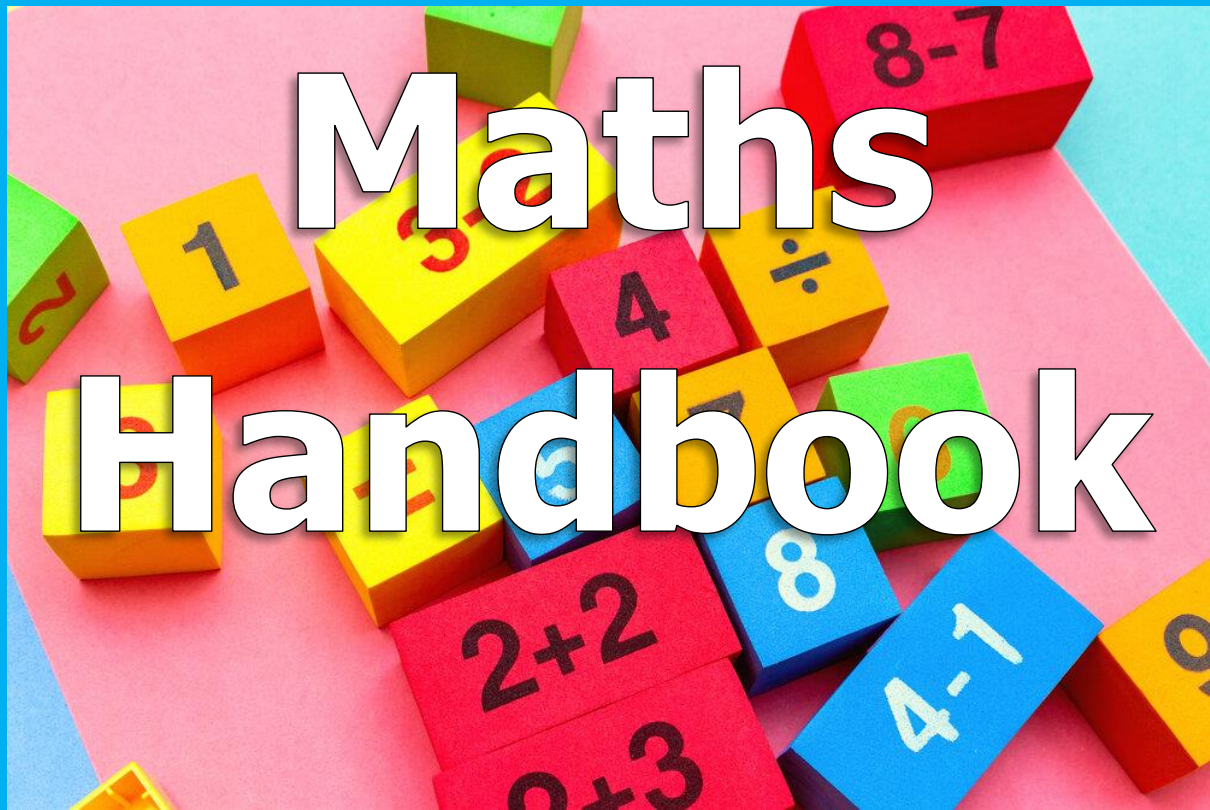




Gaskell Community Primary School
Together We Shine

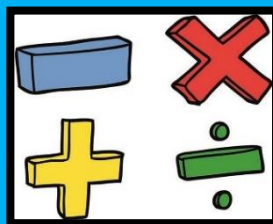
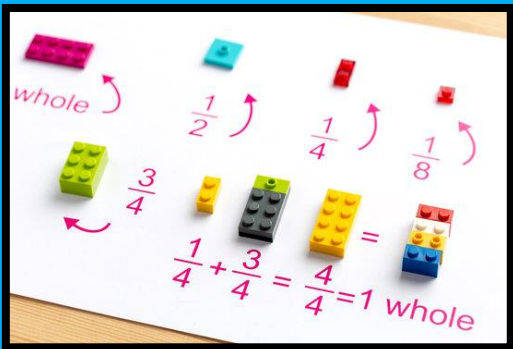
Maths Subject Leader: Steven Hawke



Maths Handbook

Gaskell Community Primary

School



Intent

To allow our children to be resilient and inspired mathematicians who have the necessary tools to solve problems and communicate mathematically through concrete, pictorial and abstract strategies.

We want all the children at Gaskell Primary School to experience the beauty, power and enjoyment of mathematics and develop a sense of curiosity about the subject with a clear understanding. By experiencing Maths, our children will understand how Maths can give them the thirst for knowledge about the world they live in. Wider life experiences are limited in our school context and Maths will give the children the chance have excellent knowledge of surviving in the real world of today. By learning about the place they live in, they will gain the knowledge and skills to see how diverse the world around them is. Children will have the opportunity to gain confidence in applying their knowledge into problems and show reasoning. Throughout their time at Gaskell, the children will learn how to use money, read tables, and tell the time so that they can use and apply this outside of school life.

Implementation

Every child is given the opportunity to be included in all aspects of school life and in all areas of the curriculum. Teaching and learning in the school ensures that all the children are set suitable learning challenges. A broad range of teaching styles are adopted in response to diverse learning needs. We make every effort to overcome potential barriers to learning and assessment for individuals and for groups of children. We aim for Gaskell Primary School to be an ideal learning environment for nurturing and developing the whole child.

How are Maths lessons taught at Gaskell Primary School?

Children are taught Mathematics for approximately 1 hour daily. Support is determined during each lesson to ensure secure understanding based on the needs of each child. Challenge is visible throughout the whole session, where the children are asked to reason and prove their understanding at a deeper secure level. As a school, we follow the National Curriculum statements, as well as using the White Rose Maths scheme for support with resources and assessments. As a school, we recap on previous learning from Maths lessons or key learning areas such as; number bonds, doubles, times tables, quick re-call division facts etc.

Teachers are well prepared and resourced to use intervention sessions to immediately tackle misconceptions and consolidate learning if not understood.

Impact

By the end of KS2 we aim for the children to be fluent in the fundamentals of mathematics with a conceptual understanding and the ability to recall and apply knowledge rapidly and accurately. All of the children will have the skills to solve problems by applying their mathematics to a variety of situations with increasing confidence. Furthermore, the children will leave Gaskell enthusiastically keen to learn more about Maths as they start their new journey onto Key Stage 3 with an already broad knowledge of the subject.

Maths Grown at Gaskell

Our school ethos is to place the child at the centre of everything we do. Our curriculum is designed to encourage, challenge and ***enable our children to become successful and resilient citizens in today and tomorrow's world.*** At Gaskell, through a broad and balanced curriculum, we will provide the children with the skills and knowledge they require for their lifetime. The curriculum encourages our children to be independent, resourceful, skilled, adaptable, flexible and empathetic.

Our school values are represented and underpinned by the curriculum drivers and form the basis of everything we do. They represent how we behave in, around and outside school from Nursery to Year 6, in all aspects of school life. They also support the teaching of British Values throughout the school.

Our Principles

Our Curriculum develops the attitude, skills and knowledge for a successful life within Gaskell Primary School.

Our Curriculum is ambitious, developmental and responsive to the current needs of our children.

Our Curriculum enables the children to learn more and remember more; facilitating a change of long-term memory.

