## Southwick School Mathematics Curriculum

## Calculation Policy

## Addition and subtraction

- Use and respond to mathematical vocabulary in rhymes and games.
- Recognise differences in quantity when comparing sets of objects, using mathematical vocabulary (more, less, most, least, add, take away, altogether, how many?, how much? bigger, biggest, smaller, smallest, before, after etc.)
- Finds one more or one less from a group of up to five objects. (using 'real' objects, Numicon, number lines and tracks, rhymes songs and games).
- Relate addition to combining two groups.
- Relate subtraction to taking away.
- In practical activities and discussion, begin to use the vocabulary involved in adding and subtracting. (more, less, add, take away, altogether, how many?, how much?, bigger, biggest, smaller, smallest, before, after?)
- Finds one more or one less than a number from 1 to 10 (using 'real' objects, Numicon, number lines and tracks, rhymes songs and games).
- Use developing mathematical ideas and methods to solve practical problems. (e.g. through games, role play and puzzles)
- Uses a range of strategies for addition and subtraction, including some mental recall of number bonds.

Y1 • Use Numicon (and other apparatus) to add and subtract.

- Put the larger number in your head and count up (add) or back (take away).
- Use a number line to calculate addition and subtraction (take away or finding the difference).
- Read and write number sentences and 'make' using Numicon. (and other apparatus)
- Use and understand calculation vocabulary :
equal to, equals (=), greater, greatest, larger, largest, fewer, fewest, halfway, how many more to make ...?, how many more is ... than, how much less is ...?, what is the difference between ...? estimate, subtract, double, sum, total, plus (+), minus (-),
- Use Numicon (and other apparatus) to add and subtract 10 and multiples of 10 and record as number sentences.
- Progress from 'numbered' number line to 'graded' number line to 'blank' number line.
- Use the number line to calculate addition and subtraction (take away or finding the difference) for $T U+U, T U-U, T U+T, T U-T$ and beyond, starting with the units.
- Record as number sentences (vertical).
- Use and understand calculation vocabulary : equal to, equals (=), greater, greatest, larger, largest, fewer, fewest, halfway, how many more to make ...?, how many more is ... than, how much less is ...?, what is the difference between ...? estimate, subtract, double, sum, total, plus (+), minus (-),
Y3/4 - Use the blank number line to calculate addition and subtraction (take away or finding the difference) for TU and extending to HTU.
- Record as number sentences (vertical), including decimal calculations for money or measurement.
- Estimate, then use formal written method to calculate and record.

Y5/6 - Use the blank number line to calculate addition and subtraction when appropriate e.g. finding the difference between 1997 and 3004.

- Estimate, then use formal written method (or chosen reliable strategy) to record.


## Calculation Policy

## Multiplication \& division

- Use and respond to mathematical vocabulary in rhymes and games. (e.g. counting, grouping and sharing)
- Use developing mathematical ideas and methods to solve practical problems. (e.g. through games, role play, puzzles, getting into groups, sharing)

Y1 • Explore multiplication and division as repeated adding or subtracting on a number line

- Introduce multiplication and division as grouping using Numicon (and other apparatus), using related vocabulary e.g. 2 lots of 3, 2 groups of 3, 2 sets of 3, 2 threes (not 2 times 3 at this stage)
- Begin to record as number sentences e.g. 2 lots of $32 \times 3=6$
- Explore multiplication and division as repeated adding or subtracting on a number line
- Explore multiplication and division as grouping using Numicon (and other apparatus), using related vocabulary e.g. 2 lots of 3, 2 groups of 3, 2 sets of 3, 2 threes
- Record as number sentences and relate to inverse e.g. $3 \times 4=12,12 \div 4=3$
- Explore the concept of division as sharing and explore practically, using vocabulary (shared equally, divided equally into, divided equally between)
- Explore division as groups and groups of e.g. 12 children into 4 groups, how many in each group? 12 children into groups of 4 , how many groups?
- Introduce concept of $3 \times 4$ as 3 times 4 (e.g. $3+3+3+3$ ) and that this is equal to $3 \times 4(4+4+4)$ - multiplication can be done in any order
- Begin to record $x$ and $\div$ number families. e.g. $3 \times 4=12,4 \times 3=12,12 \div 3=4,12 \div 4=3$

Y3/4 - Introduce remainders and relate to problem solving e.g. how many egg boxes are needed for 13 eggs?

- Introduce the 'grid method' for multiplication (always estimate first)
- Introduce formal written 'bus shelter' method for division (always estimate first)
- Introduce 'formal written method' for multiplication (always estimate first)
- Extend grid method for 'long' multiplication (always estimate first)
- Introduce 'formal written method' for 'long' multiplication (always estimate first)
- Introduce 'chunking method' for 'long' division
- Use calculators for complex calculations

