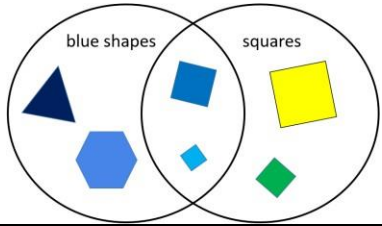


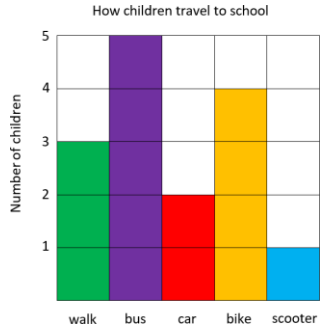




Mathematics Mastery vocabulary list

Reception	Definition	Example
Capacity	The amount of liquid a container can hold.	This cup is full to capacity because it cannot hold any more water.
Curved surface	A non-plane surface of a 3-D shape. Both cones and cylinders have curved surfaces.	The cone has a curved surface.
2-D	Abbreviation for two-dimensional. A figure is two-dimensional if it lies on a plane.	A square is a 2-D shape.
3-D	Abbreviation for three-dimensional. A solid is three-dimensional and occupies space.	A cylinder is a 3-D shape.
Edge	A line segment joining two vertices of a plane figure (2-D shape) and the intersection of two plane faces (in a 3-D shape).	A triangle has three edges and a cube has 12 edges .
Face	One of the plane surfaces of a solid shape.	A cube has six faces .
Mass	A measure relating to the amount of matter within a given object.	The mass of the school bag is greater than the mass of the book.
Measure	To find the size of something in a given unit.	How might we measure how much flour we need to bake a cake?
Number bond	A pair of numbers with a given total.	Five and four make a number bond to nine.
Number line	A linear, continuous representation of number. Each number occupies a point on the line, and there is an equal interval between each number.	This number line starts at zero and ends at ten.
Venn diagram	Two or more circles which represent given sets and intersect according to these.	
Vertex (pl. vertices)	The point at which two or more lines intersect.	This shape has five vertices .
Zero	The number before one. It is neither positive nor negative.	Zero comes before one on the number track.

Year 1	Definition	Example
Analogue clock	A clock with a face and hands.	
Anticlockwise	Movement in the opposite direction to the motion of the hands of a clock.	
Approximate	The number is not exact but it is close.	Our PSHE lesson lasts approximately half an hour.
Array	An arrangement of counters or numbers, in columns and rows, used to represent multiplication and division	This array shows 3×4 , 4×3 , $12 \div 4$ and $12 \div 3$

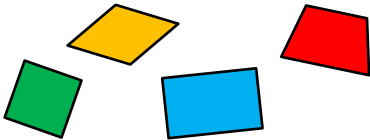
Block graph	The pre-cursor to the bar graph, this representation of data has an x- and y-axis and one block represents one item. Each block is adjoined to the adjacent block.	
Chart	A table or graph.	I will mark one day for the sun on our weather chart .
Chronological	In time order.	I ordered the events in my day chronologically . I woke up, ate my breakfast, went to school then came home.
Clockwise	Movement in the direction of the hands of a clock.	
Continuous surface	An outer boundary of a 3-D object which is uninterrupted by any plane surfaces.	A sphere has a continuous surface .
Data	Quantitative information which has been counted or measured.	This block graph shows us data for the colour of the cars in the car park.
Decreasing	Becoming smaller in value. Used in relation to number sequences.	15, 14, 13, 12. This number pattern is decreasing by one each time.