Values

Happiness

Empathy

Ambition

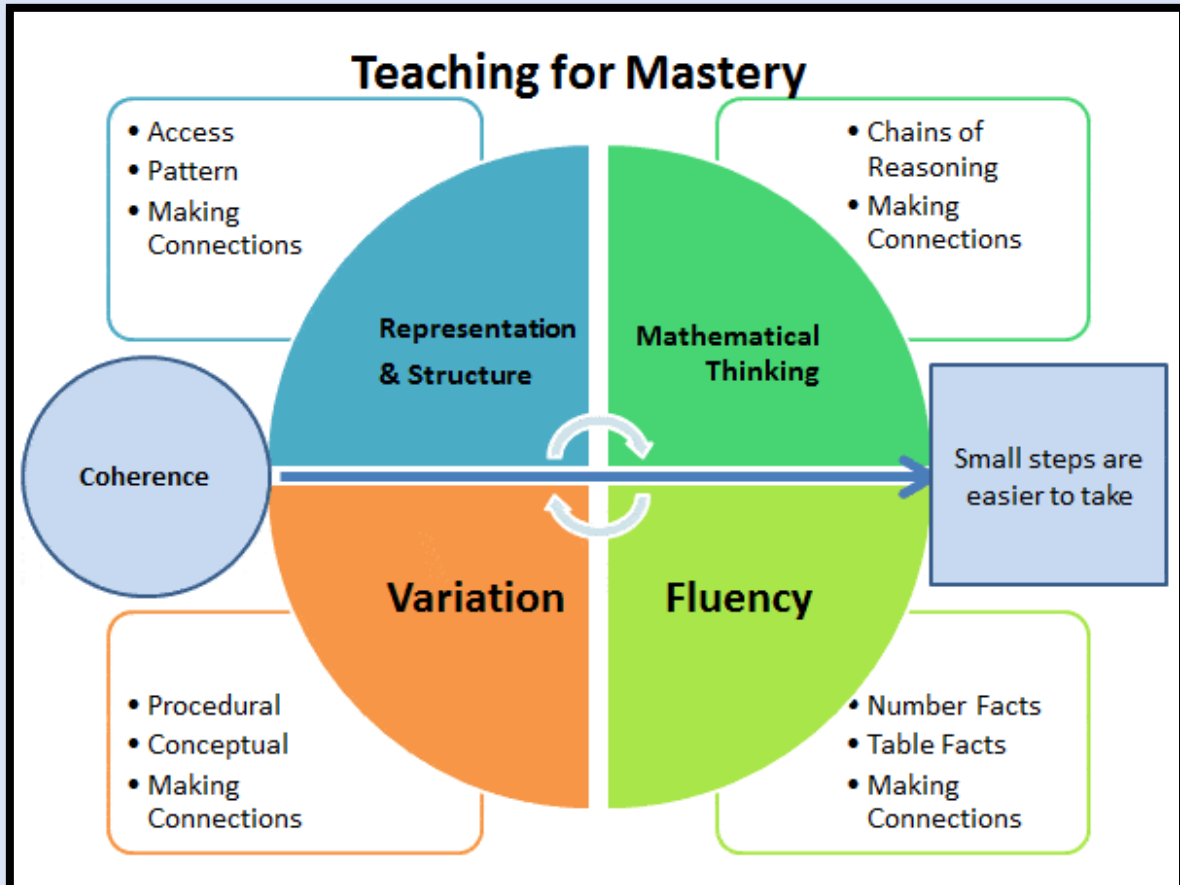
Respect

Resilience

Tolerance

Self Confidence

Mastery Approach



Aims

The national curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

The mastery approach structure is designed to develop long term retention of learning and to improve understanding. Children will be able to take the key skills they have learnt into the next year group so they can progress further.

Maths Titles

Representation - Practical equipment used and a variety of different representation provided.

Fluency and Varied Fluency - A variety of questions which increase in difficulty to apply their understanding.

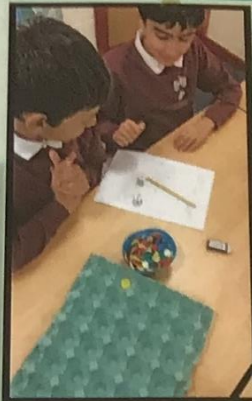
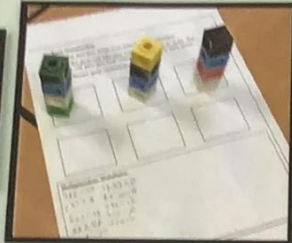
Reasoning and Problem Solving - Independently apply their learning and to apply creativity as well as make decisions to solve a problem.

Active Maths - Practical activity involving exercise and P.E Skills.

Maths Journey Of The Week – Recap on sticky knowledge which is linked to prior learning.

Maths Titles In Books

Representations with multiplication

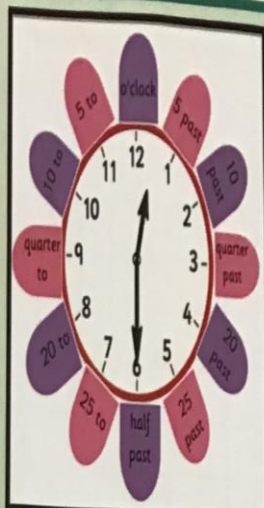


24.1.22

XXIV.I.XXII

In our Maths lesson today, we worked in pairs and explored multiplication using manipulatives. We generated a word bank of vocabulary that we will use. Super Work!

Representations with time



24.1.22

LO: To divide 2 and 3-digit numbers by 1-digit numbers.

XXIV.I.XXII

Representation with division

Year 5 have been using the hundreds, tens and ones counters to show how we divide a 2 or 3-digit number by a 1-digit number.

Challenge:

$$72 \div 3 = 14$$

$$144 \div 4 = 36$$

23.3.22

Representations with subtraction

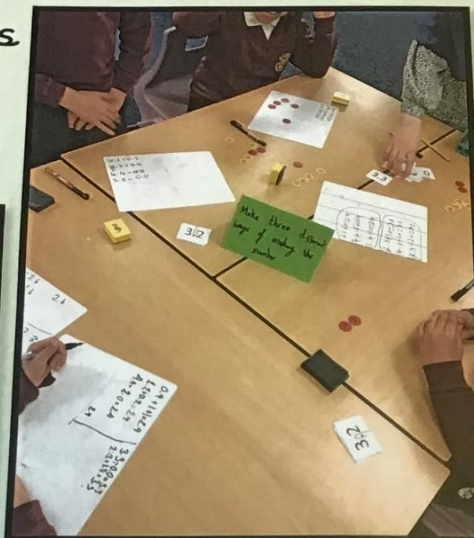
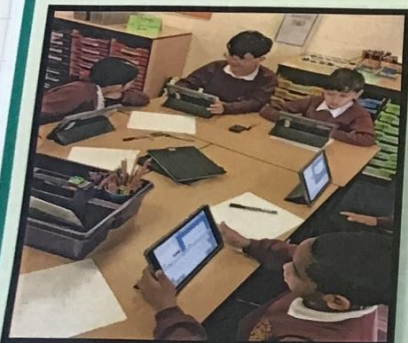
Today we used number squares to take away 10. We also used the number line method to subtract a 2 digit number from another 2-digit number.



28.02.22

XXVIII.II.XXII

Representations with decimals and tenths.



There are 2 ones and 3 tenths. The decimal represented is 2.3.