|  | understanding of number \& place value | numbers \& counting | fractions | + and -calculation | $x$ and $\div$ calculation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Y1 | I know all the Numicon shapes up to 10 . I can estimate a set of up to 10 objects. | I can read and write numbers up to 10. I can count on to 20. |  | I can add or take away 1 from any number up to 10. |  |
|  | I can say which number is bigger up to 10, using Numicon. (and other apparatus) I can estimate a set of up to 20 objects. | I can read and write numbers up to 20 in numerals and words. <br> I can count on to 30 . I can count back from 10 to 0 . | I can recognise, find and name half of a shape, object or quantity as 2 equal parts. | I know by heart + and - facts up to 5 . I can read and write number sentences. e.g. $5+4=9,6-4=2$ <br> I can add and take away using counters. I can add 3 one digit numbers. | I know all doubles up to double 5 (and related halves). |
|  | I can make '-teen' and '-ty' numbers using Numicon. (and other apparatus) I can estimate a set of up to 50 objects. <br> I recognise odd and even numbers. | I can read and write numbers up to 50 progressing to 100 . I can count on to 100, forwards and backwards, from any given number I can count on in 2 s to 20,5 's and 10 s to 100 . <br> I can use numbers for ordering, $1^{\text {st }}, 2^{\text {nd }}$ etc. Given a number, identify 1 more and 1 less | I can recognise, find and name quarter of a shape as 4 equal parts. | I know by heart all pairs of numbers that make 10. <br> I can put the large number in my head and count on to add or back to subtract. <br> I know that I put the large number first for subtraction but addition can be in any order. <br> Represent and use number bonds and related subtraction facts within 20. <br> Add and subtract one-digit and two-digit numbers to 20, including zero <br> Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $\square$ | I know all doubles up to double 10 (and related halves). <br> Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representation and arrays with the support of the teacher. |
|  | I can make any number to 100 using Numicon. (and other apparatus) | I can read and write numbers to at least 100. I can count back from 20 to 0 . I can count on in 5s to 50. | I can shade half or quarter of a shape. | I know by heart + and - facts up to 10 . I understand subtraction as 'taking away' or 'finding the difference' | I know my 10 x table. I know double 25 and 50. |
|  | I can order two digit numbers and use < > = signs. | I can read and write numbers up to 500. <br> I can count back from any two digit number. | I recognise, name and write $1 / 4,1 / 2$, $1 / 3,2 / 3$, and $3 / 4$ of a whole. | I know by heart pairs of numbers that make 20. I can add any two single digit numbers quickly. <br> I can add or take away 10 from a given number to 100. | I know my 2 and 10 x tables. I can double multiples of 10 . |
|  | I can say what each digit represents in a two digit number. <br> I can round two digit numbers to the nearest 10 . | I can read and write numbers up to 1000. <br> I can count back in 2 s from 20, 5 s from 50 or 10 s from 100. I can count in steps of 3 . | I can shade three quarters of a shape. <br> I can read and understand: $1 / 2,1 / 4$ , 3/4. | I know by heart all multiples of 10 that make 100 e.g. $60+40$. <br> I can use the number line to calculate addition and subtraction (take away or finding the difference) for $\mathrm{TU}+\mathrm{U}$, $T U-U, T U+T, T U-T$ and beyond, starting with the units. I know that addition and subtraction are the opposite of each other and can be used to check my answers. | I know my 2, 5 and $10 \times$ table and all facts to $5 \times 5$. I know that I put the large number first for division but multiplication can be in any order. <br> I know that multiplication and division are the opposite of each other and can be used to check my answers. |


| Y1 | shape | space | measure | time | handing data | using and applying |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | I can use everyday language to describe properties \& positions of 2-D and 3-D shapes. <br> Recognise and name common 2D and 3D shapes. | I can turn half, quarter and three quarters and describe these positions. I can do a simple jigsaw puzzle. | I can measure, compare and solve practical problems and order objects using direct comparison (length/height, volume/capacity, weight/mass, time). <br> Begin to record the above. <br> Recognise and know the value of different denominations of coins and notes <br> Sequence events in chronological order using language (eg next, before and after, morning , afternoon, yesterday, tomorrow) | I can read analogue and digital clocks on the hour and half past and say the time as ... o'clock. Draw the hands on a clock face to show these times. <br> I can say the days of the week. <br> Recognise and use language relating to weeks, months and years. | Through cross-curricular links, children should: <br> - sort and classify objects <br> - represent their work <br> - demonstrate the criterion they have used | Throughout the week, children should: <br> - use mathematics as an integral part of classroom activities <br> - represent their work with objects or pictures <br> - discuss their work <br> - draw simple conclusions from their work <br> - recognise and use a simple pattern or relationship |
|  | I can use mathematical names for common 3-D and 2-D shapes. I can describe their properties, including numbers of sides, right angles and corners for 2-D and number of faces, edges and vertices for 3-D. | I recognise right angles in turns and understand angle as a measurement of turn. <br> I can describe the position of objects. | I can use a ruler accurately. I can use and read weighing scales accurately. I can also use non- standard units of measure. I can compare and order measurements. | I can read clocks (analogue \& digital) on the hour/half hour progressing to the nearest 5 minutes. <br> I can say the months in the year. <br> I can choose coins to make a given value. I can start to add and takeaway money. | Through cross-curricular links, children should: <br> - sort objects and classify them using more than one criterion <br> - understand vocabulary relating to handling data <br> - collect and sort data to test a simple hypothesis <br> - record results in simple lists, tables, pictograms and block graphs <br> - communicate their findings, using the simple lists, tables, pictograms and block graphs they have recorded | Throughout the week, children should: <br> - select the mathematics they use in some classroom activities <br> - discuss their work using mathematical language <br> - predict what comes next in a simple number, shape or spatial pattern or sequence and give reasons for their opinions <br> - explain why an answer is correct |


