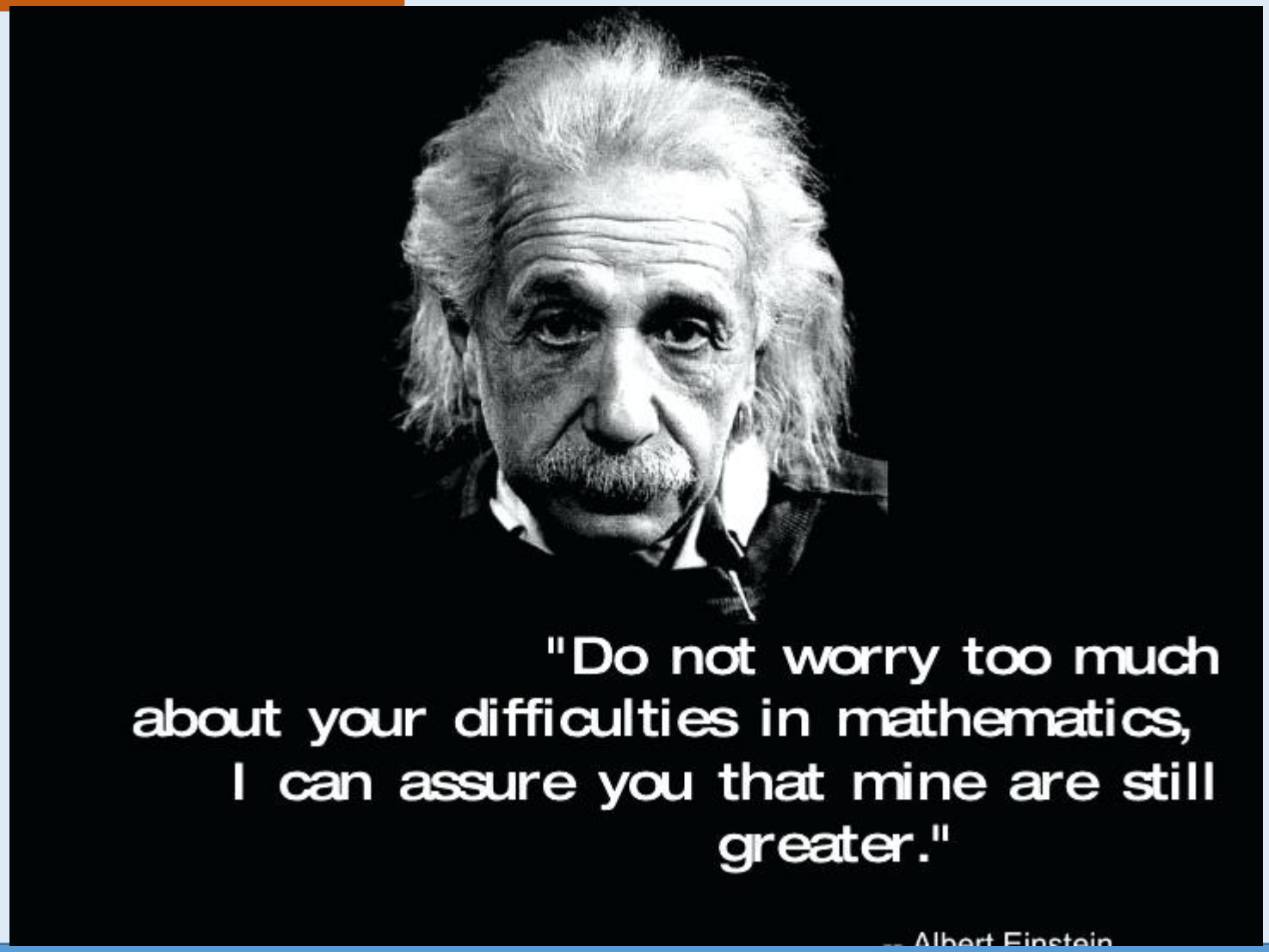
# Year 7 Maths




Mr Philip Brighton – Subject Leader for Mathematics

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## Why do students not have a growth mindset in maths?

*"I'm just not good at math."*

*"I'm not a math person."*

*"I wasn't born with the math gene."*

Maths has a 'cultural baggage'

This is based on years of parents and teachers misunderstanding or hating maths and passing these negative attitudes onto children

Evidence proves that a growth mindset taught by us will result in improved performance

Every child will face math obstacles at some point, and being prepared to face them with a growth mindset and a healthy attitude toward mathematics will give them the stamina to persevere and overcome the challenge

"Students who have a fixed mindset but who are well prepared and do not encounter difficulty can do just fine. However, when they encounter **challenges** or **obstacles** they may then be at a disadvantage."