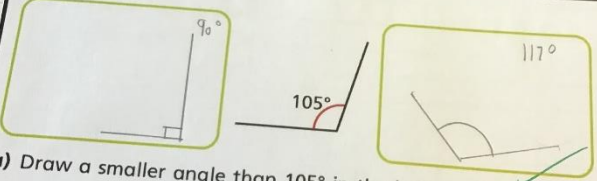


There are ___ ones and ___ tenths. The decimal represents

Reasoning and problem solving with angles.



Here is an angle.



90° is less than 105° but 105° is more than 117°.

- Draw a smaller angle than 105° in the box on the left.
- Draw a greater angle than 105° in the box on the right.
- Is this statement true or false?
The angles are in ascending order of size.

Explain your answer.

True

Problem Solving with 2D and 3D Shapes

True or False?	True	False
A square has 5 sides.		
A cube is a 3D shape.	✓	
A sphere has 2 faces.		✓
A cone has 1 flat face.	✓	
A sphere is a 3D shape.	✓	
A circle has 1 corner.		✓

- I have 6 square faces.
 - I have 8 vertices.
 - I have 12 edges.
- I am a cube!

	Cube	Cylinder
Has 6 faces	✓	
Has 2 faces		✓
Has square faces	✓	
Has 2 circular faces		✓

I have 3 sides and 3 corners.
I am a triangle.
What am I?

This shape has four straight sides and four corners. All the sides are the same length. It is a square.

This shape has four straight sides and four corners. Two sides are long and two sides are short. It is a rectangle.

- I have 1 continuous curved surface.
- I have 0 vertices.
- I have 0 edges.

I have 6 sides and 6 corners.

I am a Sphere ✓

hexagon ✓

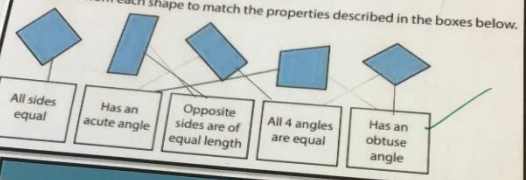


I am a cone

What am I?

Super!

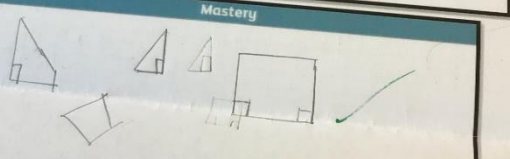
Mastery
Below are five quadrilaterals: a rectangle, a rhombus, a square, a parallelogram and an unnamed quadrilateral.
Write the names of each of the quadrilaterals.
Draw lines from each shape to match the properties described in the boxes below.



- All sides equal
- Has an acute angle
- Opposite sides are of equal length
- All 4 angles are equal
- Has an obtuse angle

We can't make a quadrilateral shape with 5 right angles because it only has four sides.

Excellent Work
Great understanding of angles!



Can you draw a triangle with:
1 right angle? No
2 right angles? No

Can you draw a quadrilateral with:
1 right angle? No
2 right angles? No
5 right angles? No
No right angle? No

Reasoning and problem solving with length

The length of the pen is 9cm.
The length of the pencil is 5cm.
What is the total length of the pen and pencil?
 $9\text{cm} + 5\text{cm} = 14\text{cm}$

The length of the book is 11cm.
The length of the toy car is 4cm.
What is the total length of the book and toy car?
 $11\text{cm} + 4\text{cm} = 15\text{cm}$

The length of the CD box is 15cm.
The length of the rubber is 3cm.
What is the total length of the CD box and rubber?
 $15\text{cm} + 3\text{cm} = 18\text{cm}$

The length of the DVD box is 17cm.
The length of the Lego brick is 4cm.
What is the total length of the DVD box and Lego brick?
 $17\text{cm} + 4\text{cm} = 21\text{cm}$

The length of the glue stick is 20cm.
The length of the stapler is 5cm.
What is the total length of the glue stick box and stapler?
 $20\text{cm} + 5\text{cm} = 25\text{cm}$

The length of the whiteboard is 22cm.
The length of the hole punch is 4cm.
What is the total length of the hole punch and whiteboard?
 $22\text{cm} + 4\text{cm} = 26\text{cm}$

Brilliant problem solving!

Problem solving with division

1. There are 1278 children at an after school club. They are put into 6-a-side teams. How many complete teams can be made?
 $1278 \div 6 = 213$

$$\begin{array}{r} 213 \\ 6 \overline{) 1278} \\ \underline{12} \\ 07 \\ \underline{6} \\ 17 \\ \underline{12} \\ 58 \\ \underline{54} \\ 48 \\ \underline{48} \\ 0 \end{array}$$

213 teams can be made.

2. Five friends go on holiday. The holiday costs £1605. The cost is shared equally by the friends. How much do they each pay?
 $1605 \div 5 = 321$

$$\begin{array}{r} 321 \\ 5 \overline{) 1605} \\ \underline{15} \\ 10 \\ \underline{10} \\ 05 \\ \underline{05} \\ 0 \end{array}$$

They pay £321 each.

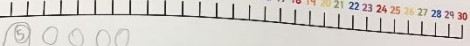
3. A tree trunk has a mass of 2553kg. It is chopped into 3 equal logs. How much does each log weigh to the nearest kilogram?
 $2553 \div 3 = 851$

$$\begin{array}{r} 851 \\ 3 \overline{) 2553} \\ \underline{24} \\ 15 \\ \underline{15} \\ 03 \\ \underline{03} \\ 0 \end{array}$$

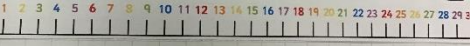
Each log weighs 851kg.

Problem Solving with Division

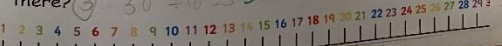
Kian has 25 football stickers. He shares them between his 5 friends. How many stickers do they get each?
 $25 \div 5 = 5$



Lottie has 27 sweets. She shares them between 3 children. How many sweets does each child get?
 $27 \div 3 = 9$

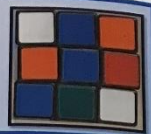


There are 30 books in total and they are packed in boxes of 10. How many boxes are there?
 $30 \div 10 = 3$



Brilliant!

Reasoning and problem solving with fractions



I know that $\frac{1}{3}$ is larger than $\frac{1}{2}$ because 3 is larger than 2

Do you agree with Dora? *Down is right because when you mark it out you take the line away from it but you take the line away from it to be lower than the line*
Explain how you know.

Which is the odd one out? Explain why.



Use the clues to work out which fraction is being described for each shape.

- My denominator is 6 and my numerator is half of my denominator. $\frac{3}{6}$
- I am equivalent to $\frac{4}{12}$ $\frac{1}{3}$
- I am equivalent to one whole $\frac{4}{4}$
- I am equivalent to $\frac{2}{3}$ $\frac{4}{6}$

Can you write what fraction each shape is worth?
Can you record an equivalent fraction for each one?

20.1.22

XX.I.XXII

LO: To multiply using the formal written method.

Year 5 had an Active Maths lesson today. They played a game called 'Duel!' where they battled against a friend to be the first to answer a range of questions using the short formal written method of multiplication.

Challenge:

$$5476 \times 36 = 197136$$

Handwritten calculation showing the formal written method for 5476 x 36, resulting in 197136.

28.1.22

XXVIII.I.XXII

Here is what we have been learning in our Maths journey of the week lesson.

Well Done!