| Y2 | understanding of number \& place value | numbers \& counting | fractions | + and -calculation | $x$ and $\div$ calculation |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | I can make any number to 100 using different representations | I can count in steps of 2 from 0 . <br> I can read and write numbers to at least 100. <br> I can count back from 20 to | I can shade half or quarter of a shape. | I know by heart + and - facts up to 10. I understand subtraction as 'taking away' or 'finding the difference' I know that + can be done in any order but - cannot. | I know my $10 \times$ table. I know double 25 and 50. |
|  | I can order two digit numbers and use < > = signs. | I can read and write numbers up to 500. I can count back from any two digit number. | I recognise, name and write $1 / 4,1 / 2(2 / 4), 1 / 3$, $2 / 3$, and $3 / 4$ of a whole. | I know by heart pairs of numbers that make 20. <br> I know related number facts up to 100 . I can add any two single digit numbers quickly. <br> I can add or take away 10 from a given | I know my 2 and $10 \times$ tables. <br> I can double multiples of 10. |
|  | I can say what each digit represents in a two digit number. <br> I can round two digit numbers to the nearest 10. | I can read and write numbers up to 1000. I can count back in 2 s from 20,5 from 50 or 10 s from 100. <br> I can count in steps of 3. I can count on or back in 10's from any number up to 100. (from yr3) | I can shade three quarters of a shape. I can read and understand: $1 / 2,1 / 4,3 / 4$. | I know by heart all multiples of 10 that make 100 e.g. 60+40. <br> I can use the number line to calculate addition and subtraction (take away or finding the difference) for $\mathrm{TU}+\mathrm{U}, \mathrm{TU}-$ $\mathrm{U}, \mathrm{TU}+\mathrm{T}, \mathrm{TU}-\mathrm{T}$ and beyond, starting with the units. $T U+T U, T U-T U$ $I$ can add 3 one digit numbers. I know that addition and subtraction are the opposite of each other and can be | I know my 2, 5 and $10 \times$ table and all facts to $5 \times 5$. (pine) I know that I put the large number first for division but multiplication can be in any order. <br> I know that multiplication and division are the opposite of each other and can be used to check my answers. |
|  | I can say what each digit represents in a three digit number. I can round 2 and 3 digit numbers to the nearest 10 or 100. <br> I can order three digit numbers. <br> I can say what each digit represents in a four digit number. <br> I can round 2 digit numbers to make approximations before adding \& subtracting. | I can read and write numbers up to 10,000 in numerals and words. I can count on or back in 10 s from any number up to 100. I can read and write numbers up to 100,000 . I can count on or back in 10 s and 100's from any number up to 1000 . <br> I can count in halves and 0.5 s . | I can find the fraction of a shaded shape. I can name unit fractions up to $1 / 12$. I can compare unit fractions and fractions with the same denominator. I can work out $1 / 2,1 / 4,1 / 3$, $1 / 5,1 / 6$ of 2 digit numbers e.g. $1 / 4$ of $12=3$. <br> I can match equivalent fractions using diagrams. | I can add or subtract multiples of 10 from any two digit number. <br> I can add or subtract from any two digit number mentally or with a blank number line. <br> I know my + and - number families facts. e.g. $6+2=8,2+6=8,8-2=6,8-6=2$ I can estimate and calculate accurately when adding and subtracting 3 digit numbers. | I know my 2, 3, 4, 5 and $10 x$ table and related division facts. I know all my x table and related division facts up to $10 \times 10$ (oak) I know my $x$ and $\div$ number families. $\begin{aligned} & \text { e.g. } 3 \times 4=12,4 \times 3=12,12 \div 3 \\ & =4,12 \div 4=3 \end{aligned}$ <br> I can multiply TU X U. |


| Y2 | shape | space | measure | time | handing data | using and applying |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | I can use mathematical names for common 3-D and 2-D shapes. <br> I can describe their properties, including numbers of sides, right angles and corners for 2-D and number of faces, edges and vertices for 3-D. I can recognise symmetry in a vertical line. <br> I can identify 2 D shapes on the surface of 3D shapes eg a circle on a cylinder. | I can order and arrange combinations of mathematical objects in patterns. I recognise right angles in turns and understand angle as a measurement of turn. <br> I can describe the position of objects. <br> I can describe a turn (rotation) as a quarter (right angle), half and three quarter. | I can use a ruler. I can use and read weighing scales accurately. I can use a thermometer accurately. I can use a measuring jug accurately. I can also use non-standard units of measure. I can compare and order measurements I can recognize and use $£$ and $p$ symbols. I can solve problems involving money. | I can read clocks (analogue \& digital) on the hour/half hour progressing to the nearest 5 minutes. (I can say the months in the year. - This is in yr 1) <br> ( Moved to measure - I can choose coins to make a given value. I can start to add and takeaway money.) | Through cross-curricular links, children should: <br> - sort objects and classify them using more than one criterion <br> - understand vocabulary relating to handling data <br> - collect and sort data to test a simple hypothesis <br> - record results in simple lists, tables, tally charts, pictograms and block graphs <br> - communicate their findings, using the simple lists, tables, pictograms and block graphs they have recorded | Throughout the week, children should: <br> - select the mathematics they use in some classroom activities <br> - discuss their work using mathematical language <br> - predict what comes next in a simple number, shape or spatial pattern or sequence and give reasons for their opinions <br> - explain why an answer is correct |
|  | I can make 2D and 3D shapes. I can classify 3-D shapes (by faces, vertices, edges, curved faces, face shapes) <br> I can classify 2-D shapes (regular/irregular, reflective symmetry, polygons, opposite, adjacent, right angles) I recognise nets of familiar 3-D shapes, e.g. cube, cuboid, triangular prism, square-based pyramid. | I recognise right angles in shapes. I can describe position and movement. I know that 2 right angles make a half turn and four a complete turn. | I can read scales with increments of $2,5,10$ or 100 . 1 can use tape measures, measuring cylinders and trundle wheels accurately. I know that $100 \mathrm{~cm}=1 \mathrm{~m}$, $1000 \mathrm{~g}=1 \mathrm{~kg}$, $1000 \mathrm{ml}=$ 1litre | I can read clocks (analogue \& digital) on 5 minute intervals progressing to the nearest minute. I know all my time facts. | Through cross-curricular links, children should: <br> - gather information <br> - construct bar charts and pictograms, where the symbol represents a group of units <br> - use Venn and Carroll diagrams to record their sorting and classifying of information <br> - extract and interpret information presented in simple tables, lists, bar charts and pictograms | Throughout the week, children should: <br> - select the mathematics they use in a wider range of classroom activities <br> - try different approaches and find ways of overcoming difficulties that arise when they are <br> - solving problems <br> - begin to organise their work and check results <br> - use and interpret mathematical symbols and diagrams <br> - understand a general statement by finding particular examples that match it <br> - review their work and reasoning |


