Exploring Division with 5th Class

A Problem-Solving Approach

Patrick Neary

What the curriculum says:

- divide a three-digit number by a two-digit number, without and with a calculator

    explore the concept of division with concrete materials

    develop the long division algorithm from repeated subtraction and multiples of repeated subtraction

Initial Problem

A jar contains 225 marbles. How many bags of 75 can be filled from this jar?

The numbers chosen matter.

My aim was for the children to actively engage in mathematical thinking.

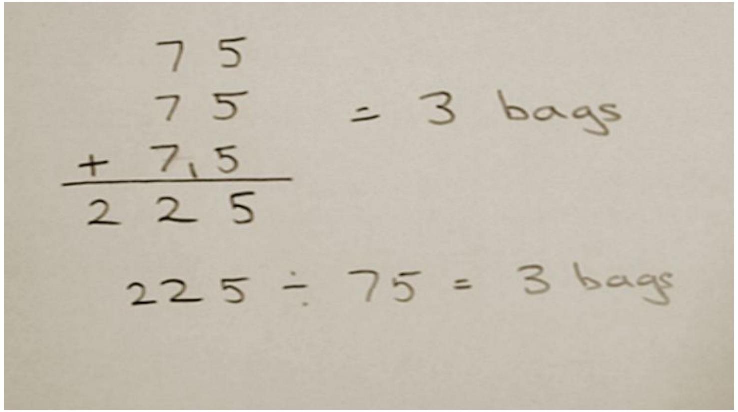
A jar contains 225 marbles. How many bags of 75 can be filled from this jar?

Children used their prior knowledge to approach this problem.

This child used a repeated addition strategy.

Others employed other methods e.g. repeated extraction.

Whole-class discussion focused on the samples of the children's work.



(Reconstruction of child's work)

Exploring Multiple Solution Strategies

- Whole-Class Discussion
- Children’s ideas and methods were prioritised
- Children’s voices were prioritised
- Children were encouraged to ‘try out’ other methods
- Context impacted the suitability of different strategies

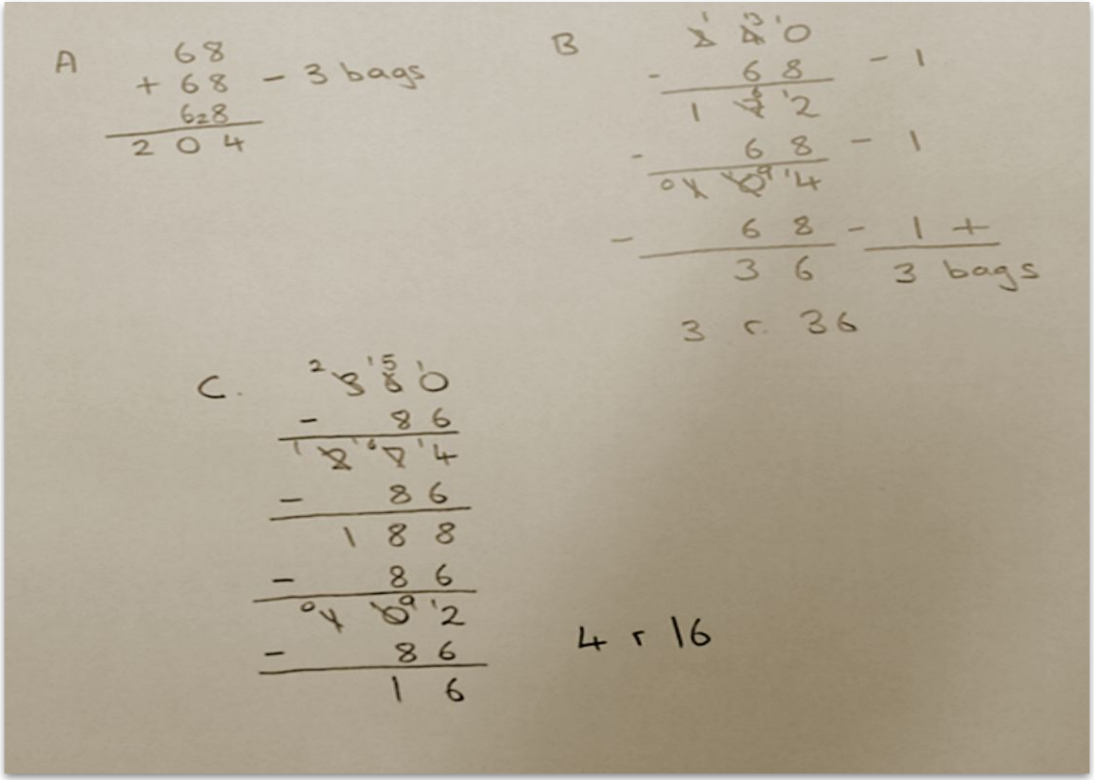
A second problem

240 ÷ 68

Method A is the same method the child used previously.

