# Welcome!

Fishponds
Church of England Academy

*'Loving to Learn, Learning to Love'*

Calculation Progression

## Upper Key Stage 2

# Aims for the workshop:

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Calculation Progression

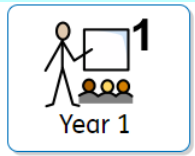
- You become aware of what Year 5/ 6 children are exposed to
- Inform you of the methods used to calculate
- Build your confidence in supporting your child/ren
- Share resources to support your child


# Why is progression in mathematics important?

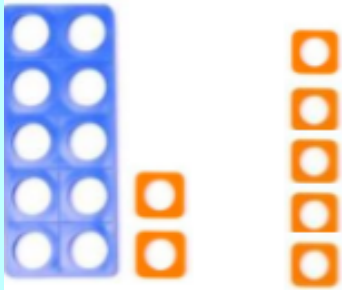
It gives the children the building blocks that they need to be successful in Mathematics and supports them to develop their calculation methods from EYFS to Year 6... and beyond!

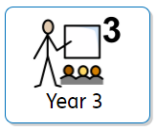
In school we have developed a policy which builds on the previous year groups knowledge so that their understanding is fluid.


# Why is progression in calculation important?



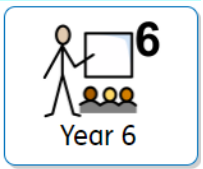

12 + 5

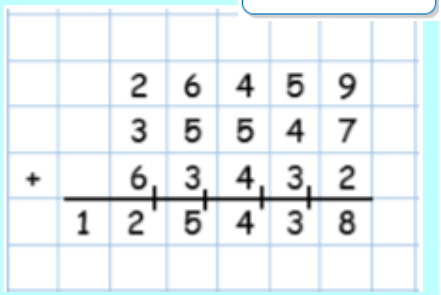





134 + 23 =

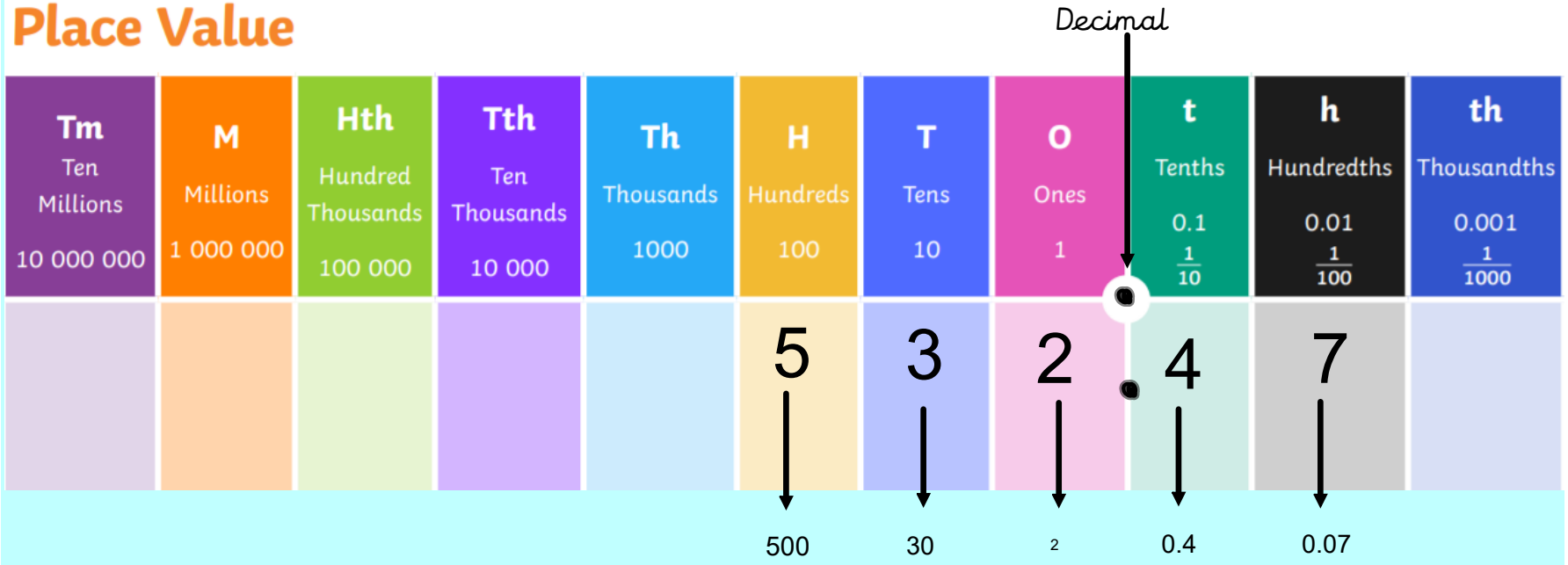
| 100s | 10s | 1s |
|---|---|---|
| 100 | 10 10 10 | 1 1 1 1 |
| | 10 10 | 1 |



