**Mathematics Objectives – Progression - Skills and Depth MTP**

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|  | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Autumn Term  **FS depth thread**  They solve problems, including doubling, halving and sharing.  Children show good control and co-ordination in small movements. (writing numbers) | * 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 twos, fives and tens * read and write numbers from 1 to 20 in numerals and words * add and subtract one-digit and two-digit numbers to 20, including zero * represent and use number bonds and related subtraction facts within 20 * 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. * recognise, find and name a half as one of two equal parts of an object, shape or quantity. * recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. | * count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward. * read and write numbers to at least 100 in numerals and in words * recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. * recall and use multiplication and division facts for the 2,3, 5 and 10 multiplication tables, including recognising odd and even numbers * show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot * solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. * recognise, find, name and write fractions a third, a quarter , 2 quarters and 3 quarters of a length, shape, set of objects or quantity * write simple fractions for example, half of 6 = 3 and recognise the equivalence of 2 quarters and a half * recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 | * count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number; solve number/practical problems. * compare and order numbers up to 1000; solve number/practical problems * read and write numbers up to 1000 in numerals and in words; solve number/practical problems * add and subtract numbers mentally, including: a three-digit number and ones; a three-digit number and tens; a three-digit number and hundreds * add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction * solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. * 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, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. * recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. | * . count in multiples of 6, 7, 9, 25 and 1000. * recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones); order and compare numbers beyond 1000; solve number/practical problems. * find 1000 more or less than a given number: round any number to the nearest 10, 100 or 1000; identify, represent and estimate numbers using different representations; solve number/practical problems. * add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate. * solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. * recall multiplication and division facts for multiplication tables up to 12 × 12. * multiply two-digit and three-digit numbers by a one-digit number using formal written layout. * recognise and show, using diagrams, families of common equivalent fractions; add and subtract fractions with the same denominator. * count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. * solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number. * find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths | * read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit; solve number/practical problems. * round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000; solve number/practical problems * add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction); solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. * multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers. * identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers; solve problems involving multiplication and division including using their knowledge of factors and multiples * solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign; solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. * multiply and divide numbers mentally drawing upon known facts; multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 * identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths; compare and order fractions whose denominators are all multiples of the same number. * recognise mixed numbers and improper fractions and convert from one form to the other and * add and subtract fractions with the same denominator and denominators that are multiples of the same number. * recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents; read, write, order and compare numbers with up to three decimal places; solve problems involving number up to three decimal places | * read, write, order and compare numbers up to 10 000 000 and determine the value of each digit; solve number and practical problems * round any whole number to a required degree of accuracy; solve number and practical problems * solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. * multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication * divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context * divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context. * use common factors to simplify fractions; use common multiples to express fractions in the same denomination * add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions * multiply simple pairs of proper fractions, writing the answer in its simplest form. * multiply one-digit numbers with up to two decimal places by whole numbers. * divide proper fractions by whole numbers. * identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places * compare and order fractions, including fractions > 1 |
