 **Threshold Concepts in mathematics – Year 7**

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| **Key concepts ideally learned before Year 7** | **Date** |
| Know times table facts and related division facts to automaticity |  |  |  |
| Add and subtract one-digit numbers to automaticity |  |  |  |
| Double and halve all number accurately, including decimal numbers |  |  |  |
| **Addition and Subtraction** | **Date** |
| Add and subtract integers and decimals using written and mental methods  |  |  |  |
| Understand the order of operations (BIDMAS) |  |  |  |
| **Algebra** | **Date** |
| Use and interpret algebraic notation |  |  |  |
| Substitute numerical values into formulae and expressions, including scientific formulae. |  |  |  |
| Understand the difference between an expression, equation, formula, term, function and identity |  |  |  |
| Simplify and manipulate algebraic expressions to maintain equivalence by collecting like terms |  |  |  |
| Generate terms of a sequence from either a term-to-term or a position-to-term rule. |  |  |  |
| Recognise arithmetic sequences |  |  |  |
| **Fractions** | **Date** |
| Recognise, find, name and write fractions |  |  |  |
| Find a fraction of a shape, length, set of objects or quantity |  |  |  |
| Write simple fraction sentences e.g. ½ of 6 = 3 |  |  |  |
| Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 |  |  |  |
| Recognise and write decimal equivalents to any number of tenths or hundredths |  |  |  |
| Know percentage and decimal equivalents of halves, quarters, fifths, tenths and hundredths |  |  |  |
| Use common factors to simplify fractions |  |  |  |
| Identify the value of each digit in numbers given to three decimal places |  |  |  |
| Use written division methods |  |  |  |
| Recall and use equivalences between simple Fractions, Decimals and Percentages including in different contexts |  |  |  |
| Compare and order fractions, including fractions > 1  |  |  |  |
| Associate a fraction with division |  |  |  |
| Use the symbols =, ≠, <, >, ≤, ≥ Combine with ordering |  |  |  |
| Use the concepts and vocabulary of multiples and lowest common multiple (LCM) |  |  |  |
| Add, subtract, multiply and divide any fraction |  |  |  |
| Find a fraction of an amount |  |  |  |
| Convert between mixed numbers and improper fractions  |  |  |  |
| **Geometry** | **Date** |
| Parallel lines and perpendicular lines |  |  |  |
| Derive and illustrate properties of triangles, quadrilaterals and circles |  |  |  |
| Angles at a point, on a straight line and vertically opposite angles  |  |  |  |
| Derive and use the sum of angles in a triangle and a quadrilateral  |  |  |  |
| Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon |  |  |  |
| Know the properties and names of 3D shapes |  |  |  |
| Understand and use the language of shape: tetrahedron, hexahedron, cube, octahedron, dodecahedron, icosahedron, polyhedron, polygon, prism |  |  |  |
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| **Multiplication and Division** | **Date** |
| Use the concepts and vocabulary of prime numbers, factors (or divisors), common factors and highest common factor (HCF)  |  |  |  |
| Use formal written methods for multiplication and division of integers and decimals  |  |  |  |
| Understand the order of operations  |  |  |  |
| Recognise and use relationships between multiplication and division including inverse operations  |  |  |  |
| Multiply and divide by 10, 100 and 1000  |  |  |  |
| **Negative Numbers** | **Date** |
| Use the four operations with negative numbers, including BIDMAS |  |  |  |
| **Place Value** | **Date** |
| Count forwards or backwards in steps of powers of 10 for any given number to 1 000 000  |  |  |  |
| Determine the value of each digit in whole numbers up to 10 000 000 |  |  |  |
| Round any whole number to a required degree of accuracy  |  |  |  |
| Rounding to decimal places (significant figures) |  |  |  |
| **Statistics** | **Date** |
| Understand the different types of data (discrete, continuous, grouped) |  |  |  |
| What is an average use the mean, median, mode and range |  |  |  |
| Interpretation of charts |  |  |  |
| Draw and interpret bar charts  |  |  |  |
| Interpret pictograms |  |  |  |
| Interpret line graphs |  |  |  |