Year 4 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.

![Mathematics Mastery logo]

Amended Year 4 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 3 summer term units are:

- Unit 10: Angles and shape (3 weeks)
- Unit 11: Measures (3 weeks)
- Unit 12: Securing multiplication and division (1 week)
- Unit 13: Exploring calculation strategies and place value (2 weeks)

Year 3 Units 10 and 11 are both 3-week units with considerable amounts of new content. The Year 4 units in which this learning is directly required are both in the summer term, however, so there is time to pre-teach some of the Year 3 content in Maths Meetings. We advise trying to find opportunities to teach measure through practical experiences throughout the year. See the Maths Meeting guidance for recommendations.

The final two units of Year 3 focus on developing conceptual understanding, making connections between representations, developing flexibility of calculation and number sense. Whilst missing these units will not present direct barriers to subsequent learning, it will be important to work elements from these units into Maths Meetings.

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

Unit 1 **Reasoning with 4-digit numbers** (4 weeks)	Pupils will have missed **Year 3 Unit 13: exploring calculation strategies and place value**. **Lessons 7 to 10** in Year 3 Unit 13 explore 4-digit place value, including recognising the value of each digit, comparing and ordering, adding and subtracting 1000 and rounding. The purpose of these lessons in the Year 3 unit are to lay the groundwork for Year 4 Unit 1. All of the teaching points in Year 3 Unit 13 are covered again in Year 4 Unit 1. As a result, there is no 'missed content' to pre-teach. However, you may wish to read through the Year 3 lessons and use as consolidation lessons if your pupils require more time. You may also find it useful to use elements of tasks from Year 3 Unit 13 in your Maths Meetings, e.g. using the representations in **Lesson 7 Independent Task** on a slide and asking pupils to write the numeral for the number it represents on a whiteboard. Year 4 Unit 1 is normally a 2-week unit with 8 planned lessons and 2 consolidation lessons. We have allowed 2 weeks for it this year, though you may require slightly longer, depending on your pupils' confidence levels.

	- find 1000 more or less than a given number - recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) - order and compare numbers beyond 1000 - solve number and practical problems that involve all of the above and with increasingly large positive numbers - identify, represent and estimate numbers using different representations - round any number to the nearest 10, 100 or 1000 - count in multiples of 6, 7, 9, 25 and 1000
Unit 2 **Addition and subtraction** (3 weeks)	Pupils will have missed **Year 3 Unit 11: measures**. This unit features two lessons (**Lesson 9 and 10**) which explore measure problems which require addition or subtraction. Bar models for different contexts are explored. Year 4 Unit 2 Lessons 11 and 12 build on this learning about how bar models can be used to represent problem contexts. While it will probably be unnecessary to teach the Year 3 lessons in their entirety, be aware that pupils will have missed this preparation. You may wish to use the Year 3 lessons as consolidation.
	- add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate - estimate and use inverse operations to check answers to a calculation - solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why
Unit 3 **Multiplication and division** (4 weeks)	Pupils will have missed **Year 3 Unit 12: securing multiplication and division**. This unit focuses on developing conceptual understanding of multiplication and division, including making connections between key representations which emphasise the underlying mathematical structures (e.g. the array, bar models in equal parts) and distinguishing between multiplication/division and addition/subtraction contexts. As these ideas are of fundamental importance to understanding multiplication and division, we recommend teaching Year 3 Unit 12 **Lessons 1 to 3**, before moving on to teaching Year 4 Unit 3. You may wish to then adapt the New Learning in Year 4 Unit 3 Lessons 1 and 2 as a result, as these lesson sections focus on making connections between different representations of multiplication and division. See the bold 'teacher note' in the New Learning of these two lessons. Pupils will also have missed **Year 3 Unit 11: measures**. This unit features two lessons (Lesson 11 and 12) which explore measure problems which require multiplication or division. Bar models for different contexts are explored. Bar models are used throughout Year 4 Unit 3, and Lesson 7 onwards in particular, as a means of representing a problem context to understand the calculation required. We recommend looking at **Year 3 Unit 11 Lessons 11 and 12** to understand the missed learning. Use teacher assessment of your pupils' understanding to decide whether to teach these lessons. Year 4 Unit 3 is normally a 3-week until with 14 planned lessons and 1 consolidation lesson. With the additional 3 Year 3 lessons at the

