

Year 5 Programme of Study

Amended for 2020-21 in response to school closures

School closure during the 2019-20 academic year will have had a significant impact on all pupils' mathematics learning. In some cases, this will have been beneficial for children's learning, providing them with more opportunities to explore maths in real-life contexts. Teachers have worked hard to provide home learning solutions, including online classrooms, investigations, and other home-learning materials; all of these will have supported pupils in making progress in mathematics. However, as pupils return to school, there will be uncertainty about the learning which has taken place. We have created amended Programmes of Study and Maths Meeting Guidance to help you understand the curriculum content which has likely been missed and plan for this.

What amended resources are we providing?

To support you in planning for the academic year 2020-2021, we are providing the following:

- amended Programmes of Study for Years 2 to 6
- amended Maths Meeting guidance, with summer term learning from the previous year group included in red, as this content may not have been taught
- an amended Yearly Planner which allows for the additional time required to teach extra lessons

The Yearly Planner is an editable Excel document and is available on our online platform.

How have we created the amended Programmes of Study?

We have taken the learning content that pupils may have missed during the summer term of the Mathematics Mastery curriculum of Years 1 to 5 and mapped out where this learning is required in Years 2 to 6. Using this, we have produced amended Programmes of Study for Years 2 to 6, which:

- explain key learning from the previous year and where it can be found
- suggest where you might want to teach lessons from the previous year's curriculum
- suggest revised durations for each unit

The number of extra lessons and unit length suggestions are for guidance only. The amount of time required for each unit will depend on the experiences your pupils have had during school closure. Do keep an eye on the Yearly Planner to ensure you are broadly on track to cover all the expected curriculum content across the year.

How should I use these additional resources?

The amended Programmes of Study are written on the assumption that the pupils have missed the previous summer term's learning. Of course, this may not always be the case where home learning has taken place. We recommend firstly speaking to your pupils' teacher(s) from the previous year to find out what home learning was provided during school closure (whilst acknowledging that not all pupils may have accessed this). They will also be able to tell you which parts of the previous year's curriculum they had covered before school closure, bearing in mind that the amended Programmes of Study only take account of missed summer term learning.

We then advise reading through the whole amended Programme of Study for the year you are teaching, to get a sense of the learning which has been missed and how we have recommended ensuring it is covered. We recommend visiting the professional development on our online platform for missed units from the previous year to familiarise yourself with the content.

There are links to the previous year's missed units in the amended Programme of Study.

Once you have a good understanding of where the key bits of missed learning fit within the year, consider where you can use Maths Meetings to pre-teach concepts and/or language. If the missed learning is only required in the summer term, you may be able to sufficiently cover any missed learning throughout the year, through Maths Meetings and in other areas of the curriculum, so that the summer term units for 2029-21 can be taught as planned.

In some cases, we have lengthened units by a week. In these cases, you may wish to keep the learning blocked as we have planned, or you may prefer to split the unit into two shorter units, particularly where the content is more self-contained, e.g. shape.

Will I still be able to teach the whole curriculum in a year?

The normal Mathematics Mastery curriculum consists of 30 weeks of planned lessons (including consolidation lessons) per year group. There are 38 weeks in the school teaching year. To accommodate the missed learning, we have recommended lengthening some units. You will therefore notice that the Yearly Planner is 'fuller' than normal, with fewer consolidation weeks. By following the amended Programme of Study, which introduces any missed content 'just in time', you should be able to ensure pupils catch up on any missed learning as well as covering all the essential elements of the year's curriculum.

Can I just teach lessons from the previous year without adapting them?

Where we have suggested teaching lessons from the previous year, adaptations will be necessary, as is always the case. This may be simply altering the context of a lesson to something with which pupils are familiar. It could also involve adapting the representations and language used as well as the tasks themselves.

In some cases, we have suggested reading through a sequence of lessons and adapting these according to your pupils' needs. For example, two lessons may have a similar focus and you might amalgamate them, choosing a task from each, as you know your pupils will benefit from them. Alternatively, you might take the key learning from three lessons and plan one lesson which incorporates the main ideas side-by-side.

Amended Year 5 Programme of Study

These are Mathematics Mastery's suggestions for amendments to units based on content that pupils will have missed in the summer term in the previous academic year.

