
**R** eaching the highest possible outcomes for children

**A** ccepting and embracing our differences

**E** veryone thriving in a secure, safe and happy environment

**B** elonging to our community and being a good citizen

**U** nderstanding that education is a precious gift

**R** especting ourselves and others by setting high standards

**N** ever giving up- learning from our mistakes

# Maths at Raeburn Primary School

| Intent | | | |
|---|---|---|---|
| **High Expectations** | **Modelling** | **Vocabulary** | **Inclusion** |
| All pupils are expected and able to make progress. We follow a 'Low threshold, high ceiling' approach which is accessible to all pupils. | Teachers use modelling in every Maths lesson and provide examples of what is expected and have high expectations. | We aim to create an environment where maths vocabulary is explicit on display and discussed in lessons. Teachers and pupils are encouraged to model mathematical language through explanations. Vocabulary is integral to all maths lessons. | The needs of all pupils are supported and catered for in an individualised approach. Where necessary, teaching and learning is adapted and additional support is in place to ensure that all pupils can achieve. All pupils are expected to take part in all maths lessons. |
| **Knowledge and concepts** | **Skills** | **British Values** | **Cultural Capital** |
| Pupils are taught the programme of study for mathematics using the New White Rose scheme. Knowledge is built upon each year enabling clear progression in mathematical skills. | We aim for all pupils to:<br>· become fluent in the fundamentals of mathematics so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.<br>· be able to solve problems by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios<br>· reason mathematically by following a line of enquiry and to develop and present a justification, argument or proof using mathematical language<br>.have an appreciation of number and number operations, which enables mental calculations and written procedures to be performed efficiently, fluently and accurately to be successful in mathematics. | **Democracy**<br>Take into account the views of others in shared activities. Voting when collecting data.<br>**The Rule of Law**<br>Undertake safe practices, following class rules during tasks and activities for the benefit of all. Understand the consequences if rules are not followed.<br>**Individual Liberty**<br>Work within boundaries to make safe choices during practical activities. Children can make their own choices within data handling activities. Tolerance of those with different faiths and beliefs<br>Use maths to learn about different faiths and cultures around the world. Eg. looking at patterns/shapes within Islam / Hindu religions.<br>**Mutual Respect**<br>To behave appropriately, allowing all participants the opportunity to work effectively. Take turns and share equipment. Review each other's work respectfully. Work collaboratively on projects/problems, help and advise others. | Pupils are taught how Maths is linked to the wider world and in everyday life. They value its importance and relevance and how mathematics is part of everyday life and many professions in life. |

## Implementation

**Curriculum(concepts, knowledge and skills)**

Our whole curriculum is shaped by our school vision which aims to enable all children, regardless of background, ability, additional needs, to flourish to become the very best version of themselves they can possibly be. We teach the National Curriculum, supported through White Rose to ensure clear skills and knowledge progression through a mastery approach. This ensures that skills and knowledge are built on year by year and sequenced appropriately to maximise learning for all children.

Maths Lessons:

Children are taught Mathematics for approximately 1 hour daily using White Rose objectives to ensure clear progression. Challenge and mastery is an integral part of lessons, where all children are asked to reason and prove their understanding. Teaching and Learning is adapted to meet the needs of all pupils in each class and all pupils are encouraged to use concrete resources where appropriate to deepen mathematical understanding. Our Raeburn motto of 'Know it, Show it, Explain it, Prove it' is used to develop the skills of problem solving and reasoning. In addition to this, from Years 2-Year 6, all pupils will have an additional arithmetic lesson practising fluency in the form of a Raeburn Memory jogger.

A typical Mathematics lesson will follow the design below.

Vocabulary box of 9
Sticky time-Recap/making connections with previous learning
Misconceptions/reasoning question
Main teaching input
My turn, your turn-Fluency Practice and problem solving
Independent tasks-fluency, reasoning and problem solving
Further misconception discussions
Assessment of the lesson objective through discussion and feedback or a further challenge to deepen learning.

**Vocabulary**

Mathematical vocabulary is used effectively in all lessons and pupils are encouraged to use a range of vocabulary. Vocabulary is taught explicitly using the frayer model where appropriate and when new vocabulary is introduced.

**Reading across the curriculum**

Pupils are taught how to read problems using skills learned from reading sessions. Mathematical links are made in texts where appropriate.

**Inclusion**

SEND,EAL and Pupil Premium pupils are all expected to take part in Maths lessons and teaching and learning is adapted to meet the needs of individuals who need more support. All pupils work from the same starting point within their year group and any gaps in knowledge identified are addressed during post it time with an adult outside of the maths lesson. This is a short time which focuses on key concepts and misconceptions.

