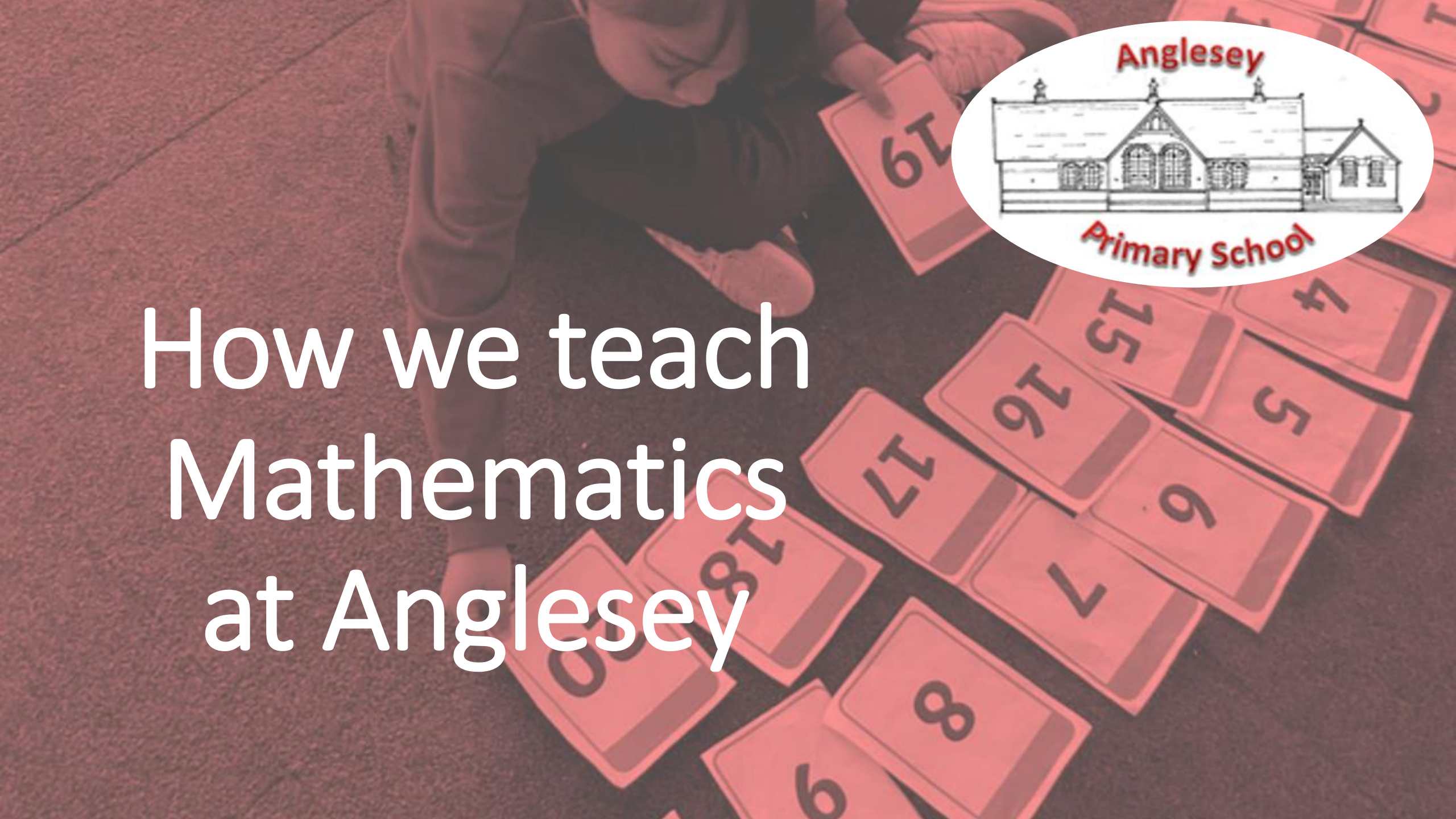
How we teach Mathematics at Anglesey



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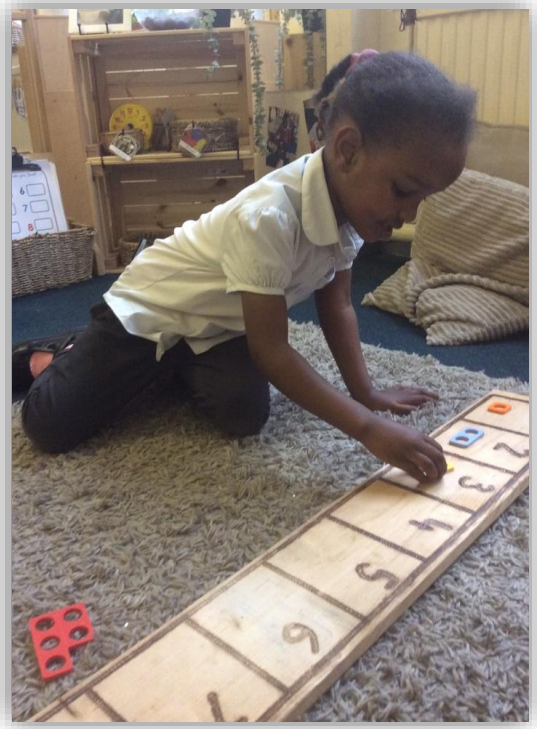
Our School Vision:

Inquisitive, Resilient, Independent

At Anglesey, we are a vibrant and nurturing school community, where children are given the skills to become, inquisitive, resilient, independent learners.
Our curriculum provides a range of creative, challenging and inspiring experiences for all. This equips our children with the life skills to be happy, flourish and be successful…*Today, tomorrow and in the future.*

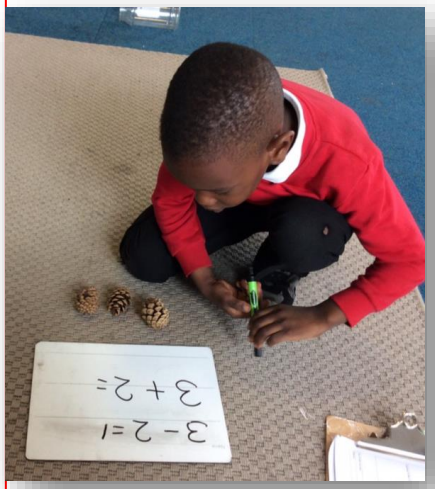
1. Subject Vision Statement

When teaching Maths for mastery at Anglesey, pupils are given time to think deeply about the maths and really understand concepts at a relational level rather than as a set of rules or procedures. This slower pace ensures that students are secure in their understanding. Concrete, Pictorial, Abstract (CPA) is our key approach to teaching pupils a deep and sustainable understanding of maths. We aim to ensure that all children become fluent in the fundamentals of Mathematics, are able to reason mathematically and can solve problems applying their Mathematics. We are committed to developing children's curiosity as well as an appreciation and beauty of the power of Mathematics and ensure children recognise the importance of Maths in the wider world.



2. Subject Implementation

Our Mathematics curriculum follows the NC to provide a broad and balanced curriculum taught through daily Mathematics lessons. There are specific objectives (Ready to Progress Criteria), which are given priority across year groups, in order for us to be confident that pupils are working at expected levels and are ready for the next year group. All classrooms are all rich Mathematical language environments and working walls ensure new and previously learned learning is accessible and we use Maths Mastery to broaden and deepen understanding. We aim for children to be confident in each yearly set of objectives and develop their ability to use this knowledge to develop a greater depth of understanding to solve varies fluency problems as well as problem solving and reasoning questions. Although not exclusively, as a school we use planning from White Rose Maths. Pupils in Year 4 take part in the Multiplication Tables Check, in order for pupils to recall their times tables fluently. We use 'Times Tables Rockstars' as an online home learning platform, which also offers resources to be used in the classroom.



