

Key Stage 2 Mathematics National Curriculum tests – 2009 Implications

This is a summary of an analysis of performance of children who attained level 4+ in the 2009 KS2 tests. It highlights key strengths and weaknesses and implications for teaching and learning.

1. Summary of strengths

Number - doubling a two-digit multiple of 10, adding three two-digit numbers, identifying missing numbers on a number line (including negative numbers), rounding and identifying numbers greater than 1000, simple division, followed a rule well and using the inverse, recognising simple fractions of shapes and identifying where these fitted on a number line, problem solving involving fractions.

Shape, space and measures - visualising and drawing shapes, identifying irregular shapes and using the properties of a range of quadrilaterals, identifying right angles accurately and working out the size of angles from known facts and properties, line symmetry, reflection and rotation, interpreting and manipulating times and temperature.

Handling data - interpreting and using information from tables and a range of simple graphs, transferring data from a Carroll diagram to a Venn diagram, working out the most likely event from given data.

2. Summary of weaknesses

Jottings - not appropriate to the question and informative, did not support the children's thinking in a helpful way; careless annotations led to incorrect answers.

Show your method and show your working - these instructions were not understood, children chose to use a formal method for calculation that could very easily have been calculated mentally. On Paper B, children used a written method when a calculator would have been more appropriate.

Reading and interpreting questions - children put their own meaning to the text when asked to determine the truth of a statement; counter examples were not used well, children used examples that didn't address the original question.

Completing two-step questions - children often completed the first part of the question but did not see the question through by completing the next step.

Place value – when multiplying larger numbers, multiples of tens, hundreds or thousands children frequently made errors related to place value. Children had problems interpreting and calculating with decimal numbers that included different numbers of decimal places.

Fractions and percentages – incorrect identification of equivalent fractions and inaccurate interpretation and manipulation of percentages; there was confusion between degrees and percentages on a pie chart.

Properties of numbers - insecure understanding of prime numbers, factors and square numbers.

3. Key messages

General

Children need to be taught:

- To read and interpret questions correctly, and to recognise when a question has more than one step and how to follow one step through to the next
- How and when to use jottings and annotations and the importance of using these accurately
- How to use trial and improvement strategies when solving problems, and check the precision and sense of their results against the information in the question
- How to use a counter example to demonstrate that a general statement is untrue

Number

Children need to be taught:

- To multiply whole numbers by 1000, 100 or 10 and their multiples
- To calculate mentally, particularly in the context of money, and approximate to check the answer is sensible
- To understand interpret place value after the decimal point and identify the value of each digit in a decimal number
- The use of precise mathematical language and to identify and use the properties of numbers such as primes, factors and squares
- To recognise and use the most efficient method for calculation, mental, written or calculator and to take account of the context in which the calculation is set
- To recognise when a mental method is more appropriate than a formal written method
- To interpret the equals sign as a symbol of equality, and construct equations and number sentence that balance
- How to convert simple decimals to fractions and vice versa
- How to simplify fractions by cancelling, to help identify equivalent fractions
- How to solve problems involving direct proportion by scaling quantities up or down
- How to represent proportion as a simple fraction, and how to convert this to a percentage

Shape, space, measures and Handling data

Children need to be taught:

- How to read and estimate measurements when a value lies between two marked divisions on the scale
- To differentiate between the meaning of perimeter and area and know how to calculate these for rectangles and simple compound shapes
- To interpret pie charts distinguishing between the use of degrees and percentages