Digit	One of the ten Arabic numerals 0 to 9, from which we compose numbers.	The number 54 has the digit five in the tens column and the digit four in the ones. The digit five has a value of fifty.
Even number	A number with a 0, 2, 4, 6 or 8 in the ones and therefore exactly divisible by two.	32 is an even number .
Facts	Related to the four operations (+, -, ×, ÷). Pupils should be supported in achieving fluency, i.e. very fast recall, in these facts. These then become known facts .	Number bonds to and within 10 and 20 are facts , e.g. 3 + 7 = 10.
Fraction	<ol style="list-style-type: none"> 1. A part of a whole number, quantity or shape. 2. Expressing a division relationship between two integers in the form $\frac{a}{b}$. 	I have shared my sweets into four equal parts. Everyone will get a fraction of the whole quantity of sweets. One group is a quarter of the whole.
Half turn	A 180 degree rotation, i.e. $\frac{1}{2}$ of a 360 degree or 'full' turn.	
Increasing	Becoming greater in value. Used in relation to number sequences.	2, 4, 6, 8. This number pattern is increasing by two each time.
Known fact	A number fact which has been committed to memory (or very fast recall) and can be applied fluently to various calculation strategies.	When I use the 'Make ten' strategy to add, I use known facts to partition the number I'm adding.
Mental calculation	A calculation performed without using a formal written strategy. Simple jottings may aid a mental calculation.	14 plus 5 is equal to 19. I completed this using a mental calculation and deriving facts because I know that four plus five is equal to nine.
Metre	A standard unit of measure, equal to 100 centimetres.	I estimate that the table is about a metre tall.
Odd number	An integer which is not divisible by two without a remainder.	All numbers which end in 1, 3, 5, 7 and 9 are odd numbers .

Partition	To split a number into two or more parts.	The number 23 can be canonically partitioned (by place value) into 20 and 3, or non-canonically partitioned in many different ways, including 18 and 5, 17 and 6, etc.
Place value	A system for writing numbers, in which the value of a digit is defined by its position within the number.	In the number 452 written in base ten, the digit four has a value of 400, the five has a value of 50 and the two has a value of two.
Property	Any attribute.	A property of a triangle is that it has three straight sides and three vertices, the sum of whose angles is 180 degrees.
Quantity	An amount, in some cases given a numerical value.	A quantity of apples is placed on the left-hand side of the balance. How many kilogram masses will we need to place on the right to balance the apples?
Repeated addition	A structure of multiplication where equal parts are added to make a whole.	I can show 4×5 as repeated addition : $4 + 4 + 4 + 4 + 4$.
Repeated subtraction	A structure of division, where equal parts are subtracted and the number of equal parts summed to calculate a quotient.	I can use repeated subtraction to calculate 20 divided by four: $20 - 4 - 4 - 4 - 4 - 4$.
Represent	To express or show a mathematical concept using words, numerals and symbols, pictures, diagrams, or concrete manipulatives.	I have used three blue cubes to represent the three oranges in the question. I used a part-whole model to represent the addition question.
Rule	A consistent pattern which allows generalisation. Awareness of a rule allows a pupil to continue a sequence or generate a related sequence.	2, 5, 8, 11, 14... The rule is that each number is three greater than the previous number. Therefore, the next number in this sequence will be 17.
Standard unit	A uniform measure, agreed upon as standard.	Standard units of mass include grams and kilograms. Standard units of length include centimetres, metres

		and kilometres. Standard units of volume and capacity include millilitres and litres.
Table	A structure organised into columns and rows, in which data can be recorded.	The information for Thursday is not yet complete on the table because it is only Wednesday.
Volume	A quantity or amount of any substance and the 3-D space it fills.	The bottle contains a volume of one litre but its capacity is two litres. The bottle is half full.