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Some primary schools tell parents not to confuse their children with different methods.

=

Year 7 students unable to do their Maths and parents not wanting to confuse them

On your tables are some whiteboards, pens and cloths.

Work out the answer to:

247 x 36 (no calculators allowed.)

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Different methods used:

Long multiplication

$$\begin{array}{r} 247 \\ \times\ 36 \\ \hline 1482 \\ 7410 \\ \hline 8892 \end{array}$$

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Different methods used:

Grid Method

| x | 200 | 40 | 7 |
|---|---|---|---|
| 30 | 6000 | 1200 | 210 |
| 6 | 1200 | 240 | 42 |

6000 + 1200 + 210 + 1200 + 240 + 42

= 8892



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## What is a Mastery Curriculum?
## What is a Mastery Approach?

Mastery is something that we want pupils to acquire. All pupils.

A Mastery Curriculum and a Mastery Approach to teaching both have the same aim—**to help pupils, over time, acquire mastery of the subject**.

Students start preparing for sitting GCSE math's from day 1 at Werneth school

> Mastery of maths, which should build gradually as a child goes through school, is a tool for life, and immeasurably more valuable than the short term ability to answer questions in tests or exams.

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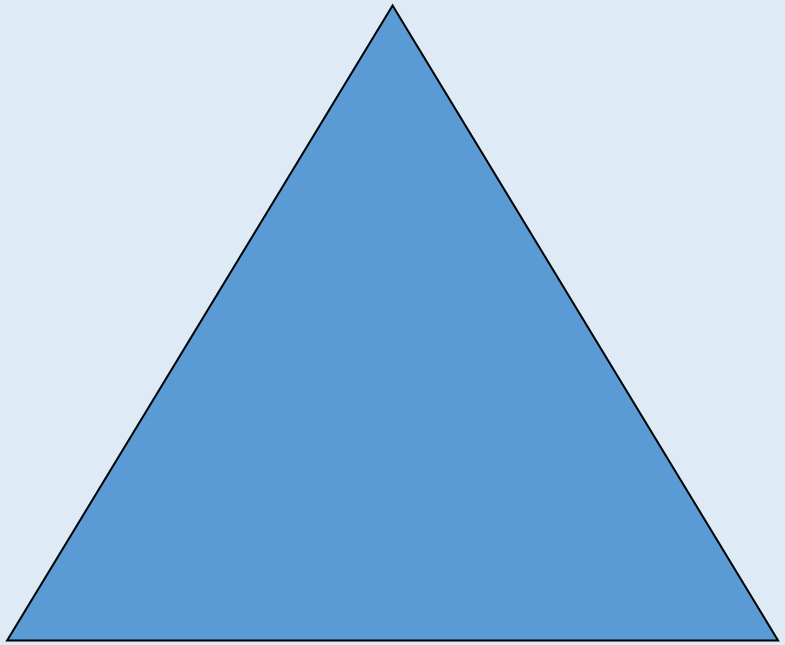
# Three Elements Of Mastery

Mastery of Maths means a deep, long-term, secure and adaptable understanding of the subject. Three elements of Mastery:

Reason mathematically



Problem solving and using and applying in context

Fluency with conceptual understanding

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- Questioning and scaffolding vary, different problems to solve, higher attainers within an area are given complex problems which deepen their knowledge of the same content. Misconceptions dealt with **immediately**.

- Fluency comes from deep knowledge and practice. Ability to recall facts and manipulate them to work out other facts is important.

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## What does this look like?