# Our calculation policy:

# Place Value




Securing place value is the first step to successful calculation. It ensures the children know what each digit represents.


| Year 5 | Year 6 |
| --- | --- |
| Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)<br><br>Add and subtract numbers mentally with increasingly large numbers | Continue to embed year 5 addition and subtraction |

Once embedded, Year 6 are able to focus on application to problem solving.

A lot of the foundations have been laid from in the previous year groups - this is about securing knowledge.

Add whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction):

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | 3 | 5, | 7 | 8 | 2 |
| + | 5 | 3, | 1 | 5 | 5 |
| | 8 | 8, | 9 | 3 | 7 |

Always starting with the ones

Carried over from the Tens column

This will be familiar to all as children would have learnt this method in Year 4 - with smaller digits.

Add whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction):

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | 2 | 6, | 4 | 5 | 9 |
| | 3 | 5, | 5 | 4 | 7 |
| + | 6 | 3, | 4 | 3 | 2 |
| | 1 2 | 5, | 4 | 3 | 8 |

Always starting with the ones

Carried over from the previous columns

Progression: Adding more than 2 numbers together.

Add whole numbers and decimals, including using formal written methods (columnar addition and subtraction):

| | | T | O | . | ths | hths |
|---|---|---|---|---|---|---|
| | £ | 5 | 6 | . | 2 | 5 |
| + | £ | 2 | 5 | . | 1 | 7 |
| | £ | 8 | 1 | . | 4 | 2 |

Always starting with the hths

Carried over from the previous columns

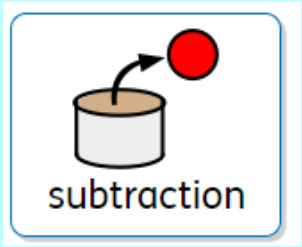
Progression: Adding decimal numbers in the context of money

Add numbers with different place values, including using formal written methods (columnar addition and subtraction):

| | H | T | O | . | ths | hths |
|---|---|---|---|---|---|---|
| | 2 | 3 | 7 | . | 4 | |
| + | | | 6 | . | 3 | 5 |
| | 2 | 4 | 3 | . | 7 | 5 |

Use a place holder to balance the equation.

Year 6 Progression: Adding decimal numbers with differing place values.