| Y3 | understanding of number \& place value | numbers, counting \& algebra | fractions, decimals \& percentages | + and - calculation | $x$ and $\div$ calculation |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | I can say what each digit represents in a three digit number. I can round 2 and 3 digit numbers to the nearest 10 or 100. <br> I can order three digit numbers. <br> I can say what each digit represents in a four digit number. <br> I can round 2 digit numbers to make approximations before adding \& subtracting. <br> Know and use multiples of 50 and 100. | I can read and write numbers up to 10,000 in numerals and words. <br> I can count on or back in 10 s from any number up to 100 . I can read and write numbers up to 100,000 . <br> I can count on or back in 10 s and 100's from any number up to 1000. <br> I can count in halves and 0.5 s. | I can find the fraction of a shaded shape. <br> I can name unit fractions up to $1 / 12$. <br> I can compare unit fractions and fractions with the same denominator. I can work out $1 / 2,1 / 4,1 / 3,1 / 5,1 / 6$ of 2 digit numbers e.g. $1 / 4$ of $12=3$. I can match equivalent fractions using diagrams. | I can add or subtract multiples of 10 from any two digit number. <br> I can add or subtract from any two digit number mentally or with a blank number line. <br> I know my + and - number families facts. e.g. $6+2=8$, $2+6=8,8-2=6,8-6=2$ I can estimate and calculate accurately when adding and subtracting 3 digit numbers. Estimate answers and use inverse operation to check answers <br> For mental calculations with two digit numbers the answer could exceed 100 | I know my 2, 3, 4, 5 and $10 x$ table and related division facts. <br> I know all my x table and related division facts up to $10 \times 10$ <br> I know my x and $\div$ number families. $\begin{aligned} & \text { e.g. } 3 \times 4=12,4 \times 3=12,12 \\ & \div 3=4,12 \div 4=3 \end{aligned}$ <br> I can multiply TU X U. <br> To use short method for division |
|  | I can compare and order numbers up to 10,000 and numbers with up to 2 decimal places. I can say what each digit represents in a seven digit number. <br> I can round 3 digit numbers to make approximations before adding \& subtracting. | I can read and write numbers up to $1,000,000$. <br> I can count on or back in 100s from any number up to 10,000. <br> I can count in multiples of 2,3 , $4,5,6,7,8,9,10,25,50,100$ and 1000 from any given number. <br> I can count in quarters and decimal equivalent. <br> I can read and write negative numbers and count forwards and backwards past zero. | I can add and subtract fractions with the same denominator. I can find equivalent fractions including those that equal 1. e.g. $3 / 4=6 / 8$ <br> I recognise pairs of fractions that add up to 1. I can reduce fractions to their simplest form. I know decimal equivalents for $1 / 4,1 / 2,3 / 4$ and any tenths and hundredths. | I can add or subtract from any two digit number mentally. <br> I can estimate and calculate accurately when adding and subtracting 4 digit numbers (including decimals). I can use a blank number line to calculate addition and subtraction (take away or finding the difference) for TU and extending to HTU. | I know all my x table and related division facts up to $12 \times 12$ <br> I can double any two digit number. <br> I can multiply and divide 2 and 3 digit numbers by 1 digit. <br> I can factor pairs up to 144. |