The Year 4 summer term units are:

- Unit 10: Solving measure and money problems (3 weeks)
- Unit 11: Shape and symmetry (3 weeks)
- Unit 12: Position and direction (1 week)
- Unit 13: Reasoning with patterns and sequences (2 weeks)
- Unit 14: 3-D shape (1 week)

In the Year 5 Programme of Study, we have added an extra 1-week unit at the end of the autumn term to teach some of the shape learning from Year 4 Unit 11. This is because we think the amount of new 2-D shape learning in Year 4 is too great to teach through Maths Meetings. We recommend teaching the Year 4 content in autumn term, a while before the Year 5 shape unit in summer term, to allow time for consolidation of vocabulary, which will be built upon in the summer.

In Year 4 Units 10 and 13, there are many lessons aimed at developing problem solving and mathematical thinking. Whilst missing these lessons should not create a direct barrier to any Year 5 learning, we recommend teaching some of these lessons throughout Year 5, both as a revision of the conceptual content and to develop problem solving and mathematical thinking. Lessons to look at include Year 4 Unit 10 Lessons 6 to 14 and Year 4 Unit 13 Lessons 1, 3, 4 and 6 to 9.

Please also refer to the Yearly Planner to see how we expect the unit lengths to fit into the school calendar.

The pink boxes are abridged curriculum notes. These are Mathematics Mastery's suggestions for amendments to units based on content that pupils will have missed in the summer term of the previous academic year.

Autumn term

<p style="text-align: center;">Unit 1</p> <p style="text-align: center;">Reasoning with large whole numbers</p> <p style="text-align: center;">(3 weeks)</p>	<p>Pupils will have missed Year 4 Unit 13: reasoning with patterns and sequences. It is in this unit that pupils are introduced to Roman numerals to 100. Pupils will have learnt the Roman numerals to 12 in Year 3 in the context of reading a clock.</p> <p>Year 5 Unit 1 is normally a 2-week unit with 10 planned lessons and no consolidation lessons. The final lesson explores Roman numerals to 1000 and compares them to our base 10 number system. We recommend teaching Year 4 Unit 13 Lesson 2 before this. To allow time for the additional Roman numeral lesson as well as some consolidation, we have scheduled it as a 3-week unit this year.</p>
	<ul style="list-style-type: none"> • read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit • count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 • round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 • solve number problems and practical problems that involve all of the above

	<ul style="list-style-type: none"> • read Roman numerals to 1000 (M) and recognise years written in Roman numerals
<p>Unit 2</p> <p>Problem solving with integer addition and subtraction</p> <p>(2 weeks)</p>	<ul style="list-style-type: none"> • add and subtract numbers mentally with increasingly 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 • solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
<p>Unit 3</p> <p>Line graphs and timetables</p> <p>(2 weeks)</p>	<ul style="list-style-type: none"> • solve comparison, sum and difference problems using information presented in a line graph • complete, read and interpret information in tables, including timetables • solve problems involving converting between units of time
<p>Unit 4</p> <p>Multiplication and division</p> <p>(3 weeks)</p>	<ul style="list-style-type: none"> • identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers • recognise and use square numbers and the notation for squared (2) • 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 • multiply and divide whole numbers by 10, 100 and 1000 • multiply and divide numbers mentally drawing upon known facts • solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes • multiply numbers up to 4 digits by a one- or two-digit number using a formal written method • 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 • solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
<p>Unit 5</p> <p>Perimeter and area</p> <p>(1 week)</p>	<ul style="list-style-type: none"> • measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres • calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of non-rectilinear shapes

<p>Extra unit</p> <p>Year 4 2-D shape learning</p> <p>(1 week)</p>	<p>We have added this 1-week unit to enable pupils to catch up on the missed 2-D shape learning from Year 4. We recommend teaching Year 4 Unit 11: shape and symmetry Lessons 6 to 9 and Lesson 11. In these lessons, pupils learn to:</p> <ul style="list-style-type: none"> • compare and classify 2-D shapes • compare and classify quadrilaterals • compare and classify right angled and equilateral triangles • compare and classify isosceles and scalene triangles • identify lines of symmetry in 2-D shapes <p>A lot of important shape language is introduced in Year 4 Unit 11 Lessons 6 to 9, including: regular, irregular, rhombus, trapezium, parallelogram, equilateral, isosceles, scalene. 2-D shape names are also revised and built upon, e.g. pentagon, hexagon, heptagon, octagon. Year 5 Unit 12 builds on this, introducing the word polygon, expanding 2-D shape vocabulary to include nonagon, decagon and dodecagon and revising and applying all previous 2-D shape learning (aspects such as parallel and perpendicular sides, line symmetry, regular, irregular) to solve problems involving sorting, classifying and thinking mathematically. We have recommended teaching the Year 4 content here to avoid pupils being overwhelmed with new knowledge and definitions in Year 5 Unit 12.</p> <p>We also recommend teaching Year 4 Unit 11 Lesson 11 here, which looks at line symmetry in shapes. Symmetry is returned as a basis for understanding reflection as a transformation in Year 5 Unit 9: transformations. Understanding of line symmetry is also drawn upon in Year 5 Unit 12: 2-D and 3-D shape.</p>
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Spring term