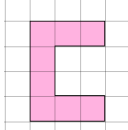
Year 2	Definition	Example
Commutative	A property of addition and multiplication. It does not matter in which order the addends or factors are added or multiplied; the result will be the same.	$4 + 6 = 10$ $6 + 4 = 10$ This demonstrates that addition is commutative . Arrays demonstrate the commutativity of multiplication, i.e. $3 \times 4 = 4 \times 3$
Consecutive	Following in order.	2, 3, 4, 5, 6 are consecutive numbers. 3, 6 and 9 are consecutive multiples of 3.
Denominator	The number written below the vinculum in a fraction. In a measure context, it indicates the number of equal parts into which the whole is divided. In a division context, it is the divisor.	In the fraction one quarter, four is the denominator .
Division	The process of partitioning a whole into equal parts.	12 divided by 3 is equal to 4.
Inverse operations	Opposite operations that 'undo' each other.	Addition and subtraction are inverse operations.
Multiple	The result of multiplying a number by an integer, for example, 12 is a multiple of 3 and 4 because $3 \times 4 = 12$.	36 is a multiple of three because three multiplied by 12 is equal to 36. It is also a multiple of 12 for the same
		reason (and 1, 2, 4, 6, 9, 18 and 36).
Multiplication	One of the four mathematical operations. Multiplication can be understood as repeated addition or scaling (introduced in Year 3).	The multiplication symbol is \times .
Multiply	To increase a quantity by a given scale factor.	I can multiply 3 by 4 which is equal to 12.
Near double	When two numbers involved in an addition are close in value, such as $23 + 22$. The numbers can be treated as exact doubles, followed by compensating.	To calculate $23 + 22$, I can use the near double strategy. I can double 22 and then add one more.
Non-unit fraction	A fraction with a numerator greater than one.	Two thirds is a non-unit fraction .
Numerator	The number written above the vinculum in a fraction. In a measure context, it	In the fraction one quarter, one is the numerator .

	indicates the specified number of parts out of the whole. In a division context, it is the dividend.	
Operation	A mathematical process. The four mathematical operations are addition, subtraction, multiplication and division.	$4 + 2 = 6$. The operation is addition.
Quadrilateral	A 2D shape with four sides and four angles. which add up to 360 degrees.	
Rotation	The act of rotating about an axis/centre.	I will rotate the square 90 degrees clockwise.
Scale	Equally spaced markings on a measuring device which can be read to quantify a measurement.	Using the scale on the ruler, the book measures 15cm.
Symmetry	A shape is symmetrical when it fits exactly onto itself when folded in half.	This triangle has one line of symmetry .
Unit fraction	A fraction with a numerator of one.	One-third is a unit fraction .
Vinculum	A horizontal line that separates the numerator and the denominator in a fraction.	$\frac{1}{4}$ vinculum

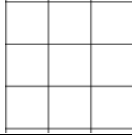
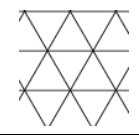
Year 3	Definition	Example
Factor	A number, that when multiplied with one or more other factors, makes a given number.	The number six has four factors : 1, 2, 3 and 6.
Formal written methods	Exemplified in <i>Mathematics Appendix 1 (see above)</i> . As well as including columnar addition and subtraction, these also consist of written algorithms for multiplication and division.	Pupils should only use formal written methods for calculations that cannot be efficiently calculated using mental strategies (with or without jottings).
Horizontal	Horizontal refers to planes and line segments that are parallel to the horizon.	The x-axis on a graph should be horizontal .
Irregular	In geometry, irregular is a term used to describe shapes that are not regular (see below).	The sides and the angles of this pentagon are not all equal so the pentagon is irregular .
Parallel	Line segments that can be described as parallel must be	The opposite sides of a square are parallel .


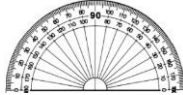
	on the same plane and will never meet, regardless of how far either or both line segments are extended.	
Perimeter	The perimeter of a 2-D shape is the total distance around its exterior.	I know that one side of this square is 2cm so it must have a perimeter of 8cm.
Perpendicular	A pair of line segments (or surfaces) can be described as perpendicular if they intersect at (or form) a right angle.	The adjacent sides of a rectangle are perpendicular .
Place holder	A place holder is a zero used in any place value column (that contains a value of zero) to clarify the relative positions of the digits in other places.	I need to use a place holder in the ones column to make it clear that my number is 320 and not 32.
Prism	A prism is a 3-D solid with two identical, parallel bases and otherwise rectangular faces.	A triangular prism has five faces, consisting of three rectangles and two triangles which are parallel.
Product	The result you get when you multiply two numbers.	24 is the product of 3 and 8.
Regular	Regular 2-D shapes (regular polygons) have angles that	A square is a regular 2-D shape because all four angles
	are all equal and side lengths that are all equal. Regular 3-D shapes (the Platonic Solids) are those that have congruent (exactly the same) faces of a single regular polygon.	are right angles and all four sides are the same length. A cube is a regular 3-D shape with six identical square faces.
Roman numeral	Roman numerals are a system of symbols used to represent numbers that were developed and used by the Romans. They do not use a place value system.	The number twelve on this clock is represented by the Roman numerals XII, which is 10 + 1 + 1.
Round	Approximate a number, normally to the nearest multiple of ten, to make it easier with which to calculate.	I would round the number 17 to 20 because it is three away from 20 but seven away from 10.

