



Primary Programme Guide 2020-21

Mathematics
Mastery

Curriculum,
Mastery +
Development

www.arkcurriculumplus.org.uk



Ark**Curriculum+**

Ark Curriculum+

Grown out of Ark, one of the highest performing Multi Academy Trusts in the UK, our team of well-researched and highly skilled educational designers and trainers guide teachers and their pupils towards subject mastery.

Our mission is to empower teachers to give *every* young person, regardless of their background, the subject knowledge and skills that will allow them to succeed.



Curriculum

We believe that great curriculum design and delivery leads to improved teaching and learner outcomes, which impacts positively on children's life chances.

Mastery

Evidence shows that pupils make more progress when they have been equipped to master a subject. They do this by understanding its fundamental concepts in sufficient depth that they can apply subject knowledge in unfamiliar contexts.

Development

Our commitment is to empower and equip schools to provide high-quality subject teaching, through curriculum collaboration and integrated professional development, in order to develop young people's subject mastery.



Since launching the programme, maths is now a key strength in our school. Visitors are blown away when they see the enthusiasm and engagement of pupils.

Michelle Thomas,
Executive Headteacher,
The New Wave Foundation



Our connection with Ark gives us our experience and our specialist expertise, earned while we developed and taught subject curricula across our own network of 37 successful academies in the UK.

Our curriculum programmes have been proven to:

- **have a positive impact on pupil progress and attainment**
- **deepen pupils' understanding of key concepts**
- **engage pupils and increase their enjoyment of lessons**
- **make more impactful use of teacher time**
- **drive change and improve teaching**

Our partner schools are supported every step of the way. We believe in working *with* schools to enable systematic, long-term change to happen from within.

Through improved subject knowledge, pedagogic content design and formative assessment, we enable teachers to make informed adaptations to ensure all lessons are right for the children in their particular class.

Our programmes are kept fresh with innovation and improvement, informed by evidence derived from world-leading educational research and feedback from our partner schools.

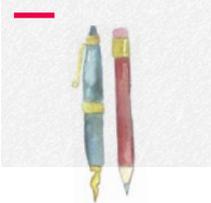


The Mathematics Mastery Primary programme.

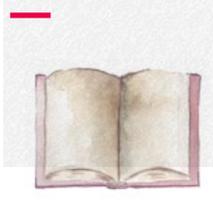
Mathematics Mastery Primary is already having an impact in hundreds of schools across the UK, improving maths skills and teaching.

Specifically designed for UK classrooms, the programme offers:

A well-sequenced and interlinked EYFS, KS1 and KS2 mathematics curriculum



A full suite of classroom planning, delivery, assessment and intervention resources



Integrated training and professional development



The programme is available in three tiers: Mastery, Leadership or Tailored – depending on the requirements of your school.

For more details and to find out our programme pricing, see page 22.



Teachers in our partner schools repeatedly tell us what a difference our programme is making:



Since joining Mathematics Mastery we've seen a significant change in the children's understanding and enjoyment of maths and strengthened subject knowledge and confidence among staff.

**Claire Pettman, Assistant Headteacher,
St Stephen's Catholic Primary School**



The programme has been brilliant for teacher confidence because of the training and resources available.

**Jodie Wallace, Mathematics Lead,
Thornaby Church of England Primary School**



The principles are so strongly embedded in the materials that I'm always drawing on the training when I teach.

**Rebecca Carver, Year 1 classroom teacher,
Ark Conway Primary Academy**

Visit our website to hear more about the positive impact Mathematics Mastery has had in other primary schools:
www.arkcurriculumplus.org.uk/case-studies

Supporting you through Covid-19.

As teachers ourselves, we understand how extraordinarily difficult this year has been for all schools. We have made some important changes to our Mathematics Mastery programme this year to help support you in the year ahead:

Remote learning



We are contributors to Oak National Academy and our curriculum programme is completely aligned to the Oak curriculum.