<p>Unit 6</p> <p>Fractions and decimals</p> <p>(3 weeks)</p>	<ul style="list-style-type: none"> • compare and order fractions whose denominators are all multiples of the same number • recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents • 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, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$] • identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths • read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$] • round decimals with two decimal places to the nearest whole number and to one decimal place • read, write, order and compare numbers with up to three decimal places
<p>Unit 7</p> <p>Angles</p>	<p>Pupils will have missed Year 4 Unit 11: shape and symmetry. In the Year 4 unit, pupils revise and develop their understanding of acute, obtuse and right angles, using angle makers (two pieces of</p>

<p>(3 weeks)</p>	<p>card connected with a split pin) and right angle checkers (a piece of paper folded twice to create a right angle). They explore angles within 2-D shapes. Year 5 Unit 7 Lesson 1 revises this knowledge and introduces the word 'reflex' to describe angles. The remainder of the unit goes on to introduce the protractor for measuring and drawing angles and then explores different angle facts, e.g. where angles meet at a point.</p> <p>Depending on the extent to which your pupils have had opportunities to recall and apply angle definitions in Maths Meetings so far this year (e.g. which of these shapes has two acute angles? Is it always/sometimes/never true that a triangle has an obtuse angle?), it may be necessary to include an amalgamation of Year 4 Unit 11 Lessons 2 to 4 at the beginning of Year 5 Unit 7. You may also wish to teach these lessons in their entirety if your pupils are insecure in this knowledge. The tasks which require pupils to construct shapes with specified angles, e.g. a pentagon with a right angle, are particularly good for checking pupils' ability to apply what they know.</p> <p>Bear in mind that the terms acute, obtuse and right angle are introduced in Year 3.</p> <p>Year 5 Unit 7 is normally a 2-week unit. We have allowed 3 weeks for it this year to allow for teaching the Year 4 lessons at the start of the unit and for additional consolidation.</p> <ul style="list-style-type: none"> • know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles • draw given angles, and measure them in degrees ($^{\circ}$) • identify: angles at a point and one whole turn (total 360°); angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°); other multiples of 90°
<p>Unit 8</p> <p>Fractions, decimals and percentages</p> <p>(3 weeks)</p>	<ul style="list-style-type: none"> • add and subtract fractions with the same denominator and denominators that are multiples of the same number • multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams • solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates • 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 fraction and decimal equivalents of percentages that are multiples of 10 and 25 • solve problems involving number up to three decimal places • use all four operations to solve problems involving measure (for example length, mass, volume, money) using decimal notation, including scaling • associate a fraction with division (Y6)

	<p>use common factors to simplify fractions; use common multiples to express fractions in the same denomination (Y6)</p>
<p>Unit 9 Transformations (3 weeks)</p>	<p>Pupils will have missed Year 4 Unit 12: position and direction. This 1-week unit introduces coordinates in the first quadrant formally for the first time. Pupils describe the translation of points using the language up, down, left and right.</p> <p>The first three lessons of Year 5 Unit 9 can be summarised as follows:</p> <ol style="list-style-type: none"> 1. translating shapes on a grid (no coordinates, just up, down, left, right) 2. describing positions on a coordinate grid in the first quadrant, translating points and line segments and describing them using coordinates 3. describing positions on a coordinate grid in all four quadrants, translating points using the full coordinate grid and describing them using coordinates <p>Pupils then go on to learn about translating shapes on a coordinate grid and reflection of line segments and shapes. We think pupils will need more time at the beginning of the unit to practise interpreting and writing coordinates accurately in the first quadrant. We therefore recommend the following unit structure:</p> <ul style="list-style-type: none"> • Year 5 Unit 9 Lesson 1 – translations on a grid • Year 4 Unit 12 Lesson 1 – introduction to coordinates, plotting coordinates and joining the points to make quadrilaterals • [Depending on pupils' confidence, you may wish to teach Year 4 Unit 12 Lessons 4 and/or 5 before moving back to the Year 5 unit] • Year 5 Unit 9 Lesson 2 – revise interpreting and writing coordinates and translate line segments • Teach the remainder of Year 5 Unit 9 as planned. <p>Year 5 Unit 9 is normally a 2-week unit with 8 planned lessons and 2 consolidation lessons. This year we have allowed 3 weeks on the yearly planner; however, it could be taught in 2 weeks, depending on pupils' progress.</p> <ul style="list-style-type: none"> • 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 • use the properties of rectangles to deduce related facts and find missing lengths and angles • describe positions on the full coordinate grid (all four quadrants) (Y6) • 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 (Y6)