Scan our code...

Reflection of your learning...

Provide a multiplication question and solve it.

$49 \times 3 =$

$$3 \begin{array}{r} 90 \\ 270 \\ \hline 1470 \end{array}$$

$$\begin{array}{r} 270 \\ + 27 \\ \hline 297 \end{array} = 540$$

Picture Maths

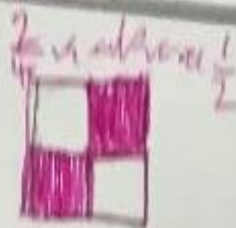


Here is what we have been learning in our Maths journey of the week lesson.

Well Done!

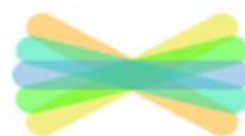
Reflection of your learning...

Provide a fraction question and solve it.



We also enjoy using Seesaw and LBQ

Learning by Questions



Seesaw

Maths Curriculum Yearly Overviews

Birth to Three

- Combine objects like stacking blocks and cups. Put objects inside others and take them out again.
- Take part in finger rhymes with numbers.
- React to changes of amount in a group of up to three items.
- Compare amounts, saying 'lots', 'more' or 'same'.
- Develop counting-like behaviour, such as making sounds, pointing or saying some numbers in sequence.
- Count in everyday contexts, sometimes skipping numbers - '1-2-3-5'.
- Climb and squeeze themselves into different types of spaces.
- Build with a range of resources.
- Complete inset puzzles.
- Compare sizes, weights etc. using gesture and language - 'bigger/little/smaller', 'high/low', 'tall', 'heavy'.
- Notice patterns and arrange things in patterns.

Three and Four-Year-Olds

- Develop fast recognition of up to 3 objects, without having to count them individually ('subitising').
- Recite numbers past 5.
- Say one number for each item in order: 1,2,3,4,5.
- Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle').
- Show 'finger numbers' up to 5.
- Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5.
- Experiment with their own symbols and marks as well as numerals.
- Solve real world mathematical problems with numbers up to 5.
- Compare quantities using language: 'more than', 'fewer than'.
- Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners', 'straight', 'flat', 'round'.
- Understand position through words alone – for example, "The bag is under the table," – with no pointing.
- Describe a familiar route.
- Discuss routes and locations, using words like 'in front of' and 'behind'.
- Make comparisons between objects relating to size, length, weight and capacity.
- Select shapes appropriately: flat surfaces for building, a triangular prism for a roof, etc.
- Combine shapes to make new ones – an arch, a bigger triangle, etc.
- Talk about and identifies the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs', etc.
- Extend and create ABAB patterns – stick, leaf, stick, leaf.
- Notice and correct an error in a repeating pattern.
- Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'

Children in Reception

- Count objects, actions and sounds.
- Subitise.
- Link the number symbol (numeral) with its cardinal number value.
- Count beyond ten.
- Compare numbers.
- Understand the 'one more than/one less than' relationship between consecutive numbers.
- Explore the composition of numbers to 10.
- Automatically recall number bonds for numbers 0–5 and some to 10.
- Select, rotate and manipulate shapes in order to develop spatial reasoning skills.
- Compose and decompose shapes so that children recognise a shape can have other shapes *within* it, just as numbers can.
- Continue, copy and create repeating patterns.
- Compare length, weight and capacity.

Early Learning Goals

Number

- Have a deep understanding of number to 10, including the composition of each number.
- Subitise (recognise quantities without counting) up to 5.
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Numerical Patterns

- Verbally count beyond 20, recognising the pattern of the counting system.
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.



Early Years Reception – long term overviews and objectives

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Getting to know you		Match, sort and compare FREE TRIAL VIEW		Talk about measure and patterns VIEW		It's me 1, 2, 3 VIEW		Circles and triangles VIEW	1, 2, 3, 4, 5 VIEW		Shapes with 4 sides VIEW
Spring term	Alive in 5 VIEW	Mass and capacity VIEW	Growing 6, 7, 8 VIEW		Length, height and time VIEW		Building 9 and 10 VIEW			Explore 3-D shapes VIEW		
Summer term	To 20 and beyond VIEW	How many now? VIEW	Manipulate, compose and decompose VIEW		Sharing and grouping VIEW		Visualise, build and map VIEW		Make connections VIEW		Consolidation	

<p>Number – number and place value</p> <ul style="list-style-type: none"> Count objects, actions and sounds Subitise Link the number symbol (numeral) with its cardinal number value. Count beyond ten. Compare numbers. Understand the 'one more than/one less than' relationship between consecutive numbers. Explore the composition of numbers to 10. Have a deep understanding of number to 10, including the composition of each number. Subitise (recognise quantities without counting) up to 5. Verbally count beyond 20, recognising the pattern of the counting system. Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. 	<p>Number – addition and subtraction</p> <ul style="list-style-type: none"> Automatically recall number bonds for numbers 0 – 5 and some to 10. Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts. 	<p>Number – multiplication and division</p> <ul style="list-style-type: none"> Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.
<p>Number – fractions</p> <ul style="list-style-type: none"> 	<p>Geometry – properties of shapes</p> <ul style="list-style-type: none"> Compose and decompose shapes so that children recognise a shape can have other shapes <i>within</i> it, just as numbers can. 	<p>Measurement</p> <ul style="list-style-type: none"> Compare length, weight and capacity.
	<p>Geometry – position and direction</p> <ul style="list-style-type: none"> Select, rotate and manipulate shapes to develop spatial reasoning skills. Continue, copy and create repeating patterns. 	
	<p>Statistics</p> <ul style="list-style-type: none"> 	



Year 1 – long term overview and objectives

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Number Place value (within 10) FREE TRIAL VIEW					Number Addition and subtraction (within 10) VIEW					Geometry Shape VIEW	Consolidation
Spring term	Number Place value (within 20) VIEW		Number Addition and subtraction (within 20) VIEW			Number Place value (within 50) VIEW		Measurement Length and height VIEW		Measurement Mass and volume VIEW		
Summer term	Number Multiplication and division VIEW			Number Fractions VIEW		Geometry Position and direction VIEW	Number Place value (within 100) VIEW		Measurement Money VIEW	Measurement Time VIEW		Consolidation