There's an online video lesson for each lesson, so you can be assured of continuity of learning whether at school or at home.



Identifying and planning recovery for gaps in learning

Every child will have been affected by Covid-19 differently.

Our daily 10-15 minute **Maths Meetings** have been designed to consolidate key areas of maths and identify areas of the curriculum where pupils have forgotten key concepts or have misconceptions.

We've amended content to indicate learning which may have been missed in the previous summer term during school closure, and ensure frequent coverage of this content to help prepare pupils for subsequent learning.

We have also created amended programmes of study for Years 2 to 6 to help you understand the learning which has likely been missed due to the pandemic.

Term	Detail
Autumn	<p>Number:</p> <ul style="list-style-type: none"> Count on and back in 2s, 3s, 5s and 10 from any number within 100 along a number line (vertical and horizontal) Recognise the place value of each digit in a 2-digit number (tens, ones) Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 Add and subtract tens and ones to 1 and 2-digit numbers within 100 (no regrouping) <p>Addition and subtraction strategies:</p> <ul style="list-style-type: none"> Use the 'Make 10' strategy to add and subtract two 1 and 2-digit numbers using a bead string Use the 'Make 10' strategy to add and subtract two 1 and 2-digit numbers on a number line Use the 'Make 10' strategy to add and subtract two 1 and 2-digit numbers on part-whole model using Dienes (introducing the word 'regroup' to describe the process of creating one unit of 10 from 10 ones, or breaking one 10 into 10 ones)



Supporting great teaching

The Education Endowment Foundation have identified that a sustained response will be required to negate the impact of school closures and that *'Great teaching is the most important lever schools have to improve outcomes for their pupils'*.

At Ark Curriculum Plus, we've always believed that the teacher makes the difference and we're committed to supporting ongoing teacher professional development.

Our new **MyMastery** learning platform divides a year's worth of curriculum into easily accessible chunks of learning, called **staging posts**. Each covers approximately 2 weeks of learning, with all the curriculum planning, classroom resources and integrated professional development you'll need to teach the next 8 – 12 hours of the curriculum.