	beginning of the unit, and allowing for additional consolidation as required, we recommend spending 4 weeks on this unit this year.
	• recall multiplication and division facts for multiplication tables up to 12 × 12
	• solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems such as *n* objects are connected to *m* objects
	• recognise and use factor pairs and commutativity in mental calculations
	• use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
	• multiply two-digit and three-digit numbers by a one-digit number using formal written layout
Unit 4 **Interpreting and presenting data** (2 weeks)	• solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs • interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs

Spring term

Unit 5 **Securing multiplication facts** (1 week)	• recall multiplication and division facts for multiplication tables up to 12 × 12
Unit 6 **Fractions** (4 weeks)	• add and subtract fractions with the same denominator • 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, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$] (Y5) • recognise and show, using diagrams, families of common equivalent fractions • count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten • solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number
Unit 7 **Time** (1 weeks)	• convert between different units of measure [for example, hour to minute] • problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days • write and convert time between analogue and digital 12- and 24-hour clocks

Unit 8 **Decimals** (3 weeks)	• find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths • recognise and write decimal equivalents of any number of tenths or hundredths • recognise and write decimal equivalents to $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}$ • round decimals with one decimal place to the nearest whole number • compare numbers with the same number of decimal places up to two decimal places
Unit 9 **Area and perimeter** (2 weeks)	• measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres • convert between different units of measure [for example, kilometre to metre] • find the area of rectilinear shapes by counting squares • calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) (Y5) • measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres (Y5)

Summer term

Unit 10 **Solving measure and money problems** (4 weeks)	Pupils will have missed **Year 3 Unit 11: measures**. **Lessons 1 to 3** of the Year 3 unit explore mass and **Lessons 4 to 6** explore capacity. These lessons include learning about reading scales in mixed measures, weighing/measuring capacity and comparing, and estimating mass/volume/capacity. Four of them are practical lessons, where pupils use measuring equipment. The extent to which you adapt Year 4 Unit 10 will depend on the learning opportunities your pupils have had so far in Year 4. For example, if they have had sufficient practice using measuring equipment accurately in other lessons and if you have regularly built questions on reading scales into Maths Meetings, you may be able to teach Year 4 Unit 10 as planned. If not, pupils will need some hands-on measuring experience before going onto the Year 4 unit, which focuses more on converting measures (applying new knowledge of decimals) and problem solving. Year 4 Unit 10 is normally a 3-week unit with 12 planned lessons and 3 consolidation lessons. Depending on how you adapt this unit, we recommend you spend 3 to 4 weeks on it. We have allowed 4 weeks on the yearly planner. • convert between different units of measure [for example, kilometre to metre; hour to minute] • solve simple measure and money problems involving fractions and decimals to two decimal places

