

## **Pupil Voice. Maths. 2021-22**

**Overall Context:** I worked with two children from each class (Year 3 to Year 6- working at a sound expected standard), and asked them to work through and talk through their approach to solving problems and calculations. The focus was on what the children are retaining from the year before, what methods they choose ( using mathematical reasoning and number fluency) and whether they could think of the most appropriate methods.

- 1) Place value and comparing numbers
- 2) Subtraction
- 3) Multiplication
- 4) Division

### **Year 3: Erin and Hollie**

#### **1) Place value and comparing numbers:**

Comparing the value of two three digit numbers, both could explain the correct approach to look at the tens as the hundreds are the same.

#### **2) Subtraction:**

Both knew what subtraction meant. Holly chose column subtraction method which was appropriate for the numbers, and she correctly exchanged. Both children could explain why they were exchanging and used their knowledge of place value. Erin used a number line and partitioned the minuend appropriately. When asked if she could use a number line, Hollie tried but got a bit confused with the method.

Talking through part b- they both reasoned well that they could use the previous answer rather than having to start calculating fully .

### **3) Multiplication:**

Both knew that multiplication involved equal grouping (although there was some confusion at first with division- sharing out into groups). They were more familiar with the vocabulary “times”- so need to be more familiar with vocabulary. They needed reminding of what the multiplication sign looks like. They were able to calculate e.g.  $4 \times 3$  by repeated addition of 3. This is a good, appropriate strategy for this age group.

### **4) Division:**

Both knew the concept of division- explaining it as splitting into groups. They both chose to do it pictorially – drawing three circles and putting into a group, and continuing to do this until used all 18. This is a good, appropriate strategy for this age group. When asked, they were able to change the pictorial into the abstract number sentence and used the division symbol correctly.

## **Year 4- Miley-Rose and Natalie**

### **1) Place-Value and comparing numbers:**

Both were very proficient with how to compare numbers using place value. They explained looking at each digit in turn. They understood the misconception; and although their written explanation did not fully explain, they could verbally explain why people might make the mistake of thinking 907 is bigger than 8160 and how the number of digits or the value of the first digit was key.

### **2) Subtraction:**

Both were very competent with the written subtraction method that involving exchanging- which they had just started in class. Both were

able to identify the common mistake of  $2-4=2$  and did it correctly-exchanging accurately.

Miley-Rose was still using her fingers to work out  $12-4$  counting back one at a time, but Natalie knew to efficiently subtract 2 then 2.

When asked if they knew an alternative method, Natalie chose a number line and did this accurately- subtracting manageable chunks. Miley-Rose had a part-whole model in mind, then realised partitioning- subtracting hundreds and then 10s could work. Both would be appropriate methods for this calculation.

### **3) Multiplication:**

Natalie could explain what the concept of multiplication is, in terms of “lots of” and gave examples. Miley-Rose struggled to explain but knew what to do after a reminder. More time might be needed to ensure all children are fully secure with the concepts of multiplication and division.

Both drew a pictorial representation- although Natalie was doing more multiplication in her head and just recording the multiples of 6 each time to work out  $6 \times 7$ . Miley-Rose decided to do a set of 3 and double it to find a set of 6 each time. This is good that she is making the connections between different times tables.

### **4) Division:**

30 divided by 6: Both could see from the story problem that they should be dividing here rather than multiplying. Both chose to draw out 30 objects and split into groups of 6. With a remainder, they could both see that it can be more efficient to count in 6's. This is okay at this stage linking back to Year 3- but later in Year 4 should be using more efficient method.

## Year 5: Isabelle & Damien

### Place Value and comparing numbers:

Both chose to write sentences in a lot of detail to explain how to compare numbers, not choosing to highlight or draw anything. This may be because they are both particular types of learner. It shows they are used to journaling in detail.

They were both confident with the method of comparing 5 digit numbers by looking at the first digit, or the next digit along if the same. They used all the correct place value vocabulary.

### Subtraction:

Both knew that story problem corresponded to subtraction. They knew this vocabulary and “take-away” but could not remember “difference”.

Both chose to do formal written method and exchanged accurately. They were not secure with explaining any other appropriate methods for subtraction e.g. counting on.

There may be some over-reliance higher up the school with formal written methods. In this case, it was appropriate to use a written method, but they should be more aware of what other methods they could use.

### Multiplication:

17 x 8. They were left to solve in whatever way they chose. Damien remembered two methods: repeated addition of 17, but also partitioning the 17 which he thought was more efficient. Isabelle chose to split the 17 into 12 and 5- using known mental facts- which showed good fluency and understanding of efficient methods.

### **Division:**

Both recognised the key vocabulary in the word problem that led to division: per and share. Both recognised dividing by 2 was the same as halving. They both partitioned efficiently. For 48 divided by 4- Damien was able to make the link that it is a quarter of. Isabelle knew to use the inverse multiplication fact.

Both had sound times table and inverse division knowledge and knew how to apply to larger calculations.

### **Year 6: Caitlin & Leighton**

#### **Place Value & Comparing Numbers:**

Both were confident to know straight away that the number of digits was the first check, then to look at each digit in turn to be able to correctly order.

#### **Subtraction:**

From the context, they knew to subtract 1558 from 1952. I asked them to look at the numbers and decide the best method to use. Leighton used a number line and counted on to get the correct answer. Caitlin used a formal written method that involved exchanging- which she did accurately and could explain what she was doing and why. She recognised that she might have been more efficient counting on because the numbers are quite close to each other and her method involved lots of exchanges.

#### **Multiplication:**

I gave them the calculation  $3999 \times 35$  to see if they would look at the number and use the most efficient method. Leighton went straight to column written method and got the right answer. When asked to look at the numbers again, he realised he should have just rounded

to 4000 and done mentally. Caitlin did see that she could do this, but got confused with the adjusting part.

### **Division:**

132 divided by 6. They both understood from the context that it was division and why.

Both chose the chunking method that had been done in class recently for long division and got to the right answer. This is an appropriate method even if not the quickest. Leighton was more efficient by seeing 20 lots of 6, whereas Caitlin did 10 lots at a time.

### **Overall summary:**

An encouraging pupil voice that shows good consistent teaching across the school. These children (who are at the expected standard) are retaining previously taught skills and are confident with written techniques for all four operations.

There is some evidence that there needs to be even more reinforcing of teaching the children to look carefully at the numbers involved and having a greater range of strategies to solve- rather than always a formal written method.

### **Place Value:**

All year groups very secure. This will have been taught in this first term quite recently, but it does show they are building on the skills taught each year to compare and order numbers using the correct strategy and correct vocabulary.

### **Subtraction:**

All year groups confident with a formal written method that involves exchanging. They could all explain why they were exchanging using place value vocabulary.

Some year groups were not fully secure with a number line method and when this could be more efficient. This could perhaps indicate more time needed to secure the understanding of difference.

Some children in lower age groups might need more strategies to move away from counting on fingers- e.g. knowledge of number bonds.

**Multiplication:**

Mostly, there is an indication of a very good understanding of what multiplication is- mostly gained through pictorial groupings.

For these children who are secure expected standard, there was good times table knowledge.

There is still sometimes an over-reliance on a formal written method when it would be more efficient to use a mental and jottings method.

**Division:**

All children were able to unpick word and story problems to know that they were dividing.

Most children used the most efficient and suitable methods.

There was good knowledge of using the inverse multiplication fact to divide mentally.