Supporting parents with learning at home



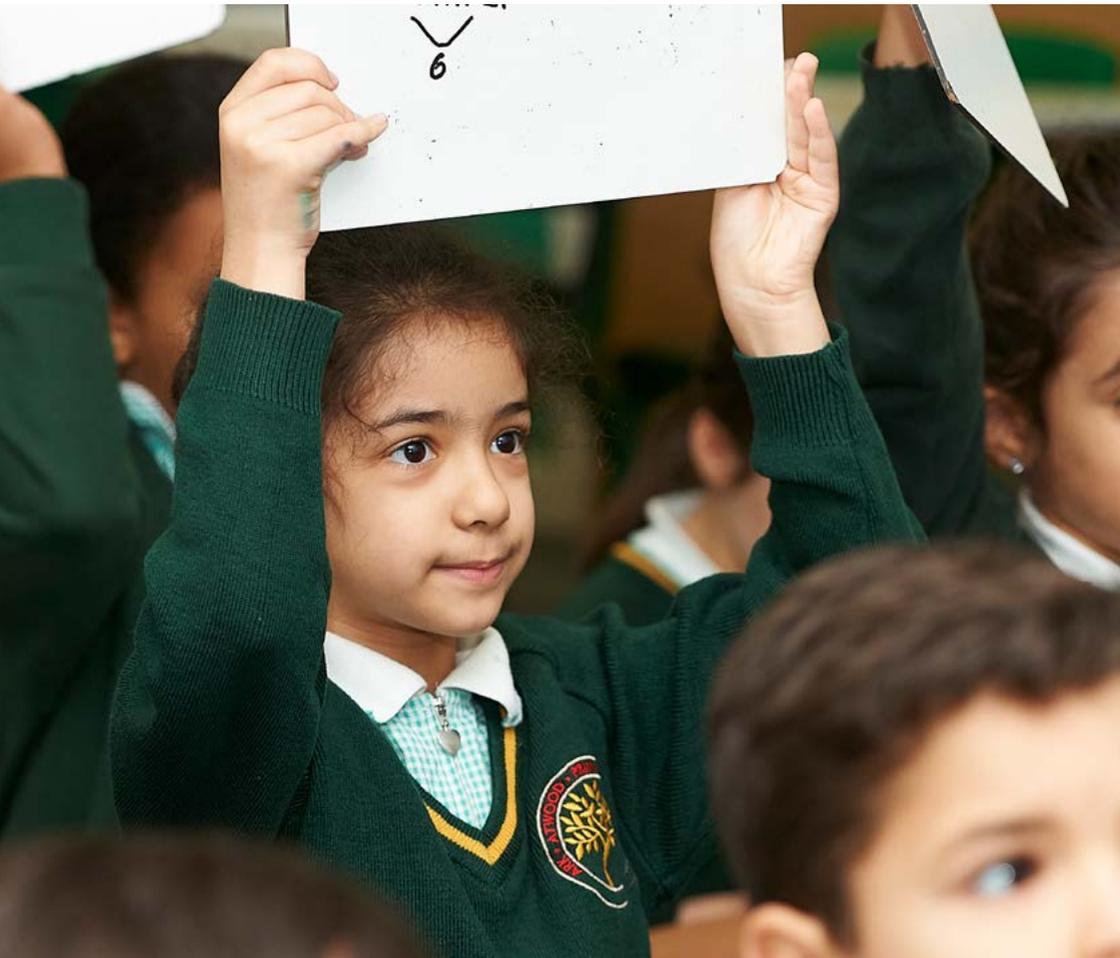
We're delighted to be working with Learning with Parents who offer the **Maths with Parents** programme. They work with teachers to provide home learning resources and support for parents to ensure all children are effectively supported at home to reach their academic potential.

We have worked together to ensure that our principles around maths learning are aligned and have co-created a curriculum map to show how Maths with Parents can be used alongside the Mathematics Mastery curriculum.

Our approach.

The Mathematics Mastery approach is driven by teacher consultation and the latest cognitive and educational research.

It is underpinned by the dimensions of depth – which together enable pupils to develop deep understanding of the subject.

