Marazion School Skills Matrix

Mathematics skills should be taught when linked to projects where possible to ensure real world application.

Key Skills

To be able to solve problems using a range of strategies.
To reason mathematically, following a line of enquiry.
Mathematical language and targets

Mathematics

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number (Number and Place value)	count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s given a number, identify 1 more and 1 less. Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least Read and write numbers from 1 to 20 in numerals and words	Count in steps of 2, 3 and 5 from zero and in tens from any number. Recognise the place value of any 2 digit number. Identify numbers and answers on a number line. Compare and order numbers from 0 up to 100 and use <> and = signs Read numbers to at least 100 in numerals and words.	Count in multiples of 4, 8, 50 and find 100 more of less than a given number. Recognise the value of each digit in 3 digit numbers. Compare and order numbers to 1000. Read and write numbers up to 1000 in numbers and words. Solve a range of practical number problems.	Count in multiples of 6,7.9 and 1000. Find 1000 more or less that a given number. Recognise the place value of 4 digit numbers. Order and compare numbers beyond 1000. Round numbers to the nearest 10, 100 or 1000. Read roman numerals to numerals to 100. Know how to solve problems using basic number concepts.	Read, write an order numbers to 1, 000,000 and know the value of each digit. Count forwards and backward sin steps of 10 up to 1,000,000. Interpret negative numbers, counting forwards and backwards in steps of 10. Round up to the nearest number including some decimals. Read roman numerals to 1000 (M) and recognise years written in roman numerals	Read, write and order numbers to 10, 000,000 and know the value of each digit. Round any whole number accurately and to whole decimal places. Identify prime numbers and know how to calculate them. Use negative numbers in context, and calculate across zero. Solve number and practical problems confidently.	Understand place value for decimals, measures and integers of any size. Order positive and negative integers, decimals and fractions Know prime numbers, square numbers, factors, multiples and prime factorisation. Understand how to round numbers by estimating and then checking answers. (round to decimal places, or a percentage)
Number (Addition and subtraction)	Read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs.	Use objects to solve problems with addition and subtraction.	Add and subtract numbers mentally, including: a three digit number and ones e.g. 349+6+ and three digit	Add and subtract up to 4 digit numbers.	Add and subtract whole numbers with more than 4 digits sing column addition and subtraction.	Solve problems involving addition and subtraction. Perform mental calculations quickly.	Use addition and subtraction confidently (decimals, fractions, integers, positive and negative numbers)

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	Represent and use number bonds and related subtraction facts within 20 add and subtract one-digit and two-digit numbers to 20, including 0 solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? – 9	Solve simple addition and subtraction questions mentally. Recall and use addition facts to 20 **fluently.** Add and subtract two digit numbers and ones, tens and then units. Recognise that adding is the inverse of subtraction.	numbers and tens and hundreds. Confidently use column addition to add and subtract. Estimate the answers to calculations. Know that adding is the inverse of subtraction.	Use a range of methods to calculate including column addition. Estimate answers and use inverse operations confidently. Solve a range of calculations, choosing the correct operation.	Add and subtract large increasingly large numbers mentally. Add and subtract when solving multi-step problems and explain methods.	Know how to solve multi step problems in a range of contexts. Use estimation to check the answers to calculations.	Use a range of strategies confidently and independently. Add and subtract using missing numbers or parts of calculations.
Number (Multiplication and division)	Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	Recall multiplication facts for the 2,5 and 10 times tables including odd and even numbers. Calculate simple multiplication and division using x / and =. Show division by using arrays, repeated addition, mental methods and problem solving.	Recall multiplication and division facts for the 3, 4 and 8 times tables. Write and calculate mental calculations using multiplication and division. Solve simple missing number problems.	Recall multiplication facts to 12x12. Use place value to multiply and divide mentally. Recognise and use factor pairs. Multiply and divide 2 and 3 digit numbers using written methods. Solve word problems involving multiplying and dividing.	Identify multiples and common factors of numbers. Know the vocabulary of prime numbers and composite numbers (non-prime) Calculate prime numbers up to 100 and recall prime numbers to 19. Recognise square and cube numbers and know how to calculate them.	Multiply up to 4 digit number using a range of methods including long multiplication. Divide up to 4 digit numbers and interpret as whole numbers. Divide up to 4 digit numbers by using short and long division. Perform mental calculations quickly. Identify common multiples and factors.	Use multiplication and division confidently (decimals, fractions, integers, positive and negative numbers) Know relationships between numbers including the inverse. Understand how to calculate the square roots of numbers. Use mathematical knowledge to explain and reason effectively.
Number (Fractions and decimals)	recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity	Find small fractions and name them easily. Represent key fractions of a length, shape, set of objects or quantity. Write simple fractions and find values e.g. 1/6 of 6 = 3 Begin to recognise some equivalent fractions.	Count up and down in tenths and know that a whole is made of ten equal parts. Recognise simple fractions and know their value. Show, using diagrams, equivalent fractions. Recognise fractions as numbers e.g ½ is 50. Add and subtract fractions with the same denominator. E.g. ¼ + ¼ =	Recognise and show equivalent fractions. Count up and down in hundredths and tenths. Add and subtract fractions with the same denominator. Recognise and write decimal equivalents to fractions. E.g. ½ is 0.5 Round decimals to the nearest decimal place or whole number.	Compare and order fractions confidently. Identify and find equivalent fractions and represent these visually. Add and subtract fractions (that are multiples of the same number) Multiply proper fractions by whole numbers. Read and write decimal numbers as fractions.	Use common factors to simplify fractions and express fractions. Compare and order fractions using <> Add and subtract fractions with similar and mixed denominators. Multiply proper fractions by whole numbers. Divide proper fractions by whole numbers.	To order decimals and fractions using symbols <> Know how to calculate fractions of amounts easily and convert these to decimals and percentages. Interpret fractions as percentages of operators. Convert fractions to decimals and know corresponding fractions and decimals.