3. Meeting the aims of the National Curriculum

Purpose of study

Mathematics is a creative and highly interconnected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Aims

The national curriculum for mathematics aims to ensure that all pupils:

•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

•reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language

•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

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

3. Meeting the aims of the National Curriculum

In Key Stage 1:

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the 4 operations, including with practical resources [for example, concrete objects and measuring tools].
At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.
By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.
Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Programme of Study cover:

Number - number and place value
Number - addition and subtraction
Number - multiplication and division
Number - fractions
Measurement
Geometry - properties of shapes
Geometry - position and direction
Statistics

3. Meeting the aims of the National Curriculum

In Key Stage 2:

The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the 4 operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

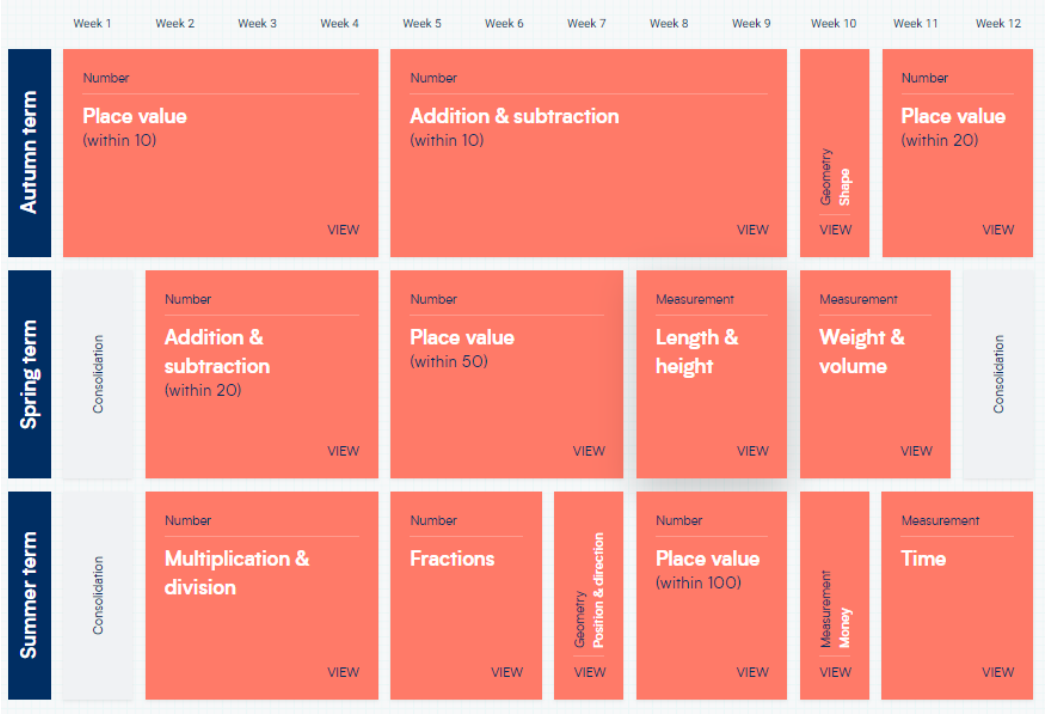
Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word-reading knowledge and their knowledge of spelling.

Programme of Study cover:

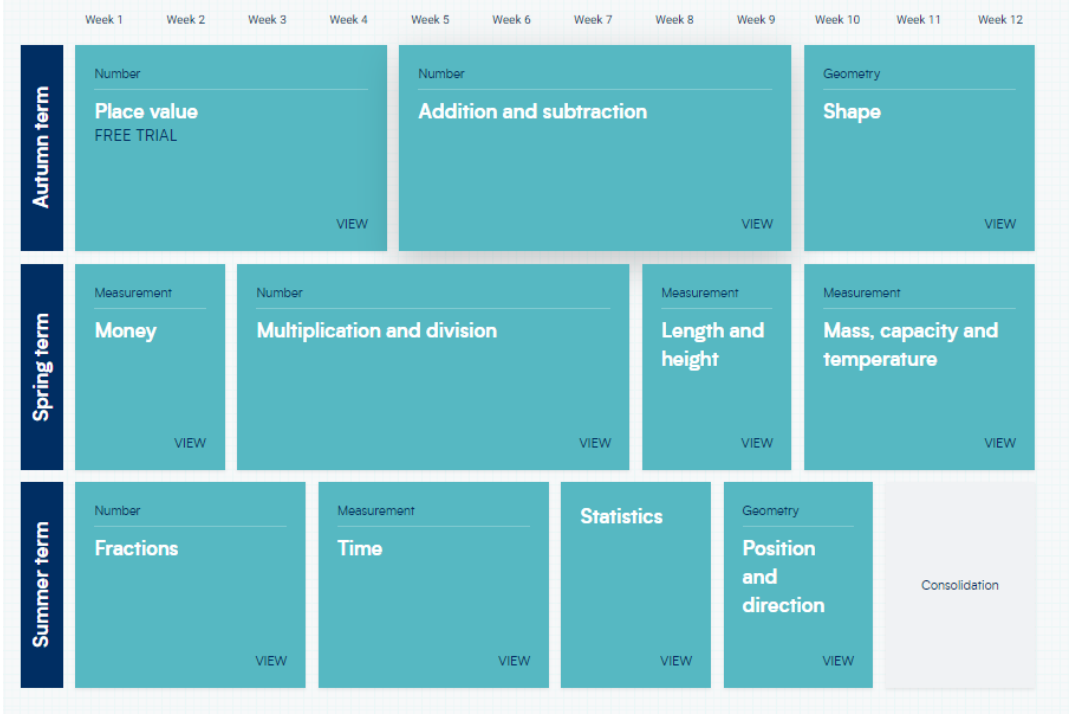
Number - number and place value
Number - addition and subtraction
Number - multiplication and division
Number – fractions (including decimals and percentages)
Measurement
Geometry - properties of shapes
Geometry - position and direction
Statistics
Ratio and Proportion
Algebra