**Assessment**

Assessment is an integral part of the mathematics curriculum. Assessment is ongoing in lessons where teachers feed back to pupils verbally and live mark. Pupils who have not grasped the objective in each lesson are given additional support through 'post it' time to enable them to succeed in mathematics. White rose mini assessments are also completed to assess pupils' understanding of key learning concepts and NFER tests are completed at the end of each term to monitor the progress of mathematics across the school.

**CPD**

National College
White Rose Hub Sustaining programme
SIA Maths visit
Half termly subject briefings
Coaching and team teaching across the school
Maths weekly drop in sessions
Training provided for individual staff and is reflective of monitoring.

**Monitoring**

**Parental involvement**

**Cultural Capital**

| | | |
|---|---|---|
| Subject leaders have a robust monitoring system including pupil voice, walk throughs, Teaching and Learning Teams, staff voice, book looks, coaching and drop ins. Maths is regularly discussed at SLT meetings.<br>Maths Ambassadors meet bi-weekly with subject leaders to discuss maths learning and how to raise the profile of mathematics across the school.<br>SIA- Deep dive<br>Ofsted February 2023 | Parents are invited to curriculum evenings where mathematical concepts are explicit to enable parents to understand how Maths is taught at Raeburn.<br>Raeburn Maths calculation policy is available for all parents. | Pupils take part in Maths challenges with other schools each year and pupils across the school compete through Times Tables rockstars. Pupils are given opportunities to develop their cultural capital by for example,visiting shops to use money, weighing ingredients in baking, and understanding coordinates by linking to texts. |
| **Whole school displays/Resources** | There is an expectation that all classrooms from EYFS-Y6 have a Maths working wall/Maths area and our Raeburn problem solving motto of, 'Know it, Show it, Explain it, Prove it' is on display in classrooms from Y1-Y6.<br>Mathematical vocabulary is on display in each classroom and is referred to throughout lessons.<br>All classrooms have a mathematics trolley of concrete resources which is accessible to all pupils in all lessons. | |

| **Impact** | | | |
|---|---|---|---|
| **Pupil Voice** | **Evidence in Knowledge** | **Evidence in skills** | **Outcomes** |
| Pupils are enthusiastic about Maths and are able to talk about the key concepts they have learned in Maths. They discuss the strategies used to solve problems and how their learning progresses each lesson. | Pupils are able to explain mathematical concepts and show what they know using the 'Know it, Show it, Explain it, Prove it' model. They will remember key learning and this will be evident through Sticky time, discussion, lessons and assessments. | Pupils will be fluent in mathematical concepts and able to problem solve effectively. They will apply the skills they have learned to a range of contexts which will therefore prepare them for learning in the wider world. | Pupils will make excellent progress from their starting points in Mathematics.<br>They will be competent mathematicians who thrive from the challenge of Maths and be able to calculate efficiently and apply their learning to a range of contexts.<br>Outcomes for all pupils will be high and they will be enthusiastic about Mathematics and be prepared for Maths in the wider world. |

# Raeburn Primary School Curriculum Progression Document: EYFS

| | Foundation 1 | Foundation 2 |
|---|---|---|
| **A1** | Uses numbers spontaneously in play<br><br>Counting Rhymes<br><br>Subitising to 3<br><br>Reciting numbers past 5<br><br>Sorting and classifying objects<br><br>Language of quantities, such as *'more than'* and *'fewer than'.*<br><br>2D Shapes in the environment. | Baseline Assessments<br><br>Just Like Me<br><br>- Verbal counting to 10 backwards and forwards from different numbers<br>- Matching and recognition/comparing/sorting/grouping (small, large)<br>- Subitising<br>- Comparing size, mass and capacity (heavy/light/full, nearly full, half full or empty, nearly empty and empty)<br>- Exploring pattern<br><br>It's Me 123<br><br>- Subitising within 3<br>- Representing numbers to 3<br>- Numbers and Place Value- Numbers to 3<br>- Comparing numbers within 3 |
| | **Vocabulary** | **Vocabulary**<br><br>Numbers, numerals, Count on/up/to/from/down, before, after, More, less, many, few, fewer, fewest, smaller, smallest, equal to, the same as, Digit, numeral, compare, Order, |