| Spring Term | * given a number, identify one more and one less * solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 =   – 9. * read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs * calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs. * 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 [cuboids, cubes, pyramids and spheres]. * describe position, direction and movement, including whole, half, quarter and three-quarter turns. | * compare and order numbers from 0 up to 100; use <, > and = signs * add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit numbers, adding three one-digit numbers. * show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. * identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. * identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces. * identify 2-D shapes on the surface of 3-D shapes [for example, a circle on a cylinder and a triangle on a pyramid] * compare and sort common 2-D and 3-D shapes and everyday objects. * order and arrange combinations of mathematical objects in patterns and sequences. * use mathematical vocabulary to describe position, direction and movement (movement in a straight line, rotation as a turn and in terms of right angles for ¼ , ½ and ¾ turns (clockwise and anti-clockwise). | * recognise the place value of each digit in a three-digit number (hundreds, tens, ones); solve number/practical problems * estimate the answer to a calculation and use the inverse operation to check answers. * recall and use multiplication and division facts for the 3, 4 and 8 times tables. * write and calculate mathematical statements for multiplication and division including two-digit by one-digit numbers using mental methods and progressing to formal written methods. * Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them. * Identify horizontal, vertical and parallel lines. * Identify right angles, recognise that two right angles make a half-turn, three make three-quarters of a turn and four a complete turn. * Identify whether angles are greater or less than a right angle. * Add and subtract fractions with the same denominator within one whole. * Compare and order unit fractions and fractions with the same denominators. | * count backwards through zero to include negative numbers; solve practical number problems. * Estimate and use inverse operations to check answers to a calculation. * Multiply three numbers together (eg 4 x 6 x 7) * Solve problems involving all four operations. * Round decimal with one decimal place to the nearest whole number; compare numbers of up to two decimal places; solve simple money problems. * Compare and classify geometric shapes including quadrilaterals and triangles based on their properties and size. * Identify acute and obtuse angles and compare and order angles up to two right angles by size. * Identify lines of symmetry in 2-D shapes presented in different orientations; complete a simple symmetrical figure. * Describe positions on a 2-D grid as co-ordinates in the first quadrant and draw sides to complete a given polygon. * Describe movements between positions as translations of a given unit to the left/right, up and down. | * interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero; solve number/practical problems * convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) solve problems involving converting between units of time use all four operations to solve problems involving measure using decimal notation, including scaling. * measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres; * calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes * understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints * solve comparison, sum and difference problems using information presented in a line graph * complete, read and interpret information in tables, including timetables. | Y6 TO UNDERTAKE A REVISION PROGRAM OF ALL TOPICS IN MATHS – SATS BATTLE PLAN TO BE DRAWN UP |
| Summer Term | * 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. * tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. * compare, describe and solve practical problems for: lengths and heights, mass/weight, capacity and volume, time. * measure and begin to record the following: lengths and heights, mass/weight, capacity and volume, time. * recognise and know the value of different denominations of coins and notes. * sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] * recognise and use language relating to dates, including days of the week, weeks, months and years | * identify, represent and estimate numbers using different representations, including the number line. * interpret and construct simple pictograms, tally charts, block diagrams and simple tables. * compare and sequence intervals of time; know the number of minutes in an hour and the number of hours in a day * tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times. * choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels * compare and order lengths, mass, volume/capacity and record the results using >, < and = * recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. * find different combinations of coins that equal the same amounts of money. * solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change. | * Identify, represent and estimate numbers using different representations; solve number problems. * Interpret and present data using bar charts, pictograms and tables. * Solve one-step and two step questions using information presented in bar charts, pictograms and tables. * Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours. * Know the number of seconds in a minute and the number of days in each month, year and leap year. * Tell and write the time from an analogue clock including using Roman Numerals from I to XII and 12 and 24 hour clocks. * Measure, compare, add and subtract lengths (mm/cm/m), mass (g/kg), capacity (ml/l) * Measure the perimeter of simple 2-D shapes. * Add and subtract amounts of money to give change, using both £ and p. | * Read Roman Numerals to 100. * Use place value to multiply and divide by 0 and 1. * Interpret and present discrete and continuous data using appropriate graphical methods including bar charts and time graphs. * Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and graphs. * Read, write and convert time between analogue and digital 12 and 24 hour clocks. * Convert between different units of measurement; solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days. * Measure and calculate