4. KS1 Curriculum Topic Overview

Year 1

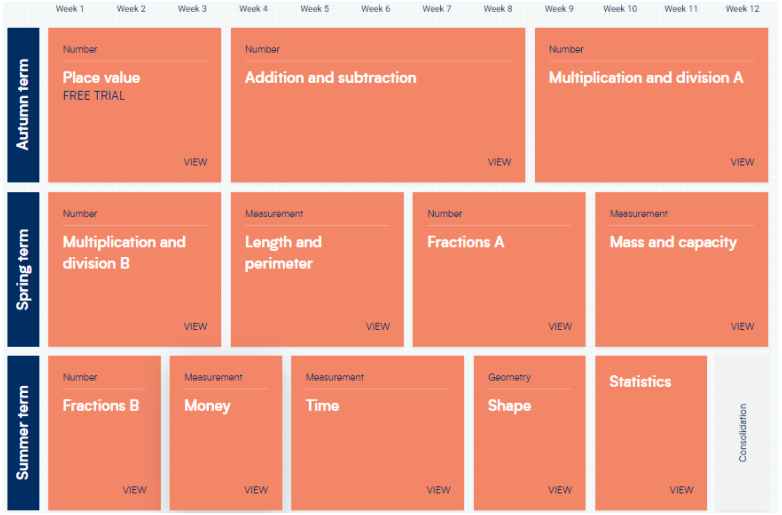


Year 2

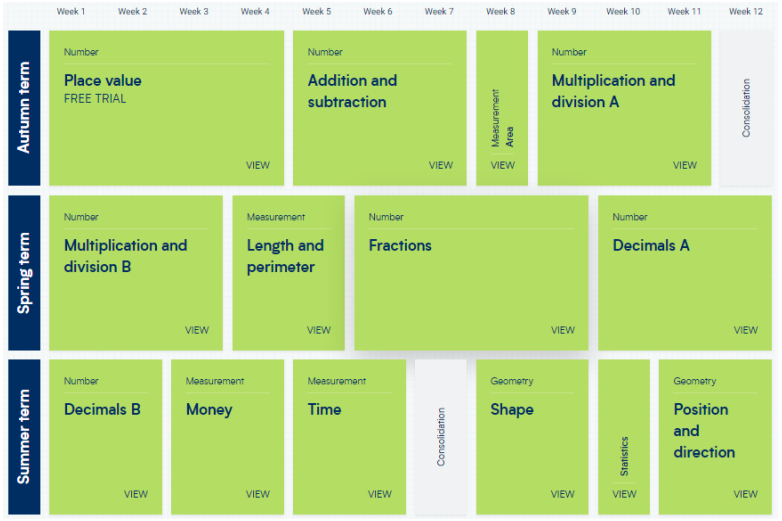


4. KS2 Curriculum Topic Overview

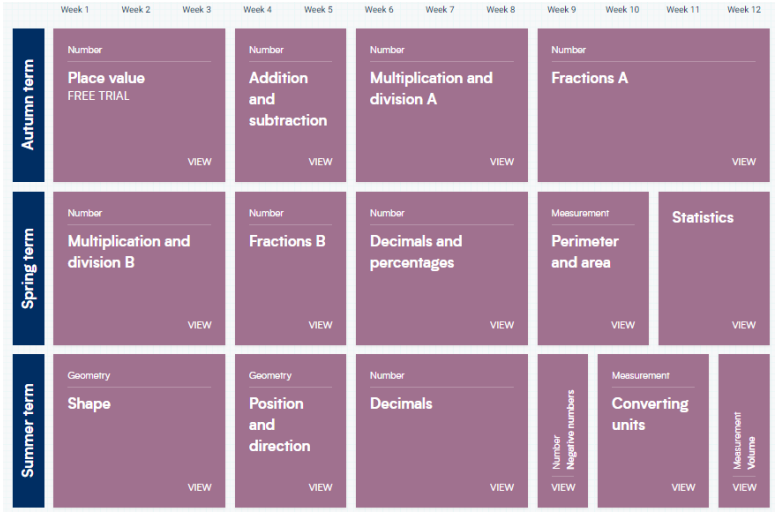
Year 3



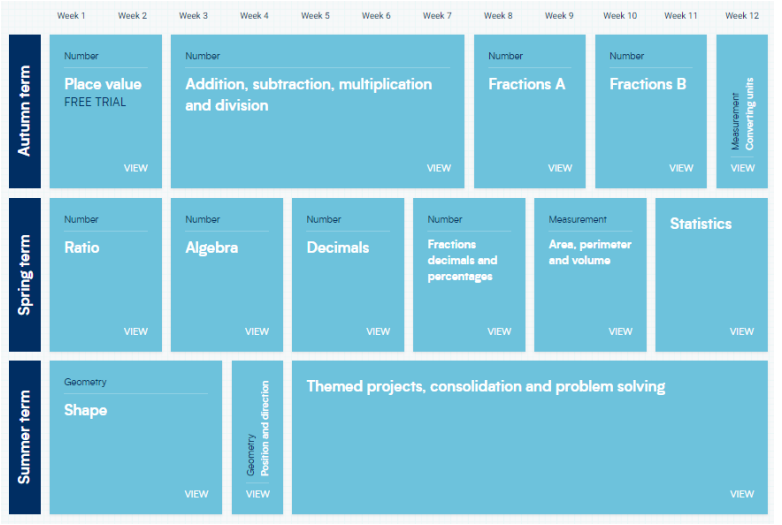
Year 4



Year 5



Year 6



5. Intended progression through the curriculum

Click here:

https://assets.whiteroseeducation.com/resource-pages/primary/National-Curriculum-Progression-Primary.pdf