Summer term

<p>Unit 10</p> <p>Converting units of measure</p> <p>(3 weeks)</p>	<p>Pupils will have missed Year 4 Unit 10: solving measure and money problems. This is where they are introduced to measure conversions involving decimals, following the introduction of decimals in Year 4 Unit 8. Year 4 Unit 10 consists not only of lessons which directly address the conversion of measures (Lessons 2 to 4), but also a range of problem-solving lessons in which pupils apply measure conversion in practical contexts to solve problems (e.g. Year 4 Unit 10 Lessons 8 and 11). In the Year 5 guidance we have recommended using these lessons as you see fit throughout Year 5 to develop problem solving strategies and to revise measure.</p> <p>By this point in Year 5, you may have found time to teach some measure conversions (e.g. between mm and cm, or cm and m), either in Maths Meetings or in other areas of the curriculum, such as science. Depending on the extent to which pupils have been introduced to these ideas previously, you might consider sequencing your lessons as follows:</p> <ul style="list-style-type: none"> • Year 5 Unit 10 Lessons 1 and 2. Two lessons on converting time. • Year 4 Unit 10 Lessons 2 and 3. Lesson 2 focuses on mm/cm conversions and Lesson 3 on cm/m conversions. Both have a practical element where pupils can see the conversions, e.g. that 10mm is equal to 1cm. This is more difficult to do with metres and kilometres, so teaching these two Year 4 lessons first will scaffold pupils' understanding of the Year 5 learning coming next. • Year 5 Unit 10 Lessons 3 to 6. These lessons explore conversions of length, including metric and imperial units and apply this to solve perimeter problems. • Consider pupils' progress in converting measures of length, as well their familiarity with the meanings of the prefixes kilo-, and milli-. You may wish to teach Year 4 Unit 10 Lesson 4 at this point to allow time for engagement with these naming conventions. Alternatively, move straight onto... • Year 5 Unit 10 Lessons 7 to 9. <p>Year 5 Unit 10 is normally a 2-week unit with 9 planned lessons and 1 consolidation lesson. This year we have allowed 3 weeks for it.</p> <ul style="list-style-type: none"> • convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram) • multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 • understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints
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<p>Unit 11</p> <p>Calculating with whole numbers and decimals</p> <p>(3 weeks)</p>	<ul style="list-style-type: none"> • use all four operations to solve problems involving measure (for example length, mass, volume, money) using decimal notation, including scaling • solve problems involving number up to three decimal places • multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers • multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
<p>Unit 12</p> <p>2-D and 3-D shape</p> <p>(2 weeks)</p>	<p>Pupils will have missed Year 4 Unit 11: shape and symmetry. There are four lessons in the Year 4 unit which focus on 2-D shapes. We have recommended teaching these in an extra unit at the end of the autumn term.</p> <p>They will also have missed Year 4 Unit 14: 3-D shape, which is a 1-week unit with 4 planned lessons and 1 consolidation lesson.</p> <p>2-D shape</p> <p>See notes to the extra unit added at the end of the autumn term, after Year 5 Unit 5.</p> <p>3-D shape</p> <p>There are no Year 4 national curriculum 3-D shape objectives; however, pupils will have missed the revision of language and sorting according to properties from Year 4 Unit 1. We recommend ensuring this is explored frequently in Maths Meetings throughout the year.</p> <p>Year 5 Unit 12 is normally a 2-week unit and it remains so this year, with the recommendation of the extra 1-week unit at the end of the autumn term.</p> <ul style="list-style-type: none"> • distinguish between regular and irregular polygons based on reasoning about equal sides and angles • use the properties of rectangles to deduce related facts and find missing lengths and angles • identify 3-D shapes, including cubes and other cuboids, from 2-D representations • recognise, describe and build simple 3-D shapes, including making nets (Y6) • illustrate and name parts of circles, including radius, diameter and circumference and know that diameter is twice the radius. (Y6)
<p>Unit 13</p> <p>Volume</p> <p>(1 week)</p>	<ul style="list-style-type: none"> • estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water] • recognise and use cube numbers and the notation for cubed (³)
<p>Unit 14</p> <p>Problem solving</p> <p>(2 weeks)</p>	<ul style="list-style-type: none"> • consolidation and application opportunities