Number – number and place value <ul style="list-style-type: none"> Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number Count in multiples of twos, fives and tens Read and write numbers to 100 in numerals Read and write numbers from 1 to 20 in numerals and words Begin to recognise the place value of numbers beyond 20 (tens and ones) Identify and represent numbers using objects and pictorial representations including the number line Use the language of: equal to, more than, less than (fewer), most, least Given a number, identify one more and one less Recognise and create repeating patterns with numbers, objects and shapes Identify odd and even numbers linked to counting in twos from 0 and 1 Solve problems and practical problems involving all of the above 	Number – addition and subtraction <ul style="list-style-type: none"> Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs Represent and use number bonds and related subtraction facts within 20 Add and subtract one-digit and two-digit numbers to 20, including zero (using concrete objects and pictorial representations) Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$ 	Number – multiplication and division <ul style="list-style-type: none"> Recall and use doubles of all numbers to 10 and corresponding halves Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher
Number – fractions <ul style="list-style-type: none"> Understand that a fraction can describe part of a whole Understand that a unit fraction represents one equal part of a whole Recognise, find and name a half as one of two equal parts of an object shape or quantity (including measure) Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity (including measure) 	Geometry – properties of shapes <ul style="list-style-type: none"> Recognise and name common 2-D shapes, including rectangles (including squares), circles and triangles Recognise and name common 3-D shapes, including cuboids (including cubes), pyramids and spheres 	Measurement <ul style="list-style-type: none"> Measure and begin to record: <ul style="list-style-type: none"> lengths and heights, using non-standard and then manageable standard units (m/cm) mass/weight, using non-standard and then manageable standard units (kg/g) Measure and begin to record: <ul style="list-style-type: none"> capacity and volume using non-standard and then manageable standard units (litres/ml) time (hours/minutes/seconds) within children's range of counting competence Compare, describe and solve practical problems for: <ul style="list-style-type: none"> lengths and heights (for example, long/short, longer/shorter, tall/short, double/half) mass/weight (for example, heavy/light, heavier than, lighter than) Compare, describe and solve practical problems for: <ul style="list-style-type: none"> capacity and volume (for example, full/empty, more than, less than, half, half full, quarter) time (for example, quicker, slower, earlier, later) Recognise and use language relating to dates, including days of the week, weeks, months and years Sequence events in chronological order using language (for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening) Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times Recognise and know the value of different denominations of coins and notes
	Geometry – position and direction <ul style="list-style-type: none"> Describe movement, including whole, half, quarter and three-quarter turns Recognise and create repeating patterns with objects and shapes Describe position and direction 	
	Statistics <ul style="list-style-type: none"> Sort objects, numbers and shapes to a given criterion and their own Present and interpret data in block diagrams using practical equipment Ask and answer simple questions by counting the number of objects in each category Ask and answer questions by comparing categorical data 	



Year 2 – Long term overview and objectives

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Number Place value FREE TRIAL VIEW				Number Addition and subtraction VIEW				Geometry Shape VIEW			
Spring term	Measurement Money VIEW		Number Multiplication and division VIEW				Measurement Length and height VIEW		Measurement Mass, capacity and temperature VIEW			
Summer term	Number Fractions VIEW			Measurement Time VIEW		Statistics VIEW		Geometry Position and direction VIEW		Consolidation		

Number – number and place value

- Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward
- Read and write numbers to at least 100 in numerals and in words
- Recognise the place value of each digit in a two-digit number (tens, ones)
- Identify, represent and estimate numbers using different representations, including the number line
- Partition numbers in different ways (e.g. $23 = 20 + 3$ and $23 = 10 + 13$)
- Compare and order numbers from 0 up to 100; use $<$, $>$ and $=$ signs
- Find 1 or 10 more or less than a given number
- Round numbers to at least 100 to the nearest 10
- Understand the connection between the 10 multiplication table and place value
- Describe and extend simple sequences involving counting on or back in different steps
- Use place value and number facts to solve problems

Number – fractions

- Understand and use the terms numerator and denominator
- Understand that a fraction can describe part of a set
- Understand that the larger the denominator is, the more pieces it is split into and therefore the smaller each part will be
- Recognise, find, name and write fractions $\frac{1}{2}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity
- Write simple fractions for example $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$
- Count on and back in steps of $\frac{1}{2}$ and $\frac{1}{4}$

Number – addition and subtraction

- Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting)
- Select a mental strategy appropriate for the numbers involved in the calculation
- Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
- Understand subtraction as take away and difference (how many more, how many less/fewer)
- Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- Recall and use number bonds for multiples of 5 totalling 60 (to support telling time to nearest 5 minutes)
- Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
 - a two-digit number and ones
 - a two-digit number and tens
 - two two-digit numbers
 - adding three one-digit numbers

- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems
- Solve problems with addition and subtraction including with missing numbers: - using concrete objects and pictorial representations, including those

Geometry – properties of shapes

- Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line
- Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces
- Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]

Geometry – position and direction

- Order/arrange combinations of mathematical objects in patterns/sequences
- 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 anti-clockwise)

Statistics

- Compare and sort objects, numbers and common 2-D and 3-D shapes and everyday objects
- Interpret and construct simple pictograms, tally charts, block diagrams and simple tables
- Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity
- Ask and answer questions about totalling and comparing categorical data

Number – multiplication and division

- Understand multiplication as repeated addition
- Understand division as sharing and grouping and that a division calculation can have a remainder
- Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- Derive and use doubles of simple two-digit numbers (numbers in which the ones total less than 10)
- Derive and use halves of simple two-digit even numbers (numbers in which the tens are even)
- Calculate mathematical statements for multiplication using repeated addition and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals ($=$) signs
- Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts
- Solve problems involving division including remainders.

Measurement

- Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature ($^{\circ}$ C); capacity and volume (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
- Compare and order lengths, mass, volume/capacity and record the results using $>$, $<$ and $=$
- Recognise and use symbols for pounds (£) and pence (p)
- Combine amounts to make a particular value
- Find different combinations of coins that equal the same amounts of money
- Compare and sequence intervals of time
- Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times
- Know the number of minutes in an hour and the number of hours in a day
- Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change and measures (including time)



Year 3 – long term overview and objectives

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Number Place value FREE TRIAL VIEW			Number Addition and subtraction VIEW				Number Multiplication and division A VIEW				
Spring term	Number Multiplication and division B VIEW			Measurement Length and perimeter VIEW		Number Fractions A VIEW		Measurement Mass and capacity VIEW				
Summer term	Number Fractions B VIEW		Measurement Money VIEW		Measurement Time VIEW		Geometry Shape VIEW		Statistics VIEW		Consolidation	

Number – number and place value	Number – addition and subtraction	Number – multiplication and division
<ul style="list-style-type: none"> Count from 0 in multiples of 4, 8, 50 and 100 Count up and down in tenths Read and write numbers up to 1000 in numerals and in words Read and write numbers with one decimal place Identify, represent and estimate numbers using different representations (including the number line) Recognise the place value of each digit in a three-digit number (hundreds, tens, ones) Identify the value of each digit to one decimal place Partition numbers in different ways (e.g. $146 = 100 + 40 + 6$ and $146 = 130 + 16$) Compare and order numbers up to 1000 Compare and order numbers with one decimal place Find 1, 10 or 100 more or less than a given number Round numbers to at least 1000 to the nearest 10 or 100 Find the effect of multiplying a one- or two-digit number by 10 and 100, identify the value of the digits in the answer Describe and extend number sequences involving counting on or back in different steps Read Roman numerals from I to XII Solve number problems and practical problems involving these 	<ul style="list-style-type: none"> Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method) Select a mental strategy appropriate for the numbers involved in the calculation Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context Recall/use addition/subtraction facts for 100 (multiples of 5 and 10) Derive and use addition and subtraction facts for 100 Derive and use addition and subtraction facts for multiples of 100 totalling 1000 Add and subtract numbers mentally, including: <ul style="list-style-type: none"> - a three-digit number and ones - a three-digit number and tens - a three-digit number and hundreds Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction Estimate the answer to a calculation and use inverse operations to check answers Solve problems, including missing number problems, using number 	<ul style="list-style-type: none"> Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method) Understand that division is the inverse of multiplication and vice versa Understand how multiplication and division statements can be represented using arrays Understand division as sharing and grouping and use each appropriately Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables Derive and use doubles of all numbers to 100 and corresponding halves Derive and use doubles of all multiples of 50 to 500 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 mental and progressing to formal written methods Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy Solve problems, including missing number problems, involving multiplication and division (and interpreting remainders), including positive integer scaling problems and correspondence problems in which n objects are connected to m objects
Number – fractions	Geometry – properties of shapes	Measures
<ul style="list-style-type: none"> Show practically or pictorially that a fraction is one whole number divided by another (e.g. $\frac{3}{4}$ can be interpreted as 3 ÷ 4) Understand that finding a fraction of an amount relates to division Recognise that tenths arise from dividing objects into 10 equal parts and in dividing one-digit numbers or quantities by 10 Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators Recognise and show, using diagrams, equivalent fractions with small denominators Add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$] Compare and order unit fractions, and fractions with the same denominators (including on a number line) Count on and back in steps of $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{5}$ Solve problems that involve all of the above 	<ul style="list-style-type: none"> Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them Recognise angles as a property of shape or a description of a turn Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle Identify horizontal and vertical lines and pairs of perpendicular and parallel lines 	<ul style="list-style-type: none"> Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) Continue to estimate and measure temperature to the nearest degree (°C) using thermometers Understand perimeter is a measure of distance around the boundary of a shape Measure the perimeter of simple 2-D shapes Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks Estimate/read time with increasing accuracy to the nearest minute Record/compare time in terms of seconds, minutes, hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon, midnight Know the number of seconds in a minute and the number of days in each month, year and leap year Compare durations of events [for example to calculate the time taken by particular events or tasks] Continue to recognise and use the symbols for pounds (£) and pence (p) and understand that the decimal point separates pounds/pence Recognise that ten 10p coins equal £1 and that each coin is $\frac{1}{10}$ of £1 Add and subtract amounts of money to give change, using both £ and p in practical contexts Solve problems involving money and measures and simple problems involving passage of time
Geometry – position and direction	Statistics	
<ul style="list-style-type: none"> Describe positions on a square grid labelled with letters and numbers 	<ul style="list-style-type: none"> Use sorting diagrams to compare and sort objects, numbers and common 2-D and 3-D shapes and everyday objects Interpret and present data using bar charts, pictograms and tables 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 	



