

Mathematics  
Mastery

# What is Mathematics Mastery?

A guide for parents and carers  
2016-17

# What is “Mathematics Mastery?”

*Mathematics Mastery is a not-for-profit organisation.*

## Our vision

For every child to enjoy and succeed in mathematics, regardless of background.

## Our mission

To transform mathematics education in the UK. We work in partnership to empower and equip schools to deliver world-class mathematics teaching.

# Core belief

Mathematics Mastery schools want to ensure that their aspirations for every child's mathematics success become reality

- Success in mathematics for every child **is possible**
- Mathematical ability is not innate, and is **increased through effort**

## Effort-based ability – growth mindset

Intelligence  
can grow

Effort leads to  
success

When the going  
gets tough ... I  
get smarter

I only need to  
believe in  
myself

Success  
is the  
making  
of  
targets

When the going  
gets tough ... dig in  
and persist

## Innate ability

Intelligence is  
fixed

Ability leads to  
success

When the going  
gets tough ... I  
get found out

I need to be  
viewed as  
able

When the going  
gets tough ... give  
up, it's hopeless

Success is  
doing  
better  
than  
others

# Key principles

- Fewer topics in greater depth
- Mastery for all pupils
- Number sense and place value come first
- Problem solving is central

# What does the National Curriculum say?

- “Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content.”
- “Those who are not sufficiently fluent should consolidate their understanding, including through additional practice, before moving on.”

# What does this look like?

Ram divided 15 pennies among four small bags.

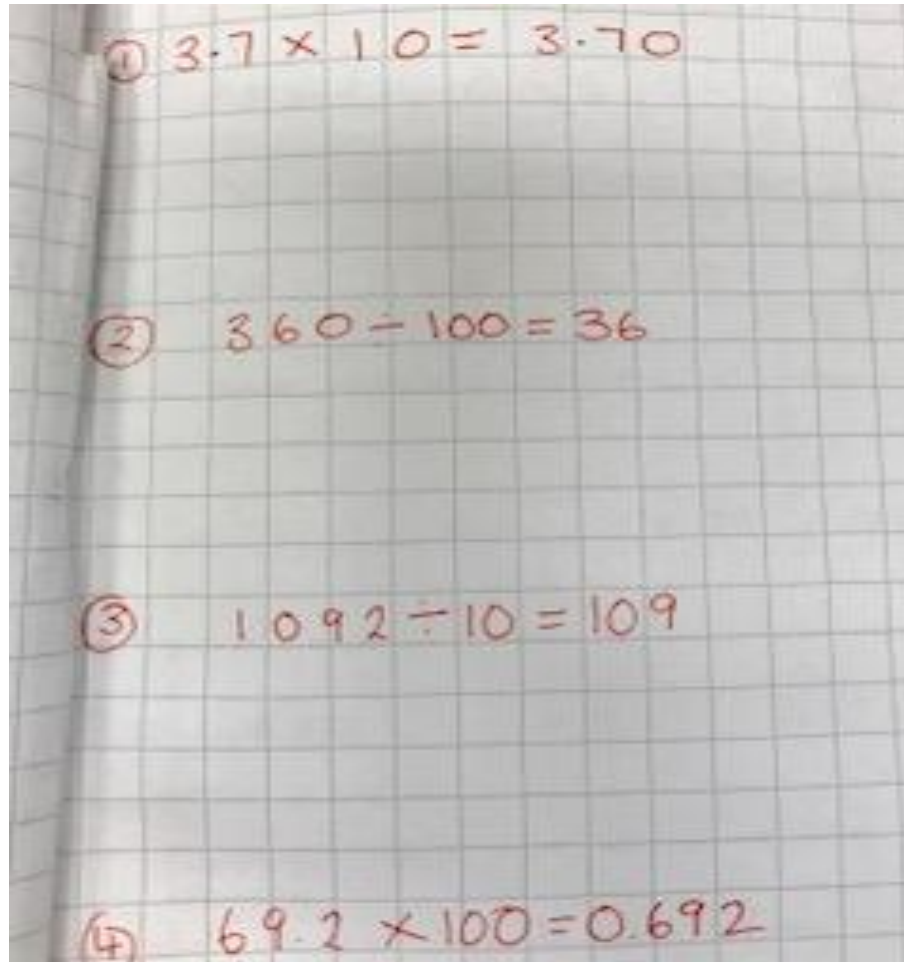


He labelled each bag with the number of pennies inside it.

He could then pay any sum of money from 1p to 15p without opening any bag.

How many pennies did Ram put in each bag?