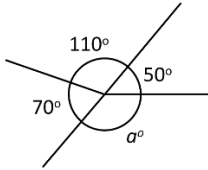
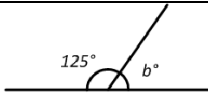

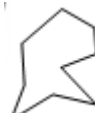
Year 4	Definition	Example
--------	------------	---------


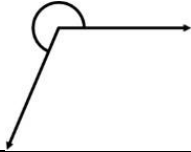
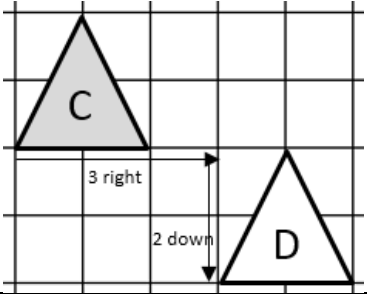
Area	The space a surface takes up inside its perimeter. Area is always measured in square units.	 <p>The area is 8 square units.</p>
Associative law	No matter how the parts in an addition or multiplication equation are grouped, the answer will be the same.	$(6 + 3) + 2 = 11$ $6 + (3 + 2) = 11$ Addition and multiplication are associative . Subtraction and division are not.
Convert	To change from one unit of measurement to another.	2 km can be converted to metres – it is equal to 2000 m.
Coordinate	The position of a point, usually described using pairs of numbers. Sometimes called Cartesian coordinates, after the mathematician Rene Descartes.	The coordinate (3,4) describes a point that is 3 on the x axis and 4 on the y axis.
Decimal fraction	A fraction expressed in its decimal form.	Half written as a decimal fraction is 0.5.
Distributive law	The process whereby adding some numbers and then multiplying the sum gives the same answer as	$3 \times (2 + 4) = (3 \times 2) + (3 \times 4)$ $3 \times 12 = (3 \times 10) + (3 \times 2)$

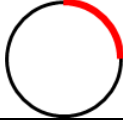
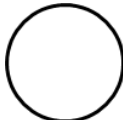
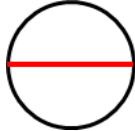
	multiplying the numbers separately and then adding the products.	
Dividend	The amount that you want to divide.	In ' $12 \div 3 = 4$ ', 12 is the dividend .
Divisor	The number you divide by.	In ' $12 \div 3 = 4$ ', 3 is the divisor .
Equilateral	Having all sides the same length.	An equilateral triangle has three equal sides.
Equivalent	Equivalent means having the same value. Equivalent fractions have the same value.	$\frac{2}{4} = \frac{1}{2}$
Expression	One or a group of numbers, symbols or operators. An expression does not use equality or inequality signs. <i>Using an equality or inequality sign will give an equation.</i>	2×3 4^2

Grid	A series of evenly divided and equally spaced shapes, usually squares.			
Improper fraction	A fraction where the numerator is bigger than the denominator. These fractions are therefore greater than one whole.	$\frac{12}{11}$		
Integer	A whole number that can be positive or negative.	6 is an integer, 0.6 is not.		
Interval	An interval on a graph's axis lies between two values.	If one point on an axis is 50 and the next 60, the interval is 10.		
Mixed numbers	Numbers consisting of an integer and fractional part.	$1\frac{1}{2}; 3\frac{3}{4}$		
Negative number	A number that is less than zero. (It is helpful to refer to these numbers as	-1, -24, -0.5 etc.		