| Autumn I<br>Solve word problems (add and subtract) | Autumn II<br>Explain and investigate (multiply and divide) | Spring I<br>Geometry | Spring II<br>Fractions | Summer I<br>Applications of algebra | Summer II<br>Percentages and statistics |
|---|---|---|---|---|---|
| ***All pupils** should be confident and competent in the following **KS2** topics. Review of these may be useful* | | | | | |
| • Number bonds<br>• Converting units<br>• Money (+ / -)<br>• Measurement | • Mental strategies<br>• Multiplication facts<br>• Multiplication strategies<br>• Solve number problems | • Lengths and units<br>• Parallel and perpendicular<br>• Work with angles<br>• Division and the mean | • Equal parts<br>• Factors and multiples<br>• Tenths and hundredths<br>• Word problems<br>• Fractional areas | • Area of rectangles and triangles<br>• Number patterns<br>• Algebraic notation<br>• Triangle and quadrilateral properties | • Decimals and problem solving<br>• Fractions of shapes<br>• Equivalence<br>• Order of operations |
| ***All pupils** will have access to the following **KS3** topics* | | | | | |
| • Place value (including decimals)<br>• Add and subtract (including decimals)<br>• Estimation<br>• Perimeter<br>• Word problems | • Factors, HCF, multiples, LCM<br>• Multiply and divide (including decimals)<br>• Area of rectangle and triangle<br>• Calculate the mean | • Draw, measure and name acute and obtuse angles<br>• Compass skills<br>• Find unknown angles (straight lines, at a point, vertically opposite)<br>• Properties of triangles and quadrilaterals | • Equivalent fractions<br>• Compare and order fractions and decimals<br>• Change mixed numbers to improper fractions and vice versa<br>• Fraction of a quantity<br>• Multiply and divide fractions | • Order of operations<br>• Substitution<br>• Simplify algebraic expressions<br>• Solve word problems with expressions<br>• Sequences (term to term, not nth term) | • Construct and interpret statistical diagrams including pie charts<br>• Convert between percentages, vulgar fractions and decimals<br>• Percentage of a quantity<br>• Find the whole, given the part and the percentage |
| ***High attaining** students may be stretched by considering the following topics in addition to termly projects* | | | | | |
| • Different counting systems or bases<br>• Generalisation<br>• Upper or lower bounds | • Shikaku puzzles<br>• Different counting systems or bases<br>• Alternative methods of multiplication<br>• Generalisation | • Tessellating triangles and quadrilaterals<br>• Tangram investigations<br>• Rigid Shapes | • Terminating and recurring decimals<br>• Fractions of tangrams<br>• Shape block challenges | • Four fours<br>• Patterns and generalising<br>• Algebraic mean questions | • Comparing and converting between representations<br>• Applications of percentages |

In each unit your child will be assessed twice at key learning points

They will be given the opportunity to stop at these points and complete an individual improvement task

There will be a formative assessment at the end

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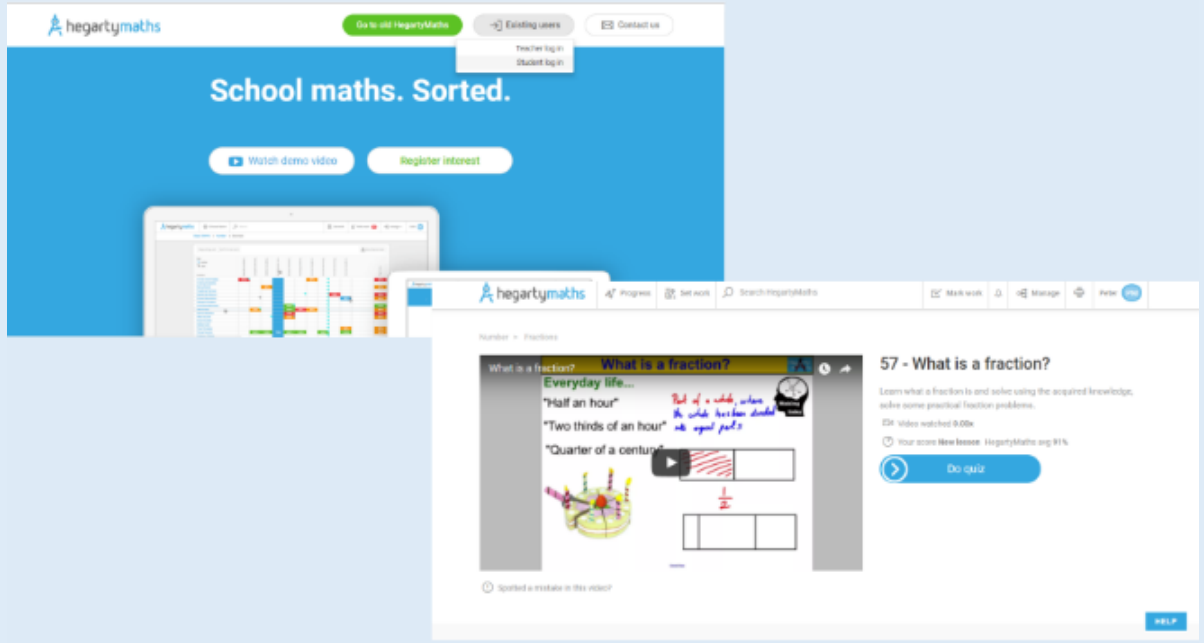