| | | |
|---|---|---|
| | Numbers, counting, count up/on/to/back/from, before, after, sort, compare, group, size, same, different more, a lot, holds, container, full, empty, shape, sort, flat, curved, corner, side, make, build | sort, Size, Value, Between, count, add, plus, make, sum, take away, subtract, how many more to make…? How many more is… then…? How much more is…? take away, minus, how many, total, altogether, five frame, match, quantity, amount, |
| **A2** | Say 1 number for each item in order to 5.<br>Subitising to 3<br>Reciting numbers<br>Link numerals and amounts<br>compare objects (size, length, weight, capacity)<br>Selecting appropriate shapes in construction<br>Identify patterns and use informal language e.g. Spotty, blobs<br>Extend and create ABAB patterns<br>Shapes of everyday objects,<br>Positional language. Describe a familiar route | Light and Dark<br>- Subitising within 5<br>- Representing numbers to 5<br>- Numbers and Place Value- Numbers to 5<br>- Comparing numbers within 5<br>- Part-whole modelling<br>- Use of Ten Frames<br>- Number Lines<br>- One more/one less<br>- Exploring shape (Square/Circle/Triangles)<br>- Days of the week and Birthdays (lead up to Christmas)<br>- Day and Night cycle<br>- Addition and subtraction- change within 5 |
| | **Vocabulary**<br>Numbers, count, match, same, different, size, colour, pattern, shape, sort, flat, curved, corner, side, make, build, circle, square, triangle, rectangle, Over, under, underneath, above, below, top, bottom, side, on, in, outside, inside, in front, behind, front, back | **Vocabulary**<br>Compare, same, different, one more, one less, numbers, numerals, sort, count, add, plus, take away, subtract, how many, five frame, match, quantity, amount, now, next, later, part, whole, ten frame, square, shape, circle, triangle, days of week, months of year. |

| | | |
|---|---|---|
| | before, after, beside, next to,<br><br>middle | |
| **SP1** | Counting actions e.g. claps or jumps.<br><br>Subitising to 3<br><br>Show finger numbers up to 5.<br><br>Simple real world practical maths problems up to 5.<br><br>Separates a group of objects/toys in different ways, recognises that the total is still the same.<br><br>Experiment with own symbols, marks and numerals<br><br>Similarities of shapes in the environment | Alive in 5<br><br>- Numbers and Place Value-comparing numbers within 5<br>- Organising numbers within 5<br>- Representing numbers within 5<br>- One more/One less<br>- More than/less than/the same<br>- What is the same/What is different<br>- Measuring Capacity<br>- Comparing numbers to 5<br><br>Growing 6, 7, 8<br><br>- Composition of 4, 5, 6, 7 and 8<br>- Representing numbers to 8<br>  - within ten frames<br>  - part whole models<br>- Addition- combining 2 amounts<br>- Making pairs<br>- Length and height.<br>- |

| | | |
|---|---|---|
| | **Vocabulary**<br><br>Numbers, count, more, less, fewer, groups, same, different, total, altogether, represent, draw, shapes, | **Vocabulary**<br><br>Part, whole, count, numeral, number, add, plus, take away, subtract, more, less, fewer, one more, one less, same, full, heavy, light, heavier, lighter, balance, scales, measure, length, height, long, short, longer, shorter, tall, taller, time, now, next, later, before, after, soon, yesterday, today, tomorrow, Composition, matching, interlocking, ten frame, pair, odd, natural, resources, total |
| **SP2** | Subitising to 3<br><br>Knows that last number reached identifies how many objects are in a set. (cardinal principle)<br><br>Matches numeral and quantity<br><br>Counts out up to six objects from a larger group.<br><br>Counts an irregular arrangement of objects.<br><br>Talk about and explore 2D shapes, and mathematical terms to describe shapes | Building 9 and 10<br><br>- Numbers and Place Value-comparing numbers within 10<br>- Representing numbers to 10<br>- Organising numbers within 10<br>- One more/One less<br>- More than/less than/the same<br>- What is the same/What is different<br>- Bonds to 10<br>- 3D shapes<br>- Exploring repeating Patterns<br><br>Consolidation |
| | **Vocabulary**<br><br>Numbers, count, more, less, fewer, groups, same, different, total, altogether, how many? set, square, rectangle, triangle, circle, flat, straight, side, corner, equal, longer, shorter, | **Vocabulary**<br><br>Add, plus, take away, subtract, minus, more, fewer, greater, less, count on/back, total, altogether, how many?<br><br>Shapes, flat, solid, 2D, 3D, circle, square, triangle, rectangle, side, straight, curved, equal, cylinder, sphere, cube, cuboid, cone, face, pattern, repeating, same, different, |