the perimeter of a rectilinear figure in centimetres and metres. * Find the area of rectilinear shapes by counting squares. * Estimate, compare and calculate different measures including money in pounds and pence. | * count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000; solve number/practical problems. * know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers; establish whether a number up to 100 is prime and recall prime numbers up to 19 * identify 3-D shapes, including cubes and other cuboids, from 2-D representations ; distinguish between regular and irregular polygons based on reasoning about equal sides and angles * know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles; draw given angles, and measure them in degrees * identify: angles at a point and one whole turn (total 360o); angles at a point on a straight line and ½ a turn (total 180o); other multiples of 90o. * use the properties of rectangles to deduce related facts and find missing lengths and angles * identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed. * read Roman numerals to 1000 (M) and recognise years written in Roman numerals; solve number/practical problems | Y6 TO UNDERTAKE A REVISION PROGRAM OF ALL TOPICS IN MATHS – SATS BATTLE PLAN TO BE DRAWN UP. |
| Skills | * count in multiples of twos, fives and tens. * Add and subtract one and two digit numbers to 20 using the appropriate method. * Recognise find and name half as one part of two. | * mental strategies for addition and subtraction to know number bonds to 20. * add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit numbers, adding three one-digit numbers * recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers | * Vertical addition and subtraction methods (up to 3 digit numbers) * Grid method (TU x U) * Times tables knowledge of 2,3,4,5,8 and 10 times tables. * Appropriate division method progressing onto short method (TU ÷ U without remainders.) * X and ÷ of whole numbers by 10 and 100. | * Vertical addition and subtraction methods (up to 4 digits) * Grid method (TU x U and HTU x U) Ladder method may be used for more able pupils. * Times tables knowledge to 12 x 12 * Appropriate division method but progressing onto using the short method (HTU ÷ U with and without remainders.) * X and ÷ whole and decimal numbers by 10, 100 and 1000 | * Vertical Addition and Subtraction Method (up to 5 digit numbers) * Ladder Method or short method for multiplication (up to TU x TU) * Short Division method (up to ThHTU ÷ U) * Knowledge and application of multiplication tables including square and cube numbers. * X and ÷ whole and decimal numbers by 10, 100 and 1000 | * Vertical Addition and Subtraction Method (up to 6 digit numbers) * Ladder Method or short method for multiplication (up to 4 digit x 2 digit numbers and including decimals) * Short Division method and Chunking method ThHTU ÷ TU) * Knowledge and application of multiplication tables. Multiplication of decimals * X and ÷ whole and decimal numbers by 10, 100 and 1000 |
| Depth  Teach – Practice - Repeat | * count in multiples of twos, fives and tens * read and write numbers from 1 to 20 in numerals and words * add and subtract one-digit and two-digit numbers to 20, including zero * represent and use number bonds and related subtraction facts within 20 | * read and write numbers to at least 100 in numerals and in words * recall and use multiplication and division facts for the 2, 3, 5 and 10 multiplication tables, including recognising odd and even numbers. * add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit numbers, adding three one-digit numbers. * solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. | * Recognize the place value of each digit in a three digit number. * Add and subtract numbers with up to three digits using formal written methods of columnar addition and subtraction. * Recall and use facts from the 3,4 and 8x tables. * Write and calculate mathematical statements for multiplication and division including for two-digit and three-digit by one digit numbers. | * recall multiplication and division facts for multiplication tables up to 12 × 12. * add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate. * multiply two-digit and three-digit numbers by a one-digit number using formal written layout. * Solve problems using all four operations. | * add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction); solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. * multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers * divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context; solve number/practical problems * multiply and divide numbers mentally drawing upon known facts; multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 | * add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction); solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. * multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers * divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context; solve number/practical problems   multiply and divide numbers mentally drawing upon known facts; multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 |
| **SMSC DEVELOPMENT**  **Spiritual Development**  Making connections between pupils’ numeracy skills and real life; for example, pie charts could compare how a child in Africa spends her day with how children in the UK spend their time. Considering pattern, order, symmetry and scale both human made and in the natural world.  **Moral Development**  Pupils are provided with opportunities to use their mathematical skills in real-life situations, applying and exploring the skills required in solving various problems.  **Social Development**  Sharing resources within the classroom, the negotiating of responses and group problem solving  **Cultural Development**  Looking at mathematical symbols and phrases still used today which came from the Ancient Greeks, Egyptians and other civilisations.  Pupils look at shape patterns around the world in particular tessellations and symmetry of famous buildings. | | | | | | |