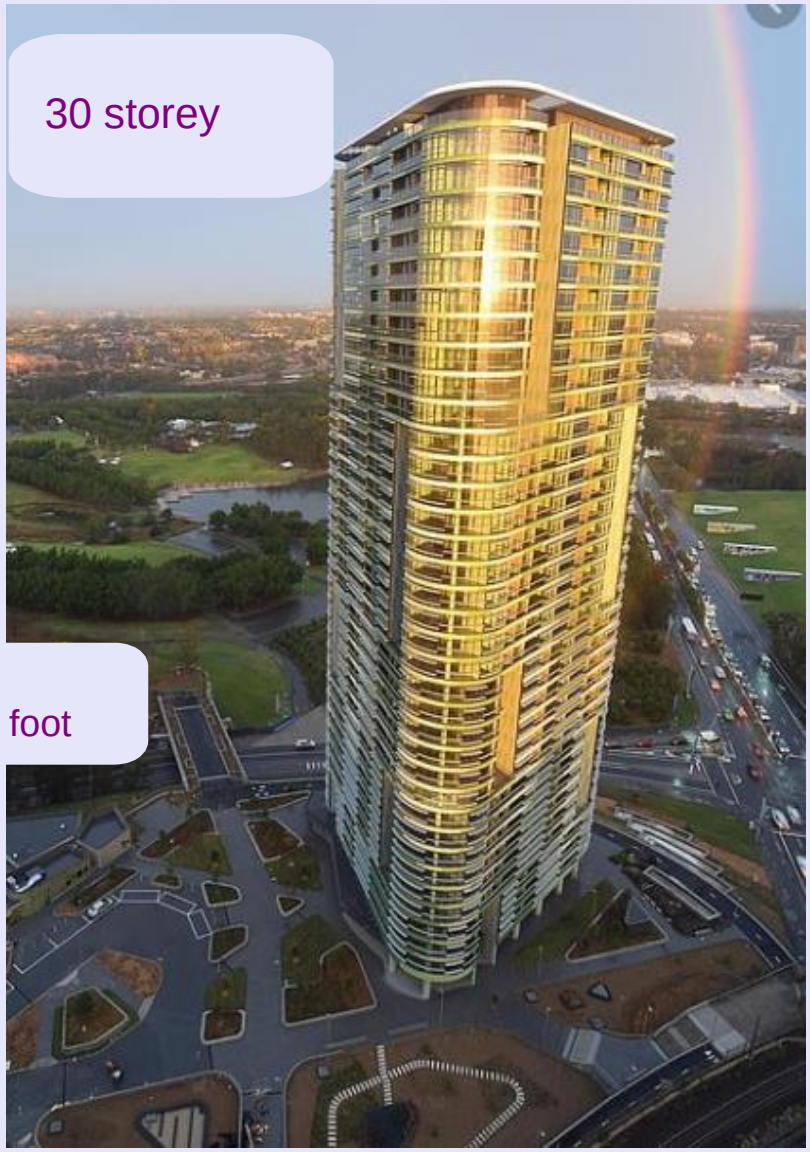
What we will be covering today:

- The power of words (especially in maths!)
- Mistakes and how they are great!
- Key Stage 2 Maths Curriculum explained + our calculation policy.
- Practical games and activities you can do at home.

