Hampshire County Council

Hampshire Mathematics Team Assessment Model

Version 3: August 2015

Problem solving should be a focus in every phase

Key Reference

Black Text	National curriculum statements
Bold/italics	NAHT Key Performance Indicators
Red Text	Hampshire additional guidance
	Phase 1
	Phase 2
	Phase 2 & Phase 3
Bold coloured	Problem solving statements

Year 6: Phase 3

(Phase 3: review and secure Phase 1 and 2 conceptual and procedural knowledge and skills

Year 6	Number and place value	Addition and Subtraction (including algebra)	Multiplication and Division (including algebra, ration and proportion)	Fractions (including decimals)	Measurement	Geometry Properties of shape	Geometry Position and direction
	Pupils should be taught to: ▪ read, write, order and compare numbers up to 10 000 000 and determine the value of each digit ▪ ***round any whole number to a required degree of accuracy*** ▪ ***use negative numbers in context, and calculate intervals across zero*** ▪ **solve number and practical problems that involve all of the above.**	Pupils should be taught to: • perform mental calculations, including with mixed operations and large numbers • ***solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why*** • solve problems involving addition, subtraction, multiplication and division • ***use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy*** ▪ use their knowledge of the order of operations to carry out calculations involving the four operations ▪ **solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why** ▪ **solve problems involving addition, subtraction, multiplication and division** **Algebra** Pupils should be taught to: ▪ ***use simple formulae*** • express missing number problems algebraically • find pairs of numbers that satisfy number sentences involving two unknowns	Pupils should be taught to: ▪ ***multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication*** ▪ ***divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context*** ▪ perform mental calculations, including with mixed operations and large numbers. • **solve problems involving addition, subtraction, multiplication and division** ▪ use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy. • use their knowledge of the order of operations to carry out calculations involving the four operations • Identify common factors, common multiples and prime numbers • Express missing number problems algebraically **Algebra:** ***use simple formulae*** **Algebra**: generate and describe linear number sequences **Algebra:** find pairs of numbers that satisfy number sentences involving two unknowns **Algebra:** enumerate all possibilities of combinations of two variables **Ratio and proportion)** **• RP: solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts** **▪ RP: *solve problems involving the calculation of percentages (e.g. of measures such as 15% of 360 and the use of percentages for comparison*** **RP: solve problems involving ration and proportion** **RP: solve problems involving similar shapes where the scale factor is known or can be found** **RP: solve problems involving unequal sharing and grouping using knowledge of fractions and multiples** **(Statistics)** **Statistics: *calculate and interpret the mean as an average*** Interpret and construct pie charts and line graphs and use these to solve problems	Pupils should be taught to: ▪ use common factors to simplify fractions; use common multiples to express fractions in the same denomination ▪ compare and order fractions, including fractions >1 ▪ add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions ▪ multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $^1/_4 \times {}^1/_2 = {}^1/_8$) ▪ associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^3/_8$) ▪ identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places ▪ multiply one-digit numbers with up to two decimal places by whole numbers ▪ ***recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.*** ▪ **solve problems which require answers to be rounded to specified degrees of accuracy** • divide proper fractions by whole numbers (eg 1/3 + 2 = 1/6) • use written division methods in cases where the answer has up to two decimal places	Pupils should be taught to: ▪ **solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate** ▪ ***use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places*** ▪ recognise that shapes with the same areas can have different perimeters and vice versa ▪ recognise when it is possible to use formulae for area and volume of shapes • convert between miles and kilometres • calculate the area of parallelograms and triangles • calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm³) and cubic metres (m³), and extending to other units such as mm³ and km³.	Pupils should be taught to: ▪ draw 2-D shapes using given dimensions and angles ▪ ***compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons*** ▪ illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius ▪ recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. • recognise, describe and build simple 3-D shapes, including making nets	Pupils should be taught to: ▪ describe positions on the full coordinate grid (all four quadrants) **• draw and translate simple shapes on the coordinate plane, and reflect them in the axes**