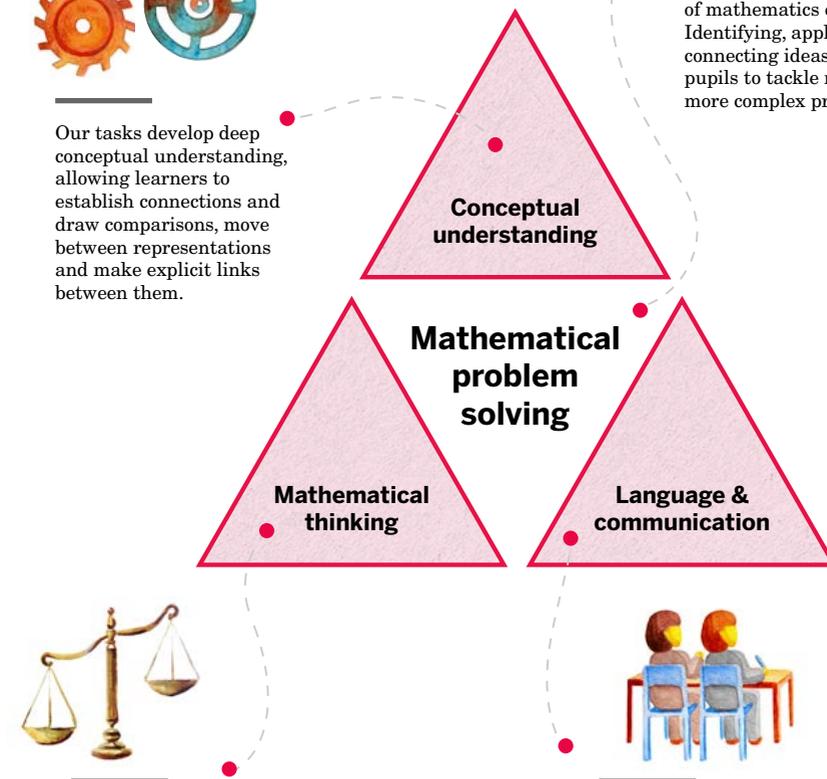


The dimensions of depth



Our tasks develop deep conceptual understanding, allowing learners to establish connections and draw comparisons, move between representations and make explicit links between them.

Enabling learners to solve new problems in unfamiliar contexts is the ultimate aim of mathematics education. Identifying, applying and connecting ideas enables pupils to tackle new and more complex problems.



Our curriculum is designed to encourage learners to think mathematically with tasks that require them to specialise and generalise, work systematically, generate their own examples, classify and make conjectures.



Our curriculum is carefully sequenced in order to develop confident use of the language, signs and symbols of mathematics. Talk tasks are part of every lesson to help with this development.

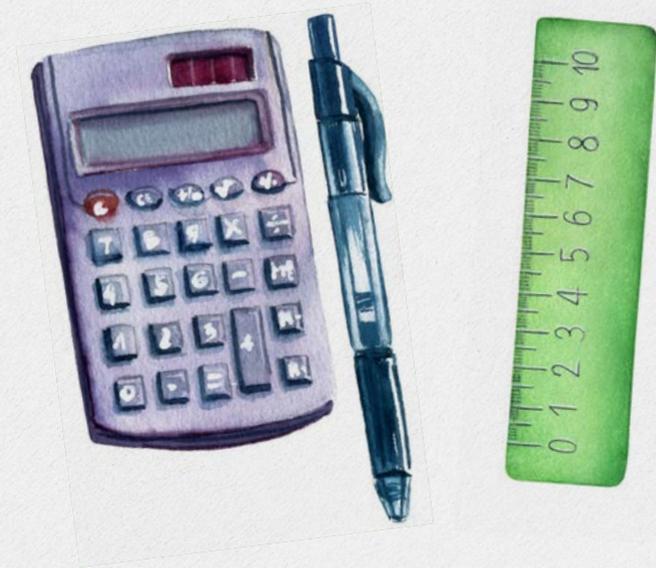
Proven impact.

Mathematics Mastery Primary has been shown by EEF (the Education Endowment Foundation) to give pupils on average **one month's additional progress** after one year on the programme.

“

On average, pupils in schools adopting Mathematics Mastery made more progress than similar pupils in schools that did not adopt the programme.

EEF Report



Mathematics Mastery schools have also been shown to score on average **two points higher than the national average in the Key Stage 2 National Tests**. This success comes despite over 45% of pupils in Mathematics Mastery schools being classified as disadvantaged.

In our annual partner school survey:

92% say that Mathematics Mastery has had a **positive impact on pupil progress**

96% say the programme has **deepened pupils' understanding of mathematical concepts**

98% say pupils **enjoy maths lessons**

95% say the programme has **improved maths teaching in their school**

What do I get when I join the programme?

The Mathematics Mastery Primary Curriculum

Available from Reception through to Year 6

The Mathematics Mastery curriculum is cumulative. Each school year begins with a focus on the concepts and skills that have the most connections, and this concept is then applied and connected throughout the year to consolidate learning.

This structure gives pupils the opportunity to gain mastery by using previous learning throughout the year, developing mathematical fluency and deep understanding of concepts.

Our curriculum is designed to ensure your school fully meets the requirements of the 2014 National Curriculum for England.