| Y3 | shape | space | measure | time | handing data | using and applying |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | I can make 2D and 3D shapes. I can classify 3 - D shapes (by faces, vertices, edges, curved faces, face shapes) <br> I can classify 2-D shapes (regular/irregular, reflective symmetry, polygons, opposite, adjacent, right angles accurate use of language including lengths of lines and acute and obtuse for angles greater or lesser than a right angle) I recognise nets of familiar 3D shapes, e.g. cube, cuboid, triangular prism, square-based pyramid. Identify horizontal , vertical, perpendicular and parallel lines. | I recognise right angles in shapes. <br> I can describe position and movement. I know that 2 right angles make a half turn and four a complete turn. <br> Identify horizontal and vertical lines and pairs of perpendicular and parallel lines | I can read scales with increments of 2,5,10 or 100. <br> I can use tape measures, measuring cylinders and trundle wheels accurately. I know that $100 \mathrm{~cm}=$ $1 \mathrm{~m}, 1000 \mathrm{~g}=1 \mathrm{~kg}$, $1000 \mathrm{ml}=1$ litre They record $£$ and $p$ separately | I can read clocks (analogue \& digital) on 5 minute intervals progressing to the nearest minute. I know all my time facts. | Through crosscurricular links, children should: <br> - gather information <br> - construct bar charts and pictograms, where the symbol represents a group of units <br> - use Venn and Carroll diagrams to record their sorting <br> - and classifying of information <br> - extract and interpret information presented in simple tables, lists, bar charts and pictograms | Throughout the week, children should: <br> - select the mathematics they use in a wider range of classroom activities <br> - try different approaches and find ways of overcoming difficulties that arise when they are <br> - solving problems <br> - begin to organise their work and check results <br> - use and interpret mathematical symbols and diagrams <br> - understand a general statement by finding particular examples that match it <br> - review their work and reasoning |
|  | I can use a compass to draw circles and arcs with a given radius. | I can say if an angle is bigger or smaller than a right angle. <br> I know if lines are horizontal, vertical, perpendicular, parallel or curved. I know what acute and obtuse angles are. I can plot points in the first quadrant to make shapes. | I can add and subtract measurements. I can find the area of shapes drawn on squared paper. I can find the perimeters of simple shapes on squared paper. I can add and subtract amounts of money to find the change. | I can convert time between the 12 hour and 24 hour clock. I can work out the difference between two times. |  |  |


| understanding of number \& place value | numbers, counting \& algebra | fractions, decimals \& percentages | + and - calculation | $x$ and $\div$ calculation |
| :---: | :---: | :---: | :---: | :---: |
| I can compare and order numbers up to 10,000 and numbers with up to 2 decimal places. <br> I can say what each digit represents in a seven digit number. <br> I can round numbers to the nearest 10,100 or 1000 . and make approximations before adding \& subtracting. <br> I can read Roman numerals up to C and notice why we now have a zero and place value | I can read and write numbers up to 1,000,000. <br> I can count on or back in 100s from any number up to 10,000. <br> I can count in multiples of 2,3 , $4,5,6,7,8,9,10,25,50,100$ and 1000 from any given number. <br> I can count in quarters and decimal equivalent. <br> I can read and write negative numbers and count forwards and backwards past zero. <br> I can multiply or divide a 2 digit number by 10 or 100. | I can add and subtract fractions with the same denominator. I can find equivalent fractions including those that equal 1. e.g. $3 / 4=6 / 8$ <br> I recognise pairs of fractions that add up to 1. <br> I can reduce fractions to their simplest form. I know decimal equivalents for $1 / 4,1 / 2,3 / 4$ and any tenths and hundredths. <br> I can use fractions to divide quantities and calculate quantities. <br> I can round decimals with 1 decimal place to the nearest whole number and compare numbers with up to 2 decimal places | I can add or subtract from any two digit number mentally. <br> I can estimate and calculate accurately when adding and subtracting 4 digit numbers (including decimals). I can use a blank number line to calculate addition and subtraction (take away or finding the difference) for TU and extending to HTU. I can use inverse operations to check my results. <br> I can solve two step problems in context. | I know all my x table and related division facts up to $12 \times 12$ <br> I can double any two digit number. <br> I can multiply and divide 2 and 3 digit numbers by 1 digit using formal written methods. I can factor pairs up to 144. I can multiply 3 numbers together and know what happens when I multiply or divide by 1 or 0 I can solve problems using scaling and n objects linked to m objects. |
| I can read and write numbers up to 1 million. I can $x$ and $\div$ by 10 or 100 and explain what happens. <br> I can round decimals to the nearest whole number and use to make approximations. | I can count forwards and backwards in steps of 100, 1000 and 10,000 from any given number to 1000,000. I can explain what multiples are. <br> I can explain what factors are. | I can say the fraction and percentage equivalent to $0.5,0.25,0.75,0.1,0.33$, 0.66 . <br> I can work out fractions of whole numbers <br> e.g. $3 / 8$ <br> of 16 | I can add or subtract from any three digit number mentally. <br> I can add and subtract whole numbers with up to 5 digits using formal methods. | I have a reliable strategy for $x$ or $\div$ a four digit number by a one digit number. |