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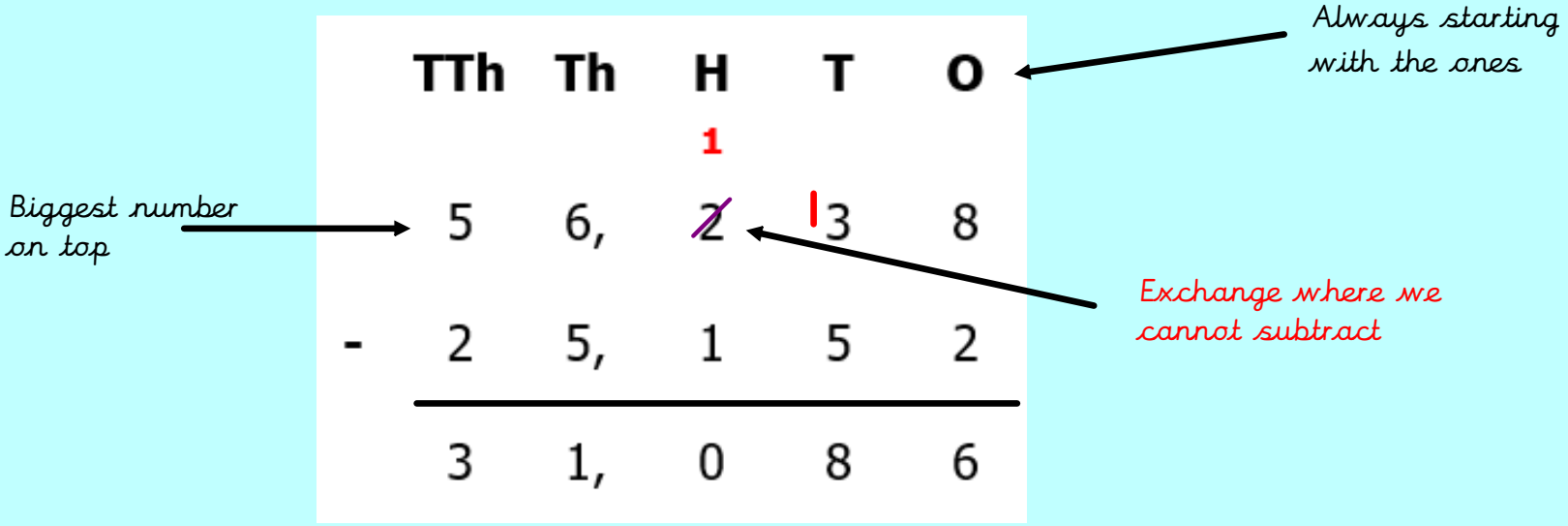
| Year 5 | Year 6 |
| --- | --- |
| Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)<br><br>Add and subtract numbers mentally with increasingly large numbers | Continue to embed year 5 addition and subtraction |

Once embedded, Year 6 are able to focus on application to problem solving.

Once again, a lot of the foundations have been laid from in the previous year groups.

Subtract whole numbers with more than 4 digits, including using formal written methods (columnar subtraction):




This will be familiar to all as children would have learnt this method in Year 4 - with smaller digits.

Subtract whole numbers with more than 4 digits, including using formal written methods (columnar subtraction):

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | 8 | 9 | 9 | | |
| | ~~9~~ | ~~0~~ 1 | ~~0~~ 1 | 5 1 | 6 |
| - | 8 | 4 | 5 | 7 | 4 |
| | 0 | 5 | 4 | 8 | 2 |

Year 6 Progression: Subtracting where there is no value

*Subtract whole numbers and decimals, including using formal written methods (columnar addition and subtraction):*

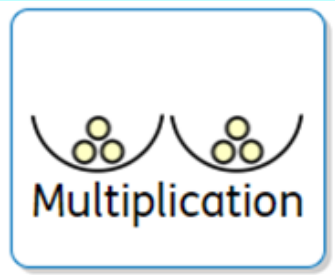
| | | T | O | . | ths | hths |
|---|---|---|---|---|---|---|
| | | 4 | | | | |
| | £ | ~~5~~ | 6 | . | 8 | 9 |
| - | £ | 2 | 7 | . | 3 | 2 |
| | £ | 2 | 9 | . | 5 | 7 |

*The same rules still apply: biggest number on top; subtract from the smallest place value (hths) and exchange where needed.*

Subtract numbers with different place values, including using formal written methods (columnar subtraction):

| | T | O | . | ths | hths |
|---|---|---|---|---|---|
| | | 8 | | 1 | |
| | 1 | ~~9~~ | . | ~~2~~ | 0 |
| - | | 3 | . | 3 | 7 |
| | 1 | 5 | . | 8 | 3 |

Year 6 Progression: Subtracting decimal numbers with differing place values.