Flea Case Study

100x their height



Kate Masters, Lead Practitioner - Vulnerable Learners - Borough of Poole

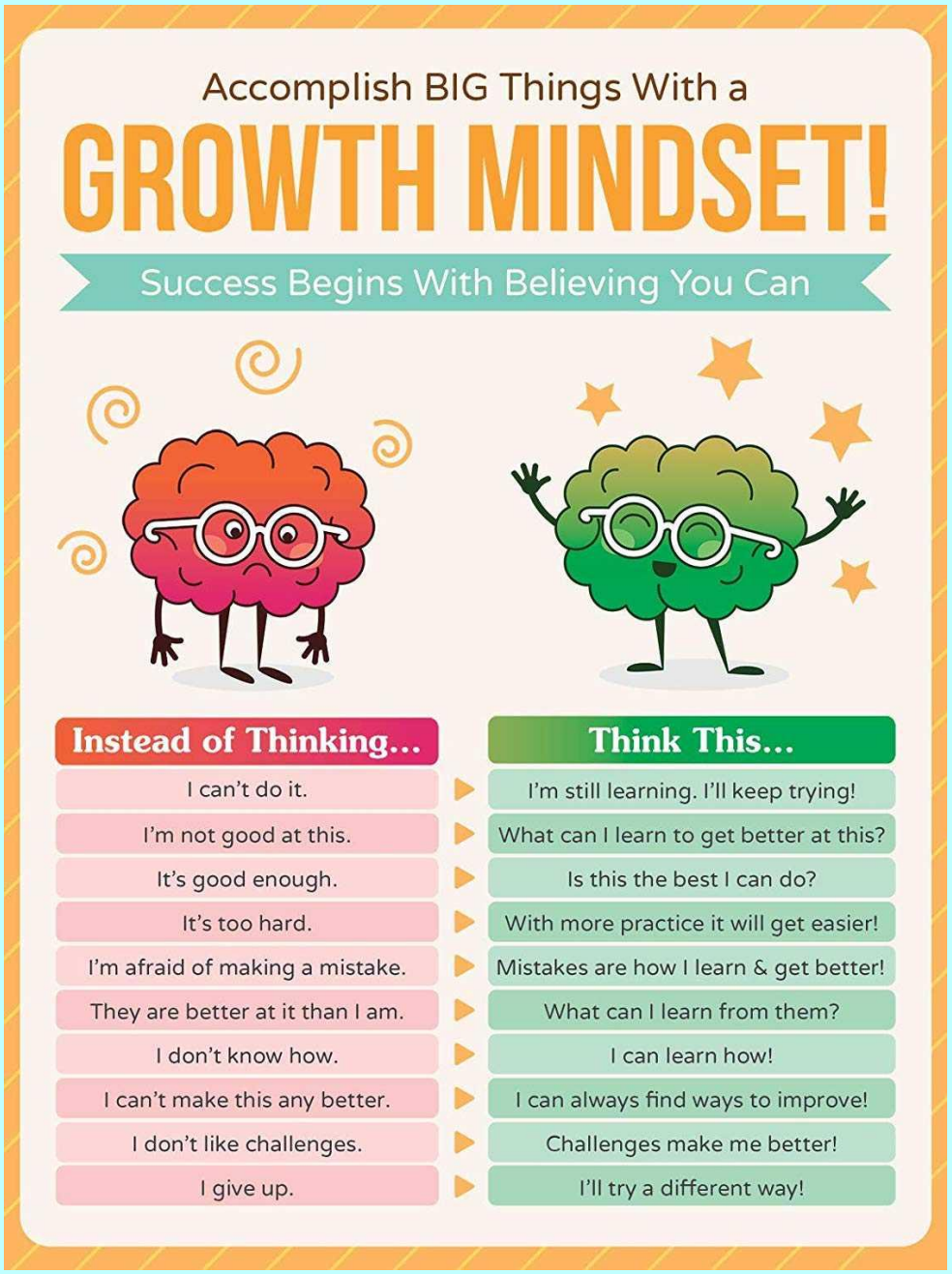
Flea Case Study

Kate Masters, Lead Practitioner - Vulnerable Learners - Borough of Poole

Belief About Maths and life...

Belief + Hard Work + Support = Success in Maths

Power of Words



A Carol Dweck study.

400 fifth graders were given an easy, short test, on which most performed well. Half the children were then praised for "being really smart." The other half were complemented on "having worked really hard."

The children were then asked to take a second test and choose between one that was pretty simple, that they would do well on, or one that was more challenging, one they might make mistakes on.

90% of those praised for effort, took the harder test. Whereas nearly the exact opposite happened for those who were praised for their intelligence.

Power of Words

FIXED MINDSET		GROWTH MINDSET
• SOMETHING YOU'RE BORN WITH • FIXED	SKILLS	• COME FROM HARD WORK. • CAN ALWAYS IMPROVE
• SOMETHING TO AVOID • COULD REVEAL LACK OF SKILL • TEND TO GIVE UP EASILY	CHALLENGES	• SHOULD BE EMBRACED • AN OPPORTUNITY TO GROW. • MORE PERSISTANT
• UNNECESSARY • SOMETHING YOU DO WHEN YOU ARE NOT GOOD ENOUGH	EFFORT	• ESSENTIAL • A PATH TO MASTERY
• GET DEFENSIVE • TAKE IT PERSONAL	FEEDBACK	• USEFUL • SOMETHING TO LEARN FROM • IDENTIFY AREAS TO IMPROVE
• BLAME OTHERS • GET DISCOURAGED	SETBACKS	• USE AS A WAKE-UP CALL TO WORK HARDER NEXT TIME.

2. PRAISED IN ONE OF TWO WAYS

Try really hard never to say....

"I was rubbish at maths at school"
(*I never tried at Maths at school and I wish I had because I know I could have done it)*

Or

"I **was amazing at maths at school"**
(*I worked so hard at Maths at school and it meant I did well. I am proud of how hard I worked.)*

Try really hard never to say

"You're so good at Maths"
(*I am so very proud of all your hard work and effort)*

Or

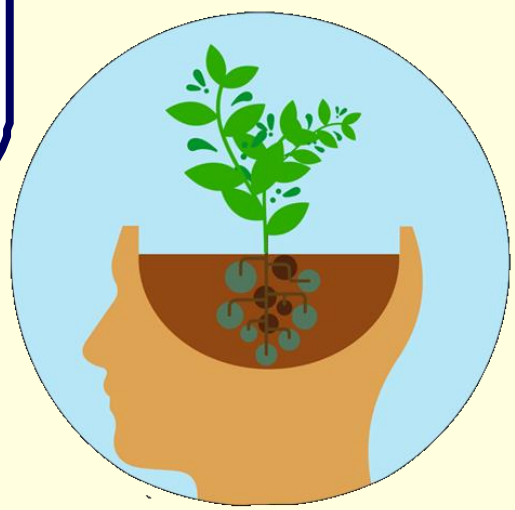
*"I***t's ok - you're probably just not a Maths person"**
(*I know you're making some mistakes but keep trying and working hard. Hard work always pays off and I will be proud of you if you continue this hard work.)*

Mistakes

(They are all good!)

Mistakes when you are trying are normal.

- Maths usually has a right or wrong answer, so mistakes can be more obvious. Praise or celebrate effort, systematic approaches or trying to solve a problem in different ways.
- Every mistake is an opportunity to improve and learn.
- Being right all the time means you aren't challenging yourself.
- Mistakes are good if we learn from them - hold mistakes to account!



1 Start with a positive mindset

Do you ever hear yourself saying "I'm really bad at maths"? It's only small, but your children can pick up on negativity towards subjects and, unfortunately, this can be a real barrier to their learning. We advise parents to try using positive language around your children when talking about maths. You may not mean to be negative, but your children may take it to heart. Your positivity may well improve their maths attitude!