Year 4 – long term overview and objectives

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	
Autumn term	Number Place value FREE TRIAL		VIEW		Number Addition and subtraction		VIEW		Measurement Area	Number Multiplication and division A		Consolidation	
Spring term	Number Multiplication and division B		VIEW		Measurement Length and perimeter	VIEW		Number Fractions	VIEW		Number Decimals A		
Summer term	Number Decimals B	VIEW		Measurement Money	VIEW		Measurement Time	VIEW		Consolidation	Geometry Shape	VIEW	
										Statistics	VIEW		
											VIEW		

Number – number and place value

- Count in multiples of 6, 7, 9, 25 and 1000
- Count backwards through zero to include negative numbers
- Count up and down in hundredths
- Read and write numbers to at least 10 000
- Read and write numbers with up to two decimal places
- Recognise the place value of each digit in a four-digit number
- Identify the value of each digit to two decimal places
- Partition numbers in different ways (e.g. $2.3 = 2 + 0.3$ & $1 + 1.3$)
- Identify, represent and estimate numbers using different representations (including the number line)
- Order and compare numbers beyond 1000
- Order and compare numbers with the same number of decimal places up to two decimal places
- Find 0.1, 1, 10, 100 or 1000 more or less than a given number
- Round any number to the nearest 10, 100 or 1000
- Round decimals (one decimal place) to the nearest whole number
- Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer
- Describe and extend number sequences involving counting on or back in different steps, including sequences with multiplication and division steps
- Read Roman numerals to 100 and know that over time, the numeral system changed to include the concept of zero and place value
- Solve number and practical problems that involve all of the above and with increasingly large positive numbers

Number – fractions and decimals

- Understand that a fraction is one whole number divided by another (e.g. $\frac{3}{4}$ can be interpreted as $3 \div 4$)
- Recognise, find and write fractions of a discrete set of objects including those with a range of numerators and denominators
- Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten
- Count on and back in steps of unit fractions
- Compare and order unit fractions and fractions with the same denominators (including on a number line)
- Recognise and show, using diagrams, families of common equivalent fractions
- Recognise and write decimal equivalents of any number of tenths or hundredths
- Recognise and write decimal equivalents to $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$
- Add and subtract fractions with the same denominator (using diagrams)
- Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number
- Solve simple measure and money problems involving fractions and decimals to two decimal places

Number – addition and subtraction

- Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method)
- Select a mental strategy appropriate for the numbers involved in the calculation
- Recall and use addition and subtraction facts for 100
- Recall and use $+/ -$ facts for multiples of 100 totalling 1000
- Derive and use addition and subtraction facts for 1 and 10 (with decimal numbers to one decimal place)
- Add and subtract mentally combinations of two and three digit numbers and decimals to one decimal place
- Add and subtract numbers with up to 4 digits and decimals with one decimal place using the formal written methods of columnar addition and subtraction where appropriate
- Estimate; use inverse operations to check answers to a calculation
- Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why
- Solve addition and subtraction problems involving missing numbers

Geometry – properties of shapes

- Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
- Identify lines of symmetry in 2-D shapes presented in different orientations
- Complete a simple symmetric figure with respect to a specific line of symmetry
- Continue to identify horizontal and vertical lines and pairs of perpendicular and parallel lines
- Identify acute and obtuse angles and compare and order angles up to two right angles by size

Geometry – position and direction

- Describe positions on a 2-D grid as coordinates in the first quadrant
- Plot specified points and draw sides to complete a given polygon
- Describe movements between positions as translations of a given unit to the left/right and up/down

Statistics

- Use a variety of sorting diagrams to compare and classify numbers and geometric shapes based on their properties and sizes
- Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts, time graphs
- Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graph

Number – multiplication and division

- Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method)
- Recognise and use factor pairs and commutativity in mental calculations
- Recall multiplication and division facts for multiplication tables up to 12×12
- Use partitioning to double or halve any number, including decimals to one decimal place
- Use place value, known and derived facts to multiply and divide mentally, including:
 - multiplying by 0 and 1
 - dividing by 1
 - multiplying together three numbers
- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout
- Divide numbers up to 3 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
- Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
- Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, division (including interpreting remainders), integer scaling problems and harder correspondence problems such as n objects are connected to m objects

Measurement

- Estimate, compare and calculate different measures, including money in pounds and pence
- Order temperatures including those below 0°C
- Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
- Know area is a measure of surface within a given boundary
- Find the area of rectilinear shapes by counting squares
- Convert between different units of measure [e.g. kilometre to metre; hour to minute]
- Read, write and convert time between analogue and digital 12- and 24-hour clocks
- Write amounts of money using decimal notation
- Recognise that one hundred 1p coins equal £1 and that each coin is $\frac{1}{100}$ of £1
- Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days and problems involving money and measures



Year 5 – long term overview and objectives

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Number Place value FREE TRIAL VIEW			Number Addition and subtraction VIEW		Number Multiplication and division A VIEW			Number Fractions A VIEW			
Spring term	Number Multiplication and division B VIEW			Number Fractions B VIEW		Number Decimals and percentages VIEW			Measurement Perimeter and area VIEW		Statistics VIEW	
Summer term	Geometry Shape VIEW			Geometry Position and direction VIEW		Number Decimals VIEW			Number Negative numbers VIEW	Measurement Converting units VIEW		Measurement Volume VIEW

