Mathematical Vocabulary

Number and Place Value

Fluency – To be mathematically fluent one must have a mix of conceptual understanding, procedural fluency and knowledge of facts to enable you to tackle problems appropriate to your stage of development confidently, accurately and efficiently.

Place Value – The value of a digit that relates to its position or place in a number.

Example: in 1482 the digits represent 1 thousand, 4 hundreds, 8 tens and 2 ones respectively; in 12.34 the digits represent 1 ten, 2 ones, 3 tenths and 4 hundredths respectively.

Representation – The word 'representation' is used in the curriculum to refer to a particular form in which the mathematics is presented, so for example a quadratic function could be expressed algebraically or presented as a graph; a quadratic expression could be shown as two linear factors multiplied together or the multiplication could be expanded out; a probability distribution could be presented in a table or represented as a histogram, and so on. Very often, the use of an alternative representation can shed new light on a problem.

KS1	KS2
Algebra – The part of mathematics that deals with generalised arithmetic. Letters are used to denote variables and unknown numbers and to state general properties. **Approximation –** A number or result that is not exact. In a practical situation an approximation is sufficiently close to the actual number for it to be useful. **Average –** Loosely an ordinary or typical value, however, a more precise mathematical definition is a measure of central tendency which represents and or summarises in some way a set of data. **Cardinal Number –** A cardinal number denotes quantity, as opposed to an ordinal number which denotes position within a series. **Compare –** In mathematics when two entities (objects, shapes, curves, equations etc.) are compared one is looking for points of similarity and points of difference as far as mathematical properties are concerned. **Compensation –** A mental or written calculation strategy where one number is rounded to make the calculation easier. The calculation is then adjusted by an appropriate compensatory addition or subtraction. Examples: • 56 + 38 is treated as 56 + 40 and then 2 is subtracted to compensate. • 27 × 19 is treated as 27 × 20 and then 27 (i.e. 27 × 1) is subtracted to compensate. • 67 − 39 is treated as 67 − 40 and then 1 is added to compensate. **Consecutive –** Following in order. Consecutive numbers are adjacent in a count. Examples: 5, 6, 7 are consecutive numbers. 25, 30, 35 are consecutive multiples of 5 multiples of 5. **Count –** The act of assigning one number name to each of a set of objects (or sounds or movements) in order to determine **Digit –** One of the symbols of a number system most commonly the symbols 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. Examples: the number 29 is a 2-digit number; there are three digits in 2.95. The position or place of a digit in a number conveys its value.	**Cube Number –** A number that can be expressed as the product of three equal integers. Example: 27 = 3 × 3 × 3. Consequently, 27 is a cube number; it . It is the cube of 3 or 3 cubed. This is written compactly as 27 = 3³, using index, or power, notation. **Decimal –** Relating to the base ten. Most commonly used synonymously with decimal fractions where the number of tenths, hundredth, thousandths, etc. are represented as digits following a decimal point. The decimal point is placed at the right of the ones column. Each column after the decimal point is a decimal place. **Decimal Fraction –** Tenths, hundredths, thousandths etc represented by digits following a decimal point. Example 0.125 is equivalent to 1/10 + 2/100 + 5/1000 or 1/8. **Efficient Methods –** A means of calculation (which can be mental or written) that achieves a correct answer with as few steps as possible. In written calculations this often involves setting out calculations in a columnar layout. **Estimate –** To arrive at a rough or approximate answer by calculating with suitable approximations for terms or, in measurement, by using previous experience / a rough or approximate answer. **Expression –** A mathematical form expressed symbolically. **Integer –** any of the positive or negative whole numbers or zero. **Interval –** All possible points in the closed continuous interval between 0 and 1 on the real number line, including the end points zero and 1. **Negative Number –** 1. A number less than zero. Commonly read aloud as 'minus or negative one, minus or negative two' etc. the use of the word 'negative' often used in preference to 'minus' to distinguish the numbers from operations upon them. **Place holder –** In decimal notation, the zero numeral is used as a place holder to denote the absence of a particular power of 10.

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Inequality - When one number, or quantity, is not equal to another. Statements such as: a ≠ b, a<b, a ≤, b, a > b or a≥b are inequalities. The inequality signs in use are: = means 'equal to'; A = B means 'A is equal to B" < means 'less than'; A < B means 'A is less than B' > means 'greater than'; A > B means 'A is greater than B' Mental calculation — referring **Number sentence -** A mathematical sentence involving numbers. Examples: 3 + 6 = 9 and 9 > 3 **Partition -** To separate a set into subsets. To split a number into component parts. Example: the two-digit number 38 can be partitioned into 30 + 8 or 19 + 19. A model of division. Example: 21 ÷ 7 is treated as 'how many sevens in 21?' **Zero —** nought or nothing. Zero is the only number that is neither positive or negative.	**Power of ten -** 100 (i.e. 102 or 10 x 10) is the second power of 10, 1000 (i.e.103 or 10 x 10 x 10) is the third power of 10 etc. Powers of other numbers are defined in the same way. 2. **Prime number -** A whole number greater than 1 that has exactly two factors, itself and 1.