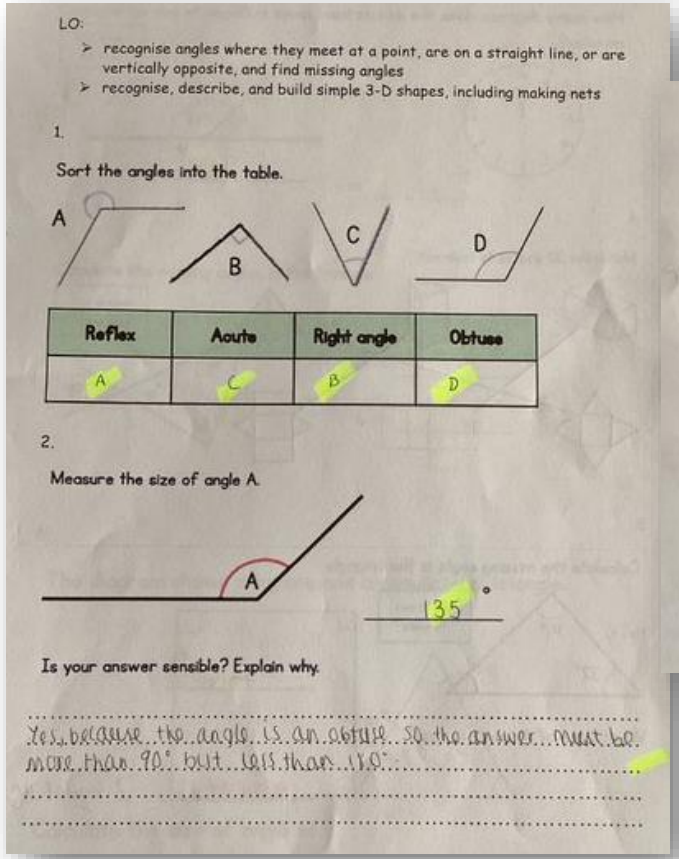
National Curriculum Progression

Years 1 to 6

6. Subject Impact

Each pupil has a maths folder, both to help them remember and recall previous learning (particularly worked examples and explanatory diagrams) as well as gain a sense of progression and achievement. The work in these folders is moderated across year groups and across the school. We have a process of monitoring to ensure standards and this includes, observations, work trawls, learning walks and Lesson Study to demonstrate dialogic teaching. WalkThru techniques are incorporated in every Mathematics lesson, including a daily review, questioning, worked examples and independent practice. Each term, Year Groups undertakes a formative assessment, the results of which are not published, but used for future planning and to highlight any individual learning gaps. Teachers make termly judgements for each pupil against year group expectations and bring this information to Pupil Progress meetings, alongside updates on intervention groups. We report the standards for individual pupils at the end of Reception and Year 6.

7. Examples of work



LO:

- recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles
- recognise, describe, and build simple 3-D shapes, including making nets

1.

Sort the angles into the table.

A B C D

Reflex	Acute	Right angle	Obtuse
A	C	B	D

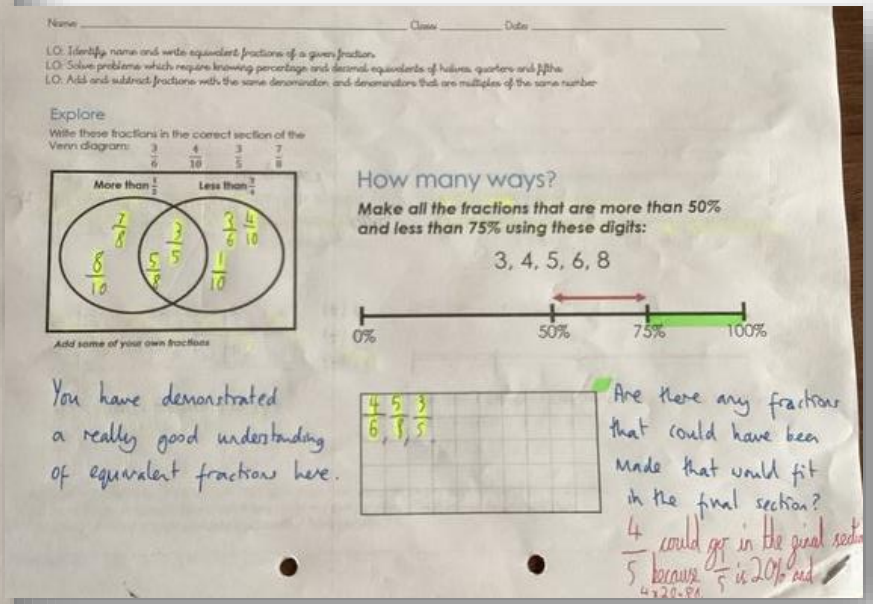
2.

Measure the size of angle A.

A 135°

Is your answer sensible? Explain why.

Yes, because the angle is an obtuse. So the answer must be more than 90° but less than 180°.



Name _____ Class _____ Date _____

LO: Identify, name and write equivalent fractions of a given fraction.
LO: Solve problems which require knowing percentage and decimal equivalents of halves, quarters and fifths.
LO: Add and subtract fractions with the same denominator and denominators that are multiples of the same number

Explore

Write these fractions in the correct section of the Venn diagram: $\frac{3}{6}$ $\frac{4}{10}$ $\frac{3}{5}$ $\frac{7}{8}$

More than $\frac{1}{2}$ | Less than $\frac{3}{4}$

$\frac{7}{8}$ $\frac{8}{10}$ $\frac{3}{5}$ $\frac{5}{8}$ $\frac{3}{6}$ $\frac{4}{10}$ $\frac{1}{10}$

Add some of your own fractions

How many ways?

