

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**

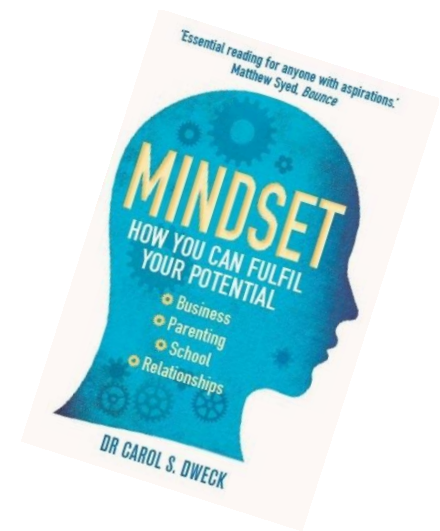
What is mindset?

Mindset is an idea developed by Dr. Carol Dweck.

A set of beliefs that determine somebody's behaviour and outlook in life.

Two types of mindset:

- A **fixed** mindset
- A **growth** mindset

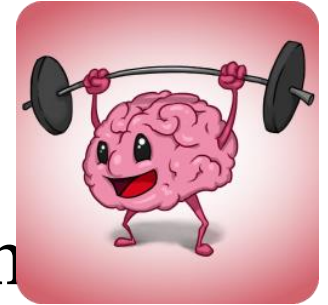


Characteristics of a fixed mindset



- ability and intelligence are innate
- intelligence and ability cannot be changed
- tend to give up easily with tasks
- avoid challenges
- feel threatened by the success of others
- ignore constructive criticism

Characteristics of a growth mindset



- intelligence can be developed over time through effort, dedication and hard work
- persevere with tasks
- enjoy challenges
- setbacks and criticism as lessons to be learnt from
- inspired by and learn from the success of others

Key principles

- Fewer topics in greater depth
- Mastery for all pupils
- Number sense and place value come first – Y1 really focuses on this within 10 and 20
- 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?

Stage: 1 ★ ★

Choose four of the numbers from this list: 1, 2, 3, 4, 5, 6, 7, 8, 9 to put in the squares below so that the difference between joined squares is odd. Only one number is allowed in each square. You must use four different numbers.

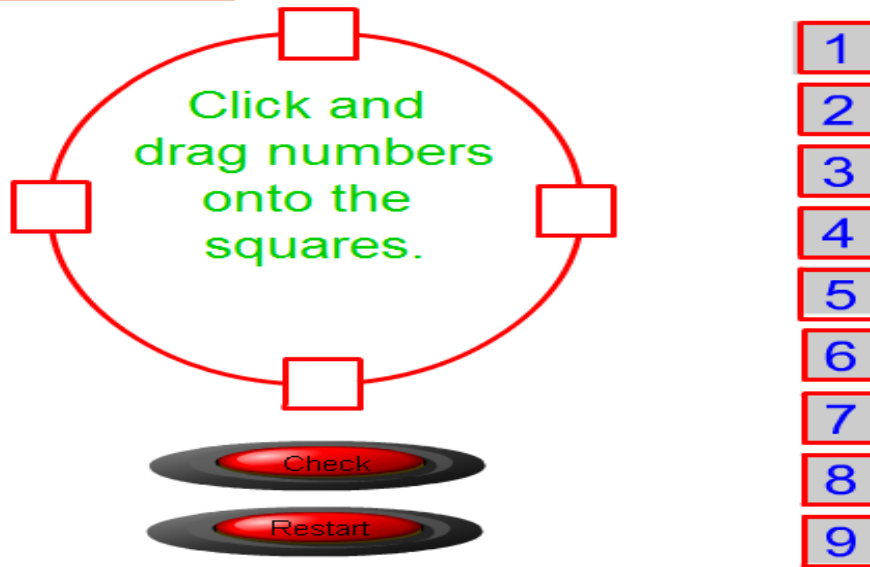
What can you say about the sum of each pair of joined squares?

What must you do to make the difference even?

What do you notice about the sum of the pairs now?

Here are [some sheets](#) for recording your solutions.

[Full size version](#)



Click and drag numbers onto the squares.