2 Play maths games together

Many games use mathematical and logical skills that your children will need in later life - plus they're fun!. Games like jigsaw puzzles help children to develop logical & spatial awareness skills. Board games with dice develop children's counting skills. Other games that may help develop your child's maths skills are darts, scrabble, and chess. Get playing!

3 Learn their maths methods

You can also support your child's learning by getting to grips with the maths they learn, like the grid method and bar modelling. Sometimes parents try to help by teaching their children methods they learned in school. This can confuse children. Try instead to learn the method that your child uses by asking to see the school's Calculation Policy (usually on the school website), speaking to their teacher, or Googling it. This ensures continuity between school and home learning for your child and genuinely improves their learning!

4 Practise reading the time

As we move into digital, many children are growing up not reading analogue clocks. Make sure your child practises reading analogue clocks in everyday life, as this is part of the maths curriculum. It's as simple as reading the clock you may walk past on the side of a building, otherwise how will they ever be able to read the iconic Big Ben?

5 Use fractions in daily life

Fractions can be simple for you to practise with your child. Simple common fractions can be reinforced at home even if you're not too confident with fractions. Stick to fractions you know such as ½ or ¼. See a window split into four coloured panels? Ask your child "what fraction of the window is coloured in blue?" You don't have to use rounded shapes such as cakes and pizzas to practise fractions, just make sure the separate parts of the shape are all the same size.

6 Times tables: Practice Practice Practice!

As everybody knows, it's essential for children to learn their times tables in order to access harder maths questions. This is an easy thing for parents to practise with their children - sneak it in when they're bored! Make car journeys go by faster, or distract them on the bus by asking times tables questions. Challenge them to say their times tables backwards if they get bored of reciting them.

7 Involve them with problem solving

The KS2 maths curriculum requires pupils to be able to problem solve in maths. As parents, you can help your children practice these skills every day. You can ask your child to tell you which is the best deal at the supermarket or how much their pair of trousers are worth when there is a 30% sale on in a clothes store, or which internet provider has the best deal when you need to switch.

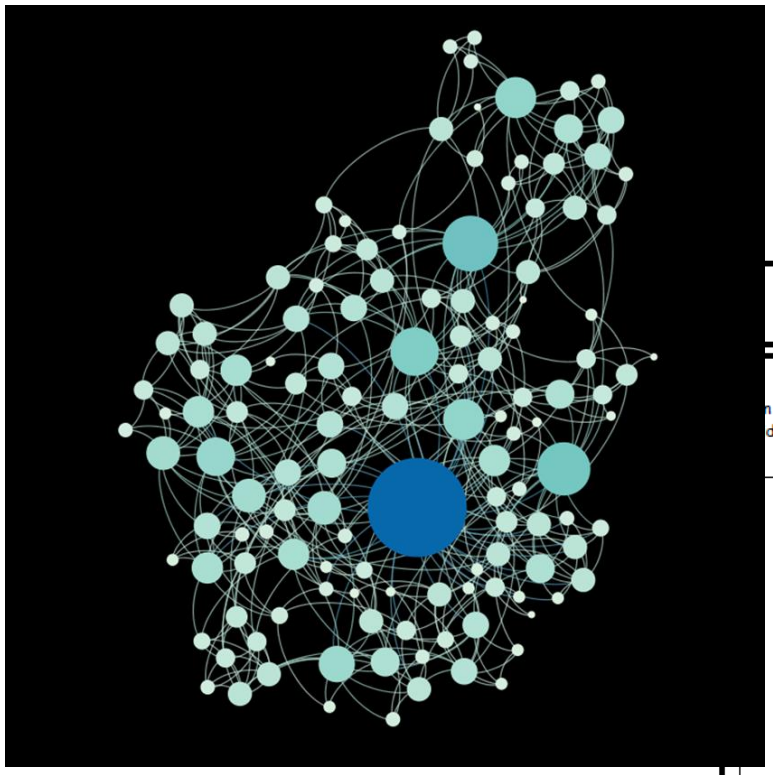
8 Use open questions

Sometimes it's just plain hard not to work out the correct answer for your child's homework without simply giving it to them. Unfortunately, just giving children the answer to their homework means don't learn to work the answer out for themselves. This means they'll get stuck without you. Next time your child needs help with their homework, try asking prompting questions such as:

"Why did you write that down?" "How did you get that answer?" "What method did you use?"

This will help your child fully understand the maths methods they're using and reinforce independent learning.

Help them with their timestables and number bonds.



MENTAL MATHS KEY SKILLS

Log on to MyMaths to practice the skills you have learnt in class and at home!
Please ask your teacher or Henry if you do not know your username or password.

MULTIPLICATION AND DIVISION

In addition to the 2, 3, 4, 5 and 10 times tables, know **ALL** your times tables inside out and recognise their factors and multiples! And by the end of Year 4 – have fast and fluent recall of all the tables!