Make all the fractions that are more than 50% and less than 75% using these digits:

3, 4, 5, 6, 8

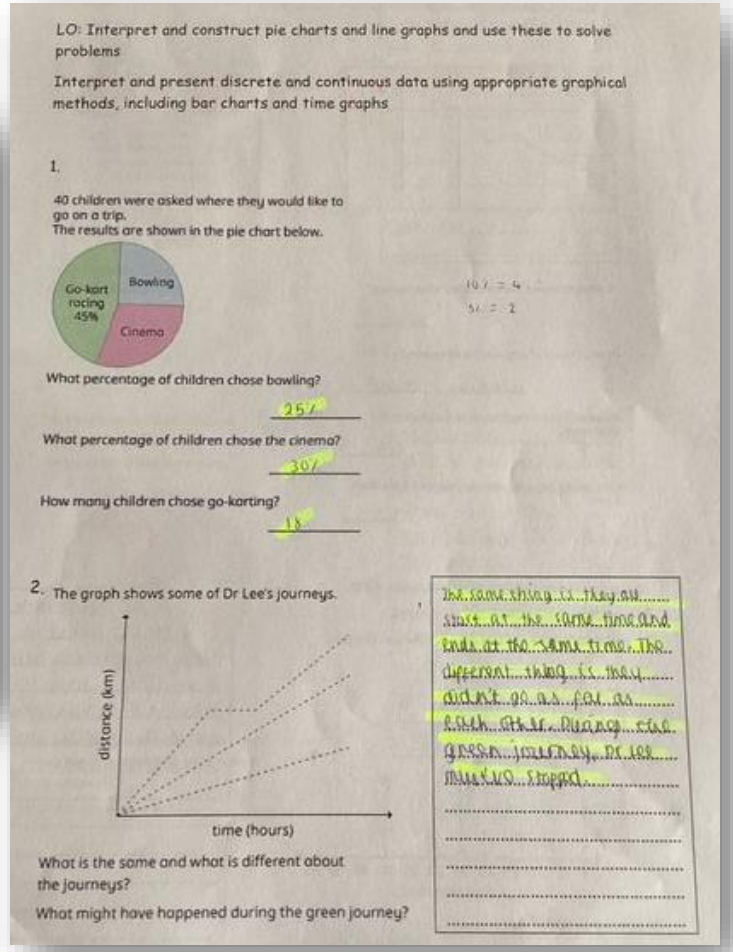
0% 50% 75% 100%

$\frac{4}{6}$, $\frac{5}{8}$, $\frac{3}{5}$.

You have demonstrated a really good understanding of equivalent fractions here.

Are there any fractions that could have been made that would fit in the final section?

$\frac{4}{5}$ could go in the final section because $\frac{4}{5}$ is 20% and 4×20=80



LO: Interpret and construct pie charts and line graphs and use these to solve problems

Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs

1.

40 children were asked where they would like to go on a trip.
The results are shown in the pie chart below.

What percentage of children chose bowling?

25%

What percentage of children chose the cinema?

30%

How many children chose go-karting?

18

2. The graph shows some of Dr Lee's journeys.

What is the same and what is different about the journeys?

The same thing is they all start at the same time and ends at the same time. The different thing is they didn't go as far as each other. During the green journey Dr Lee must've stopped.

What might have happened during the green journey?

8. Pupil Voice

(Year 6 Pupil)
I like maths because it challenges me - it gets my brain thinking. I feel successful when I solve a problem; the bigger the challenge, the more fun it is. I want to be a doctor when I'm older so I'm planning on studying maths until I get to university.

(Year 3 Pupil)
I love learning my times tables, it's really fun. I was the first child in Year 3 to receive my green badge as I know all my times tables. Times Table Rock Stars helps me at school and at home.

(Year 2 Pupil)
I like maths because it's challenging and there's usually more than one way to work out the answer. I like to think about all the methods and discuss which one was the best.

(Year 1 Pupil)
Maths is my favourite subject. When we use Numicon and counters, I can calculate with big numbers which is exciting. I am good at maths, but I know it's ok to make mistakes because this is where we learn.