Year 5/6 | Mastery Overview Term by Term

MathsHUBS
White Rose

Mixed Year Overview

Since our Year 1 to Year 6 Schemes of Learning and overviews have been released we have had lots of requests for something similar for mixed year groups. This document provides the yearly overview that schools have been requesting. We really hope you find it useful and use it alongside your own planning.

We had a lot of people interested in working with us on this project and this document is a summary of their work so far. We would like to take this opportunity to thank everyone who has contributed their thoughts to this final document.

These overviews will be accompanied by more detailed schemes linking to fluency, reasoning and problem solving. Termly assessments will be available to evaluate where the children are with their learning.

If you have any feedback on any of the work that we are doing, please do not hesitate to get in touch. It is with your help and ideas that the Maths Hubs can make a difference.

The White Rose Maths Hub Team

Guidance

The White Rose Maths Hub has produced these long term plans to support mixed year groups. The mixed year groups cover Y1/2, Y3/4 and Y5/6. These overviews are designed to support a mastery approach to teaching and learning and have been designed to support the aims and objectives of the new National Curriculum.

The overviews:
•	have number at their heart. A large proportion of time is spent reinforcing number to build competency.
•	ensure teachers stay in the required key stage and support the ideal of depth before breadth.
•	provide plenty of time to build reasoning and problem solving elements into the curriculum

This document fits in with the White Rose Maths Hub Year 1 – 6 Mastery documents. If you have not seen these documents before you can register to access them for free by completing the form on this link http://www.trinitytsa.co.uk/maths-hub/free-learning-schemes-resources/

Once registered you will be provided with a Dropbox link to access these documents; please be aware some school IT systems block the use of Dropbox so you may need to access this at home.

Mixed age planning

Using the document

The overviews provide guidance on the length of time that should be dedicated to each mathematical concept and the order in which we feel they should be delivered. Within the overviews there is a breakdown of objectives for each concept. This clearly highlights the age related expectations for each year group and shows where objectives can be taught together.

There are certain points where objectives are clearly separate. In these cases, classes may need to be taught discretely or incorporated through other subjects (see guidance below).

Certain objectives are repeated throughout the year to encourage revisiting key concepts and applying them in different contexts.

Lesson Plans

As a hub, we are collating a variety of lesson plans that show how mixed year classes are taught in different ways. These highlight how mixed year classes use additional support, organise groups and structure their teaching time. All these lesson structures have their own strengths and as a teacher it is important to find a structure that works for your class.

Progression documents

We are aware that some teachers will teach mixed year groups that may be arranged differently to our plans (eg Y3/4/5). We are therefore working to create some progression documents that help teachers to see how objectives link together from Year 1 to Year 6.

Linking of objectives

Within the overviews, the objectives are either in normal font or in bold. The objectives that are in normal font are the lower year group out of the two covered (Year 1, Year 3, Year 5). The objectives in **bold** are the higher year group out of the two covered (**Year 2, Year 4, Year 6**), Where objectives link they are placed together. If objectives do not link they are separate and therefore require discrete teaching within year groups.

Mixed age planning

Teaching through topics

Most mathematical concepts lend themselves perfectly to subjects outside of maths lessons. It is important that teachers ensure these links are in place so children deepen their understanding and apply maths across the curriculum.

Here are some examples:

- Statistics- using graphs in Science, collecting data in Computing, comparing statistics over time in History, drawing graphs to collect weather data in Geography.
- Roman Numerals- taught through the topic of Romans within History
- Geometry (shape and symmetry)- using shapes within tessellations when looking at Islamic art (R.E), using shapes within art (Kandinsky), symmetry within art
- Measurement- reading scales (science, design technology),
- Co-ordinates- using co-ordinates with maps in Geography.
- Written methods of the four operations- finding the time difference between years in History, adding or finding the difference of populations in Geography, calculating and changing recipes in food technology.
- Direction- Programming in ICT

Objectives split across topics

Within different year groups, topics have been broken down and split across different topics so children can apply key skills in different ways.

