MATHS – GLOSSARY OF TERMS

These symbols are referred to as the **'greater than' (>) and 'less than' (<) symbols**. Children learn that they are used to show whether a number is bigger or smaller than another number (for example, 56 > 34 or 34 < 56).

The **12-hour clock** runs from 1am to 12 noon and then from 1pm to 12 midnight. The **24-hour clock** uses the numbers 00:00 to 23:59 (midnight is 00:00).

2D shapes are two-dimensional, or 'flat'. Examples of 2D shapes are squares, triangles, circles and rectangles.

3D shapes are three-dimensional, and have a volume. Examples of 3D shapes are cubes, cuboids, spheres, cylinders and prisms.

An **acute angle** is one that measures less than 90˚.

An **analogue clock** is a circular-faced clock with the numbers one to twelve around the outside and two hands, a shorter one to measure hours and a longer one to measure minutes. A **digital clock** is a clock which simply shows numbers to denote the time.

Area is the term used to define the amount of space taken up by a 2D shape or surface. We measure area in square units : cm^2 or m^2.

An **array** is a pictorial representation, a picture of rows of dots, to help children understand multiplication and times tables.

Arrow cards are a maths aid used to help children partition numbers (divide them unto units, tens, hundreds, etc) and understand place value.

When a group of numbers are given in **ascending order**, this means they are given in order from smallest to largest (ascending means 'going up'). The opposite is descending order.

In maths, the **average** value in a set of numbers is the middle value, calculated by dividing the total of all the values by the number of values.

Axes are the horizontal and vertical lines used to frame a graph or chart.

A **bar chart** is a chart that displays information (data) by using rectangular bars of different heights, arranged on a vertical axis and a horizontal axis.

The **bar model method** is used in Singapore maths to help children visualise maths problems, first by handling actual objects, then by drawing pictures of the objects or cubes / dots representing them and finally by drawing one long bar and labelling it with numbers.

A **block graph** (or block diagram) is a simple chart which shows numbers on the vertical axis and labels on the horizontal axis. Each unit is represented by one block.

BODMAS OR BIDMAS or is an acronym used to help pupils remember the correct order to complete mathematical calculations in: Brackets, Orders (Indices), Division, Multiplication, Addition, Subtraction.

The **"bridging through ten"** method is a mental maths technique used to add numbers when the answer is larger than 10.

The **'bus stop' method** (also known as short-hand division or short division) is a division technique children are taught in primary school. Children are usually taught the bus stop method once they are confident with chunking (another division technique).

Capacity is the total amount of fluid that can be contained in a container. It is the word we use when we are measuring liquids (in litres or millilitres).

A **Carroll diagram** is used to organise data and group it according to whether it fits certain criteria. The information is presented in rows and columns.

Chunking is a method used for dividing large numbers. It involves using rough estimates of how many times a number will go into another number and then adjusting until the right answer is found (repeated subtraction of the divisor and multiples of the divisor – in other words, working out how many groups of a number fit into another number).

A **circle** is a 2D curved shape, every point of which is the same distance from a fixed point in the centre.

The **circumference** is the measurement all the way around the outside edge of a circle.

When something moves in a **clockwise direction**, it is moving in the same direction as the hands on the clock. When something moves in an **anti-clockwise direction**, it is moving in the opposite direction. Children are taught about the language of direction from KS1 onwards.

Coordinates are numbers which determine the position of a point or a shape in a particular space (a map or a graph). Points are marked by how far along they are on the x axis (the horizontal axis) and how far up they are on the y axis (the vertical axis).

The **column method** of addition and subtraction is the method where numbers are 'carried' and 'exchanged'. The numbers to be added and subtracted are set up in columns of ones, tens, hundreds, etc.

'Complementary addition' is a subtraction method that involves putting the smaller number at the start of a number line and then jumping up to the bigger number (it's also known as the 'jump strategy'). This makes the concept of subtraction being about finding the difference between two numbers very clear.

Converting into the same units of measurement means understanding that the same length, capacity or weight can be expressed in different units of measurement. For example, weight can be shown in kilograms (kg) but also grams (g); there are 1000g in 1kg.

A **cube number** is a number that is the product of three numbers which are the same. In other words, if you multiply a number by itself and then by itself again, the result is a cube number. To write the mathematical formula for cube numbers we add a small 3 next to and above the number, for example: 2^3.

A **decimal** is a number expressed in the scale of tens. Commonly speaking we talk about decimals when numbers include a decimal point to represent a whole number plus a fraction of a whole number (tenths, hundredths, etc.).

Degrees are the unit of measurement used to measure angles. A right angle is 90˚, a straight line angle is 180˚ and a full turn is 360˚. We use a protractor (an angle measurer) to measure degrees.

The **denominator** is the bottom number of a fraction. So in the fraction 3/8 the denominator is 8. In the fraction 5/6 the denominator is 6.

When numbers are put in **descending order**, they are ordered from largest to smallest. The opposite is ascending order (from smallest to largest).

A **diagonal** is a straight line joining two non-adjacent vertices of a shape, that is, two corners of a shape that are not next to each other.