| | | |
|---|---|---|
| **S1** | Identifies numerals 1 to 5 and beginning to use marks to represent numbers.<br><br>Subitising to 3<br><br>Finds one more or one less from a group of up to five objects. In practical activities, use the vocabulary involved in adding. Talk about and explore 3D shapes and use mathematical terms to describe them.<br><br>Describe a sequence of events using words such as first, then | To 20 and Beyond<br>- Building number bonds beyond 10<br>- Counting pattern beyond 10<br>- Spatial awareness and spatial reasoning<br>- Matching rotating and manipulating<br><br>First, Then, Now<br>- Adding more - counting on<br>- Taking aware - counting back<br>- Spatial reasoning<br>  - Composing and decomposing shapes |
| | **Vocabulary**<br><br>Count, number, represent, one more, add, more, greater, total, altogether, makes, cone, cube, cuboid, sphere, cylinder, flat, curved, face | **Vocabulary**<br><br>counting, forward, backward, add, plus, take away, subtract, matching, rotating, shape, patterns, fit |
| **S2** | Selects the correct numeral to represent 1 to 5<br><br>Subitising to 3<br><br>Compare quantities using language more than and fewer than<br><br>In practical activities beginning to use the vocabulary involved in adding and subtracting.<br><br>Beginning to use mathematical names for ‘solid’ 3D shapes and mathematical terms to describe shape<br><br>Extend and create ABAB patterns | Find my pattern<br>- Doubling<br>- Sharing and Grouping<br>- Even and Odd<br>- Spatial reasoning<br>  - Replication and repetition<br>  - Position |

| | | |
|---|---|---|
| | Notice and correct an error in a repeating pattern. | On the Move<br>- Deepening understanding<br>- Consolidation<br>- Patterns and relationships<br>- Spatial reasoning<br>  - Mapping<br>  - Representation through relationships |
| | **Vocabulary**<br><br>Count, number, represent, one more, one less, add, more, group, greater, total, altogether, makes, take away, subtract, less, fewer, count on, count back, cone, cube, cuboid, sphere, cylinder, flat, curved, face | **Vocabulary**<br><br>Groups of, same, equal, lots of, odd, even, double, share, same, different, position, next to, behind, under, over, though, by , pattern, measure, match, map, model, first, next, past |