Money is one of the topics that is split between other topics. It is used within addition and subtraction and also fractions. In Year 1 and 2 it is important that the coins are taught discretely however the rest of the objectives can be tied in with other number topics.

Other measurement topics are also covered when using the four operations so the children can apply their skills.

In Year 5 and 6, **ratio** has been split across a variety of topics including shape and fractions. It is important that these objectives are covered within these other topics as ratio has been removed as a discrete topic.

Times tables

Times tables have been placed within multiplication and division however it is important these are covered over the year to help children learn them.

Everyone Can Succeed

As a Maths Hub we believe that all students can succeed in mathematics. We don't believe that there are individuals who can do maths and those that can't. A positive teacher mindset and strong subject knowledge are key to student success in mathematics.

Acknowledgements

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More Information

If you would like more information on 'Teaching for Mastery' you can contact the White Rose Maths Hub at mathshub@trinityacademyhalifax.org

We are offering courses on:

- Bar Modelling
- Teaching for Mastery
- Year group subject specialism intensive courses – become a maths expert.

Our monthly newsletter also contains the latest initiatives we are involved with. We are looking to improve maths across our area and on a wider scale by working with the other Maths Hubs across the country.

Term by Term Objectives

Y5/6

Year 5 and 6 overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Place Value				Four operations					Prime numbers	Statistics	
Spring	Fractions				Decimals		Percentages		Algebra	Geometry- Angles and Shape		Geometry- Position and Direction
Summer	Converting units	Area and Perimeter	Volume	Measures (Y5) SATS (Y6)		Fractions, Decimals, Percentages (Y5) Consolidation (Y6)				Four operations (Y5) Consolidation (Y6)		

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Term by Term Objectives

Year	5 and 6	Term	Autumn

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12

Number: Place Value

Read, write, order and compare numbers to at least 1000000 and determine the value of each digit.
Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.

Count forwards or backwards in steps of powers of 10 for any given number up to 1000000.

Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers including through zero.
Use negative numbers in context, and calculate intervals across zero.

Round any number up to 1000000 to the nearest 10, 100, 1000, 10000 and 100000
Round any whole number to a required degree of accuracy.

Solve number problems and practical problems that involve all of the above.
Solve number and practical problems that involve all of the above.

Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.

Read, write, order and compare numbers with up to three decimal places.
Identify the value of each digit in numbers given to three decimal places and multiply numbers by 10, 100 and 1000 giving answers up to 3dp.

Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.

Round decimals with two decimal places to the nearest whole number and to one decimal place.

Solve problems involving number up to three decimal places.
Solve problems which require answers to be rounded to specified degrees of accuracy.

Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000

Number- addition subtraction, multiplication + division

Add and subtract numbers mentally with increasingly large numbers.
Perform mental calculations, including with mixed operations and large numbers.
Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)

Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.
Use estimation to check answers to calculations and determine in the context of a problem, an appropriate degree of accuracy.
Solve addition and subtraction multi-step problems in contexts deciding which operations and methods to use and why.
Solve addition and subtraction multi step problems in contexts, deciding which operations and methods to use and why.

Multiply and divide numbers mentally drawing upon known facts.
Multiply and divide whole numbers by 10, 100 and 1000.
Perform mental calculations, including with mixed operations and large numbers.
Multiply numbers up to 4 digits by a one or two digit number using a formal written method, including long multiplication for 2 digit numbers.
Multiply multi-digit number up to 4 digits by a 2 digit number using the formal written method of long multiplication.

Divide numbers up to 4 digits by a one digit number using the formal written method of short division and interpret remainders appropriately for the context.
Divide numbers up to 4 digits by a 2 digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions or by rounding as appropriate for the context.
Divide numbers up to 4 digits by a 2 digit number using the formal written method of short division, interpreting remainders according to context.

Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.
Identify common factors, common multiples and prime numbers.
Recognise and use square numbers and cube numbers and the notation for squared (^{2}) and cubed (^{3})
Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.
Solve problems involving addition and subtraction, multiplication and division and a combination of these, including understanding the use of the equals sign.
Solve problems involving addition, subtraction, multiplication and division.
Use their knowledge of the order of operations to carry out calculations involving the four operations.