6 Times Table	7 Times Table	9 Times Table
0 x 6 = 0	0 x 7 = 0	0 x 9 = 0
1 x 6 = 6	1 x 7 = 7	1 x 9 = 9
2 x 6 = 12	2 x 7 = 14	2 x 9 = 18
3 x 6 = 18	3 x 7 = 21	3 x 9 = 27
4 x 6 = 24	4 x 7 = 28	4 x 9 = 36
5 x 6 = 30	5 x 7 = 35	5 x 9 = 45
6 x 6 = 36	6 x 7 = 42	6 x 9 = 54
7 x 6 = 42	7 x 7 = 49	7 x 9 = 63
8 x 6 = 48	8 x 7 = 56	8 x 9 = 72
9 x 6 = 54	9 x 7 = 63	9 x 9 = 81
10 x 6 = 60	10 x 7 = 70	10 x 9 = 90
11 x 6 = 66	11 x 7 = 77	11 x 9 = 99
12 x 6 = 72	12 x 7 = 84	12 x 9 = 108
And ÷ facts	And ÷ facts	And ÷ facts

11 Times Table	12 Times Table
0 x 11 = 0	0 x 12 = 0
1 x 11 = 11	1 x 12 = 12
2 x 11 = 22	2 x 12 = 24
3 x 11 = 33	3 x 12 = 36
4 x 11 = 44	4 x 12 = 48
5 x 11 = 55	5 x 12 = 60
6 x 11 = 66	6 x 12 = 72
7 x 11 = 77	7 x 12 = 84
8 x 11 = 88	8 x 12 = 96
9 x 11 = 99	9 x 12 = 108
10 x 11 = 110	10 x 12 = 120
11 x 11 = 121	11 x 12 = 132
12 x 11 = 132	12 x 12 = 144
And ÷ facts	And ÷ facts

Y4

PLACE VALUE AND COUNTING

Count in multiples of 6, 7, 9, 25 and 1000
Find 1000 more or less than any number
Count backwards through zero to include negative numbers
Recognise the place value of each digit in a four digit number
Partition a four digit number into 1000s, 100s, 10s and 1s
(e.g. 2345 = 2000 + 300 + 40 + 5)
Order and compare numbers beyond 1000
Round any number to the nearest 10, 100 or 1000
Round decimals with one decimal place to the nearest whole number
Understand place value with hundredths and tenths
Compare and order numbers with 2 decimal places

CALCULATION (+ - x ÷)

Understand multiplying and dividing numbers by 10 and 100
Multiply 3 numbers together mentally
USE AND APPLY YOUR TIMES TABLES! (with 3 digit numbers)
For example: If you know that 2 x 3 = 6
You also know….200 x 3 = 600 or 600 ÷ 2 = 300

FRACTION ACTION!

Understand and use hundredths and tenths
Count up and down in hundredths 1/100, 2/100, 3/100
Recognise decimal equivalents to simple fractions
1/10 = 0.1 1/100 = 0.01
$\frac{1}{2}$ = 0.5 $\frac{1}{4}$ = 0.25 $\frac{3}{4}$ = 0.75
Use knowledge of factors and multiples to recognise and simplify equivalent fractions (e.g. 6/9 = 2/3)

Interactive Resources: Multiple Wipeout, Top Spot, Rounding balloons, Sum Sense, Arithmagons
Dice Games: SPROD, Shall I Risk it, Gozinto

Years 3-6 the strands of mathematics

1) **Number** - number and place value
- addition and subtraction
- multiplication and division
- fractions (including decimals and % in Y5 & Y6)

2) **Geometry** - properties of shape
- position and direction (Y4 onwards)