Addition & Subtraction

<table>
<tr><td colspan="2" align="center">Addend + Addend = Sum
Minuend — Subtrahend = Difference</td></tr>
<tr><td align="center">KS1</td><td align="center">KS2</td></tr>
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<td>Addend — a number to be added to another.
Addiiton - The binary operation of addition on the set of all real numbers that adds one number of the set to another in the set to form a third number which is also in the set. The result of the addition is called the sum or total. The operation is denoted by the + sign.
Commutative - When we write 5 + 3 we mean 'add 3 to 5'; we can also read this as '5 plus 3'. The order of addition does not matter: The answer to 5 + 3 is the same as 3 + 5 and in both cases the sum is 8. This holds for all pairs of numbers and therefore the operation of addition is said to be commutative.
Difference - In mathematics, difference means the numerical difference between two numbers or sets of objects and is found by comparing the quantity of one set of objects with another.
Minus — A name for the symbol -, representing the operation of subtraction.
Subtraction — The inverse operation to addition. Finding the difference when comparing magnitude. Take away.</td>
<td>Columnar addition or subtraction - A formal method of setting out an addition or a subtraction in ordered columns with each column representing a decimal place value and ordered from right to left in increasing powers of 10.
With addition, more than two numbers can be added together using column addition, but this extension does not work for subtraction.
Complement - In addition, a number and its complement have a given total. Example: When considering complements in 100, 67 has the complement 33, since 67 + 33 = 100</td>
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This is not an exhaustive list of vocabulary and terms used within Maths lessons at Floreat.

Subtrahend – A number to be subtracted from another. **Sum –** The result of one or more additions.	

Multiplication and Division

Factor x Factor = Product
Multiplicand x Multiplier = Product
Dividend ÷ Divisor = Quotient *(remainder)*

KS1	KS2
Array - An ordered collection of counters, numbers etc. in rows and columns. **Commutative -** Addition and multiplication of real numbers are commutative where a + b = b + a and a × b = b × a for all real numbers a and b. It follows that, for example, 2 + 3 = 3 + 2 and 2 x 3 = 3 x 2. **Dividend -** In division, the number that is divided. E.g. in 15 ÷ 3, 15 is the dividend **Divisor -** The number by which another is divided. Example: In the calculation 30 ÷ 6 = 5, the divisor is 6. In this example, 30 is the dividend and 5 is the quotient. **Multiplicand –** A number to be multiplied by another.	**Common Factor -** A number which is a factor of two or more other numbers, for example 3 is a common factor of the numbers 9 and 30. **Common Multiple –** An integer which is a multiple of a given set of integers, e.g. 24 is a common multiple of 2, 3, 4, 6, 8 and 12. **Divisibility -** The property of being divisible by a given number. Example: A test of divisibility by 9 checks if a number can be divided by 9 with no remainder. **Factor -** When a number, or polynomial in algebra, can be expressed as the product of two numbers or polynomials, these are factors of the first. Examples: 1, 2, 3, 4, 6 and 12 are all factors of 12 because 12 = 1×12=2×6=3×4. **Multiplicative reasoning -** Multiplicative thinking is indicated by a capacity to work flexibly with the concepts, strategies and representations of multiplication (and division) as they occur in a wide range of contexts. **Quotient -** The result of a division. Example: 46 ÷ 3 = 15⅓ and 15⅓ is the quotient of 46 by 3. **Remainder -** In the context of division requiring a whole number answer (quotient), the amount remaining after the operation. Example: 29 divided by 7 = 4 remainder 1.

Fractions

Fraction - The result of dividing one integer by a second integer, which must be non- zero. The dividend is the numerator and the non-zero divisor is the denominator.	
KS1	KS2
Fraction bar – the line that is used to separate the numerator and denominator. **Numerator –** In the notation of common fractions, the number written on the top. In the fraction ⅔, the numerator is 2.	**Improper fraction -** An improper fraction has a numerator that is greater than its denominator. Example: 9/4 is improper and could be expressed as the mixed number 2 ¼.

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Denominator - In the notation of common fractions, the number written on the bottom In the fraction ⅔, the denominator is 3. Simple fraction – a fraction where the numerator and denominator are both integers. Unit fraction – a fraction that has 1 as the numerator and whose denominator is a non-zero integer e.g. 1/4, 1/2 1/3,	Mixed fraction – A whole number and a fractional part expressed as a common fraction. Example: 1⅓ is a mixed fraction. Also known as a mixed number. Mixed number - A whole number and a fractional part expressed as a common fraction. Example: 2 ¼ is a mixed number. Also known as a mixed fraction. Percentage - A fraction expressed as the number of parts per hundred and recorded using the notation %. The whole can be expressed as 100%. Percentage can also be interpreted as the operator 'a number of hundredths of'. Example: 15% of Y means 15/100 × Y Simplify (a fraction) - Reduce a fraction to its simplest form.

Geometry

KS1	KS2
Angle - An angle is a measure of rotation and is often shown as the amount of rotation required to to turn one line segment onto another where the two line segments meet at a point. Composite shape – A shape formed by combining two or more shapes.	Angle at a point - The complete angle all the way around a point is 360°. Angle at a point on a line – The sum of the angles at a point on a line is 180°. Circumference - The distance around a circle (its perimeter). If the radius of a circle is r units, and the diameter d units, then the circumference is 2r, or d units. Coordinate – A coordinate system is a system which uses one or more numbers, or coordinates, to uniquely determine the position of a point in space

Measure

KS1	KS2
Capacity – the volume of a material (typically liquid or air) held in a vessel or container. Centi – Prefix meaning one-hundredth (of). Milli – Prefix meaning one-thousandth (of).	Convert - Changing from one quantity or measurement to another. E.g. from litres to gallons or from centimetres to millimitres etc. Cubic Centimetre - Symbol: cm3. A unit of volume. The three-dimensional space equivalent to a cube with edge length 1cm. Perimeter – The length of the boundary of a closed figure.