# Raeburn Primary School Curriculum Progression Document: Years 1-6

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| Place value: Counting | Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.<br><br>Count numbers to 100 in numerals: count in multiples of 2 5 and 10s | Count in steps of 2,3 an 5 from 0, and in 10s from and number, forward and backward. | Count from 0 in multiples of 4, 8, 50 and 100.<br><br>Find 10 or 100 more or less than a given number | Count in multiples of 6, 7, 9, 25 and 1000.<br><br>Count backwards through zero to include negative numbers | Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000<br><br>Count forwards and backwards with positive and negative whole numbers, including through zero | |
| Place Value: represent | Identify and represent numbers using objects and pictorial representations. | Read and write numbers to at least 100 in numerals and in words.<br><br>Identify, represent and estimate numbers using | identify, represent and estimate numbers using different representations<br><br>Read and write numbers up to | identify, represent and estimate numbers using different representations<br><br>Read Roman numerals to 100 (I to C) and know | Read, write (order and compare) numbers to at least 1,000,000 and determine the value of each digit.<br><br>Read Roman numerals to 1000 | Read, write (order and compare) numbers to at least 10,000,000 and determine the value of each digit. |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Read and write numbers to 100 in numerals<br><br>Read any write numbers from 1 to 20 in words and numerals | different representations, including the number line | 1000 in numerals and words | that over time, the numeral system changed to include the concept of zero and place value | (M) and recognise years written in Roman numerals. | |
| Place Value:<br>Use PV and compare. | Given a number, identify 1 more and 1 less. | Recognise the place value of each digit in a two digit number (tens and ones)<br><br>Compare and order numbers from 0 up to 100; use <> and = signs | Recognise the place value of each digit in a three digit number (hundreds, tens and ones)<br>Compare and order numbers up to 1000 | Find 1000 more or less than a given number.<br><br>Recognise the place value of each digit in a four digit number (thousands, hundreds, tens and ones)<br><br>Compare and order numbers beyond 1000 | (Read, Write), order and compare numbers to at least 1,000,000 and determine the value of each digit. | (Read, Write), order and compare numbers to at least 10,000,000 and determine the value of each digit. |
| Place value:<br>Problems and rounding | | Use place value and number facts to solve problems | Solve number problems and practical problems involving these ideas | Round any number to the nearest 10, 100 or 1000.<br><br>Solve number and practical problems that involve all of the above with increasingly large positive numbers | Interpret negative numbers in context.<br><br>Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000.<br><br>Solve number problems and | Round any whole number to a requires degree of accuracy.<br><br>Use negative numbers in context, and calculate intervals across zero.<br><br>Solve number problems that involve all of the above. |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | practical problems that involve all of the above | |
| Addition and subtraction: Recall, represent, Use | Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.<br><br>Represent ant use number bonds and related subtraction facts within 20 | Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.<br><br>Show that addition of two numbers can be done in any order (Commutative) and subtraction of one number from another cannot.<br><br>Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. | estimate the answer to a calculation and use inverse operations to check answers | estimate and use inverse operations to check answers to a calculation. | use rounding to check answers to calculations and determine in the context of a problem levels of accuracy | |
| Addition and Subtraction: Calculations | add and subtract one digit and two digit numbers to 20, including zero | add and subtract numbers using concrete objects pictorial representations | add and subtract numbers mentally including:<br>a 3 digit number and ones | add and subtract numbers with up to four digits using formal written methods of columnar addition | add and subtract whole numbers with more than 4 digits including using formal written methods | perform mental calculations, including with mixed operations and large numbers |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | and mentally including:<br>a two digit number and ones<br>a two digit number and 10s<br>two 2 digit numbers<br>adding three one digit numbers | a 3 digit number and 10s<br>a three digit number and hundreds.<br><br>Add and subtract numbers with up to three digits using formal written methods of columnar addition and subtraction | and subtraction where appropriate. | (columnar addition and subtraction)<br><br>Add and subtract numbers mentally with increasingly large numbers | use their knowledge of the order of operations to carry out calculations involving the four operations. |
| Addition and Subtraction:<br>Solving Problems | solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations and missing number problems such as<br>7 = _ - 9 | solve problems with addition and subtraction:<br>using concrete objects and pictorial representations, including those involving numbers quantities and measures<br>applying their increasing knowledge of mental and written methods | solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction | solve addition and subtraction two step problems in contexts, deciding which operations and methods to use and why. | solve addition and subtraction multi step problems in contexts, deciding which operations and methods to use and why<br><br>solve problems involving addition, subtraction, multiplication and division and a combination of these including understanding the meaning of the equals sign | solve addition and subtraction multi step problems in contexts, deciding which operations and methods to use and why |
| Multiplication and Division:<br>Recall, Represent, Use | | Recall and use multiplication and division facts for | recall and use multiplication and division facts for | recall multiplication and division facts for | identify multiples and factors including finding | identify common factors, common |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | the 2, 5 and 10 multiplication tables including recognising odd and even numbers<br><br>show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot | the three four and eight multiplication tables | multiplication tables up to 12 x 12<br><br>use place value known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers<br><br>recognise and use factor pairs and commutativity mental calculations | all factor pairs of a number and common factors of 2 numbers<br><br>know and use vocabulary of prime numbers, prime factors and composite(non prime) numbers<br><br>establish whether a number up to 100 is prime and recall prime numbers up to 19<br><br>recognise and use square numbers and cube numbers the notation for squared and cubed. | multiples and prime numbers<br><br>use estimation to check to answers to calculations and determine, in the context of a problem. an appropriate degree of accuracy. |
| Multiplication and Division: calculation | | calculate mathematical statements for multiplication and division within multiplication tables and write them using the multiplication division and equals signs | Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two digit numbers times one digit numbers, using | multiply two digit and three digit numbers by a one digit number using formal written layout | multiply numbers up to four digits by a one or two digit number using a formal written method including long multiplication for two digit numbers<br><br>multiply and divide numbers mentally | multiply multi digit numbers up to four digits by a two digit whole number using the formal written method of long multiplication<br><br>divide numbers up to four digits by a two digit whole number using the formal |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | mental and progressing to formal written methods | | drawing upon known facts<br><br>divide numbers up to four digits by a one digit number using formal written method of short division and interpret remainders appropriately for the context<br><br>multiply and divide whole numbers and those involving decimals by 10,100 and 1000 | written method of long division and interpret remainders as whole number remainders, fractions or by rounding as appropriate for the context<br><br>divide numbers up to four digits by a two digit number using the formal written method of short division where appropriate, interpreting remainders according to the context<br><br>perform mental calculations including with mixed operations and large numbers |
| Multiplication and Division: Solve Problems | solve one step problems involving multiplication and division by calculating the answer using concrete objects, pictorial representations and arrays with | solve problems involving multiplication and division using materials, arrays, repeated addition, mental methods, and multiplication and division facts including problems in contexts | solve problems including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are | solve problems involving multiplying and adding, including using the distributive law to multiply 2 digit numbers by 1 digit, integer scaling problems and harder correspondence | solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes<br><br>solve problems involving | solve problems involving addition subtraction multiplication and division |