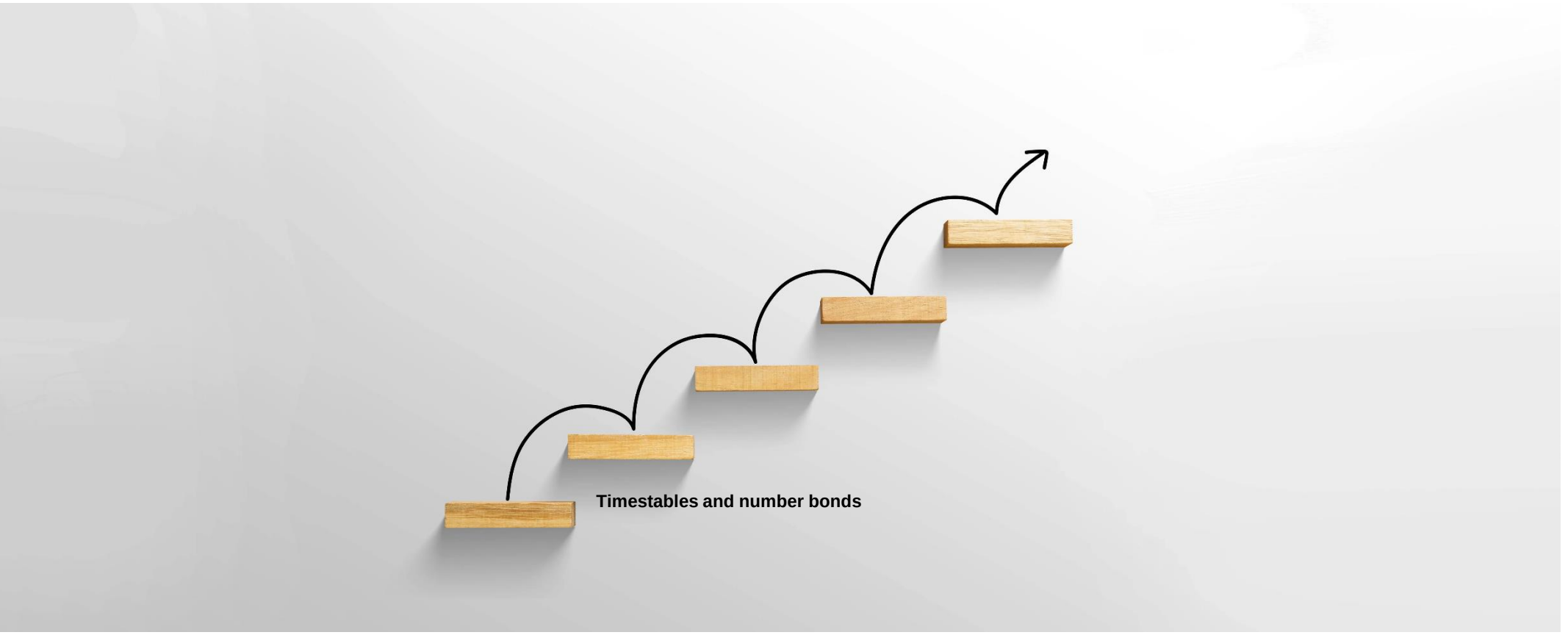
3) **Measurement**

4) **Statistics**

Year 6

- Ratio and proportion
- Algebra

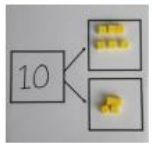
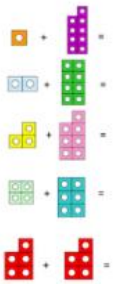
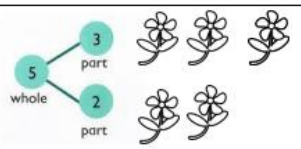
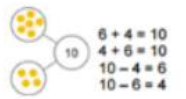
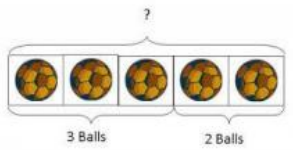
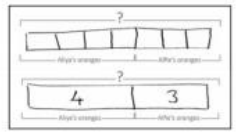
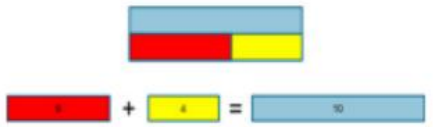
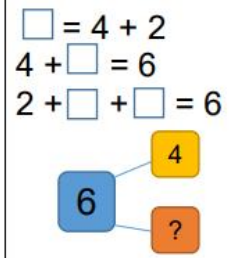
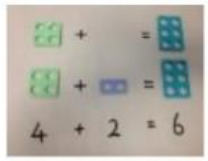
Calculation Policy Guidance



What is a calculation policy and how do I use it?

Brecknock Primary School

Calculation Policy

Objective and Strategies	Concrete	Pictorial	Abstract
Combining two parts to make a whole: part-whole model (aggregation)	   Use cubes to add two numbers together as a group or in a bar.    	   Use the part-part whole diagram as shown above to move onto more abstract problems. First use images within the bar (above). Then represent each object as part of a bar as a 1:1 representation before each quantity is represented approximately as a rectangular bar.   	 Use pictures to add two numbers together as a group or in a bar. 

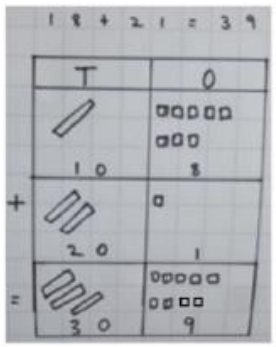
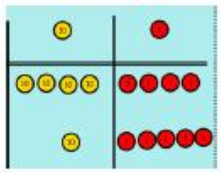
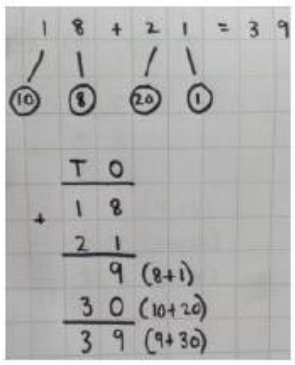
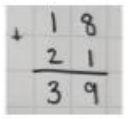
When are children ready to move on to written calculations?

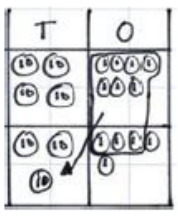
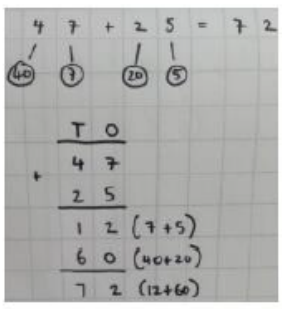
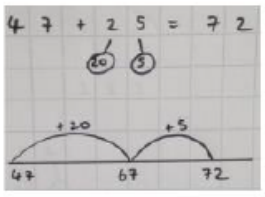
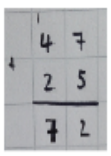
Addition and subtraction

- Do they know addition and subtraction facts to 20?
- Do they understand place value and can they partition numbers?
- Can they add three single digit numbers mentally?
- Can they add and subtract any pair of two digit numbers mentally?
- Can they explain their mental strategies orally and record them using informal jottings?

Mu**ltiplication and division**

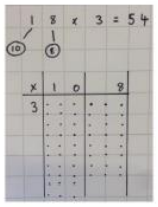
- Do they know the 2, 3, 4, 5 and 10 time table
- Do they know the result of multiplying by 0 and 1?
- Do they understand 0 as a place holder?
- Can they multiply two and three digit numbers by 10 and 100?
- Can they double and halve two digit numbers mentally?
- Can they use multiplication facts they know to derive mentally other multiplication facts that they do not know?
- Can they explain their mental strategies orally and record them using informal jottings?

No regrouping	Use dienes or place value counters - add together the ones first then add the tens.  44 + 15 = 59 After practically using the base 10 blocks and place value counters, children can draw the counters to help them to solve additions. 	The expanded method should be introduced alongside dienes or place value counters. 'What's the same, what's different?'  Initially, children should be encouraged to partition the numbers. They should be adding from the right – ie starting with the ones, then the tens and finally the hundreds. Initially, equations for ones, tens and hundreds can be written in brackets alongside. NB – This is an interim method to develop conceptual understanding. They are working towards the formal written method 	The formal written method should be introduced alongside the expanded method. 'What's the same, what's different?' 

