Mathematics expectations
Year 5

Number and Place Value			
Count forwards and backwards in steps of power 10 for any given number up to 1,000,000			
Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit			
Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero			
Round any number to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000			
Read Roman numerals to 1,000 (M) and recognise years written in Roman numerals			

Addition and Subtraction			
Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)			
Add and subtract numbers mentally with increasingly large numbers			
Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy			
Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why			

Multiplication and Division			
Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers			
Know and use the vocabulary of prime numbers and composite (non-prime) numbers			
Establish whether a number up to 100 is prime and recall prime numbers up to 19			
Multiply and divide numbers mentally drawing upon known facts up to 12 x 12			
Multiply and divide whole numbers by 10, 100 and 1,000			
Multiply and divide numbers involving decimals by 10, 100 and 1,000			
Multiply numbers up to 4-digit by a 1 or 2-digit number using formal written methods, including long multiplication for 2-digit numbers			
Divide numbers up to 4-digits by 1-digit numbers using the formal written method of short division, and interpret remainders appropriately			
Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})			
Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes			
Solve problems involving all four number operations, including understanding the meaning of the equals sign			
Solve problems involving all four number operations, including scaling by simple fractions and problems involving simple rates			

Fractions, Decimals and Percentages			
Compare and order fractions whose denominators are all multiples of the same number			
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 to the other, and write mathematical statements >1 as a mixed number [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]			
Add and subtract fractions with the same denominator and denominators that are multiples of the same number			
Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams			
Read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$]			
Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents			

Round decimals with two decimal places to the nearest whole number and to one decimal place			
Read, write, order and compare numbers with up to three decimal places			
Solve problems involving number up to three decimal places			
Recognise the per cent symbol (%) and understand per cent relates to number of parts per hundred			
Write percentages as a fraction with denominator hundred, and as a decimal			
Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25			

Measurement

Convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre]			
Understand and use approximate equivalences between metric and common imperial units such as inches, pounds and pints			
Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres			
Calculate and compare the area of rectangles (including squares), and including using standard units (cm² and m²)			
Estimate the area of irregular shapes			
Estimate volume and capacity			
Solve problems involving converting between units of time			
Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling			

Geometry: Shape

Identify 3-D shapes, including cubes and other cuboids, from 2-D representations			
Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles			
Draw given angles, and measure them in degrees (°)			
Identify angles at a point and one whole turn (total 360°)			
Identify angles at a point on a straight line and ½ a turn (total 180°)			
Identify other multiples of 90°			
Use the properties of rectangles to deduce related facts and find missing lengths and angles			
Distinguish between regular and irregular polygons based on reasoning about equal sides and angles			

Geometry: Position and Direction

Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed			

Statistics

Solve comparison, sum and difference problems using information presented in a line graph			
Complete, read and interpret information in tables, including timetables			

Greater Depth			
Independently and consistently apply skills and knowledge in all areas of the year group expectations			
Show a high level of fluency, confidence and resilience when faced with more challenging and complex problems			
Apply skills and knowledge to a range of contexts across the curriculum			
Organise ideas to make connections with other areas of learning in mathematics and across the curriculum			
Return to an aspect of mathematical learning after a break and still feel confident that they can apply skills and knowledge without difficulty			
Explain their understanding of mathematical concepts, skills and knowledge to others			