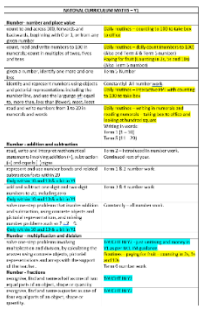
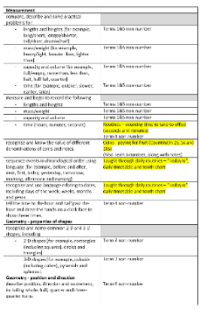
Mathematical routines in Y1 blog

Over the last few years our Reception team have worked hard on developing our maths provision, through local CPD opportunities, and their own interest and drive. This has included work on developing mathematical routines through the day. At the start of this academic year we worked as a Reception/Year 1 team to develop our use of mathematical routines in Year 1. Our objectives were:

- To provide a smooth transition from Reception by continuing daily routines that were familiar to the children
- To plan teaching of the Y1 maths objectives that we feel are best learnt in daily mathematical moments rather than over a few dedicated lessons
- To free up maths lessons for measures, shape, spatial reasoning and pattern, and fluency in calculation within 10.

We started with two inputs: the list of daily mathematical routines used in Reception and our Year 1 maths curriculum. We highlighted the programme of study objectives which we suspected were best taught through daily routines and mapped Reception routines against these. We then took each routine and discussed how it needed adapting to make sure that it was teaching what children need to know and be able to do by the end of Year 1.





This shows our starting point – we've added and adapted routines since then, but the yellow highlighting gives a sense of just how much of the Y1 curriculum can be taught through routines.

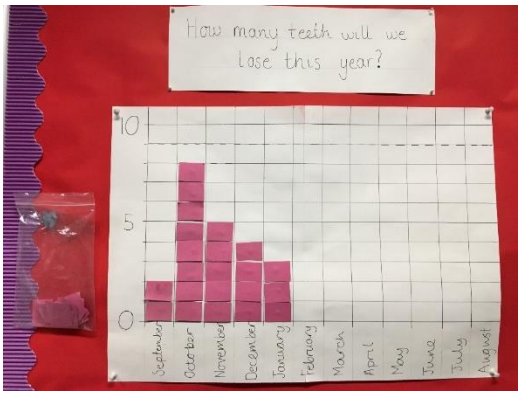
School day count

The daily count was planned to support place value, but provides other mathematical opportunities too. The children add a straw to the chart each school day of the year, bundling up 10 ones to make 1 ten as they go (here there are 7 bundles of 10 straws and 3 additional ones). The child adding the straw also writes up the day number; here you can see the teacher has written 73 correctly alongside the child's numeral. The children enjoy working out how many more days until the next bundle of 10 can be made, providing daily reinforcement of number bonds to 10. Some children have also wanted to work out how many more days until 100. The 100 square with crossings out has been a great tool for supporting this. On day 73 they can see that there are two more full rows of 10 days, plus 7 more, making 27 more days until 100 day.

After 100 days of the school year we have a 100 day celebration, with '100' themed teaching for the day and the children bring in 100 of something. In the past we have had, among many other things, 100 pennies (and a pound coin), lego models with 100 pieces, an article about the end of the First World War 100 years before and a 100 zloty note. Each gives opportunity to discuss where the 'hundredness' is.

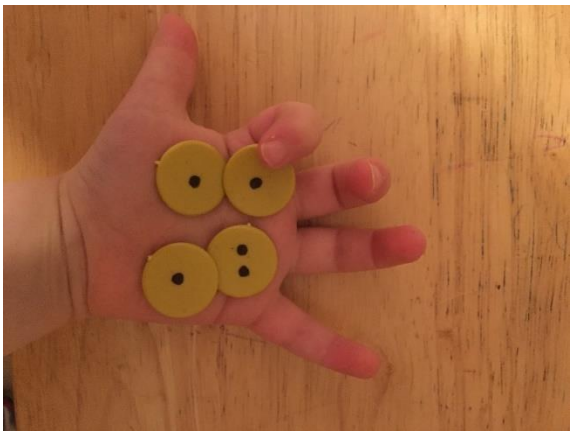
Tooth loss chart

In Reception the children do a daily chart of lunch choices as part of mealtime maths which provides another opportunity for daily counting. We wanted to continue using a chart in Y1, but adapt this to find a chart with smaller numbers in each category which the children could start to calculate with. We decided on a 'tooth loss' chart. As losing a tooth is a big deal in Y1 we thought children would engage with this context and enjoy discussing how the chart developed through the year; it also provided an opportunity to learn months of the year. We thought carefully about how to mark the scale on the chart to get full mathematical potential out of the routine.



Because the blocks of paper the children put on when they lose a tooth end up looking more like a bar chart than a pictogram, it has also encouraged the children to use the scale to find the total for each month rather than counting. For example we can work out there are 8 teeth lost in November by counting on 3 more from 5, or by subitising the extra 3 and adding this to 5, or by seeing it is 2 less than 10. There is lots of opportunity for comparing the number of teeth lost in different months and using the language 'more than' and 'fewer than'. The tooth chart has also provided opportunities for sum (addition) and difference (subtraction) discussions and the class are now starting to calculate with the numbers on the chart.

Paying for fruit with pre money tokens



One of the really successful routines in Reception is fair exchange, where each child 'pays' for their fruit with pre money tokens – see https://nrich.maths.org/2586. In Reception we start with 1 dot counters, before introducing 2 and 5 dot counters. By changing the pre-money tokens available and price of fruit we can increase the challenge of the routine as the children's fair exchange ability grows.

In Year 1 the routine was proving difficult to manage with only one adult in the classroom and every child paying, so we have recently discussed how to adapt it to Year 1 staffing ratios. Now we are going to have two children a day paying on behalf of the class using bigger counters on a magnetic board and explaining their fair exchange to the rest of the class. We are also adapting the routine so that it makes up our main multiplicative provision in Year 1. We will work with 2, 5 and 10 pre-money counters, for example providing only '5' tokens and setting the price of fruit at 35. Counting up in 5s to work out that 7 lots of 5 dot counters are needed to pay 35 is quotative division. Although we choose not explicitly teach multiplication and division or show the children written equations with the division symbol in Year 1, the children will in fact have had daily exposure to multiplication and division before starting Year 2.

Timing taking the dinner orders

While the school day count provides an opportunity to focus on one number in detail each day, this routine helps children develop fluency in the counting sequence. While two children take the dinner orders to our school office, the rest of the class count to time how long it takes them. We start the year with forwards counting and move to backwards counting. The teachers watch one child carefully each day, seeing if they are struggling with specific bits of the counting sequence, so this also provides a great individualised assessment opportunity which the teachers can then address.

This routine has evolved to comparing two-digit numbers. Each day the children discuss whether the pair taking the box were faster or slower than the previous day. In weeks the class are counting forwards, the lower number is quicker. In weeks where they are counting backwards, the higher number is quicker. The teachers writes the five

times from the week on post-its, and children then have to place that day's time in the correct position, so by the end of each week the class have ordered 5 two-digit numbers.

Shifting routines and developing maths provision

The Year 1 teachers been hugely positive, and a little surprised, regarding just how much of the number curriculum in Year 1 can be taught in 'mathematical moments' in the school day.

They have said that they could do these kind of things - practising counting to 100, practising number bonds – as starters in the daily maths lesson, but this way a lot more of the children are engaged as they really care about the contexts, and the familiarity and repetition gives every child the confidence to engage with them. They have also noted how the routines can be adapted, and the mathematics within them extended, as the children's mathematical knowledge grows.