Calculations Policy Pencil and paper procedures Key Stages 1 & 2

St Joseph's Catholic Primary



| Number track | Has the numbers inside the sections, rather than on the divisions | 0 1 2 3 4 5 6 7 8 9 10 |
|---|---|------------------------|
| Calibrated, numbered numberline | Equal divisions marked on the numberline and each division is numbered | 0 1 2 3 4 5 6 7 8 9 10 |
| Calibrated, unnumbered numberline | Equal divisions are marked, but left unnumbered for children to add relevant numbers to | |
| Blank numberline | No divisions or numbers marked for the children | |

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Background to policy.

This policy contains the key pencil and paper procedures that will be taught within our school. It has been written to ensure consistency and progression throughout the school and reflects a whole school agreement.

Although the focus of the policy is on pencil and paper procedures it is important to recognise that the ability to calculate mentally lies at the heart of mathematics. The mental methods for teaching mathematics will be taught systematically from Reception onwards and pupils will be given regular opportunities to develop the necessary skills. However mental calculation is not at the exclusion of written recording and should be seen as complementary to and not as separate from it.

In every written method there is an element of mental processing. Sharing written methods with the teacher encourages children to think about the mental strategies that underpin them and to develop new ideas. Therefore written recording both helps children to clarify their thinking and supports and extends the development of more fluent and sophisticated mental strategies.

During their time at this school children will be encouraged to see mathematics as both a written and spoken language. Teachers will support and guide children through the following important stages:

- Developing the use of pictures and a mixture of words and symbols to represent numerical activities;
- Using standard symbols and conventions;
- Use of jottings to aid a mental strategy;
- Use of pencil and paper procedures;
- Use of a calculator.

This policy concentrates on the introduction of standard symbols, the use of the empty number line as a jotting to aid mental calculation and on the introduction of pencil and paper procedures. It is important that children do not abandon jottings and mental methods once pencil and paper procedures are introduced. Therefore children will always be encouraged to look at a calculation/problem and then decide the best method to choose – pictures, mental calculation with or without jottings, structured recording or a calculator. Our long-term aim is for children to be able to select an efficient method of their choice (whether this be mental, written or in upper Key Stage 2 using a calculator) that is appropriate for a given task. They will do this by always asking themselves:

- 'Can I do this in my head?
- 'Can I do this in my head using drawings or jottings?'
- 'Do I need to use a pencil and paper procedure?
- 'Do I need a calculator?







Subtraction

Formal Method for Subtraction.

Stage 4

- Place Value titles to be shown in all calculations.
- Ones to be used

Formal Method with exchanging.



Formal Method with 0 as a place holder.

Subtraction must start from the right.

Bar Method

| 608 | | |
|-----|-----|--|
| ? | 249 | |
| | | |
| | | |
| | | |



Stage 5

Formal Method for Subtraction involving decimals up to two places.



Bar Method



Stage 6 Formal Method for Subtraction using more Choose digits to go in the empty boxes to make these number sentences true. 14 781 - 6 53 = 8528 23.12 + 22. = 45.23 Two numbers have a difference of 2.38. The smaller number is 3.12. What is the bigger number? Two numbers have a difference of 2.3. They are both less than 10. What could the numbers be? Can you use five of the digits 1 to 9 to make this number sentence true? Two numbers have a difference of 2.38. What could the numbers be if: the two numbers add up to 6? one of the numbers is three times as big as the other number? Two numbers have a difference of 2.3. To the nearest 10, they are both 10. What could the numbers be? For other examples see Mastery documentation NCETM and progression maps for reasoning. (Upper KS2.)