# Spot the mistake





# Missing digit equations

these equations

②	3	6	③	4	5	④	3
-	1	2	-	2	6	-	1
<hr/>			<hr/>			<hr/>	
Ⓐ	3	6	Ⓑ	?	9	Ⓒ	3
-	?	7	-	2	7	-	1
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1	?		4	?		2	8

# Lesson structure

- Mathematics Mastery lessons follow a 6-part structure. This keeps the lesson pacy, gives flow and allows more opportunities to teach creatively, give feedback and assess learning.
- Pupils have access to plenty of concrete materials such as bead strings and place value counters so that they have time to fully explore mathematics.

# What are concrete resources?



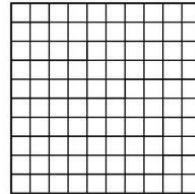
Bead strings



Bar models

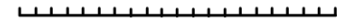


Fraction towers



100 grids

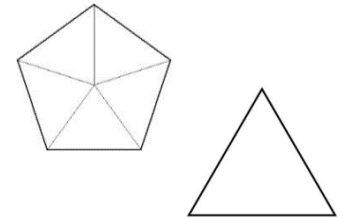
Number lines



Cuisenaire rods



Shapes



Multilink cubes



Dienes blocks



# Mathematical language

Mathematics Mastery lessons provide opportunities for pupils to communicate and develop mathematical language through:

- Sharing essential vocabulary at the beginning of every lesson and insisting on its use throughout
- Modelling clear sentence structures using mathematical language
- Paired language development activities, known as Talk Tasks.
- Plenaries which give a further opportunity to assess understanding through pupil explanations.

# What do these words and phrases mean?

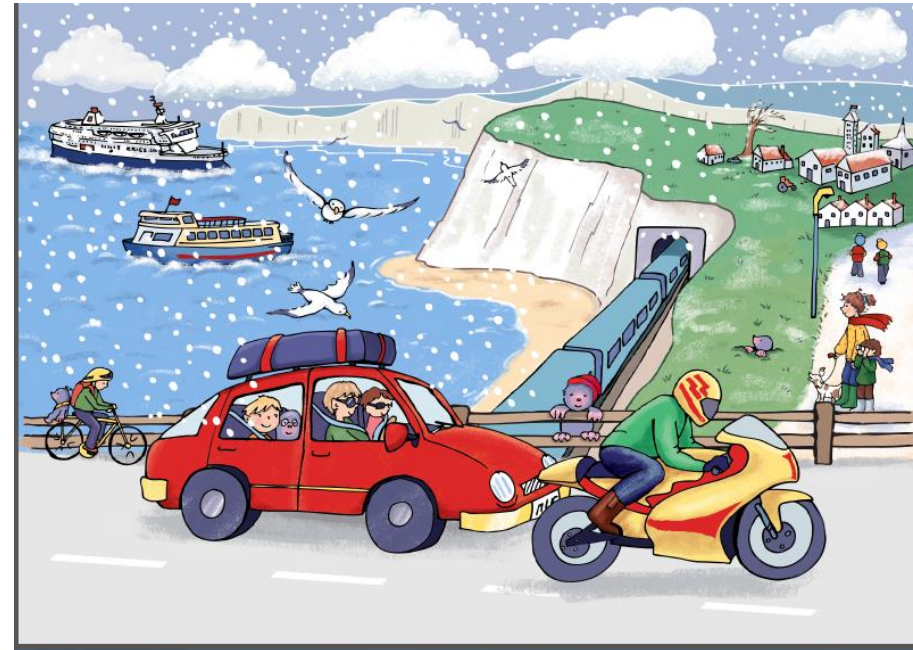
- Vertex/vertices
- Is equal to
- Hundreds, Tens and ones
- Fewer/less

Try these!

I have fewer/less apples than Harry.

I have fewer/less money than Amrick.

# Big pictures



# How will children's work be recorded?

- Task sheets
- Books
- Photographs

# Does it work?

The study shows that children who were taught through the Singaporean 'maths mastery' approach learn faster than their classmates

RICHARD GARNER | EDUCATION EDITOR | Thursday 18 June 2015



The first conclusive proof that Far Eastern teaching methods can improve UK pupils' maths performance is revealed in research just published.

A study, by UCL Institute of Education and Cambridge University, shows that children who were taught through the Singaporean "maths mastery" approach learn faster than their classmates - making, on average, an extra month of progress in a calendar year.



THE INDEPENDENT :



Farm

## English pupils' maths scores improve under east Asian approach

Study shows 'maths mastery' experiment improved children's scores in English schools after just one year



# How can I become involved?

- Talk to your child about their learning, what they learn in their maths lessons each day.
- Ask your children to show you/explain how they solved a problem
- Cook and shop with your child, getting them to weigh ingredients, using language such as “more” and “less/fewer”
- Provide practical opportunities where maths skills are practised