Number – number and place value	Number – addition and subtraction	Number – multiplication and division
<ul style="list-style-type: none"> Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 Count forwards and backwards in decimal steps 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 with up to 3 decimal places Identify the value of each digit to three decimal places Identify represent and estimate numbers using the number line Find 0.01, 0.1, 1, 10, 100, 1000 and other powers of 10 more or less than a given number Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 Round decimals with 2 d.p.s to the nearest whole number and to 1 d.p. Multiply/divide whole numbers and decimals by 10, 100 and 1000 Interpret negative numbers in context, count on and back with positive and negative whole numbers, including through zero Describe and extend number sequences including those with multiplication/division steps and where the step size is a decimal Read Roman numerals to 1000 (M); recognise years written as such Solve number and practical problems that involve all of the above 	<ul style="list-style-type: none"> Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method) Select a mental strategy appropriate for numbers involved in the calculation Recall and use addition and subtraction facts for 1 and 10 (with decimal numbers to one decimal place) Derive and use addition and subtraction facts for 1 (with decimal numbers to two decimal places) Add and subtract numbers mentally with increasingly large numbers and decimals to two decimal places Add and subtract whole numbers with more than 4 digits and decimals with two decimal places, including using formal written methods (columnar addition and subtraction) Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why Solve addition and subtraction problems involving missing numbers 	<ul style="list-style-type: none"> Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method) Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers Establish whether a number up to 100 is prime, recall prime numbers up to 19 Recognise and use square (°) and cube (°) numbers, and notation Use partitioning to double or halve any number, including decimals to two decimal places Multiply and divide numbers mentally drawing upon known facts Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for 2-digit numbers Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context Use estimation/inverse to check answers to calculations; determine, in the context of a problem, an appropriate degree of accuracy Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates
Number – fractions, decimals and percentages	Geometry – properties of shapes	Measurement
<ul style="list-style-type: none"> Recognise mixed numbers and improper fractions and convert from one form to the other Read and write decimal numbers as fractions (e.g. $0.71 = \frac{71}{100}$) Count on and back in mixed number steps such as $1\frac{1}{2}$ Compare and order fractions whose denominators are all multiples of the same number (including on a number line) Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths Recognise and use $\frac{1}{1000}$ and relate them to $\frac{1}{10}$, $\frac{1}{100}$ and decimal equivalents Add and subtract fractions with denominators that are the same and that are multiples of the same number (using diagrams) Write statements > 1 as a mixed number (e.g. $\frac{2}{3} + \frac{4}{3} = 1\frac{1}{3}$) Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal Solve problems involving fractions and decimals to three places Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$ and fractions with a denominator of a multiple of 10 or 25 	<ul style="list-style-type: none"> Distinguish between regular and irregular polygons based on reasoning about equal sides and angles Use the properties of rectangles to deduce related facts and find missing lengths and angles Identify 3-D shapes from 2-D representations Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles Draw given angles, and measure them in degrees (°) Identify: angles at a point and 1 whole turn (total 360°), angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°), other multiples of 90° 	<ul style="list-style-type: none"> Use, read and write standard units of length and mass Estimate (and calculate) volume (e.g., using 1 cm³ blocks to build cuboids (including cubes)) and capacity (e.g. using water) Understand the difference between liquid volume and solid volume Continue to order temperatures including those below 0°C Convert between different units of metric measure Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints Measure/calculate the perimeter of composite rectilinear shapes Calculate and compare the area of rectangle, use standard units cm² and m² and estimate the area of irregular shapes Continue to read, write and convert time between analogue and digital 12 and 24-hour clocks Solve problems involving converting between units of time Use all four operations to solve problems involving measure using decimal notation, including scaling
Geometry – position and direction	Statistics	
<ul style="list-style-type: none"> Describe positions on the first quadrant of a coordinate grid Plot specified points and complete shapes Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed 	<ul style="list-style-type: none"> Complete and interpret information in a variety of sorting diagrams (including those used to sort properties of numbers and shapes) Complete, read and interpret information in tables and timetables Solve comparison, sum and difference problems using information presented in all types of graph including a line graph Calculate and interpret the mode, median and range 	



Year 6 – long term overviews and objectives



	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Number Place value FREE TRIAL VIEW		Number Addition, subtraction, multiplication and division VIEW				Number Fractions A VIEW		Number Fractions B VIEW		Measurement Converting units VIEW	
Spring term	Number Ratio VIEW		Number Algebra VIEW		Number Decimals VIEW		Number Fractions decimals and percentages VIEW		Measurement Area, perimeter and volume VIEW		Statistics VIEW	
Summer term	Geometry Shape VIEW		Geometry Position and direction VIEW		Themed projects, consolidation and problem solving VIEW							

Number – number and place value <ul style="list-style-type: none"> Count forwards or backwards in steps of integers, decimals, powers of 10 Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit Identify the value of each digit to three decimal places Identify, represent and estimate numbers using the number line Order and compare numbers including integers, decimals and negative numbers Find 0.001, 0.01, 0.1, 1, 10 and powers of 10 more/less than a given number Round any whole number to a required degree of accuracy Round decimals with three decimal places to the nearest whole number or one or two decimal places Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places Use negative numbers in context, and calculate intervals across zero Describe and extend number sequences including those with multiplication and division steps, inconsistent steps, alternating steps and those where the step size is a decimal Solve number and practical problems that involve all of the above 	Number – addition and subtraction <ul style="list-style-type: none"> Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method) Select a mental strategy appropriate for the numbers in the calculation Recall and use addition and subtraction facts for 1 (with decimals to 2 dp) Perform mental calculations including with mixed operations and large numbers and decimals Add and subtract whole numbers and decimals using formal written methods (columnar addition and subtraction) Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy Use knowledge of the order of operations to carry out calculations Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why Solve problems involving all four operations, including those with missing numbers 	Number – multiplication and division <ul style="list-style-type: none"> Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method) Identify common factors, common multiples and prime numbers Use partitioning to double or halve any number Perform mental calculations, including with mixed operations and large numbers Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication Multiply one-digit numbers with up to two decimal places by whole numbers Divide numbers up to 4 digits by a two-digit whole number using the formal written methods of short or long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context Use written division methods in cases where the answer has up to two decimal places Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy Use knowledge of the order of operations to carry out calculations Solve problems involving all four operations, including those with missing numbers
Number – fractions, decimals and percentages <ul style="list-style-type: none"> Compare and order fractions, including fractions > 1 (including on a number line) Use common factors to simplify fractions; use common multiples to express fractions in the same denominator Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375 and $\frac{3}{8}$) Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions Multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $\frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$) Divide proper fractions by whole numbers (e.g. $\frac{1}{2} \div 2 = \frac{1}{4}$) Find simple percentages of amounts Solve problems involving fractions Solve problems which require answers to be rounded to specified degrees of accuracy Solve problems involving the calculation of percentages (e.g. of measures and such as 15% of 260) and the use of percentages for comparison 	Geometry – properties of shapes <ul style="list-style-type: none"> Compare/classify geometric shapes based on the properties and sizes Draw 2-D shapes using given dimensions and angles Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius Recognise, describe and build simple 3-D shapes, including making nets Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles Find unknown angles in any triangles, quadrilaterals, regular polygons 	Measurement <ul style="list-style-type: none"> Use, read and write standard units of length, mass, volume and time using decimal notation to three decimal places Convert between standard units of length, mass, volume and time using decimal notation to three decimal places Convert between miles and kilometres Recognise that shapes with the same areas can have different perimeters and vice versa Calculate the area of parallelograms and triangles Recognise when it is possible to use formulae for area and volume of shapes Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units (e.g. mm³ and km³) Calculate differences in temperature, including those that involved a positive and negative temperature Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
Geometry – position and direction <ul style="list-style-type: none"> Describe positions on the full coordinate grid (all four quadrants) Draw and translate simple shapes on the coordinate plane, reflect them in the axes 	Statistics <ul style="list-style-type: none"> Continue to complete and interpret information in a variety of sorting diagrams (including sorting properties of numbers and shapes) Interpret and construct pie charts and line graphs and use these to solve problems Solve comparison, sum and difference problems using information presented in all types of graph 	
Ratio and proportion <ul style="list-style-type: none"> Solve problems involving the relative sizes of two quantities where missing values can be found using integer multiplication/division facts Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples Solve problems involving similar shapes where the scale factor is known or can be found 	Algebra <ul style="list-style-type: none"> Use simple formulae Generate and describe linear number sequences Express missing number problems algebraically Find pairs of numbers that satisfy an equation with two unknowns Enumerate possibilities of combinations of two variables 	