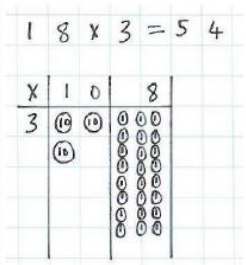
Column method- regrouping TO + TO (up to 100)	Make both numbers on a place value grid using dienes or place value counters. 47 + 25 = 72  Add up the units ('12 ones is 1 ten and 2 ones') and **regroup**. Then add the tens ('4 tens add 3 tens is 7 tens'). As children move on to decimals, money and decimal place value counters can be used to support learning.	<u>Expanded written method:</u> Partitioning the numbers visually encourages children to make a link to the equations in brackets. This expanded method should be introduced alongside dienes or place value counters. 'What's the same, what's different?'  If required, children can draw a pictoral representation of the columns and place value counters to further support their learning and understanding. <u>Mental method:</u> Children should be shown the same calculation using an empty number line, partitioning the smaller number and counting on in ones and tens. They should be encouraged to move on from bridging the 10, instead using their knowledge of number facts to 20 and place value to add the ones in one step. Explain this is more efficient as it requires fewer steps. Taught with Dienes or place value counters alongside. 	This formal written method should be introduced alongside the expanded method. 'What's the same, what's different?' 

Grid Method

Show the link with arrays to first introduce the grid method.

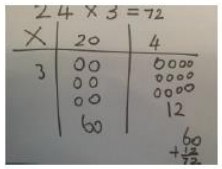


The two digit number is partitioned horizontally with the tens digit coming first. The equation is then represented using counters (or an array).



Again, the two digit number is partitione horizontally with the tens digit coming f This time the equation is represented u place value counters or Dienes.

Children can draw the counters, using colours to show different amounts or just use circles in the different columns to show their thinking as shown below.

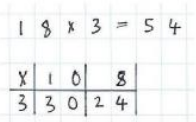


Bar modelling can support learners when identifying and solving problems with multiplication alongside the formal written methods.

E.g. There are 3 bags of sweets. Each bag has 4 sweets inside. How many are there altogether?

Start with multiplying by one digit numbers and showing the clear addition alongside the grid. Ensure children are secure with place value – especailly x 10 and x 100. Encourage them to verbalise the process to demonstrate understanding.

TO x O



HTO x O

Short column multiplication

Year 3: Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one- digit numbers, using mental and progressing to formal written methods

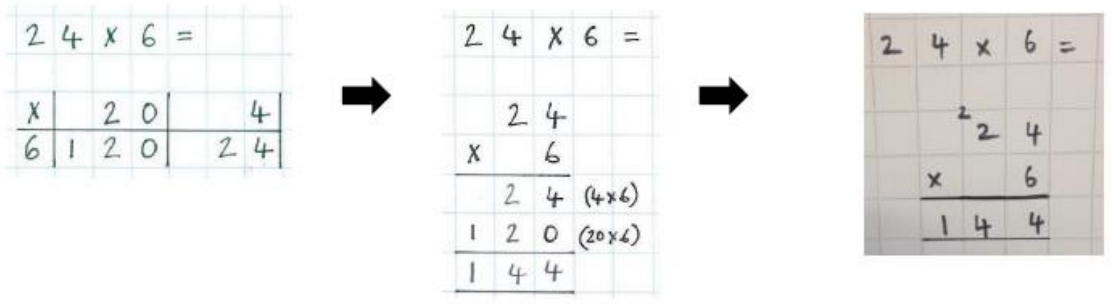
Year 4: Multiply two-digit and three-digit numbers by a one-digit number using formal written layout

Year 5: 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

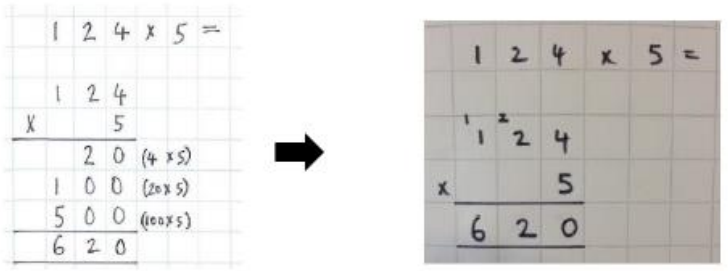
Year 6: Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication

The short multiplication method is introduced alongside the grid method and expanded form to aid understanding. Children should be told that these are interim methods – they are working towards becoming more efficient mathematicians. Teachers should ensure children can explain their understanding of each method verbally and written down before moving on. Children should be encouraged to discuss what is similar and what is different between the different strategies. Bar modelling can support learners when solving word problems with multiplication, alongside the formal written methods.

TO x O



HTO x O



Games

Games are fun!
“Is this a game or a maths lesson?”
They help improve fluency from number recognition up to times tables practise and beyond.
Can be accessed by all, at all ages and learning styles.
Simple and easy to set up (often just need a deck of cards or some dice).
Can be played at school or at home.

