{2} = \frac{2}{4}$

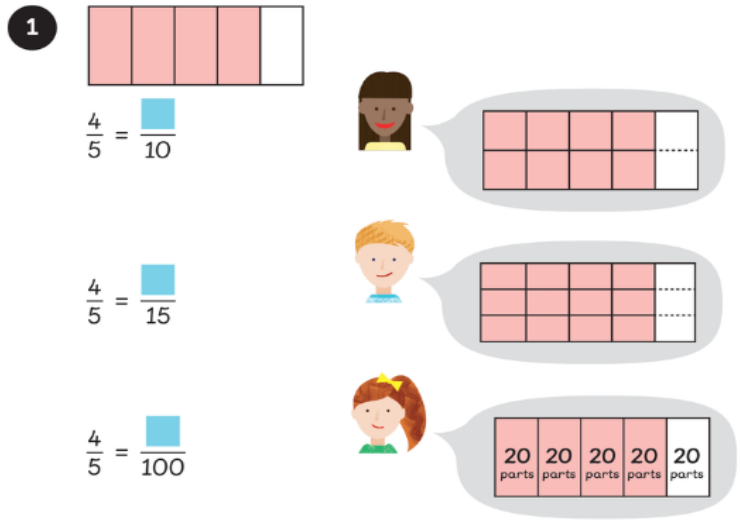


<u>Teacher opportunities</u>

- Modelling
- Links with key vocabulary – model the language and thought process

Lets Learn – The class use 'Lets Learn' to look at various methods in more detail to solve the problem. The questions and examples are carefully varied by expert authors to encourage pupils to think about the maths. Rather than provide mechanical repetition, the examples are designed to deepen pupils' understanding and reveal misconceptions.

Guided Practice – Partner Work

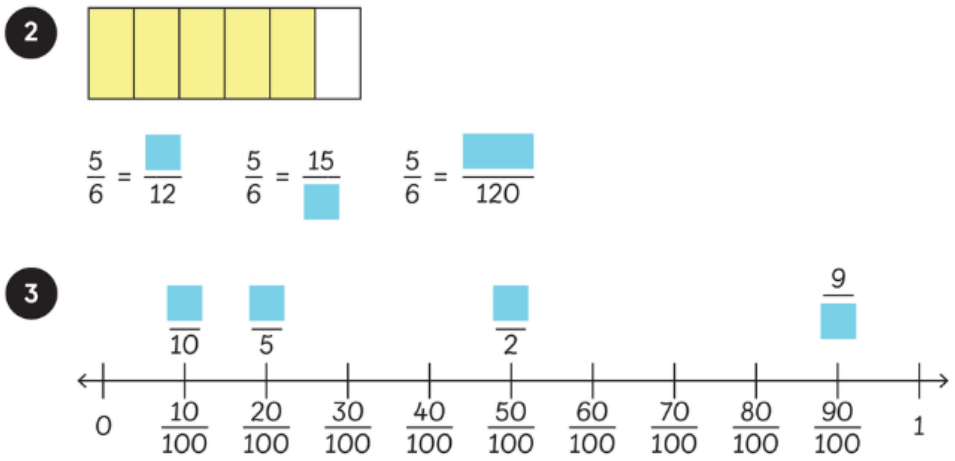


Teacher opportunities

- Modelling
- **Using white board – 3, 2, 1 … Show Me!**
- Teacher zooms in on partner work – listening out for misconceptions, AfL to feedback to the whole class, further modelling required?
- Teacher working with focus children.

Guided Practice – An opportunity for children to work through strategies learnt in the previous parts of the lesson with support where needed. Children are to move to using a pictorial and abstract approach when ready. Concrete Pictorial Abstract (CPA) Approach means pupils learn new concepts initially using concrete examples, such as counters, then progress to drawing pictorial representations before finally using more abstract symbols, such as the equals sign.