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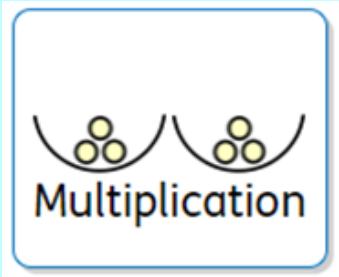
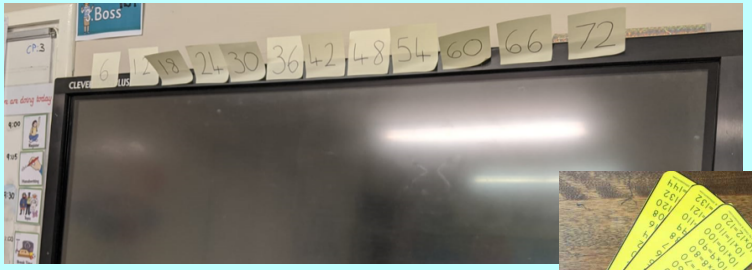
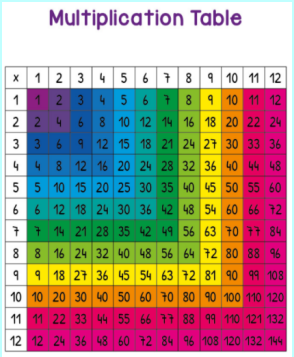
| Year 5 | Year 6 |
| --- | --- |
| Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers<br><br>Multiply and divide numbers mentally drawing upon known facts<br><br>Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context<br><br>Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 | Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication<br><br>Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context<br><br>Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context |

There is a lot more new learning in Year 5 & 6 - focuses on formal methods




# Times tables (Y1-4)



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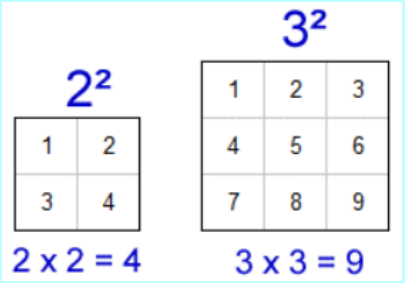
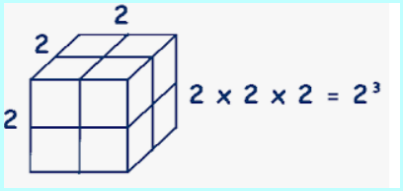
Tons of MATH VIDEOS here: https://www.mccarthymathacademy.com/ My mission is to math FUN, make it CLICK, and make it ...

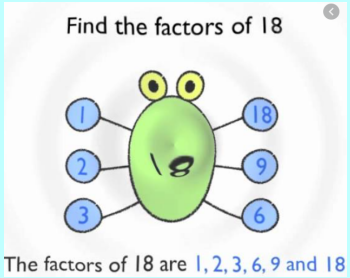
# New vocabulary in UKS2:



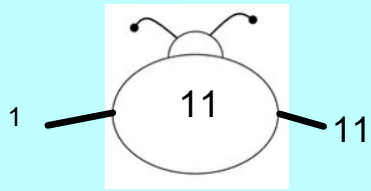

Squared



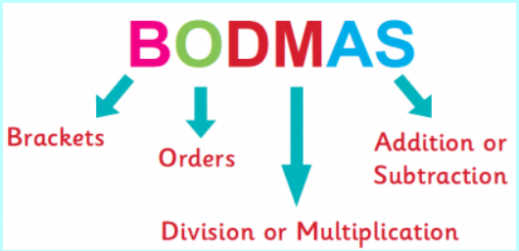

Cubed




Factors

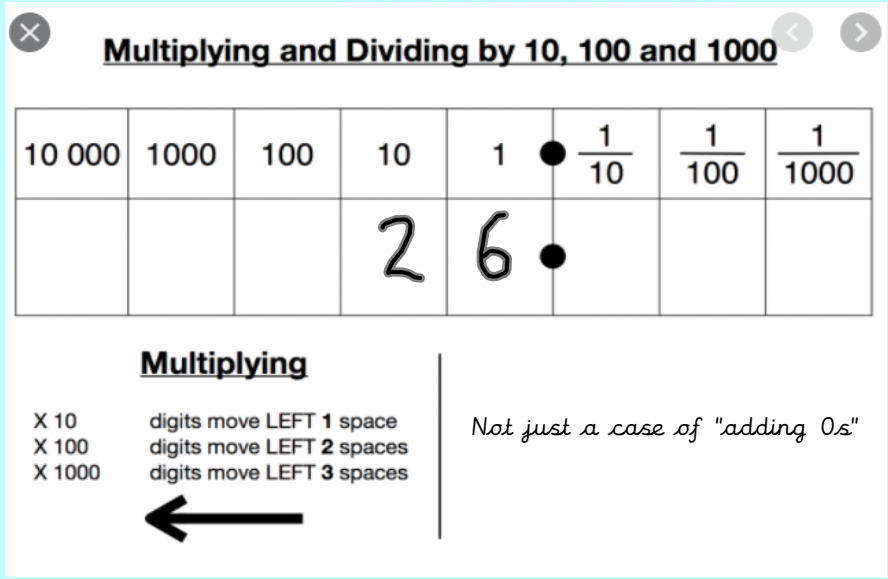



Prime numbers

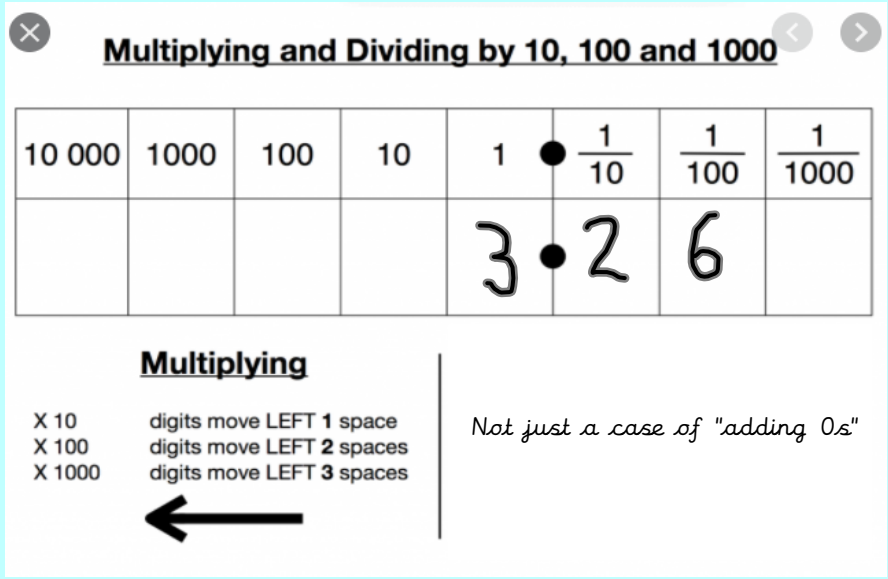



Y6 - BODMAS

# Multiply whole numbers and those involving decimals by 10, 100 and 1000



# Multiply decimal numbers and those involving decimals by 10, 100 and 1000



Multiply numbers up to 4 digits by a one - or two- digit number using a formal written method:

| | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| | | 7 | 5 | 2 | 3 |
| X | | | | | 5 |