| | | | | | | |
|---|---|---|---|---|---|---|
| | the support of the teacher | | connected to m objects | problems such as n objects are connected to m objects | multiplication and division, including scaling by simple fraction and problems involving simple rates | |
| Multiplication and Division: Combined Operations | | | | | solve problems involving addition subtraction multiplication and division and a combination of these, including understanding the meaning of the equals sign | use their knowledge of the order of operations to carry out calculations involving the four operations |
| Fractions: Recognise and Write | recognise find and name a half as one of two equal parts of an object shape or quantity<br><br>recognise find an name a quarter as one of four equal parts of an object shape or quantity | recognise find name and write fractions 1/3, ¼, 2/4 and 3/4 of a length shape set of objects or quantity. | count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one digit numbers in or quantities by 10<br><br>recognise find and write fractions of a discrete set of objects: unit fractions and non unit fractions with small denominators | count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10 | identify name and write equivalent fractions of a given fraction, represented visually including tenths and hundredths<br><br>recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements>1 as mixed number for example | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | recognise and use fractions as numbers: unit fractions and non unit fractions with small denominators | | | |
| Fractions:<br>Compare | | recognise the equivalence of 2/4 and 1/2 | recognise and show using diagrams, equivalent fractions with small denominators<br><br>compare and order unit fractions, and fractions with the same denominators | recognise an show using diagrams, families of common equivalent fractions | compare and order fractions whose denominators are all multiples of the same number | use common factors to simplify fractions; use common multiples to express fractions in the same denomination nomination<br><br>fractions<br>compare and under order fractions, including fractions>1 |
| Fractions:<br>Calculations | | Write simple fractions<br>for example<br>½ of 6 = 3 | add and subtract fractions with the same denominator within one whole<br>for example<br>5/7 +1/7 = 6/7 | | | |
| Fractions:<br>Solve Problems | | | solve problems that involve all of the above | solve problems involving increasingly hard fractions to calculate quantities, and fractions to divide quantities, | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | including non- unit fractions where the answer is a whole number | | |
| Decimals:<br>Recognise and write | | | | recognise and write decimal equivalents of any number of tenths or hundredths<br><br>recognise and write decimal equivalent to 1/4 ½, 3/4 | read and write decimal numbers as fractions for example 0.71 = 71/100<br><br>recognise and use thousandths and relate them to tenths hundredths and decimal equivalents | identify the value of each digit in numbers given to three decimal places |
| Decimals:<br>Compare | | | | round decimals with one decimal place to the nearest whole<br><br>number compare numbers with the same number of decimal places up to two decimal places | round decimals with two decimal places to the nearest whole number and to one decimal place<br><br>read, write, order and compare numbers with up to three decimal places | |
| Decimals: Calculations and Problems | | | | find the effect of dividing a one or two digit number by 10 and 100 identifying the value of the digits in the answers as | solve problems involving number up to three decimal places | multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | ones, tenths and hundredths | | multiply 1 digit numbers with up to two decimal places by whole numbers<br><br>use written division methods in cases where the answer has up to two decimal places<br><br>solve problems which require answers to be rounded to specific degrees of accuracy |
| Fractions, Decimals and Percentages | | | | solve simple measure and money problems involving fractions and decimals to two decimal places | recognise the percent symbol and understand that percent relates to number of parts per hundred and write percentages as a fraction with the denominator 100 and as a decimal<br><br>Solve problems which require knowing percentage and decimal equivalents of ½, 1/4 , 1/5, 2/5, 4/5 and those fractions with the | associate a fraction with division and calculate decimal fraction equivalents for a simple fraction<br><br>recall and use equivalence is between simple fractions decimals and percentages including in different contexts |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | nominator of a multiple of 10 or 25 | |
| Ratio and Proportion | | | | | | solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts<br><br>solve problems involving the calculation of percentages and the use of percentages for comparison<br><br>solve problems involving similar shapes where the scale factor is known or can be found<br><br>solve problems involving unequal sharing and grouping using knowledge of fractions and multiples |
| Algebra | | | | | | use simple formula<br><br>generate and describe linear number sequences |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | express missing number problems algebraically<br><br>find pairs of numbers that satisfy an equation with two unknowns<br><br>enumerate possibilities of combinations of two variables |
| Using Measure | Compare, describe and solve practical problems for : lengths and height mass/weight capacity and volume time<br><br>measure and begin to record the following: lengths and height mass/ weight capacity /volume time (hours, minutes, seconds) | choose and use appropriate standard units to estimate and measure length/ height in any direction mass temperature capacity to the nearest appropriate unit using rulers scales thermometers and measuring vessels<br><br>compare and order Length, mass, volume/ capacity and record the results using > <and = | Measure, compare, add and subtract lengths (m/cm/mm); mass (kg,g); volume/capacity (l/ml) | convert between different units of measure<br><br>estimate compare and calculate different measures | convert between different units of metric measure<br><br>understand and use approximate equivalence is between metric units an common imperial units such as inches pounds and pints<br><br>use all four operations to solve problems involving measure using decimal notation including scaling | solve problems involving the calculation and conversion of units of measure using decimal notation up to three decimal places where appropriate<br><br>use, read, write and convert between standard units converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit and vice versa using decimal |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | notations up to three decimal places<br><br>convert between miles and kilometres |
| Measurement:<br>Money | recognise an know the value of different denominations of coins and notes | recognise and use the symbols for pounds (£) and pence (p) combine amounts to make a particular value<br><br>find different combinations of coins that equal the same amount of money<br><br>solve simple problems in a practical context involving addition and subtraction of money of the same unit including giving change | add and subtract amount of money to give change using both pounds and pence in practical context | Estimate, compare and calculate different measures including money in pounds and pence | use all four operations to solve problems involving measure for example money | |
| Measurement:<br>Time | sequence events in chronological order using language for example, before and after, next, first, today, | compare and sequence intervals of time<br><br>tell and write the time to five minutes, including quarter past/to | tell and write the time from an analogue clock including using Roman numerals from I too XII and 12 hour and 24 hour clocks | read write and convert time between analogue and digital 12 and 24 hour clocks<br><br>solve problems involving | solve problems involving converting between units of time | use read write and convert between standard units converting measurements of time from a smaller unit of measure to a larger unit and vice versa |