| understanding of number \& place value | numbers, counting \& algebra | fractions, decimals \& percentages | + and - calculation | $x$ and $\div$ calculation |
| :---: | :---: | :---: | :---: | :---: |
| I can read and write numbers up to 1 million. <br> I can read Roman numeral to 1000 (M) and recognize years written in Roman numerals I can $x$ and $\div$ by 10 or 100 and explain what happens. I can round decimals to the nearest whole number and use to make approximations. <br> I can round any whole number up to 1 million to the nearest 10 , 100, 1000, 10 000, 100000 | I can count forwards and backwards in steps of 100, 1000 and 10,000 from any given number to 1000,000. <br> I can explain what multiples are. I can explain what factors are. <br> I can identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. | I can say the fraction and percentage equivalent to 0.5 , $0.25,0.75,0.1,0.33,0.66$. I can work out fractions of whole numbers e.g. $3 / 8$ of 16 I can compare and order fractions whose denominators are all multiples of the same number I can recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements $>1$ as a mixed num. | I can add or subtract from any three digit number mentally. <br> I can add and subtract whole numbers with up to 5 digits using formal methods. (more than 4 digits) <br> I can use rounding to check answers to calculations and determine levels of accuracy <br> I can solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. | I have a reliable strategy for x or $\div \mathrm{a}$ four digit number by a one digit number. <br> I can solve problems involving multiplication and division where larger numbers are used by decomposing them into their factors I can know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers <br> I can establish whether a number up to 100 is prime and recall prime numbers up to 19 |
| I can $x$ and $\div$ by 10 or 100 , including decimal numbers, and explain what happens. <br> I can say what each digit represents in numbers with up to 3 decimal places. | I can explain what prime numbers are. <br> I can explain what square numbers are and find the square root of a number. <br> I can continue number sequences involving negative numbers, decimals, and fractions. | I can identify, write and say the fraction and percentage equivalent to any number up to 2 decimal places between 0 and 1 . I can add and subtract fractions with the same denominator. | I have a reliable strategy for adding and subtracting any set of numbers with up to 3 decimal places. <br> I can use a blank number line to calculate addition and subtraction when appropriate <br> e.g. finding the difference between 1997 and 3004 . | I have a reliable strategy for multiplying up to 4 digits by a two digit number. I can multiply and divide numbers mentally drawing upon known facts I can recognise and use square numbers and cube numbers |
| I can order any set of numbers up to 1,000,000, including decimals with up to 3 decimal places and fractions. | I can apply my understanding of 'number families' to solve simple algebraic problems, including calculator use. <br> I know all my tests for divisibility. | I can work out $20 \%, 30 \%$... <br> $90 \%, 25 \%, 75 \%, 33 \%, 66 \%$ of any whole number. <br> I can multiply proper fractions and mixed numbers by whole numbers | I can estimate the answer to any problem and use this as a check for my solution. <br> I can add and subtract negative numbers. | I have a reliable strategy for dividing up to 4 digits by a two digit number. <br> I can estimate the answer to any problem and use this as a check for my solution. |
| I can read and write numbers up to 1 million. <br> I can read Roman numeral to $1000(\mathrm{M})$ and recognize years written in Roman numerals I can x and $\div$ by 10 or 100 and explain what happens. I can round decimals to the nearest whole number and use to make approximations. <br> I can round any whole number up to 1 million to the nearest 10 , $100,1000,10000,100000$ | I can count forwards and backwards in steps of 100 , 1000 and 10,000 from any given number to 1000,000 . <br> I can explain what multiples are. <br> I can explain what factors are. <br> I can identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. | I can say the fraction and percentage equivalent to 0.5 , $0.25,0.75,0.1,0.33,0.66$. <br> I can work out fractions of whole numbers e.g. $3 / 8$ of 16 I can compare and order fractions whose denominators are all multiples of the same number I can recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number | I can add or subtract from any three digit number mentally. <br> I can add and subtract whole numbers with up to 5 digits using formal methods. (more than 4 digits) <br> I can use rounding to check answers to calculations and determine levels of accuracy <br> I can solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. | I have a reliable strategy for x or $\div \mathrm{a}$ four digit number by a one digit number. <br> I can solve problems involving multiplication and division where larger numbers are used by decomposing them into their factors I can know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers I can establish whether a number up to 100 is prime and recall prime numbers up to 19 |


| Y5 | shape | space | measure | time | handing data | using and applying |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | I can further classify 3-D shapes (e.g. definitions of prisms, pyramids) I can further classify 2-D shapes (e.g. parallel, perpendicular, types of triangle) <br> I can make 3-D models by linking given faces or edges and draw common 2-D shapes in different orientations on grids reflect simple shapes in a mirror line, translate shapes horizontally or vertically and begin to rotate a simple shape or object about its centre or a vertex. <br> I can compare different triangles and know their properties. | I can identify acute, obtuse and reflex angles, estimate angles and recall key angles $\left(45^{0}, 90^{0}\right.$, $\begin{aligned} & 180^{0}, 270^{0}, \\ & 360^{\prime} \text { ) } \end{aligned}$ <br> I can use a protractor (angle measurer) and draw given angles, and measure them in degrees Use the properties of rectangles to deduce related facts and find missing lengths and angles Distinguish between regular and irregular polygons based on <br> Reasoning about equal sides and angls | I can read a range of measuring instruments. <br> I can convert units of measure e.g. cm into m. <br> I can measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres I can estimate volume and capacity and use volume in practical contexts. | I can read <br> clocks <br>  <br> digital) and <br> work out how <br> much time until <br> the next hour. <br> I understand <br> 24 clocks. <br> I can solve <br> problems involving <br> converting <br> between units of <br> time | Through cross-curricular links, children should: <br> - collect and record discrete data <br> - group data, where appropriate, in equal class intervals <br> - continue to use Venn and Carroll diagrams to record their sorting and classifying of information <br> - construct and interpret frequency diagrams and simple line graphs <br> - understand and use the mode and range to describe sets of data <br> - in probability, select methods based on equally likely outcomes and experimental evidence, as appropriate | Throughout the week, children should: <br> - develop own strategies for solving problems <br> - use their own strategies within mathematics and in applying mathematics to practical contexts <br> - begin to organise their work and check results <br> - present information and results in a clear and organised way <br> - search for a solution by trying out ideas of their own <br> - solve problems which require knowing percentage and decimal equivalents <br> - Use all four operations to solve problems involving measure (e.g. |
|  | I can use a wider range of properties of 2-D and 3-D shapes, including those of specific quadrilaterals (trapezium, parallelogram, rhombus, kite, and identify all the symmetries of 2-D shapes (reflective, rotational, translational) <br> I can name the parts of a circle - radius, circumference and diameter. | I know and use the angle sum of a triangle and angles at a point and on a straight line. I can find missing angles. <br> I can measure and draw angles to the nearest degree, when constructing models and drawing or using shapes. I can reason about position and movement and transform shapes. | I can read and interpret scales on a range of measuring instruments, explaining what each labelled division represents. I can find perimeters and areas of compound shapes. I can use a formula to find the volume of cubes and cuboids. | I can read and interpret timetables. e.g. train timetables I can solve time-related problems. | Through cross-curricular links, children should: <br> - ask questions, plan how to answer them and collect the data required <br> - understand and use the probability scale from 0 to 1 <br> - understand and use the mean of discrete data and compare two simple distributions, using the range and one of mode, median or mean <br> - understand that different outcomes may result from repeating an experiment <br> - interpret graphs and diagrams, including pie charts, and draw conclusions <br> - create and interpret line graphs where the intermediate values have meaning | Throughout the week, children should: <br> - identify and obtain necessary information to carry through a task and solve mathematical problems <br> - check results, considering whether these are reasonable <br> - solve word problems and investigations from a range of contexts <br> - show understanding of situations by describing them mathematically using symbols, words and diagrams <br> - draw simple conclusions of their own and give an explanation of their reasoning |


