



# Aston Fields Middle School

## KS2 Maths Key Performance Indicators

Pupils who are working at age related expectations at the end of the year will have secure knowledge to these Key Performance Indicators.

Indicators for end of Key Stage 2:

### Number and place value

- Solve problems and reason about place value and number.
- Use place value in whole numbers to at least 10 000 000 to read, write, compare and order numbers.
- Identify the value of each digit in numbers with up to 3 decimal places.
- Round any whole number to the nearest 10, 100, 1,000, 10,000, 100,000.
- Use approximation to estimate and check answers to calculations and determine, in the context of a problem, levels of accuracy.
- Use negative numbers in practical contexts and solve problems, including calculating intervals across 0.

### Addition, subtraction, multiplication, division

- Use knowledge of the 4 operations to reason and to solve problems, including puzzles not set in a context (aims).
- Add and subtract mentally with increasingly large numbers.
- Add and subtract whole numbers with more than 4 digits, using formal written methods.
- Solve addition and subtraction multi-step problems in context.
- Recognise and use: multiples and factors; prime numbers to at least 19; and square numbers, at least up to 144.
- Use understanding of place value to multiply and divide whole numbers and decimals with up to 3 decimal places by 10, 100 and 1000.
- Multiply and divide numbers mentally, drawing upon multiplication facts, including with mixed operations and large numbers.
- Perform mental calculations including with mixed operations and large numbers.
- Fluently multiply numbers up to 4 digits by a 2-digit number using the long multiplication method.
- Fluently divide numbers with up to 4 digits by a 1-digit number using the formal written method.
- Use long division with 2-digit divisors.
- Interpret remainders according to the context.
- Solve problems involving addition, subtraction, multiplication and division.
- Use estimation to check answers to calculations and determine, in the context of a problem, appropriate levels of accuracy.

### Fractions including decimals and percentages

- Solve problems and reason about fractions, decimals and percentages (aims).
- Use common factors to: simplify fractions; identify equivalent fractions, using common multiples to express fractions in the same denomination.
- Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred'.
- Recall and use equivalences between simple fractions, decimals and percentages, in different contexts.
- Associate a fraction with division and begin to calculate decimal fraction equivalents.
- Calculate simple fractions and percentages of whole numbers and quantities.
- Add and subtract fractions with denominators that are multiples of the same number.
- Convert and calculate between improper fractions and mixed numbers where appropriate for the context.
- Fluently add and subtract decimal numbers and round when required to specified degrees of accuracy.
- Multiply one-digit numbers with up to 2 decimal places by whole numbers.
- Use written division methods in cases where the answer has up to 2 decimal places.

<b>Ratio and proportion</b>
<ul style="list-style-type: none"> <li>• Use simple ratio and proportional reasoning to solve problems.</li> <li>• Solve problems involving similar shapes where the scale factor is known or can be found.</li> </ul>
<b>Algebra</b>
<ul style="list-style-type: none"> <li>• Use simple formulae in words, and express missing number problems algebraically.</li> <li>• Generate and describe linear number sequences.</li> <li>• Find possible values in missing number problems and equations involving 1 or 2 unknowns.</li> </ul>
<b>Measurement</b>
<ul style="list-style-type: none"> <li>• Read, write and convert time between analogue clocks (including clock faces using Roman numerals) and digital 12- and 24-hour clocks, using am and pm where necessary.</li> <li>• Read Roman numerals to 1000 (M).</li> <li>• Solve problems involving converting units of time, including problems involving the duration of events.</li> <li>• Use, read, write and convert between standard metric units of measure.</li> <li>• Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.</li> <li>• Recognise that shapes with the same areas can have different perimeters and vice versa.</li> <li>• Estimate the area of irregular shapes by counting squares (including half squares and fractions of squares).</li> <li>• Calculate and compare the area of squares and other rectangles including using standard units, square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>).</li> <li>• Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate.</li> <li>• Reason and solve problems involving measures.</li> </ul>
<b>Geometry – properties of shapes</b>
<ul style="list-style-type: none"> <li>• Solve problems and reason about shapes and their properties.</li> <li>• Compare and classify geometric shapes based on their properties and sizes.</li> <li>• Recognise, describe and build simple 3-D shapes, including using nets and other 2-D representations.</li> <li>• Draw 2-D shapes using given lengths and angles with increasing accuracy.</li> <li>• Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.</li> <li>• Find unknown angles in triangles.</li> <li>• Illustrate and describe parts of circles including radius, diameter and circumference.</li> </ul>
<b>Geometry – position and movement</b>
<ul style="list-style-type: none"> <li>• Draw and translate simple shapes on the co-ordinate plane in the first quadrant.</li> <li>• Describe positions of a 2-D grid as co-ordinates in the first quadrant.</li> <li>• Use reasoning to solve problems related to co-ordinates, reflections and translations.</li> </ul>
<b>Statistics</b>
<ul style="list-style-type: none"> <li>• Present, complete, read and interpret information in tables and bar charts.</li> <li>• Construct and interpret line graphs, interpret pie charts and use both to solve problems.</li> <li>• Calculate and interpret the mean as an average for simple sets of discrete data in different contexts.</li> </ul>