

Year 6 - Number and Place Value

	Emerging	Expected	Exceeding
Number and Place Value	<p>Sufficient evidence shows the ability to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit. <input type="checkbox"/> Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000. <input type="checkbox"/> Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero. <input type="checkbox"/> Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000. <input type="checkbox"/> Solve number problems and practical problems that involve all of the above. <input type="checkbox"/> Read Roman numerals to 1000 (M) and recognise years written in Roman numerals. 	<p>Sufficient evidence shows the ability to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. <input type="checkbox"/> Round any whole number to a required degree of accuracy. <input type="checkbox"/> Use negative numbers in context, and calculate intervals across zero. <input type="checkbox"/> Solve number and practical problems that involve all of the above. 	<p>Sufficient evidence shows the ability to:</p> <p>All aspects of number and place value at the national standard are embedded.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Demonstrate rapid recall of number facts and is able to use these fluently to generalise to obtain new facts using place value. <input type="checkbox"/> Show very good understanding of place value and is able to apply this to working with larger numbers/decimals and in solving problems. <input type="checkbox"/> Apply their understanding to solving increasingly complex problems, is able to reason and explain their thinking.
Addition, subtraction, multiplication and division	<p>Sufficient evidence shows the ability to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). <input type="checkbox"/> Add and subtract numbers mentally with increasingly large number. <input type="checkbox"/> Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. <input type="checkbox"/> Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. <input type="checkbox"/> Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. <input type="checkbox"/> Know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers. <input type="checkbox"/> Establish whether a number up to 100 is prime and recall prime numbers up to 19. <input type="checkbox"/> Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers. <input type="checkbox"/> Multiply and divide numbers mentally drawing upon known facts. <input type="checkbox"/> Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context. <input type="checkbox"/> Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. 	<p>Sufficient evidence shows the ability to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. <input type="checkbox"/> 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. <input type="checkbox"/> Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context. <input type="checkbox"/> Perform mental calculations, including with mixed operations and large numbers. <input type="checkbox"/> Identify common factors, common multiples and prime numbers. <input type="checkbox"/> Use their knowledge of the order of operations to carry out calculations involving the four operations. <input type="checkbox"/> Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. 	<p>Sufficient evidence shows the ability to:</p> <p>All aspects of number - addition and subtraction at the national standard are embedded.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Demonstrate rapid recall of number facts and is able to use these fluently to generalise to obtain new facts. <input type="checkbox"/> Show a wide repertoire of reliable and efficient of calculation strategies, both written and mental, that they are able to apply when solving problems. <input type="checkbox"/> Make choices regarding choice of strategies and explain reasoning. <input type="checkbox"/> Solve problems of increasing complexity using a range of strategies and is able to communicate their reasoning. <input type="checkbox"/> Explain why different methods give the same result. <input type="checkbox"/> Think creatively when problem solving and is able to justify and prove. <input type="checkbox"/> Show rapid and fluent recall of all x facts to 12 x 12 and is able to use their knowledge to generate new facts and when working with larger numbers. <input type="checkbox"/> Apply knowledge of factors, multiples, prime number, squares and commutativity to solving mental calculations of more complex problems. <input type="checkbox"/> Show a clear understanding of the different structures of multiplication and division and the related vocabulary and is able to apply this to solving increasingly complex problems. <input type="checkbox"/> Apply the knowledge of the inverse operation and the links between division and multiplication to solving problems.

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Fractions	<p>Sufficient evidence shows the ability to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Compare and order fractions whose denominators are all multiples of the same number. <input type="checkbox"/> Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example: $2/5 + 4/5 = 6/5 = 1 \frac{1}{5}$]. <input type="checkbox"/> Add and subtract fractions with the same denominator and denominators that are multiples of the same number. <input type="checkbox"/> Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. <input type="checkbox"/> Read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$]. <input type="checkbox"/> Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. <input type="checkbox"/> Round decimals with two decimal places to the nearest whole number and to one decimal place. <input type="checkbox"/> Read, write, order and compare numbers with up to three decimal places. <input type="checkbox"/> Solve problems involving number up to three decimal places. 	<p>Sufficient evidence shows the ability to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. <input type="checkbox"/> Compare and order fractions, including fractions > 1. <input type="checkbox"/> Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. <input type="checkbox"/> Multiply simple pairs of proper fractions, writing the answer in its simplest form [e.g. $1/2 \times 1/2 = 1/8$]. <input type="checkbox"/> Divide proper fractions by whole numbers [e.g. $1/3 \div 2 = 1/6$]. <input type="checkbox"/> Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $3/8$]. <input type="checkbox"/> Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places. <input type="checkbox"/> Multiply one-digit numbers with up to two decimal places by whole numbers. <input type="checkbox"/> Use written division methods in cases where the answer has up to two decimal places. <input type="checkbox"/> Solve problems which require answers to be rounded to specified degrees of accuracy. <input type="checkbox"/> Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. 	<p>Sufficient evidence shows the ability to:</p> <p>All aspects of number – fractions at the national standard are embedded</p> <ul style="list-style-type: none"> <input type="checkbox"/> Apply knowledge of fractions to problems involving measures and shapes. <input type="checkbox"/> Use their knowledge of decimals in problem involving measure to work with increased accuracy. <input type="checkbox"/> Demonstrate a very good understanding of the connections between fractions decimals and percentages and is able to use their knowledge to translate between the three. <input type="checkbox"/> Apply their knowledge of fractions, decimals and percentages to problems of increasing complexity and to explain their reasoning and thinking.
Ratio and proportion	<ul style="list-style-type: none"> <input type="checkbox"/> Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal. <input type="checkbox"/> Solve problems which require knowing percentage and decimal equivalents of $1/2$, $1/4$, $1/5$, $2/5$, $4/5$ and those fractions with a denominator of a multiple of 10 or 25. 	<ul style="list-style-type: none"> <input type="checkbox"/> Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. <input type="checkbox"/> Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison. <input type="checkbox"/> Solve problems involving similar shapes where the scale factor is known or can be found. <input type="checkbox"/> Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. 	<ul style="list-style-type: none"> <input type="checkbox"/> Demonstrate a very good understanding of the connections between fractions, decimals and percentages, ratio and proportion and is able to use their knowledge to translate between the three. <input type="checkbox"/> Apply their knowledge of ratio and proportion to problems of increasing complexity and to explain their reasoning and thinking.

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algebra	<ul style="list-style-type: none">❑ Use simple formula to represent calculations such as perimeter and area of different shapes.❑ Use sequencing when working on shape, measures and pattern activities.❑ Solve problems including missing number problems using addition, subtraction, multiplication and division facts.❑ Demonstrate a secure understanding of the inverse relationship when applied to calculations involving two variables.	<ul style="list-style-type: none">❑ Use simple formulae.❑ Generate and describe linear number sequences.❑ Express missing number problems algebraically❑ Find pairs of numbers that satisfy an equation with two unknowns.❑ Enumerate possibilities of combinations of two variables.	<ul style="list-style-type: none">❑ Use algebraic representation to illustrate relationships and patterns.❑ Apply understanding of equivalence in calculation to solve problems with unknowns and more than one possibility.❑ Use algebra to prove relationships and patterns.❑ Explain the meaning of the mathematical notation.
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