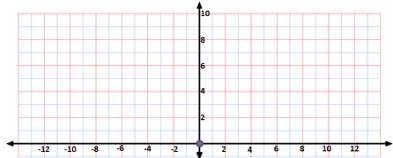

	'negative numbers' rather than 'minus' to avoid confusion with the operation 'minus'.)	
Parallelogram	A 2-D shape that has two pairs of parallel sides and equal opposite angles.	
Positive number	A number that is greater than zero. Zero is neither positive or negative.	3, 32, 0.5
Proper fraction	A fraction with a value less than one.	$\frac{1}{2}$, $\frac{3}{4}$, $\frac{5}{8}$
Protractor	A measuring device for measuring the size of an angle. Angles are measured in degrees (°).	
Quotient	The result when the dividend is divided by the divisor.	$15 \div 3 = 5$ 5 is the quotient .
Rectilinear	A rectilinear shape has straight line edges which are perpendicular (all meet at right angles).	A rectangle. A straight-sided shape that can be divided up into other rectangles.
Short division	A formal written layout where the quotient is calculated showing only one written step.	$\begin{array}{r} 77 \\ 5 \overline{) 385} \end{array}$
Short multiplication	A formal written layout where the multiplier is usually 9 or less.	$\begin{array}{r} 782 \\ \times 9 \\ \hline 7038 \end{array}$
Simplify	To write a number or equation in its simplest form.	I can simplify $\frac{8}{10}$ to $\frac{4}{5}$.

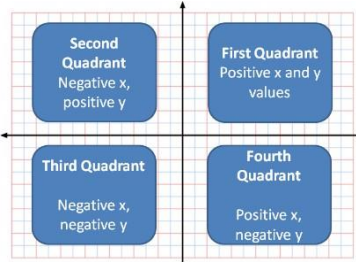
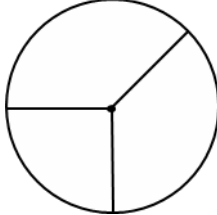
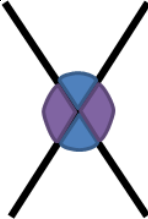
Year 5	Definition	Example
Angle at a point	Angles that meet at a point that sum to 360° .	
Angle on a line	Angles formed on a straight line that sum to 180° .	
Average (mean)	A measure of central tendency. The mean average of a set of data is the sum of the quantities divided by the number of quantities.	The mean average of the set 4, 5, 5, 6 is 5 because $(4 + 5 + 5 + 6) \div 4 = 5$.
Common factor	A factor of two (or more) given numbers.	A common factor of 12 and 9 is 3 because $3 \times 4 = 12$ and $3 \times 3 = 12$.
Common multiple	A multiple of two (or more) given numbers.	A common multiple of 3 and 6 is 12 because $3 \times 4 = 12$ and $6 \times 2 = 12$.
Congruent	Used to describe two shapes or figures which are exactly the same size.	The two triangles are congruent . If I place one on top of the other, there is no overlap. 
Cube number	The product of three equal factors.	Eight is a cube number because $8 = 2 \times 2 \times 2 = 2^3$.
Degree	The unit of measure for angles.	A right angle is 90 degrees .
Negative integer	A whole number with a value less than zero. Zero is neither positive nor negative.	When the temperature falls below 0° a negative integer is used to record it.
Nonagon	A polygon with nine sides and nine angles.	
Percentage	The number of parts per hundred which is written using the % symbol.	30% means for every 100 there are 30.
Polygon	A 2-D shape with three or more straight sides.	Triangles and rectangles are examples of polygons .
Polyhedron (pl. polyhedra)	A 3-D shape with flat surfaces that are polygons.	A cuboid is a polyhedron . A cylinder is not a polyhedron because it has a curved surface.
Prime factor	A factor that is a prime number.	3 and 2 are prime factors of 6.

Prime number	A whole number with only two factors, one and the number itself.	2, 3, 5, 7, 11, 13, 17 and 19 are the prime numbers less than 20.
Remainder	The amount remaining after division when a whole number answer is needed.	21 divided by four is equal to five with a remainder of 1.
Reflection	A mirror image that is equidistant from a mirror line.	The shape has been reflected in the dotted mirror line. 
Reflex angle	An angle that is greater than 180°.	
Scale (not to scale)	The ratio of lengths, in a drawing, are in proportion to the measurements of the real object. The lengths are not in proportion when not to scale.	The diagram was not drawn to scale . That means I can't use a ruler to measure the sides, because they are not in proportion to the real object.
Square number	The product of two equal factors.	9 is a square number because $9 = 3 \times 3 = 3^2$.
Transformation	A collective term for the ways that shapes can be changed, resulting in congruent or similar shapes, i.e. translation, reflection, rotation or enlargement.	Translations and reflections are types of transformations .
Translation	When a shape moves so that it is in a different position but retains the same size, area, angles and side length and so is congruent.	Triangle C has been translated three right and two down resulting in triangle D. 