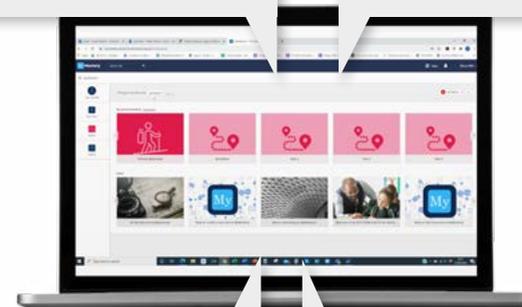
Each year's curriculum includes all of the National Curriculum objectives for that year group, plus a small number from the year above, where we feel these will help pupils make connections with their learning.

Access to the MyMastery learning platform

Our new **MyMastery learning platform** is at the heart of our programme – offering easy 'anytime, anywhere' access to the full suite of Mathematics Mastery content.

Curriculum maps and programmes of study

Planning and lesson resources



Bite-sized PD videos and tutorials

Tools to assess for mastery

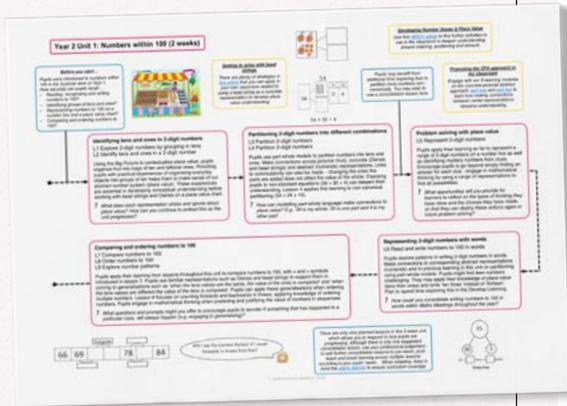


Teaching overviews

The resources on MyMastery are split into easily accessible chunks of learning – these are called **staging posts**.

Each staging post covers approximately 2 weeks of learning, with all the resources and comprehensive professional development needed to support the teaching of that stage and the units within it.

Unit narratives provide overviews of key content and learning



On-demand unit tutorials develop subject knowledge



Planning guidance

Easily accessible planning guidance outlines the core 6-part structure of each lesson:

Do Now > New Learning > Talk Task > Develop Learning > Independent Task > Plenary

Mathematics Mastery Year 2 Unit 1: Numbers within 100

Lesson 1: Place value

Key Learning: To recognise the place value of each digit in numbers within 100 and apply knowledge of place value to represent numbers using cubes.

Lesson Overview: Pupils recognise and describe concrete representations of numbers to 100 and apply knowledge of place value to represent numbers using cubes.

TAF statement link: Partition a two-digit number into tens and ones to demonstrate an understanding of place value, though they may use structured resources to support them (WT). Count in tens, fives and tens from 0 and use this to solve problems (WT). Read and write numbers in numerals up to 100 (WT).

Resources: Cubes, mini whiteboards, Task sheet

Transitions: Counting forward in tens starting from different numbers

Do Now: Introducing the Big Picture
Show pupils the Big Picture for this unit. ?What maths can they see in the Big Picture? Encourage pupils to notice that the fruit is grouped in tens.

New Learning: Grouping in tens and ones
Introduce the story on the slide and ask questions to ensure pupils have understood. Invite pupils to explore, providing each pair with 34 'apples' (represented as cubes) as well as mini whiteboards to record their jottings. Please plan-way through to share pupils' representations with the class. Some may be inefficient (e.g. 34 dots on a whiteboard) and some may be more efficient (e.g. dots grouped into tens). Allow more time for discussion and exploration; highlight how and why particular strategies and representations may be more efficient.

Talk Task: Using efficient strategies when problem solving
Pupils continue to explore Gemma's fruit stall with other problems shown on the slide. Partner A chooses a problem and counts out the number of cubes. Partner B solves the problem using cubes and Partner A solves the problem using jottings on a mini whiteboard. Swap and repeat. Encourage pupils to group their 'fruit' into tens, so that they can easily visualise the number of bags needed.