Always starting with the ones

Multiply numbers up to 4 digits by a one - or two - digit number using a formal written method:

| | H | T | O |
|---|---|---|---|
| | | 2 | 3 |
| X | | 1 | 6 |
| | | | |
| + | | | |

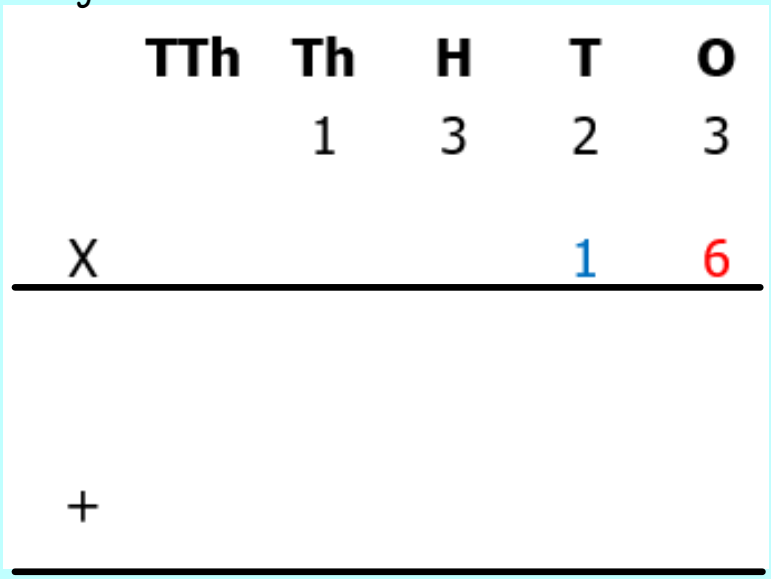
Always starting with the ones

Multiply the 23 by the 6

Multiply the 23 by the 10

Progression: Multiplying 2 digits by 2 digits

Multiply numbers up to 4 digits by a one - or two - digit number using a formal written method:




Always starting with the ones

Multiply the 1323 by the 6

Multiply the 1323 by the 10

Y6 Progression: Multiplying 4 digits by 2 digits

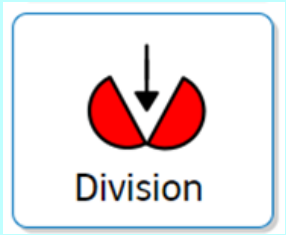
## Multiply decimal numbers by whole numbers:

Always starting with the smallest value

| | T | O | . | ths |
|---|---|---|---|---|
| | | 2 | . | 5 |
| X | | 7 | | |

| | T | O | . | ths | hths |
|---|---|---|---|---|---|
| | | 9 | . | 1 | 5 |
| X | | 3 | | | |

## Y6 Progression: Multiplying decimals

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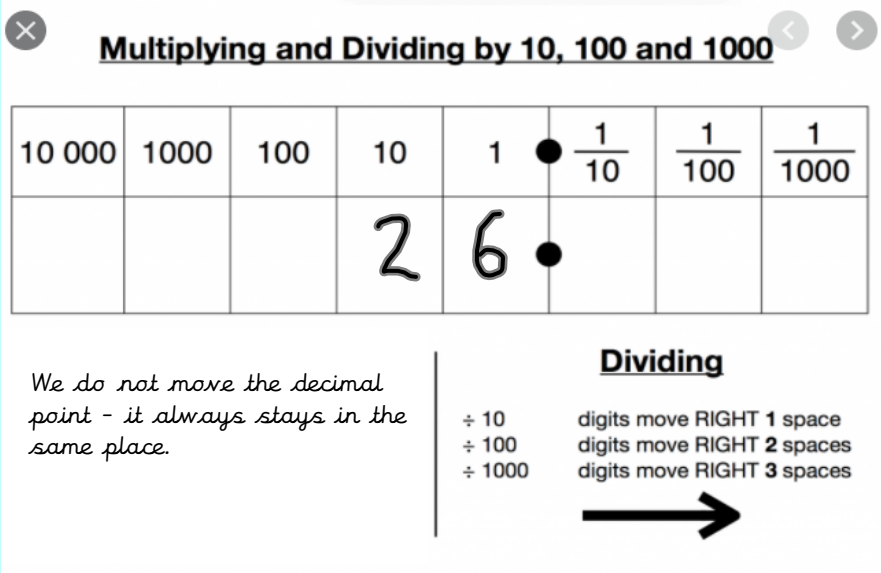
Year 5 & 6 heavily focuses on formal methods