| understanding of number \& place value | numbers, counting \& algebra | fractions, decimals \& percentages | + and - calculation | $x$ and $\div$ calculation |
| :---: | :---: | :---: | :---: | :---: |
| I can read and write numbers up to 1 million. I can $x$ and $\div$ by 10 or 100 and explain what happens. I can round decimals to the nearest whole number and use to make approximations. | I can count forwards and backwards in steps of 100, 1000 and 10,000 from any given number to 1000,000. I can explain what multiples are. <br> I can explain what factors are. | I can say the fraction and percentage equivalent to 0.5 , $0.25,0.75,0.1,0.33,0.66$. I can work out fractions of whole numbers e.g. $3 / 8$ of 16 | I can add or subtract from any three digit number mentally. <br> I can add and subtract whole numbers with up to 5 digits using formal methods. | I have a reliable strategy for $x$ or $\div$ a four digit number by a one digit number. |
| I can x and $\div$ by 10 or 100 , including decimal numbers, and explain what happens. <br> I can say what each digit represents in numbers with up to 3 decimal places. | I can explain what prime numbers are. <br> I can explain what square numbers are and find the square root of a number. I can continue number sequences involving negative numbers, decimals, and fractions. <br> I can express missing number problems algraically | I can say the fraction and percentage equivalent to any number up to 2 decimal places between 0 and 1. I can add and subtract fractions with the same denominator. I can simplify fractions | I have a reliable strategy for adding and subtracting any set of numbers with up to 3 decimal places. I can use a blank number line to calculate addition and subtraction when appropriate e.g. finding the difference between 1997 and 3004. | I have a reliable strategy for multiplying up to 4 digits by a two digit number. |
| I can order any set of numbers up to $1,000,000$, including decimals with up to 3 decimal places and fractions. | I can apply my understanding of 'number families' to solve simple algebraic problems, including calculator use. <br> I know all my tests for divisibility. | I can work out 20\%, 30\% ... $90 \%, 25 \%, 75 \%, 33 \%, 66 \%$ of any whole number. | I can estimate the answer to any problem and use this as a check for my solution. <br> I can add and subtract negative numbers. | I have a reliable strategy for dividing up to 4 digits by a two digit number. <br> I can estimate the answer to any problem and use this as a check for my solution. |
| I can read and write numbers up to 10 million. I can $x$ and $\div$ by 1000 , including decimal numbers, and explain what happens. <br> I can round tenths and hundredth. <br> I use approximation to check the validity of my solutions. | I can solve problems using co-ordinates in all four quadrants. <br> I can construct and use algebraic formulae. I understand ratio. I understand proportion. For ratio and proportion refer to $P$ of S page 42 for extra detail. I can find pairs of numbers that satisfy an equation I can enumerate poss. Of combinations of 2 variables | I can order a mixed set of fractions by reducing to a common factor. <br> I can convert and order mixed and improper fractions. I can use a calculator to work out fraction or percentages of any number. I can + and - fractions with different denominators that exceed 1. <br> I can multiply single pairs of fractions | I can use and understand brackets. I can use a calculator to solve multistep problems. <br> I can use the inverse to check calculations. | I can use and understand brackets. <br> I can use a calculator to solve multi-step problems. <br> I can use the inverse to check calculations. <br> I can multiply and divide numbers with up to 2 decimal places by 1 and 2 digit numbers. |

I can further classify 3-D shapes (e.g. definitions of prisms, pyramids) I can further classify 2-D shapes (e.g. parallel, perpendicular, types of triangle)
I can make 3-D models by linking given faces or edges and draw common 2-D shapes in different orientations on grids reflect simple shapes in a mirror line, translate shapes horizontally or vertically and begin to rotate a simple shape or object about its centre or a vertex.
I can compare different triangles and know their properties.
I can use a wider range of properties of 2-D and 3-D shapes, including those of specific quadrilaterals (trapezium, parallelogram, rhombus, kite, and identify all the symmetries of 2-D shapes (reflective, rotational, translational)
I can name the parts of a circle - radius, circumference and diameter.
space

I can identify acute,
obtuse and reflex angles, estimate angles and recall key angles $\left(45^{\circ}, 90^{\circ}, 180^{\circ}, 270^{\circ}\right.$, $360^{\circ}$ )
I can use a protractor (angle measurer).