Develop Learning: Groups and leftovers
Encourage pupils to explore other situations involving the fruit stall using concrete and pictorial representations of their choice, in pairs. Share their findings, making connections between different representations. Pupils should identify that three bags of satsumas is the same as three groups of ten, which is 30. There are also 5 more satsumas: $30 + 5 = 35$. Repeat by creating further examples using different 2-digit numbers and different fruit. Discuss the statement provided and use this to identify any misconceptions.

Independent Task: How many groups of ten?
Pupils investigate more fruit stall problems in pairs. Ensure pupils still have access to cubes and mini whiteboards. Once pupils have solved a problem, they should record in some way. Teacher note: some pupils may benefit from scaffolding to organise their findings. Pupils who have completed several problems can begin to pattern seek. ?What patterns can they see about the between the number of pieces of fruit, the groups of ten and the number of leftovers?

Possible adaptations:

- Some pupils may not be ready to make the link between the pictorial representations of jottings and the concrete cubes. These pupils should remain working in the concrete stage throughout the lesson. They could be given bags to place their groups of ten cubes on as well as placing the leftovers beside the bags.
- Some pupils may be challenged to find examples where there are the same number of bags as there are left-overs (e.g. 11, 22, 33, 44, etc.).

Plenary: Pattern seeking
Share findings from the fruit stall problems, recording pupils' findings. Discuss the patterns pupils have explored about the relationship between the number of fruit, groups of ten and leftovers. Use this to emphasise that our place value system, and the way we record numbers in tens and ones, shows us how many 'groups of ten' there are in each number (by looking at the 'tens' column) and how many ones there are in each number (by looking at the 'ones' column – which were the 'left-over' fruit in today's problem).

Copyright © 2020

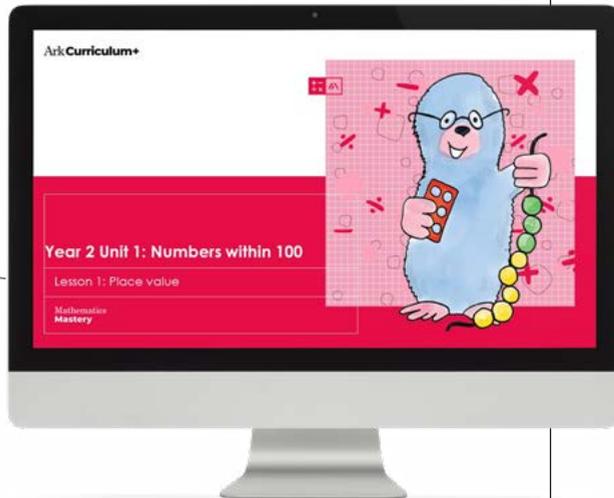


Lesson resources

Our suite of lesson resources exemplifies our classroom principles and supports teachers' ongoing professional development.

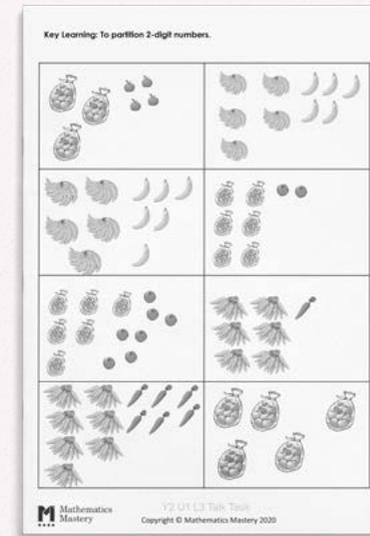
We understand the importance of creative freedom when planning lessons. We also know the needs of teachers and pupils vary hugely. Our materials therefore address a full spectrum of needs and can be fully customised to suit your class.

PowerPoint slides are provided for each lesson



Fully editable to meet your pupils' needs

Big Pictures encourage mathematical discussions



Flexible activities support pupils' learning

Download samples of the programme resources on our website

Assessment and intervention tools

The programme integrates formative assessment throughout, enabling teachers to assess depth of understanding and scaffold learning. Half-termly assessments are also provided.