	• estimate, compare and calculate different measures, including money in pounds and pence
Unit 11 **2-D shape and symmetry** (4 weeks)	Pupils will have missed the 3-week unit **Year 3 Unit 10: angle and shape**. Year 4 Unit 11 builds directly on this learning and follows the same unit structure, which can be separated into three sections: 1. developing understanding of angles (also understanding of lines in Year 3) 2. developing understanding of 2-D and 3-D shapes 3. reasoning about symmetry As Year 4 Unit 11 comes in the summer term, there should be plenty of time throughout the year to teach some of the key concepts from the Year 3 unit. Classifying and sorting plays a big role in Year 3 and Year 4 shape learning; vocabulary definitions are central to this (e.g. what are the limits of a parallelogram? Is a square a parallelogram? Is a rectangle?). See the Maths Meeting guidance for our suggestions of teaching points. **Angles** Year 4 Unit 11 Lessons 1-4 focus on angles. Pupils develop their understanding of right angles, acute and obtuse angles, which would have been introduced in Year 3 Unit 10. Pupils make and use an angle-maker, which also featured in Year 3 Unit 10. As the introduction to these ideas in Year 3 have been missed, it will be important to take time exploring and clarifying definitions through many different examples, using consolidation lessons as necessary. This will depend on the extent to which you have explored these ideas in Maths Meetings and other areas of the curriculum. The connection between quarter turns and right angles is explicitly taught in **Year 3 Unit 10 Lesson 3** but not in Year 4. In the Year 3 lesson, pupils explore quarter, half and three-quarter turns and their constituent number of right angles. Hopefully you will have been able to cover this in Maths Meetings, but if not, teach this before Year 4 Unit 11 Lesson 2. Year 3 Unit 10 **Lessons 6 to 8** introduce and explore perpendicular and parallel lines. These are not explicitly taught in Year 4, but it is important that pupils understand them before moving onto Year 4 Unit 11 Lesson 7 which focuses on quadrilaterals and introduces the word 'parallelogram'. This learning will be much more meaningful if pupils can connect the name of the shape with the adjective 'parallel'. We therefore recommend teaching Year 3 Unit 10 **Lessons 6 to 8** after Year 4 Unit 11 Lesson 4. **2-D and 3-D shapes** The first Year 4 shape lesson (Lesson 6) recaps Year 3 learning on naming 2-D shapes and their properties. Hopefully, you will have been able to cover much of this in Maths Meetings, exploring definitions, sorting and classifying. Lesson 7 moves onto quadrilaterals and introduces parallelograms, rhombi and trapezia. Before teaching Lesson 7, we recommend teaching **Year 3 Unit 10**

	Lesson 10, which focuses on categorising squares and rectangles as subsets of quadrilaterals. The remaining two Year 4 2-D shape lessons (Lessons 8 and 9) explore different types of triangle. There is no specific Year 3 learning on triangles, so these lessons can be taught as planned. **Symmetry** Year 3 Unit 10 only dedicates one lesson (Lesson 14) to the introduction of line symmetry, whereas Year 4 Unit 11 spends three lessons exploring the concept. The New Learning and Let's Explore of Year 4 Unit 11 Lesson 11 recaps learning from Year 3. Depending on the extent to which you have explored the concept of symmetry previously in Year 4, you may be able to teach the Year 4 lessons as planned. Alternatively, you could teach Year 3 Unit 10 Lesson 14 first. Year 4 Unit 11 is normally a 3-week unit with 11 planned lessons and four consolidation lessons. We suggest planning this as a 4-week unit this year.
	• compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes • identify acute and obtuse angles and compare and order angles up to two right angles by size • identify lines of symmetry in 2-D shapes presented in different orientations • complete a simple symmetric figure with respect to a specific line of symmetry
	• solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate • 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 to up to three decimal places • convert between miles and kilometres • recognise that shapes with the same areas can have different perimeters and vice versa • recognise when it is possible to use formulae for area and volume of shapes • use simple formulae • calculate the area of parallelograms and triangles • calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units [for example, mm^3 and km^3] • generate and describe linear number sequences (with decimals)
Unit 12 **Position and direction**	• describe positions on a 2-D grid as coordinates in the first quadrant • describe movements between positions as translations of a given unit to the left/right and up/down

(1 week)	• plot specified points and draw sides to complete a given polygon
Unit 13 **Reasoning with patterns and sequences** **(2 weeks)**	• read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value • count backwards through zero to include negative numbers • recognise and use square numbers, and the notation for squared (^{2}) (Y5)
Unit 14 **3-D shape** **(1 week)**	There is only one Year 3 lesson, Unit 10 Lesson 13, which explores names and properties of 3-D shapes. We recommend building this learning into Maths Meetings throughout the year so that pupils gradually increase in confidence in their usage of 3-D shape language. Be aware that pupils may confuse 2-D and 3-D shape language, and also that pupils may not automatically recognise the connection between 2-D images of 3-D shapes and the 3-D shapes themselves. • identify 3-D shapes, including cubes and other cuboids, from 2-D representations (Y5)