# Divide whole numbers and those involving decimals by 10, 100 and 1000



# Divide numbers up to 4 digits by a one-digit number using the formal written method of short division:

Always starting with the largest value →

How many times does ___ go in? →

| | H | T | O |
|---|---|---|---|
| 5 | 2 | 3 | 5 |

Divide numbers up to 4 digits by a one-digit number using the formal written method of short division with remainders:

| | Th | H | T | O |
|---|---|---|---|---|
| 7 | 3 | 7 | 2 | 1 |

Progression: interpreting remainders

As a decimal:

| | Th | H | T | O |
|---|---|---|---|---|
| | 0 | 5 | 3 | 1 |
| 7 | 3 | 3 7 | 2 2 | 1 1 |

As a fraction:

| | Th | H | T | O |
|---|---|---|---|---|
| | 0 | 5 | 3 | 1 |
| 7 | 3 | 3 7 | 2 2 | 1 1 |

Y6 Progression: converting remainders in to decimals and fractions

Divide numbers up to 4 digits by a two-digit number using the formal written method of short division with remainders:

Multiples of 25:

25
50
75
100
125
150
175

| | Th | H | T | O |
|---|---|---|---|---|
| 25 | 2 | 5 | 6 | 7 |

Y6 Progression: dividing by a 2-digit number

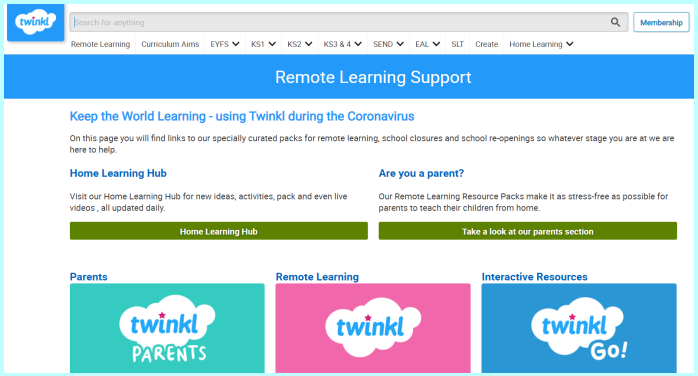
Divide decimals number by a whole number using a formal method of division:

| | O | . | ths | hths |
|---|---|---|---|---|
| 4 | 2 | . | 0 | 0 |

Y6 Progression: dividing decimals

# How can you support your child at home?


Practise books from Amazon

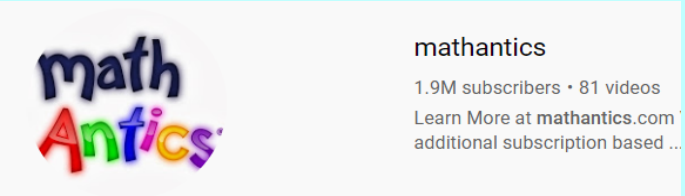




Myminimaths.com - daily arithmetic practise

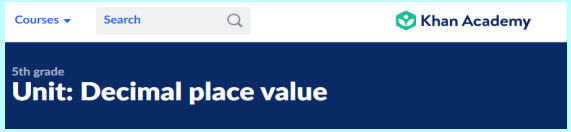
Free parent twinkl account for some free downloads

# How can you support your child at home?

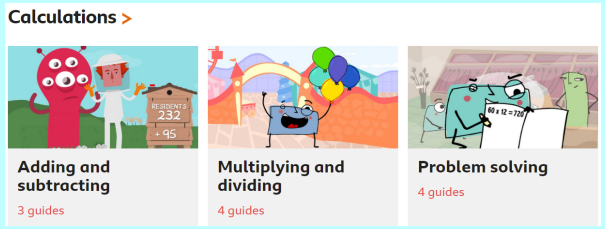



Youtube - mathantics


Mathsisfun.com - videos, games and worksheets




Khan Academy - videos and quizzes




BBC Bitesize - videos to support