Check

Restart

1
2
3
4
5
6
7
8
9

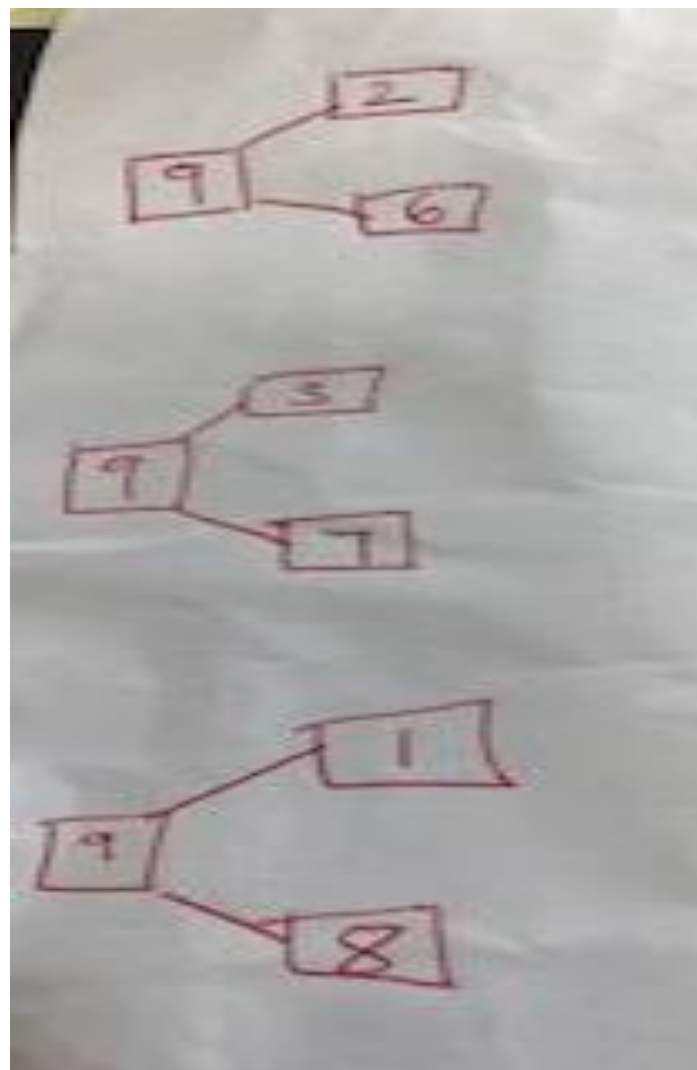
The interface features a central red circle with four small red squares attached to its top, bottom, left, and right. Inside the circle, the text "Click and drag numbers onto the squares." is displayed in green. Below the circle are two buttons labeled "Check" and "Restart". To the right of the circle is a vertical column of nine red-bordered boxes containing the numbers 1 through 9 in blue.

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
<hr/>			<hr/>			<hr/>	
1	?		4	?		2	8

Spot the mistake



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?



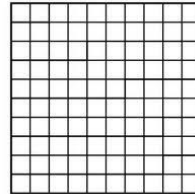
Bead strings



Bar models

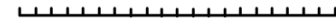


Fraction towers



100 grids

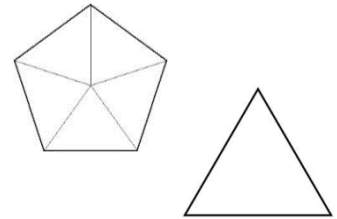
Number lines



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.

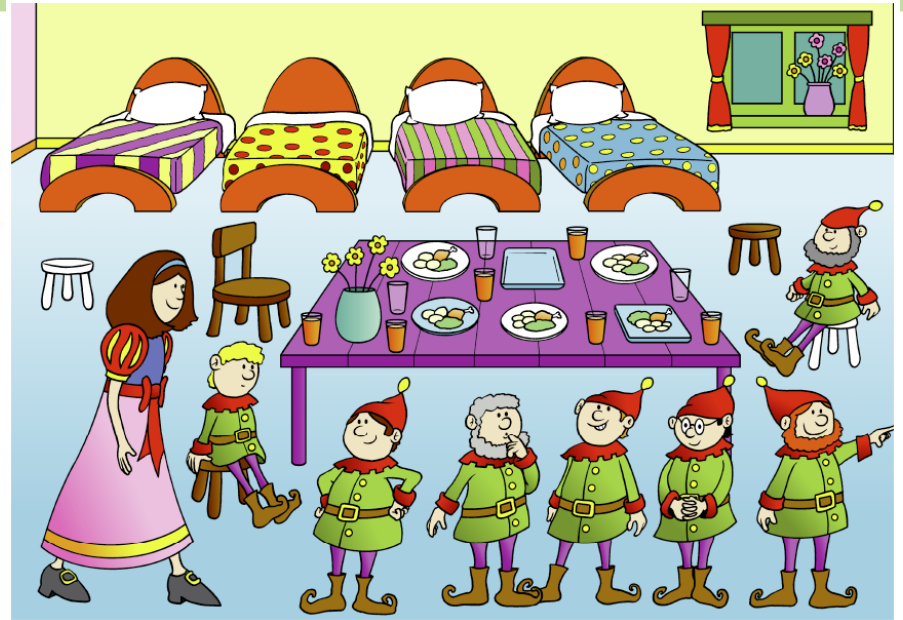
What do these words and phrases mean?

- 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.



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