Key Constructs

outline the 'big ideas' in maths that are essential to understand to enable progress. Guidance is given on assessing each of these areas against age-related expectations.

M Mathematics Mastery Year 2

1. Pupils are developing fluency, reasoning skills and problem solving as they compare and order numbers from zero up to 100 using the <, > and = signs

Expected:

- Pupils use the correct symbols to order and compare two-digit numbers
- Pupils can mathematically reason their decisions

Possible evidence for the tasks below:

- Pupils independently answer the questions below accurately
- Pupils' explanations are clear, for example, 37 is greater than 31 because the tens are the same but there are seven ones in 37 and only one one in 31.

Possible tasks:

Insert the correct symbol: $37 \square 31$ $31 + 4 \square 37 - 2$

$37 \quad 13 \quad 73 \quad 33 \quad 3$

If you wrote these numbers in order starting with the number that has the least value, which number would be third? Explain how you know.

See also Mathematics Mastery Year 2 Unit 1.

Guidance for support:

Provide pupils with number lines, Dienes and place value charts to compare different numbers.

Ask pupils to read the numbers. What's the same? What's different? What is the value of each digit?

Guidance for depth:

Pupils compare numbers that are given in different contexts, for example, 37 cm and 31 m. Which is more?

Ensure pupils use full sentences using only correct mathematical vocabulary when explaining how they ordered numbers.

If I wanted to use this symbol '>' what could you write in the spaces provided? Explain.

$31 + 4 > \square \square$

Links to Teacher Assessment Frameworks:

Working towards the expected standard	Working at the expected standard	Working at greater depth within the expected standard
Read and write numbers in numerals up to 100.	N/A	Use reasoning about numbers and relationships to solve more complex problems and explain their thinking.

Copyright © Mathematics Mastery 2018

Maths Meetings

are a key part of the programme - consolidating key areas and providing opportunities to assess reteach needs on a daily basis.

Term	Detail
Autumn	<p>Number:</p> <ul style="list-style-type: none"> Count on and back in 2s, 3s, 5s and 10 from any number within 100 along a number line (vertical and horizontal) Recognise the place value of each digit in a 2-digit number (tens, ones) Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 Add and subtract tens and ones to 1 and 2-digit numbers within 100 (no regrouping) <p>Addition and subtraction strategies:</p> <ul style="list-style-type: none"> Use the 'Make 10' strategy to add and subtract two 1 and 2-digit numbers using a bead string Use the 'Make 10' strategy to add and subtract two 1 and 2-digit numbers on a number line Use the 'Make 10' strategy to add and subtract two 1 and 2-digit numbers on part-whole model using Dienes (introducing the word 'regroup' to describe the process of creating one unit of 10 from 10 ones, or breaking one 10 into 10 ones)

Catch-up materials

support interventions for pupils who demonstrate gaps in learning.

M Mathematics Mastery

Place Value Within 100: Tens and ones within multiples of ten

To explore place value within 100 when the number of tens remains the same

About the maths

Place value is a key concept that pupils need to understand to enable them to work with larger numbers, negative numbers and decimal numbers.

Vocabulary

Group, groups of
Exchange, regroup
Tens, ones

Resources

Dienes blocks
Number cards 0-100

Getting started

These tasks should be completed for the following ranges of numbers: 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80-89 and 90-99. The examples in this guide focus on 30-39.

Ask pupils to place the ones Dienes alongside each other to find out how many cubes are equal to a longer cuboid. Ensure that pupils recognise that ten cubes are equal to one longer cuboid.

Display 30 ones. Model how to regroup one ten ones for one ten and find out how many ones there are left. Explore how many groups of ten they can make with the ones and how many ones there are remaining.

Record this on a table.

30	tens	ones
	3	0

Repeat with 31.