Think of a number.

double it

add 10

halve it

take away your original number

five

ten more,
ten less

x 10

3 5

factors

next three
even numbers

odd or
even?

partition it

ten more = 45

ten less = 25

x 10

3500

3 5

factors

1, 2, 5, 35

next three even numbers

38, 40, 42

~~odd or even?~~

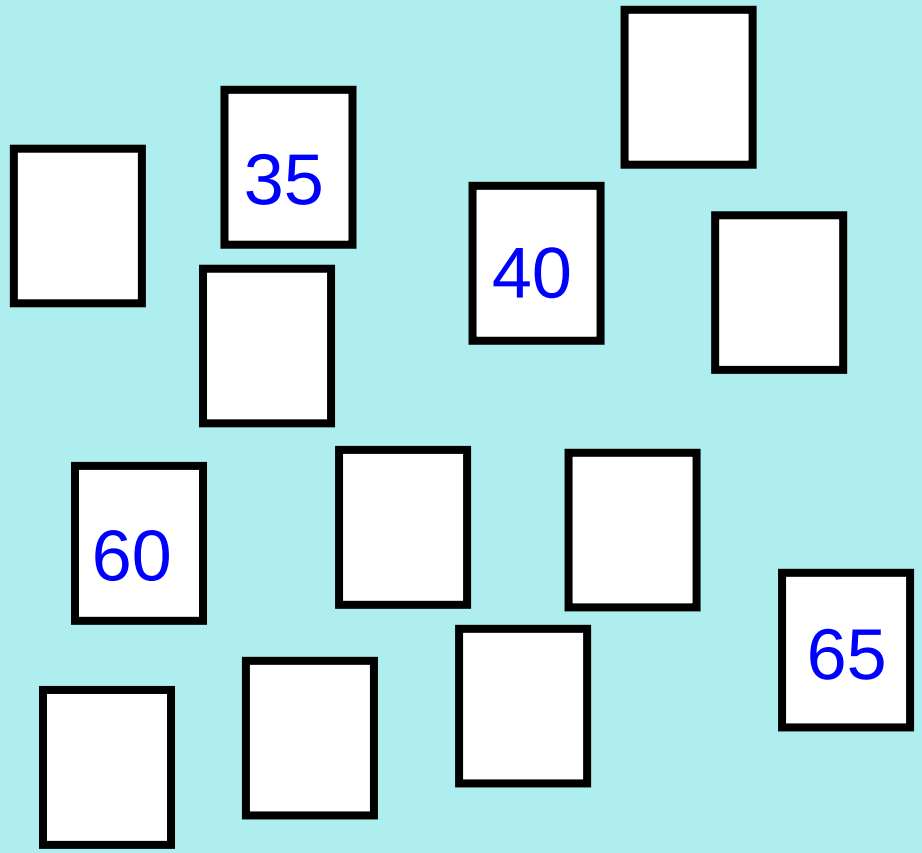
partition it

30 and 5

Total 100 - Memory Game

Take it in turn to turn over two cards. If the numbers total 100, then you keep the pair.

When all the pairs have been found, the person who claimed the most, wins!



PLACE INVADERS

	Th	H	T	U
PLAYER 1				
PLAYER 2				

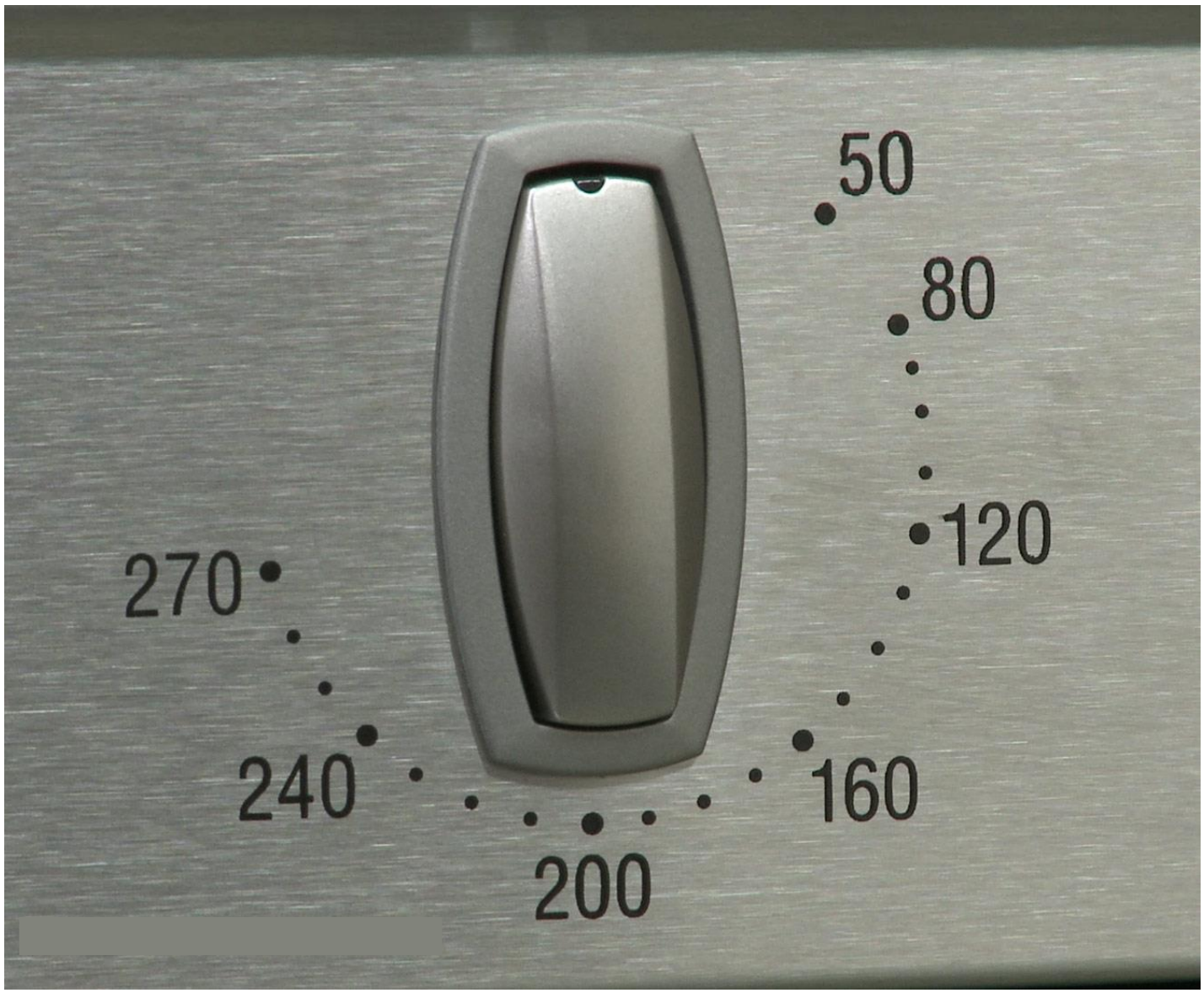
Take it in turns to roll the dice and put that digit into your own number. The team with the largest number when all the boxes are filled, wins!