| | | | | | | |
|---|---|---|---|---|---|---|
| | yesterday, tomorrow, morning, afternoon and evening<br><br>recognise and use language relating to dates, including days of the week, weeks, months and years<br><br>tell time to the hour and half past the hour and draw hands on the clock face to show these times | the hour and draw the hands on the clock face to show these times<br><br>know the number of minutes in an hour and the number of hours in a day | estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm ,morning, afternoon, noon and midnight<br>Know the number of seconds in a minute and the number of days in each month, year and leap year<br><br>compare durations of events for example to calculate the time taken by a particular event or task | converting from hours to minutes, minutes to seconds, years to months, weeks to days | | |
| Measurement:<br>Perimeter, Area, Volume | | | measure the perimeter of simple 2D shapes | measure and calculate the perimeter of a rectilinear figure (including squares) | measure and calculate the perimeter of composite rectilinear shapes | recognise that shapes with the same area can have different perimeters and vice versa |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | in centimetres and metres<br><br>find the area of rectilinear shapes by counting squares | in centimetres and metres<br><br>calculate and compare the area of rectangles including squares and including using standard units and estimate the area of irregular shapes<br><br>estimate volume for example using one centimetre cubed blocks to build cuboids including cubes and capacity for example using water | recognise when it is possible to use formulae for area and volume of shapes<br><br>calculate the area of parallelograms and triangles<br><br>calculate estimate and compare volume of cubes and cuboids using standard units including cubic centimetres and cubic metres and extending to other units |
| Geometry:<br>2D shapes | recognise an name, 2D shapes for example rectangles (including squares), circles and triangles | identify and describe the properties of 2D shapes, including the number of sides and line of symmetry in a vertical line<br><br>identify 2D shapes on the surface of 3D shapes )for example a circle on a cylinder and a | draw 2D shapes | compare and classify geometric shapes including quadrilaterals and triangles based on their properties and size<br><br>identify lines of symmetry in 2D shapes presented on different orientations | distinguish between regular and irregular polygons based on reasoning about equal sides and angles<br><br>use the properties of rectangles to juice related facts and find missing lengths and angles | draw 2D shapes using given dimensions and angles<br><br>compare and classify geometric shapes based on their properties and sizes<br><br>illustrate and name parts of circles including radius and diameter and circumference and |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | triangle on a pyramid)<br><br>compare and sort common 2D shapes and everyday objects | | | | know that the diameter is twice the radius |
| Geometry:<br>3D shapes | recognise and name common 3D shapes for example cuboids including cubes pyramids and spheres | recognise and name common 3D shapes for example cuboids including cubes pyramids and spheres<br><br>compare and sort common 3D shapes and everyday objects | make 3D shapes using modelling materials<br>recognise 3D shapes in different orientations and describe them | | identify 3D shapes including cubes and other cuboids from 2D representations | recognise describe and build simple 3D shapes including making nets |
| Geometry:<br>Angles and lines | | | recognise angles as a property of shape or a description of a turn<br><br>identify right angles recognise that two right angles make half a turn three make 3/4 of a turn and four a complete turn; identify whether angles are greater than or | identify acute and obtuse angles and compare and order angles up to two right angles by size<br><br>identify lines of symmetry in 2D shapes represented in different orientations<br><br>complete a simple symmetrical figure | know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles<br><br>draw given angles, and measure them in degrees<br><br>identify:<br>angles at a point and one whole turn | find unknown angles in any triangles, quadrilaterals and regular polygons<br><br>recognise angles where they meet at a point, on a straight line or are vertically opposite and find missing angles |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | less than a right angle<br><br>identify horizontal and vertical lines and pairs of perpendicular and parallel lines | with respect to a specific line of symmetry | angles at a point on a straight line and half a turn<br><br>other multiples of 90 degrees | |
| Geometry: Position and Direction | describe position direction and movement, including whole, half, quarter and three quarter turns | order and arrange combinations of mathematical objects in patterns and sequences<br><br>use mathematical vocabulary to describe position direction and movement including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three quarter turns clockwise and anticlockwise | | describe positions on a 2D grid as coordinates in the first quadrant<br><br>describe movements between positions as translations of a given unit to the left/ right and up/ down<br><br>plot specified points and draw sides to give to complete a given Polygon | identify describe an represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed | describe positions on the full coordinate grid all 4 quadrants<br><br>draw and translate simple shapes on the coordinate plane, and reflect them in the axes |
| Statistics:<br>Present and interpret | | interpret and construct simple pictograms, tally charts, block | interpret and present data using bar charts, | interpret and present discrete and continuous data using | complete read and interpret information in | interpret and construct pie charts and line graphs and |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | diagrams and simple tables | pictograms and tables | appropriate graphical methods including bar charts and time graphs | tables including timetables | use these to solve problems |
| Statistics:<br>Solve Problems | | ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity<br><br>ask and answer questions about totalling and comparing categorical data | solve one step and two step questions (for example How many more? and How many fewer?) using information presented in scaled bar charts and pictograms and tables | solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs | solve comparison, sum and difference problems using information presented in a line graph | calculate and interpret the mean as an average |