I can read a range of measuring instruments, including forcemeters, thermometers, tape measures and stopwatches. I can convert units of measure e.g. cm into $m$.
I can find perimeters and areas of simple shapes. (inc tri) I can use volume in practical contexts. I can convert miles and km
I can read and interpret scales on a range of measuring instruments, explaining what each labelled division represents. I can find perimeters and areas of compound shapes.
I can use a formula to find the volume of cubes and cuboids.
I know and use the
angle sum of a triangle and angles at a point and on a straight line. I can find missing angles.
I can measure and draw angles to the nearest degree, when constructing models and drawing or using shapes.
I can reason about position and movement and transform shapes.
I can describe position in all 4 quadrants of a grid

| Y6/7 | understanding of number \& place value | Algebra | fractions, decimals \& percentages | Calculation |
| :---: | :---: | :---: | :---: | :---: |
|  | I can round decimals to the nearest whole number or to one or two decimal places <br> I can multiply and divide a fraction by an integer <br> I can multiply and divide integers and decimals by 0.1, 0.01 <br> I can use index notation for integer powers (for example: $a^{2}=a \times a$ and $4 a^{2}=4 \times a \times a$ ) <br> I know simple instances of the index laws. For instance: when multiplying you add the indices, and when dividing you subtract the indices (e.g. $4 s^{3} \times 3 s^{2}=$ multiply $4 \& 3$ and add $3 \& 2$ as these follow indices rule.) | I can substitute integers into simple formulae <br> I can find the value of a variable in a multi step equation <br> I can find the value of a variable in a multi step equation involving expanding brackets <br> I can find the value of a variable in a multi step equation by adding like terms <br> I can find the value of a variable in a multi step equation with variables on each side <br> I can write an expression to describe the nth term of an arithmetic sequence <br> I can plot the graphs of linear functions, where $y$ is given explicitly in terms of $x$ <br> I recognise that equations of the form $y=m x+c$ correspond to straight-line graphs <br> I can use systematic trial and improvement methods and ICT tools to find approximate solutions to equations such as $x^{3}+x=20$ | I can order fractions by writing them with a common denominator or by converting them into decimals <br> I can convert between fractions, decimals and percentages <br> I can divide a quantity into two or more parts in a given ratio <br> I can use the unitary method (discover what one unit represents) to solve simple word problems involving ratio and direct proportion | I can calculate percentages and find the outcome of a given percentage increase or decrease. <br> I can find the original value when given the result of a percentage increase or decrease. <br> I can divide a quantity into two or more parts in a given ratio and solve problems involving ratio and direct proportion. <br> I can add or subtract fractions and mixed numbers by writing them with a common denominator <br> I can multiply and divide fractions <br> I can multiply and divide an integer by a fraction. <br> I know that like signs in an addition or subtraction problem becomes positive (++ = +, - - = +) <br> I know that unlike signs in an addition or subtraction problem becomes negative (+ - =-, - + = -) <br> I can multiply and divide negative and positive numbers and say whether the outcome should be positive or negative |


| Y6/7 | shape | space | measure | handing data | using and applying |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | I can classify quadrilaterals by their geometric properties <br> I can solve geometrical problems using properties of angles, of parallel and intersecting lines, and of triangles and other polygons <br> I can visualise and use 2-D representations of 3-D objects <br> I can enlarge 2-D shapes, given a centre of enlargement and a positive whole-number scale factor | I can identify alternate and corresponding angles (Z and F) <br> I can explain how to find, calculate and use the interior and exterior angles of regular polygons <br> I know that translations, rotations and reflections preserve length and angle and map objects onto congruent images | I can deduce and use formulae for the area of a triangle and parallelogram, and the volume of a cuboid <br> I can calculate volumes and surface areas of cuboids <br> I know and use the formulae for the circumference and area of a circle <br> I can find the locus of a point <br> I can find the locus of a line | I can collect and record continuous data, choosing appropriate equal class intervals over a sensible range to create frequency tables. <br> I know that adding the frequencies in a frequency table gives the total <br> I can find the mean, median and mode of data in a frequency table or chart <br> I know that if a table is for a range of values the mid-point of each class is used in calculations <br> I can construct and interpret frequency diagrams. <br> I can construct pie charts. <br> I can draw conclusions from scatter diagrams, and have a basic understanding of correlation. <br> I can find and record all possible and mutually exclusive outcomes for single events and two successive events in a systematic way (Probability trees) <br> I know that the sum of probabilities of all mutually exclusive outcomes is 1 , and use this when solving problems <br> I know that if the probability of an event occurring is $p$, then the probability of it not occurring is $1-\mathrm{p}$ | Throughout the week, children should: <br> Solve problems and carry through substantial tasks by breaking them into smaller, more manageable tasks, using a range of efficient techniques, methods and resources, including ICT; give solutions to an appropriate degree of accuracy. <br> Interpret, discuss and synthesise information presented in a variety of mathematical forms. <br> Present a concise, reasoned argument, using symbols, diagrams, graphs and related explanatory texts. <br> Use logical argument to establish the truth of a statement. |