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			Compare and order key fractions with the same denominators. Solve problems involving all of the above.	Compare and order decimals with up to two decimal places. Solve simple measures i.e. money problems involving up to two decimal places.	Round decimals to the nearest whole number. Read, write and order numbers with up to three decimal places. Write percentages as decimals and fractions. Solve problems by converting fractions to decimals.	Calculate fractions, decimals and percentages and know equivalences. Round all of the above to the nearest whole number or decimal place.	
Measurement/ Geometry	recognise and name common 2-D and 3-D shapes, including: 2-D shapes [for example, rectangles (including squares), circles and triangles] 3-D shapes [for example, cuboids (including cubes), pyramids and spheres] describe position, direction and movement, including whole, half, quarter and three-quarter turns	Choose and use appropriate unites to measure and estimate length/ height (m/cm) Compare and order lengths, mass and volume/capacity. Recognise and use £ and p signs and make a value. Find different combinations of coins that equal the same amounts of money. Solve simple problems including adding and subtracting money. Compare and sequence times (12 and 24 hour) Tell and write time accurately to five minutes. Know the number of hours in a day and minutes in an hour. Identify the properties of 2D (sides, lines of symmetry) and 3D shapes (edges, vertices and faces)	Measure, compare, add and subtract lengths (m/cm/mm), mass (kg/g) and volume/capacity (l/ml) Measure the perimeter of simple 2D shapes. Add simple amounts of money to give change. Using both £ and p. Tell and write the time in an analogue clock including telling the time using roman numerals, and 12 and 24 hour clocks. Estimate time with accuracy to the nearest minute, hour, am, pm. Understand midnight and midday. Know the number of seconds in a minute and minutes in an hour. Know the number of days in each month and year and leap year. Draw 2D and some 3D shapes.	Convert between different units of measure (e.g. Kilometre to metre, hour to minute) Measure and calculate the area of squares and rectangles Know how to represent area by using cm2. Find the area of shapes by counting squares. Estimate, compare and calculate different measures including pounds and pence. Compare and classify geometric shapes including; quadrilaterals and triangles, based on proportions and sizes. Know about simple lines of symmetry and create own shapes to show this. Describe positions on a grid in the first quadrant.	To convert between different units of measure eg kilometer and metre. Understand and know conversions between metric and imperial measurements. Measure and calculate the perimeter of simple shapes in centimetres and metres. Calculate and compare the area of rectangles. Estimate volume and capacity (e.g by using 1cm2 blocks to estimate) Solve problems involing converting units of time. Solve a range of problems involving measure including mass, length volume and money. Identify 3D shapes including cubes and cuboids from 2D representations. Know a range of angles and compare angle sizes.	Solve problems involving the converting measurements. Convert between standard units and metric including; length mass, volume and time. Convert between miles and kilometers. Recognise that shapes have the same area but different perimeters. Begin to calculate the volume of simple shapes and calculate compare and estimate the volume of cubes and cuboids. Calculate the area of parallelograms and triangles. Draw 2D shapes using simple angles. Build simple 3D shapes including nets. Find missing angles in a range of shapes.	Calculate problems involving perimeter and area (simple and more complex shapes including circles and some volume) To interpret line scale drawings. Use a ruler and compass constructions to construct shapes. Draw points, lines, parallel and perpendicular lines, angles from a given point. Draw translations, rotations and reflections of shapes confidently. Calculate angles, missing angles and know the degrees of a shape. Solve problems involving the properties of shapes.

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		Compare and sort 2D and 3D shapes. Identify 2D shapes on the surface of 3D shapes.	Identify right angles and know they are 90 degrees. Identify horizontal and vertical lines.	Describe movements between positions and translations. Plot points to draw given shapes including polygons.	Draw given angle accurately Know angle son a point, whole turn and right angles.	Illustrate and name parts of circles including radius, diameter and circumference. Calculate the averages of charts, including mean, median and mode.	
Probability, ratio and proportion	N/A	N/A	N/A	N/A	N/A	Solve problems with proportion which include missing numbers. Solve problems which include the calculation of percentages. Solve problems using unequal amounts using knowledge of fractions and percentages.	Record frequency of outcomes and derive simple probability. Understand that probabilities of all possible outcomes sum to 1. Organise data using diagrams, tables and grids.
Statistics	N/A	Interpret and construct simple pictograms, block diagrams and tally charts. Answer simple questions by counting the number of objects in each quantity. Ask and answer questions about totaling data.	Interpret bar charts, pictograms and tables. Solve one and two step problems posing questions such as how many more? Have a simple understanding of scales in charts.	Present data in a clear and concise way. Know how to construct bar charts and time graphs. Solve problems by taking information from bar charts, pictograms, tables and other graphs.	Complete read and interpret information in a range of tables, including timetables. Show comparisons, sum and difference problems using information presented in a line.	N/A	Represent statistics using graphs, grouped data and measures such as mean median and mode. Construct and interpret; pie charts, diagrams, frequency tables and bar charts. Know the relationships between the variables when interpreting data.
Algebra	N/A	N/A	N/A	N/A	N/A	To use simple formulae in algebra To generate and describe linear number sequences. To express missing number problems. Find pairs of numbers that satisfy an equation. Find possibilities of two calculations.	Understand how to interpret simple algebraic notation. (See curriculum for more detail) Substitute numerical value and calculate simple formulas. Work with co-ordinates in all four quadrants. Understand simple calculations and find numerical values.