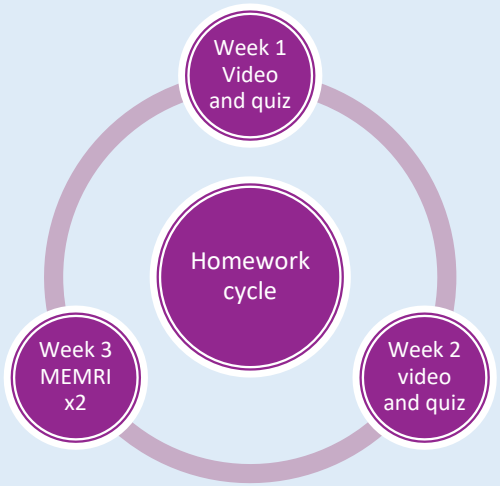


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due 13/9

completed 11/9

## 1 - Simple Addition & its Meaning

### Video notes

**Big Idea: Addition**

- What is 2 more than 3?

ooo oo ← easy to imagine with small numbers, our brains know to add them.

3 + 2 = 5

- What is 27 more than 35?

← Our brain finds this hard to see the answer quickly with bigger numbers

We use addition to work this out

| Keywords |
|---|
| Addition |
| Add |
| Plus |
| More than |
| Count on |
| Sum |
| Number line |
| Positive integer. |

**Example 1**

2 + 6

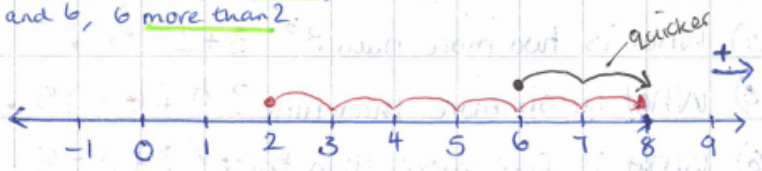
2 + 6 = 8

6 + 2 = 8

Addition is commutative (it can be done in any order)

In words: 2 add 6, 2 and 6, 2 plus 6, the sum of 2 and 6, 6 more than 2.

Number line




**Example 2**: Use symbols to express the following and work out the answers

(i) "2 more than 3" 3 + 2 = 5

(ii) "3 more than 2" 2 + 3 = 5 ↙ commutative so same answer

(iii) "eight plus one" 8 + 1 = 9

(iv) "the sum of two and three" 2 + 3 = 5

**Summary**

1+9 → addition is commutative so we can change this to 9+1 which is quicker to work out when counting on

### Quiz Notes

(1) What is 5 more than 7? 7+5=11 x 7+5=12 ✓

(2) What is 5 more than 5? 5+5=10 ✓

(3) What is 6 more than 9? 9+6=14 x 9+6=15 ✓

(4) What is two more than 3? 3+2=5 ✓

(5) What is six more than nine? 9+6=15 ✓

(6) What is five more than three? 3+5=8 ✓

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# Talk to your child's teachers!

Keep involved.

Let your teacher know of any difficulties with work at home. Show My Homework is a great way to message teachers quickly. If you have not yet got your SMHW login, speak to your child's form tutor.

If you are concerned that your child is struggling with a topic or is not being challenged, get in touch…..a quick email or a note in their homework diary is fine.

Don't be shy to ask questions!

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# practise the basics!

Times tables matter…it's not just in primary school but times tables underpin all maths. Learning times tables and testing your child on them will help bring success!

The same goes for number bonds and the four rules. Get that right and the majority of other topics will follow.

Numeracy in form time to support the basics.

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# Maths Email addresses

| | | |
|---|---|---|
| PBR | Phillip Brighton | philip.brighton@wernethschool.com |
| RAS | Richard Astles | richard.astles@wernethschool.com |
| KKI | Karen Kiernan | karen.kiernan@wernethschool.com |
| EBE | Eleanor Bennett | eleanor.bennett@wernethschool.com |
| RBK | Rebekah Baker | rebekah.Baker@wernethschool.com |
| RMA | Rumla Majid | rumla.majid@wernethschool.com |
| DED | Delia Edge | Delia.Edge@wernethschool.com |
| RWA | Rhiannon Wates | Rhiannon.wates@wernethschool.com |
| JRA | Julie Ramsbottom | julie.ramsbottom@wernethschool.com |
| JSU | James Sullivan | James.Sullivan@wernethschool.com |
| GKE | Gillian Kennedy | Gillian.kennedy@wernethschool.com |
| MATHS | GENERAL QUERIES | Maths.enquiries@wernethschool.com |

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