MathsHUBS
Enigma

**In what way were you planning to strengthen links in Mathematics**?

My Aim:

- To ensure there is a clear progression of mathematics skills across the school.

Why did you choose this area?

Movement of staff across all year groups and the implementation of the new national curriculum for maths – staff were unsure of what these expectations *looked* like in lessons. I also wanted to make sure concepts were being taught in depth and therefore we were starting to plan for mastery.

What did your project involve? **What did I do?**

- I formed a maths task force team with the leader of year two, the leader of year one and myself representing foundation stage. Together we had a shared vision of how we could develop mathematics across the three year groups and how progression will ensure the mathematical links are being made. See example below.

- Year groups planned weekly mathematics lessons together. This allowed for there to be a good discussion about gaps in the children's learning and how to fill those whilst still challenging the more able.

- I have introduced a Mathematics Mastery planning and teaching tool across foundation and key stage one. This is a trial and there is ongoing discussion taking place to decide how it best fits our school.

- Whole school staff meetings on developments that are relevant to all of the teaching staff as well as using the time to discuss resources, planning and teaching tools to aid clear progression.

- I introduced Working Walls in each classroom to encourage children to make the links to prior learning and for teachers to use as a teaching tool within the lesson. This is still an area for development.
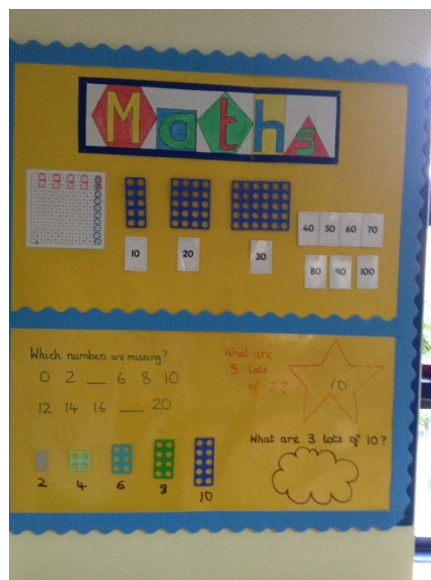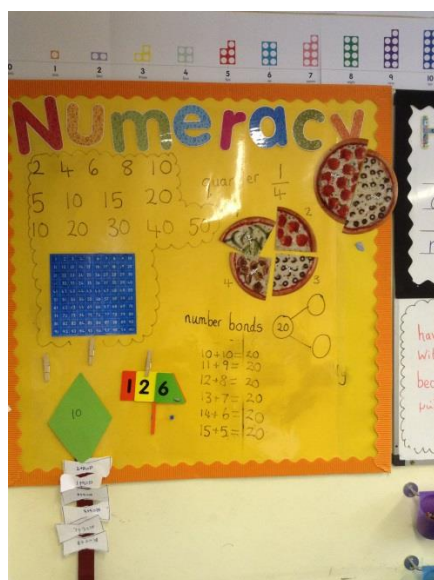
What did you find out throughout carrying out your project?

I found that after initially wanting to look at one particular area of our whole school maths, there were so many areas my task force team wanted to tackle that actually the list of changes to be made became more extensive!

What has been the impact on your learners and on your school?

- There has been a greater focus on planning and progression through the year groups – fact sheets on steps to complete concepts have been implemented.

- Gaps in children's learning are being filled for all year groups which is evident from our end of year results.

- There is a greater emphasis on mathematics in the classroom and encouraging the children to make the links between concepts through the use of working walls.

- Mathematics learning over time has developed – after book trawls, planning trawls and observations, 30% of teaching staff have moved from good to outstanding.

What did you learn yourself? - **Next Steps**

- Understanding the key stage curriculum and implementing this successfully into year two – fluency, deepening understanding and making connections.
- Training new staff to ensure consistency.
- Implementing a new assessment system that gives clearer examples of what emerging, expected, exceeding and mastered levels look like.
- To review the calculation policy and add the models and images used in the classroom.

Any other comments - **What did you consider and change your mind on?**

I thought that I would be able to develop the understanding of mastery across the school. However, I felt this needed more research and with items constantly appearing on the NCETM website, I realised there was not enough understanding on my part to lead this initially. Instead, this will appear on a section of our whole school development plan for the 2015-2016 academic year.

EXAMPLE

Year One National Curriculum Requirements:
- Count in multiples of twos, fives and tens.
- Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

- Stage 1: Concrete Objects – Put the socks in pairs. How many are there altogether?

- Stage 2: Pictorial Representations – How many legs will the three teddy bears have?

- Stage 3: Repeated Addition – How many shoes will the children need?

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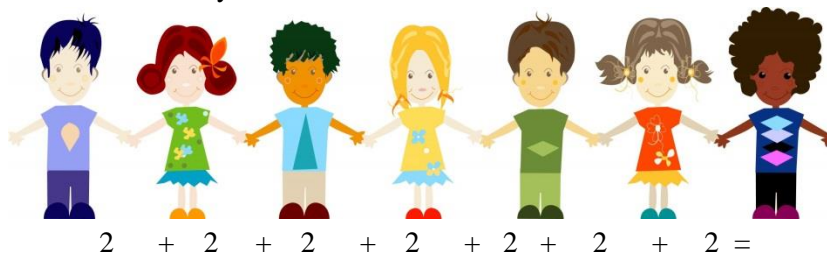
- Stage 4: Arrays – using concrete objects – There are cakes in each row. How many are in four rows?

- Stage 5: Pictorial Arrays

YEAR 1

MULTIPLICATION AND DIVISION
Count in multiples of twos, fives and tens. [copied from *Number and Place Value*]
Making links
If one teddy has two apples, how many apples will three teddies have?
Here are 10 lego people. If 2 people fit into the train carriage, how many carriages do we need?
Practical
If we put two pencils in each pencil pot how many pencils will we need?
Spot the mistake
Use a puppet to count but make some deliberate mistakes.
Eg 2 4 5 6; 10 9 8 6
See if the pupils can spot the deliberate mistake and correct the puppet.

YEAR 2

MULTIPLICATION AND DIVISION
Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward. [copied from *Number and Place Value*]
Recall and use x/÷ facts for the 2/5/10 multiplication tables, including recognising odd and even numbers.
Missing numbers
10 = 5 x☐
What number could be written in the box?
Making links
I have 30p in my pocket in 5p coins. How many coins do I have?

Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs.
Prove It
Which four number sentences link these numbers? 3, 5, 15? Prove it.
True or False?
When you count up in tens starting at 5 there will always be 5 units.

Use the inverse

Use the inverse to check if the following calculations are correct:

12 ÷ 3 = 4

    3   x 5 = 14

<u>Show that x of two numbers can be done in any order (commutative) and ÷ of one number by another cannot.</u>

Making links

Write the multiplication number sentences to describe this array:

X	X	X
X	X	X

What do you notice?

Write the division sentences.

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