Year 6	Definition	Example
Arc	A portion of the circumference of a circle	
Brackets	The symbols () used to separate parts of a multi-step calculation.	$(10 - 2) \times 3 = 21$
Centre	In a circle, the centre refers to one point that is equidistant to all points around the circumference of the circle.	To draw a circle, I place the point of my pair of compasses at the centre .
Circumference	The perimeter/boundary of a circle.	
Compasses	A tool for creating curved lines, arcs and circles.	I can use a pair of compasses to draw a circle with a radius of 4 cm.
Common fraction	A fraction written with a numerator and denominator separated by a vinculum.	One quarter can be written as a common fraction, $\frac{1}{4}$
Degree of accuracy	A description of how accurately a value is communicated.	The degree of accuracy needed for the answer is one decimal place.
Diameter	A line from one point of the circumference of a circle to another on the opposite side, which must pass through the centre of the circle.	The circumference of a circle is the diameter multiplied by pi. 
Equivalent expression	An expression, which can be algebraic, which is equal in value to another expression.	Find an equivalent expression to $17 + 10$. $18 + 9$ is an equivalent expression to $17 + 10$.
Factorise	To identify factors of a given number. To express a number as factors.	I can factorise 12 by looking at its factor pairs. $1 \times 12 = 12$, $2 \times 6 = 12$, $3 \times 4 = 12$. So the factors of 12 are 1, 2, 3, 4, 6 and 12.
Formula	An algebraic expression of a rule.	The area of a rectangle can be found by multiplying the width and height. $a = w \times h$

Imperial unit	A unit of measure once officially used in the UK but is now used less often, except in the context of length. Includes miles, pounds and pints.	Miles are an imperial unit to measure length.

Intersect	The point at which two (or more) lines meet is where they intersect.	The x and y axes intersect at (0,0)
Metric unit	A standard unit of measure used in the UK and Europe. Includes centimetres, litres and kilograms.	Litres are a metric unit used to measure volume.
Order of operations	The internationally agreed order to complete operations in a multi-step equation with multiple operations.	$(3 + 4) \times 2 = \square$ The order of operations dictates that the operation within the brackets is completed first.
Origin	The point at which axes in a coordinates grid cross; the point (0,0).	 <p>The origin is indicated by the blue dot.</p>
Pie chart	A representation of a set of data where each segment represents one group in proportion to the whole.	<p style="text-align: center;">Nationality of Astronauts on Board ISS January 2017</p>  <p style="text-align: center;">Russia USA France</p>
Proportion	A comparison between two or more parts of a whole or group. Proportion expresses a part-whole relationship. This may be represented as a fraction, a percentage or a decimal.	Two thirds of a class were boys. The proportion of the class that is girls is one third.

<p>Quadrant</p>	<p>One of four regions into which a coordinates grid is divided.</p>	
<p>Radius</p>	<p>A line from one point of the circumference of a circle to the centre of the circle.</p>	
<p>Ratio</p>	<p>A comparison between two or more parts of a whole or group. Ratio expresses a part-part relationship. This is usually represented in the form a:b.</p>	<p>For every 4 tulips there are 7 daffodils. The ratio of tulips to daffodils is 4:7.</p>
<p>Similar</p>	<p>Similar shapes are those which have the same internal angles and where the side lengths are in the same ratio or proportion. Enlarging a shape by a scale factor (for example by doubling all side lengths) creates a similar shape.</p>	<p>All squares are similar to one another.</p>
<p>Vertically opposite angles</p>	<p>Angles which are positioned opposite to one another when two lines intersect.</p>	 <p>The purple angles indicated are vertically opposite angles.</p>