MATHS AT HOME

Which is the best value?

3 pack £2.40

55p each

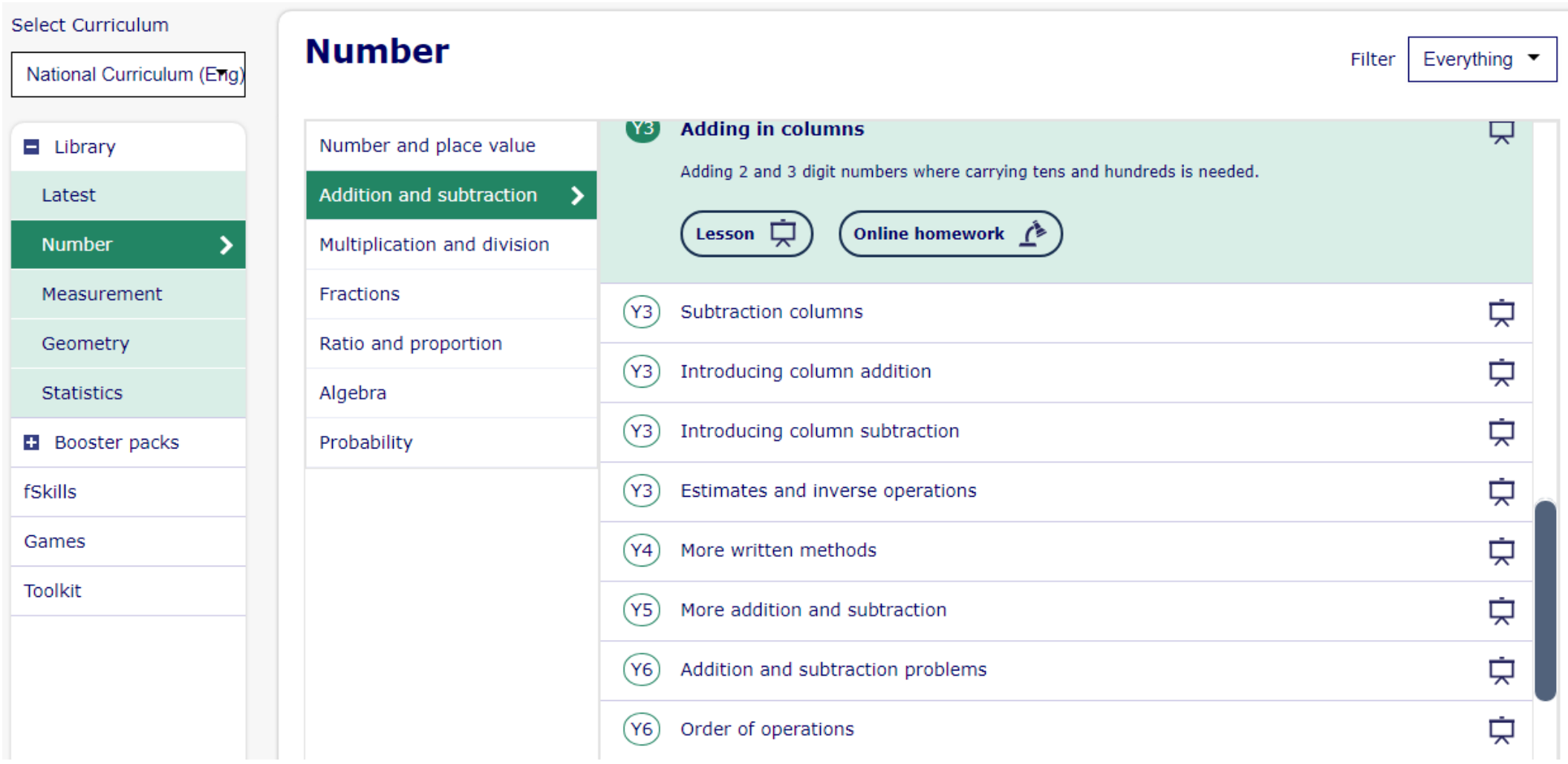


Reading scales

"Can you turn the oven up to 180 degrees please?"

Websites

My Maths (and Year 6 Hegarty Maths)
X-tables (www.timestables.co.uk)



Questions? Comments? Advice?

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