Task for pupils

Provide pupils with 30 ones and three tens. Ask pupils to explore grouping the numbers 30-39 into tens and ones by exchanging groups of ten for a tens Dienes. Ask pupils to record their answers in a table.

Deepening understanding

Remind pupils that one ten Dienes is equal to ten one Dienes.

Display the table below and explain that they are going to exchange each ten for a group of ones to find out what the missing number is.

tens	ones
3	4

The steps below are to support pupils who do not count in tens and ones when counting Dienes

First, represent the table with the tens and ones.

Then exchange each ten for ten ones.

Finally count how many ones there are altogether (in tens and ones).

Copyright © 2018 Mathematics Mastery. This can be printed out and photocopied by Mathematics Mastery teachers registered users only. For further information please see our terms and conditions at www.mathematics-mastery.org/terms-and-conditions.

Professional development

Mastery

Our Mastery tier includes access to a wide range of professional development modules to support your teachers as they work through the Mathematics Mastery curriculum.

When you join us, all of your teachers are set up for success through our online introductory training, accessed via MyMastery. Then for the continued development of your team, our professional development content is divided into chunks or ‘staging posts’ that allow easy access to the knowledge and training available for each unit.

Available on demand, your teachers can access the training they need when it suits them best – offering flexibility and support at the right points through the year.



Specialist support

Leadership

Our Leadership package includes all of the online professional development and training content from the Mastery tier, PLUS

Live induction training for new teachers

Collaborative training for everyone who is teaching Mathematics Mastery for the first time.

Subject mastery leadership course for your maths lead

Our one-year *Leadership of Mathematics* course will expand your in-house expertise, developing subject leadership skills, pedagogical understanding and classroom practice that can be cascaded throughout the school.

A dedicated School Development Lead and four remote mastery leadership development sessions

Your school will be allocated a Development Lead who will support you with professional development, additional training and action planning throughout the year. These are experienced classroom teachers or senior leaders who have been carefully selected and trained as Mathematics Mastery specialists.

One ticket to our annual conference

Each year we hold an Ark Curriculum Plus Conference which brings together partner schools to think and talk about maths education, hear inspirational speakers and share best practice.

Tailored

If you are looking for a more bespoke service, then our Tailored package allows you the flexibility for expert support, advice and guidance including two school development visits per year and on-site training options for the full teaching team.

To find out more, visit www.arkcurriculumplus.org.uk/join-us

Now available in three flexible tiers.

In line with our mission to make improving life chances accessible to all schools, we have now made our programmes available in three flexible packages: Mastery, Leadership and Tailored – offering different levels of support, depending on the requirements of each school.

This means that those schools who may not wish to take on the full face-to-face training model of the Tailored programme, can still deliver and embed a mastery approach with full curriculum and professional development – all delivered online via our MyMastery learning platform.

Mathematics Mastery Primary – pricing

We are a non-profit organisation.

The schools that we work with are charged a financial contribution which goes towards delivering and developing the programmes. An outline of our pricing structure is below – but do get in touch to receive a quote for your specific setting.

Mastery	Leadership	Tailored
From £1,350* per key stage	From £4,000*	From £6,500*

* Discounts are available for small schools.

For full details of the support included in each programme package, visit www.arkcurriculumplus.org.uk/join-us



Choose the package that's right for your school

Our friendly partnerships team will be happy to talk you through the programme and help you decide on the right approach and package for your school.

To book a demo, or sign up for a free trial, contact us on:

E: partnerships@arkcurriculumplus.org.uk
T: 020 3116 6363

Or book a call online at
www.arkcurriculumplus.org.uk/book-a-demo

New mastery programmes for primary Science, History & Geography are launching in Spring 2021.

Visit **www.arkcurriculumplus.org.uk/our-programmes** to find out more.



Mathematics Mastery is a curriculum programme from

ArkCurriculum+

The Yellow Building

1 Nicholas Road

London

W11 4AN

020 3116 6363

info@arkcurriculumplus.org.uk