Number- Prime Numbers

Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.

Establish whether a number up to 100 is prime and recall prime numbers up to 19

Statistics

Solve comparison, sum and difference problems using information presented in a line graph.
Interpret and construct pie charts and line graphs and use these to solve problems

Complete, read and interpret information in tables including timetables.
Calculate the mean as an average.

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Term by Term Objectives

Year	5 and 6	Term	Spring

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12

Weeks 1–4: Number: Fractions

Compare and order fractions whose denominators are multiples of the same number.
Compare and order fractions, including fractions > 1
Generate and describe linear number sequences (with fractions)

Identify, name and write equivalent fractions of a given fraction, represented visually including tenths and hundredths.
Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.
Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as a mixed number [for example $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]

Add and subtract fractions with the same denominator and denominators that are multiples of the same number.
Add and subtract fractions with different denominations and mixed numbers, using the concept of equivalent fractions.

Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.
Multiply simple pairs of proper fractions, writing the answer in its simplest form
Divide proper fractions by whole numbers [for example $\frac{1}{3} \div 2 = \frac{1}{6}$]

Read and write decimal numbers as fractions [for example $0.71 = \frac{71}{100}$]
Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example $\frac{3}{8}$]

Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.
Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples
Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.

Weeks 5–6: Number: Decimals

Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.

Multiply one digit numbers with up to 2dp by whole numbers.

Use written division methods in cases where the answer has up to two decimal places.

Weeks 7–8: Number: Percentages

Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal.

Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}, \frac{1}{4}, \frac{1}{5}, \frac{2}{5}, \frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.

Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

Solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison.

Week 9: Number: Algebra

Use simple formulae.

Generate and describe linear number sequences.

Express missing number problems algebraically

Find pairs of numbers that satisfy an equation with two unknowns.

Enumerate possibilities of a combination of two variables.

Year 5- Recap FDP

Weeks 10–11: Geometry - Angles & Properties of Shape

Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.
Draw given angles, and measure them in degrees
Draw 2D shapes using given dimensions and angles.

Identify: angles at a point and one whole turn (total 360°), angles at a point on a straight line and ½ a turn (total 180°) other multiples of 90°
Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

Identify 3D shapes, including cubes and other cuboids, from 2D representations.
Use the properties of rectangles to deduce related facts and find missing lengths and angles.

Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.
Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons.

Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

Solve problems involving similar shapes where the scale factor is known or can be found.

Week 12: Geometry- position and direction

Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.

Describe positions on the full coordinate grid (all four quadrants).

Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.

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Term by Term Objectives

Y5/6

Year	5 and 6	Term	Summer

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12

Week 1 — Converting units
Convert between different units of metric measure (, km and m; cm and m; cm and mm; g and kg; l and ml)
Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation up to 3dp.

Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.
Convert between miles and kilometres.

Solve problems involving converting between units of time
Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.

Week 2 — Area and Perimeter
Measure and calculate the perimeter of composite rectilinear shapes in cm and m.
Calculate the area of parallelograms and triangles.

Calculate and compare the area of rectangles (including squares), and including using standard units, cm^2, m^2 estimate the area of irregular shapes.
Recognise that shapes with the same areas can have different perimeters and vice versa.

Week 3 — Volume
Estimate volume [for example using $1cm^3$ blocks to build cuboids (including cubes)] and capacity [for example, using water]
Calculate, estimate and compare volume of cubes and cuboids using standard units, including cm^3, m^3 and extending to other units (mm^3, km^3)

Use all four operations to solve problems involving measure
Recognise when it is possible to use formulae for area and volume of shapes.

Week 4 / Week 5 — Measures
Revisit and consolidate Y5 measure objectives

Y6 SATS

Week 6-8 — Year 5 Fractions, Decimals & Percentages
Revisit & consolidate

Year 6- Revisit and consolidate

Week 9-12 — Year 5 Number – Addition, Subtraction, Multiplication & Division
Revisit & consolidate

Year 6- Revisit and consolidate

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