The **diameter** is the straight line going through the centre of a circle, connecting two points on the circumference.

Division facts are the division number sentences related to times tables. For example, 30 ÷ 3 = 10, 27 ÷ 3 = 9 and 24 ÷ 3 = 8 are all division facts for the 3x table.

In 3D shapes, the **edges** are the lines where two faces meet.

An **equation** is a number sentence where one side equals the other, for example 4 + 4 = 10 - 2.

An **equilateral triangle** has three equal sides and three equal angles.

When two fractions are **equivalent**, this means they are the same in terms of shape and size, but are expressed using different numbers (for example, 1/3 is equivalent to 2/6 or 3/9). **Simplifying a fraction** means finding an equivalent fraction where the numbers are reduced as much as possible.

An **estimate** is sometimes called a 'clever guess'. Estimating means roughly calculating or judging a number or value.

Expanded notation is writing numbers or number sentences in which the numbers are partitioned (so 67 + 43 could be written as 60 + 7 + 40 + 3).

In 3D shapes, the faces are the flat parts of the shape.

A **factor** is one of two or more numbers that divides a given number without a remainder. In the number sentence 4 x 5 = 20, both 5 and 4 are factors of 20.

Finding the difference between two numbers means subtracting the smaller number from the larger number. This concept is usually taught with complementary addition (subtraction on a number line).

A **formula** is a group of mathematical symbols and numbers that show how to work something out. Formulae children will learn in primary school include the formula for calculating the perimeter and area of 2D shapes and the formula for the volume for 3D shapes.

The **grid method** is a written technique used to teach children multiplication. It involves partitioning numbers into tens and ones before they are multiplied and placing them in a grid. The numbers are then multiplied two by two and the results are added together to give a total answer.

The **highest common factor** of two numbers is the largest whole number which is a factor of both. A factor is one of two or more numbers that divides a given number without a remainder.

A **horizontal** line is a line that runs from right to left, like the horizon.

Imperial units of measurement were used in the UK before the adoption of the metric system.

An **improper fraction** is one that is 'top-heavy' so the numerator is bigger than the denominator, for example 7/3.

An **integer** is a whole number. This can be a negative or positive number; 0 is also an integer.

Inverse operations are opposite operations; one reverses the effect of the other. Subtraction is the inverse of addition and division is the inverse of multiplication.

An **isosceles triangle** has two equal sides and two equal angles.

A **line graph** is used to display information which changes over time. It is plotted on a graph as a series of points joined with straight lines.

Long division is a written method of dividing numbers (usually a three or four-digit number by another large number).

Long multiplication (or column multiplication) is a written method of multiplying numbers (usually a two or three-digit number by another large number).

The **lowest common multiple** of two numbers is the smallest whole number which is a multiple of both. A multiple is a number that can be divided by another number a certain number of times without a remainder.

Mass refers to the weight of an object. It is usually measured in grams and kilograms.

The **mean** is the total of all the values in a set of data, divided by the number of values.

A **mirror line** is the central line which can be drawn on a symmetrical shape to show that both sides of the shape are exactly the same.

A **mixed number** is made up of a whole number and a fraction, for example 9 ¾.

A **negative number** is a number smaller than 0 (for example, -1, -3, -36).

A **net** is what a 3D (three-dimensional) shape would look like if it were opened out flat.

Number bonds are the pairs of numbers that make up a given number (number bonds to 10 are 1 + 9, 2 + 8, 3 + 7, 4 + 6, 5 + 5; number bonds to 20 are 1 + 19, 2 + 18, 3 + 17, 4 + 16, 5 + 15).

Number facts are basic addition, subtraction, multiplication and division calculations that children should learn to recall instantly.

A **number line** is a straight, horizontal line with numbers placed at even increments along the length. It's not a ruler, so the space between each number doesn't matter, but the numbers included on the line determine how it's meant to be used.

A **number sentence** is an arrangement of numbers and symbols, such as the following: 6 + 7 = 13.

A **number square** is a primary-school maths aid, a square filled with numbers (ordered sequentially). Younger children will often use a number square from one to 100.

The **numerator** is the top number of a fraction. So in the fraction 3/8 the numerator is 3. In the fraction 1/9 the numerator is 1.

An **obtuse angle** is greater than 90˚ and less than 180˚.

An **even number** is a number that can be divided into two equal groups. Even numbers always end in 2, 4, 6, 8 and 0. An **odd number** is a number that cannot be divided into two equal groups. Odd numbers end in 1, 3, 5, 7, 9.

The four mathematical **operations** are addition, subtraction, multiplication and division.

Parallel lines are straight lines that always stay the same distance from each other and never meet.

Partitioning means separating numbers into the tens, ones, hundreds, thousands, etc. that make them up (so 2967 is 2000 + 900 + 60 + 7). Partitioning helps children understand place value.

A **percentage** is a number or ratio expressed as a fraction of 100. When we talk about percentages, we imagine that 'a whole' has been divided into 100 equal parts.

The **perimeter** is the distance around the edge of a 2D shape.

When two lines are **perpendicular**, they are at right angles to each other.

