

## Challenges young children experience with written mathematics

- The spoken and (formal, abstract) written language of mathematics is like a 'foreign' language to young children
- Children have to make sense of individual symbols but also understand their role within a system such as a written word, musical notation or a mathematical sign or numeral within a written calculation
- Letters of the alphabet, numerals and mathematical signs have no inherent meanings - they do not 'look like' anything to the young child
- Young children assign their own meanings to marks they make, looking for similarities between their marks and something they know or have experienced
- Children interpret written symbolism in terms of what they already know
- Young children are learning two standard symbol systems at the same time – writing and mathematics. It could be argued that the writing system makes more sense to children and when given the choice, some prefer to use writing instead of mathematical symbols
- The way in which we set down symbols can cause confusion: for example, 6 and 9 may appear the same, as 6 and b
- Place value causes problems: for example '2' has a different value when on its own, compared to the numeral '2' in '25'
- Signs such as '+' and '-' have alternative meaning in our homes and in the community
- The subtraction and equals signs are visually similar, as are addition and multiplication signs
- Children's understanding of formal written symbolism generally lags behind their informal understanding of 'written' mathematics
- Mathematics represented either by adults in children's books or published worksheets prevent children making connections between their own understanding and the new knowledge
- Mathematics represented by adult in children's books, or in published worksheets appears to prevent children making connections between their own marks and understanding and new knowledge (standard, abstract symbols and written calculations)
- Children need to build on and make connections between their mental methods and 'written' mathematics

**Good teaching attempts to foster connections between the child's informal knowledge and the abstract symbol system of written mathematics.**