Method B is an alternative method that arose during whole-class discussion.

The child identified that method B told them how many marbles were left over i.e. a remainder. They used this method for the next problem.

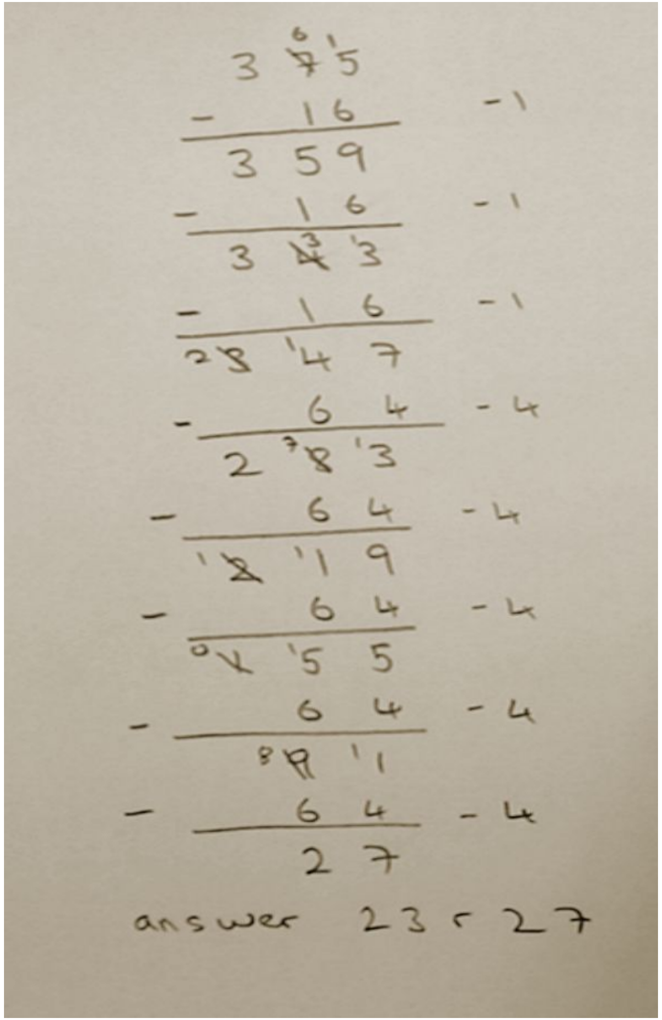


Creating a need for efficiency

This group developed a more efficient strategy whilst working on the problem.

You may notice a calculation error here. The remainder should be 7 and not 27. This lead to a discussion about accuracy.

The calculation error **did not** take away from the advancements in the children's understandings.