Guided Practice – Independent

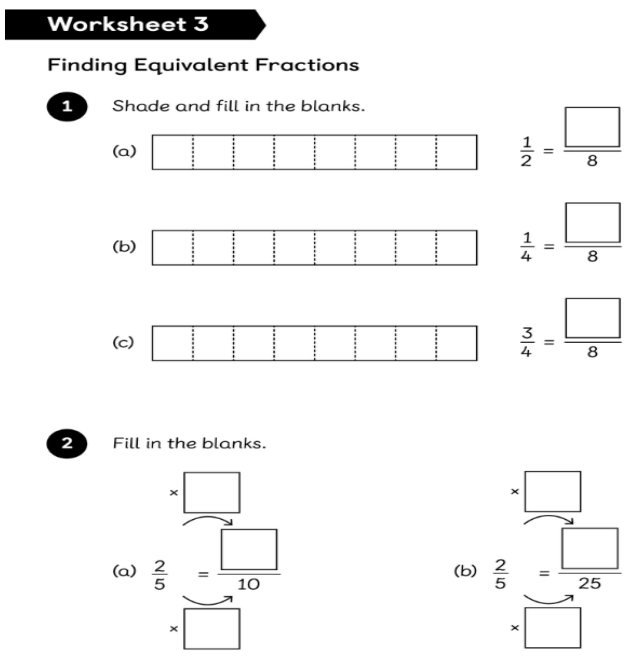


Teacher opportunities

- Modelling
- **Using white board – 3, 2, 1 … Show Me!**
- Teacher zooms in on partner work – listening out for misconceptions, AfL to feedback to the whole class, further modelling required?

Guided Practice – An opportunity for children to work through strategies learnt in the previous parts of the lesson with support where needed. Prepares child for independent work –confidence building.

Independent – Workbook page 143



Worksheet 3

Finding Equivalent Fractions

1 Shade and fill in the blanks.

(a) $\frac{1}{2} = \frac{\square}{8}$

(b) $\frac{1}{4} = \frac{\square}{8}$

(c) $\frac{3}{4} = \frac{\square}{8}$

2 Fill in the blanks.

(a) $\frac{2}{5} = \frac{\square}{10}$ (× □ above, × □ below)

(b) $\frac{2}{5} = \frac{\square}{25}$ (× □ above, × □ below)

Workbook – When ready, children work independently in workbooks. Differentiated tasks and activities are designed to be easy for pupils to enter while still containing challenging components. For advanced learners, the textbooks also contain non-routine questions for pupils to develop their higher-order thinking skills.

Check and Correct

2 Use > or < to fill in the blanks.

(a) $\frac{5}{6}$ [>] $\frac{7}{12}$

(b) $\frac{11}{15}$ [>] $\frac{2}{5}$

(c) $\frac{7}{8}$ [>] $\frac{11}{16}$

(d) $\frac{3}{5}$ [<] $\frac{17}{20}$

(e) $\frac{15}{28}$ [<] $\frac{4}{7}$

(f) $\frac{7}{9}$ [>] $\frac{20}{27}$

3 Use > or < to compare the fractions. Then, order the fractions from the smallest to the greatest.

(a) $\frac{1}{3}$ [<] $\frac{5}{6}$ [>] $\frac{7}{12}$ — $\frac{1}{3}, \frac{7}{12}, \frac{5}{6}$

(b) $\frac{3}{4}$ [<] $\frac{7}{8}$ [<] $\frac{11}{12}$ — $\frac{3}{4}, \frac{7}{8}, \frac{11}{12}$

(c) $\frac{4}{5}$ [>] $\frac{11}{15}$ [<] $\frac{19}{25}$ — $\frac{11}{15}, \frac{19}{25}, \frac{4}{5}$

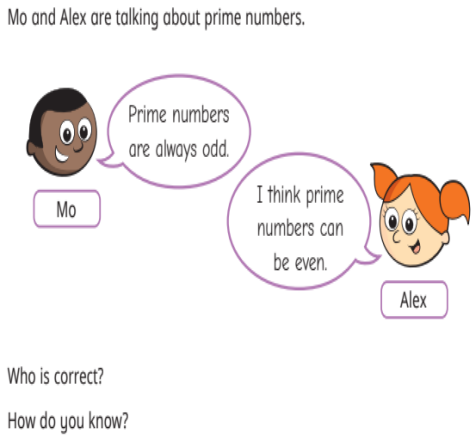
(d) $\frac{5}{7}$ [>] $\frac{18}{35}$ [<] $\frac{9}{14}$ — $\frac{18}{35}, \frac{9}{14}, \frac{5}{7}$

Teacher opportunities

- Check and correct – green pen marking
- AfL

Check and Correct – This part of the lesson will now be referred to as 'Check and correct'. Assess how secure your children are. Can you move them on? Do you need to deepen their conceptual understanding? Will your next (or upcoming) lesson need to be a journaling lesson based on this? Will you need to set homework linked to this?

AMAZE ME - Journalling



Next :

Can you solve this problem in another way?

Prove it!

Who is correct? How do you know? Give a written example.

Teacher opportunities

- Use the language – 'Prove it!" "Explain It", "Check and Correct", "Can you solve it in a different way?"

Challenge – To be completed in Journals for those who have achieved 100% on workbook task. The children who have struggled with the workbook task will continue to check and correct, address misconcept.
Problem Solving activities are designed to be taught using problem-solving approaches to encourage pupils' higher-level thinking. The focus is on working with pupils' core competencies, building on what they know to develop their relational understanding