A **pictogram** is a chart that uses pictures to represent data. Pictograms are set out in the same way as bar charts, but instead of bars they use columns of pictures to show the numbers involved.

Pie charts are circular charts divided up into sections (or 'slices') to represent values of different sizes.

Place value is the value of each digit in a number. It means understanding that 582 is made up of 500, 80 and 2, rather than 5, 8 and 2.

Polygons are 2D shapes with straight, fully closed sides. Polygons can have any number of sides. Common polygons are triangles, squares, pentagons, hexagons.

A **prime number** is a number greater than 1 that cannot be divided evenly by any number other than itself or 1. For example: 13 is a prime number because you cannot divide it (without a remainder) by any number except 13 or 1.

The **product** of two numbers is the result you get when you multiply them together (for example, 12 is the product of 3 and 4 and 20 is the product of 4 and 5).

Proportion tells us about a portion or part in relation to a whole.

A **pyramid** is 3D shape with a polygon base and flat (triangular) sides that join at a common point.

A **quadrilateral** is a 2D shape with four sides. The following shapes are quadrilaterals: square, rectangle, rhombus, trapezium, parallelogram, kite.

The **radius** is the distance from the centre of a circle to the edge of the circle.

A **ratio** compares values, telling us how much of one thing there is compared to another thing.

Reflecting a shape in a mirror line means drawing a symmetrical copy of the shape, flipped over the line (exactly the same size but facing in the opposite direction).

Reflective symmetry is when a shape or pattern is reflected in a line of symmetry or a mirror line. The reflected shape will be exactly the same as the original, the same distance from the mirror line and the same size.

A **reflex angle** is an angle that measures between 180˚ and 360˚.

Regular shapes have sides that are all equal and interior (inside) angles that are all equal. **Irregular shapes** have sides and angles of any length and size.

A **right angle** is an angle that measures 90˚. It is also known as a 'quarter turn' because it is a quarter of a full turn (which measures 360˚).

A **right-angled triangle** is a 2D shape with three sides and an angle that measures 90º.

Roman numerals are the numbers that were used in ancient Rome, combinations of letters from the Latin alphabet (I, V, X, L, C, D and M).

Rotating shapes means moving them around a fixed point (clockwise or anticlockwise, and by a certain number of degrees). The shape stays the same, but its position in the space will change.

Rotational symmetry is when a shape or pattern can be rotated or turned around a central point and remains the same.

Rounding numbers means adjusting the digits (up or down) to make rough calculations easier. We usually round numbers to the nearest 10, 100 and 1000.

Repeated addition is a method of helping children understand multiplication. Children are asked to work out, for example, what 3 'lots of' 5 are. They will be shown that this can be written as 5 + 5 + 5 (repeated addition number sentence) as well as 3 x 5 (multiplication number sentence).

When we talk about increasing the size of a 2D shape the size by which we make the shape larger is described by its **scale factor**.

A **scalene triangle** is a three-sided 2D shape in which the sides and angles are all unequal.

'Shared between' is a term used in word problems to indicate division. Children learn that by sharing equally into groups they are dividing.

When you multiply a number by itself, the result is a **square number**. To write the mathematical formula for square numbers we add a small 2 next to and above the number, for example: 3^2.

Standard units are the units we usually use to measure the weight, length or capacity of objects (grams and kilograms, centimetres, metres and kilometres, millilitres and litres). **Non-standard units** are used by younger children to introduce them to the concept of measuring (for example: handspans, the length of a pencil).

The **sum** of two numbers is the answer you get when you add them both together (for example, the sum of 5 and 4 is 9).

Something is symmetrical when it is the same on both sides. A shape has **symmetry** if a central dividing line (the mirror line) can be drawn on it, to show that both sides of the shape are exactly the same.

A **tally chart** uses marks representing numbers to collect data quickly and efficiently. One vertical mark is used to represent each unit; when five objects are counted the fifth line is crossed through the first four.

Tessellation is when shapes fit together exactly with no gaps. Common examples of **tessellating shapes** are floor tiles.

In geometry **translation** means moving a shape into a different position, without changing it in any way.

A **triangle** is a polygon with three sides and three angles. It is a 2D shape.

Triangular numbers are a sequence of numbers generated by arranging a pattern of dots into equilateral triangles.

A quarter turn is a 90˚ movement, **clockwise or anti-clockwise**. A half turn is 180˚ and a full turn is 360˚.

A **two-step problem** is a word problem that requires two operations to solve it; a **multi-step problem** requires more than two operations before the solution can be found.

A **Venn diagram** shows the relationship between a group of different things (a set) in a visual way, by sorting data into two or three circles which overlap in the middle. Each circle follows a certain rule, so any numbers or objects placed in the overlapping part (the intersection) follow both rules.

In 3D shapes, the **vertices** are the points where two or more edges meet. The angles of a 2D shape are also sometimes referred to as 'vertices' (singular: vertex).

A **vertical** line runs up and down the page, from top to bottom.

Volume is the amount of 3D space an object occupies or takes up.

A **word problem** (also known as a story problem) is a 'real-life' scenario where a problem needs to be solved by way of a mathematical calculation.