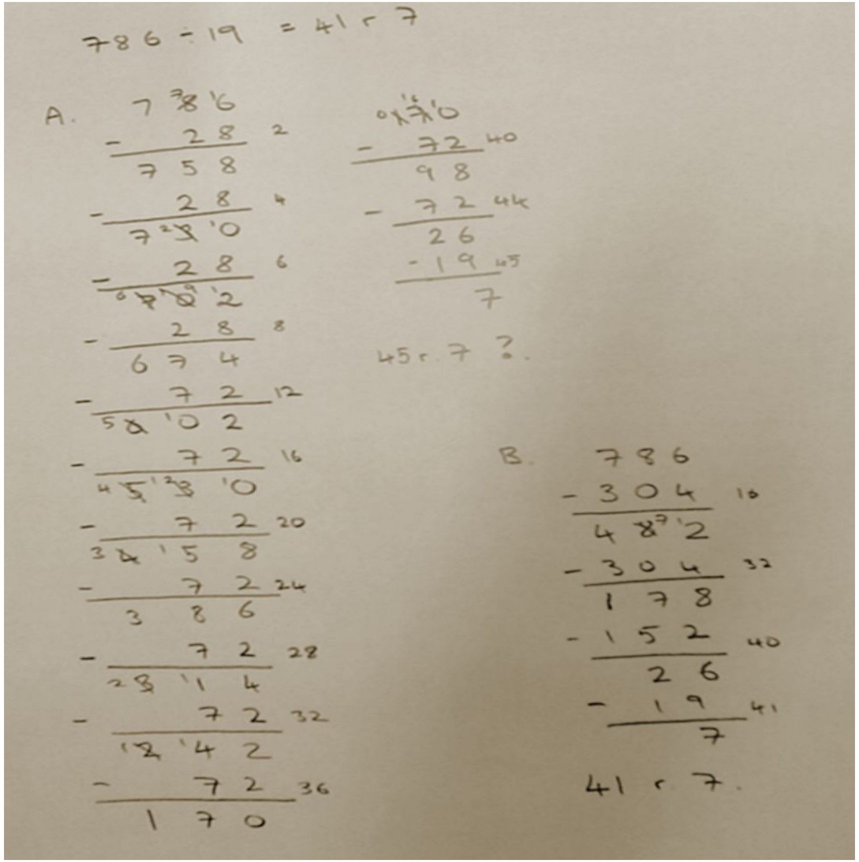


A focus on process rather than product

Method A: Some 'multiples of repeated subtraction' used. Calculation error as 19 x 4 = 76 and not 72.

Method B: A more efficient method is developed for the same problem.

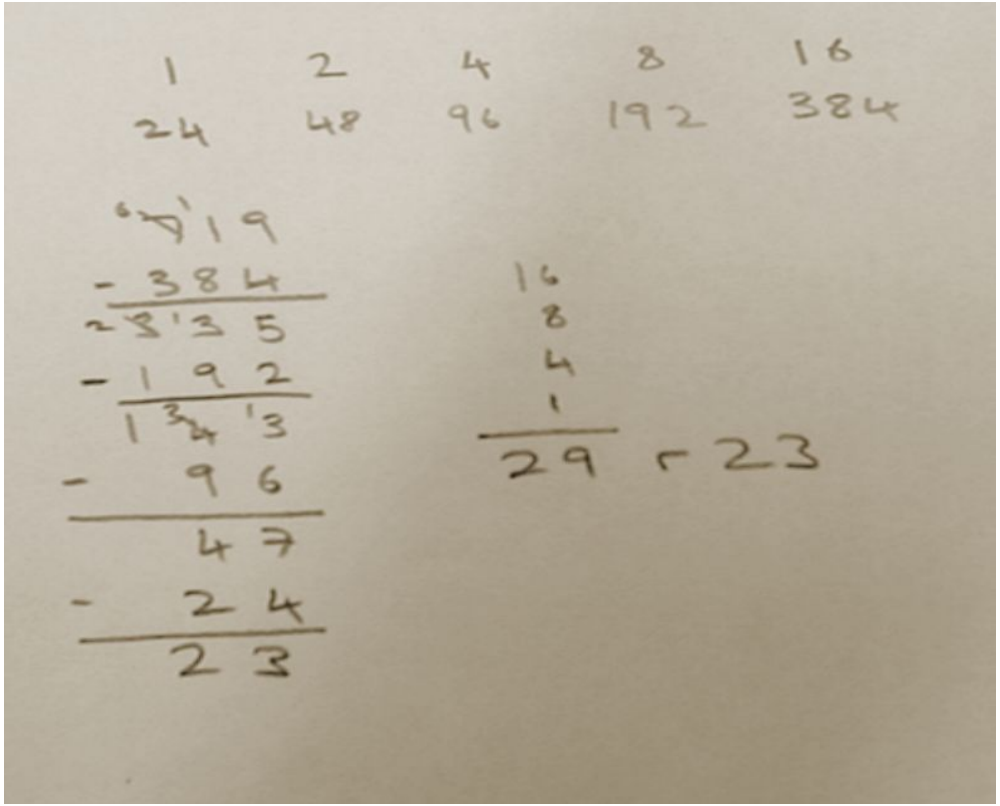
The child refined their solution strategy.



Student-Invented Method

This group used their understanding of doubles to support a repeated subtraction strategy.

The only teacher demonstration that occured during this lesson was when the teacher revoiced the children’s own thinking.



Next Steps

Concept	Link	Procedure
Lessons focused on building conceptual understanding.	Lessons focused on connecting concepts and procedures.	Lessons focused on the practise and application of procedures.