# Mathematics Lesson design at Raeburn

**Sticky Time:**

**Starter- Vocabulary box of 9**

- 5 minute recap of previous learning or arithmetic to keep fluency skills sharp
    - This could be Flashback 4, “let’s learn” from WR ppt or a question/misconception
- Response time to any marking/feedback via green pen
    - Teachers to ensure one question in marking to extend or highlight incorrect answers for children to correct

**Introduction:**

- Start the learning with a misconception or find the fib question to promote discussion. This should be about the current topic of work or a topic just taught. Alternatively, take a single problem relating to learning objective.
- Look for verbal response/discussion with table or shoulder partners
- Allow children to explore the question/problem and derive maths from their answers.
- Guide children towards objective of lesson

**Main:**

- Teaching point - what do the children need to understand to access the objective.
- Dependant on lesson - WR PPT, modelling, visuals or similar to get teaching point across
- As much child interaction as possible through mathematical discussion and proving of key learning points
- AfL through whiteboards etc.
- 3 questions:
    - Teacher does one with correct method/working out/pictorial (if you can do CPA here)
    - Children do one with the teacher collaboratively
    - Children do one independently
- Assess children's understanding and let them get on with independent work.
- Teacher support those who need

**Independent work:**

- Sequence of structured questions ensuring opportunities for fluency, reasoning and problem solving. These must be a selection of carefully crafted ideas and **should not** always be white rose worksheets. The children should be encouraged to calculate in books, with concrete resources and explain their mathematical thinking. Work should be selected from white rose, classroom secrets, I see reasoning or could be homemade tailored for the class.

**Plenary:**

Green pen work/questions to assess/address and misconceptions from the lesson.