Written Progression

Progression-in-Written-Methods.pdf
(gaskell.bolton.sch.uk)

Progression in Written Addition

Year 1 Add with numbers up to 20

Use numbered number lines to add, by counting on in ones. Encourage children to start with the larger number and count on.



Children should:

Have access to a wide range of counting equipment, everyday objects, number tracks and number lines, and be shown numbers in different contexts. Read and write the addition (+) and equals (=) signs within number sentences.

Interpret addition number sentences and solve missing box problems, using concrete objects and number line addition to solve them: $8 + 3 = \square$, $15 - 4 = \square$, $5 + 3 = 1 - \square$, $6 + \square = 10$

This builds on from prior learning of adding by combining two sets of objects into one group (5 cubes and 3 cubes) in Early Years.

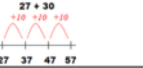
Base 10 apparatus or place value counters can be used to illustrate addition including bridging through ten by counting on 2 then counting on 3.



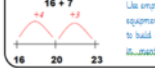
Year 2 Add with 2-digit numbers

Use empty number lines, concrete equipment, hundred squares etc. to build confidence and fluency in mental addition skills.

Add 2-digit numbers and tens:

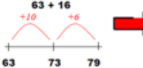


Add 2-digit numbers and units:

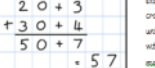


Add pairs of 2-digit numbers, moving to the partitioned column method when secure adding tens and units:

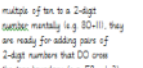
63 + 16



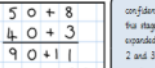
23 + 34



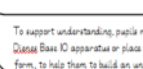
58 + 43



50 + 8

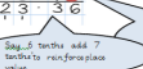
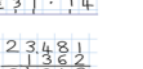


58 + 43



Year 5 Add numbers with more than 4-digits

The decimal point should be aligned in the same way as the other place value columns, and must be in the same column in the answer.

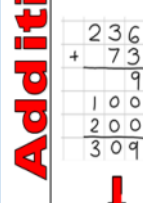


Children should:

Understand the place value of tenths and hundredths and use this to align numbers with different numbers of decimal places.

Year 3 Add numbers with up to 3-digits

Introduce the expanded column addition method:

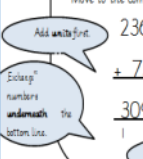


Add the units first in preparation for the compact method.

In order to carry out this method of addition:

Children need to recognise the value of the hundreds, tens and units without recording the partitioning. Pupils need to be able to add in columns.

Move to the compact column addition method, with exchanges:

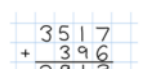


Children who are very secure and confident with 3-digit expanded column addition should be moved onto the compact column method, being introduced to 'exchanging' for the first time. Compare the expanded method to the compact column method to develop an understanding of the process and the reduced number of steps involved. Round pupils the actual value is three tens and nine units. Lead out three add ones, which equals ten tens.

Year 4 Add numbers with up to 4-digits

Move from expanded addition to the compact column method, adding units first and exchanging numbers underneath the calculation. Also include money and measures contexts.

e.g. 3517 + 396 = 3913



Introduce the compact column addition method by asking children to add the two given numbers together using the method that they are familiar with (expanded column addition - see Y3). Teacher models the compact method with exchanging, asking children to discuss similarities and differences and establish how it is carried out.

Add units first

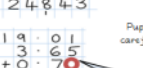
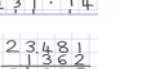
Exchange numbers underneath the bottom line

Reinforce correct place value by reminding them the actual value is 3 hundreds, 9 tens, 6 units, not 5 add 3, for example.

Use and apply this method to money and measurement values.

Year 6 Add several numbers of increasing complexity

Adding several numbers with different numbers of decimal places (including money and measures):



Empty decimal places can be filled with zero to show the place value in each column.

Children should:

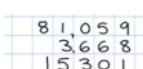
Understand the place value of tenths and hundredths and use this to align numbers with different numbers of decimal places.

Year 6 Add several numbers of increasing complexity

Adding several numbers with different numbers of decimal places (including money and measures):



Empty decimal places can be filled with zero to show the place value in each column.



Children should:

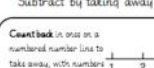
Understand the place value of tenths and hundredths and use this to align numbers with different numbers of decimal places.

Progression in Written Subtraction

Year 1 Subtract from numbers up to 20

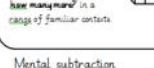
Children consolidate understanding of subtraction practically, starting subtraction on lead strings, using cubes etc. and in familiar contexts, and are introduced to more formal recording using number lines as below.

Subtract by taking away



Count back in ones on a numbered number line to take away, with numbers up to 20.

Find the distance between



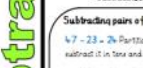
Mental subtraction

Children should start recalling subtraction facts up to and within 10 and 20, and should be able to subtract zero.

Year 2 Subtract with 2-digit numbers

Subtract on a number line by counting back, aiming to develop mental subtraction skills.

Subtracting pairs of 2-digit numbers on a number line:



Teaching children to bridge through ten (as help them to become more efficient, for example 42 - 25)

Mental strategy - subtract numbers close together by counting on:



Year 3 Subtracting with 2 and 3-digit numbers

Introduce partitioned column subtraction.

STEP 1: Introduce the method using expanded column subtraction:



STEP 2: Introduce the compact method using exchanging:



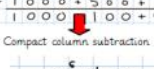
Children who are still not secure with number facts and place value will need to remain on the partitioned column method until ready for the compact method.

Children should:

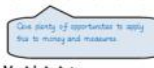
Understand the place value of tenths and hundredths and use this to align numbers with different numbers of decimal places.

Year 4 Subtract with up to 4-digit numbers

Partitioned column subtraction with exchanging (decomposition):



Compact column subtraction (see video):

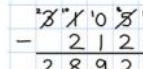


Mental strategies

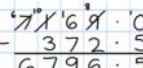
A variety of mental strategies must be taught and practised, including counting on to find the difference where numbers are close together, or where it is easier to count on (see video below).

Year 5 Subtract with at least 4-digit numbers

Includes money, measures, decimals.

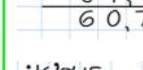
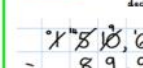


Subtract with decimal values, including mixtures of integers and decimals, aligning the decimal point.



Creates lots of opportunities for subtracting and finding differences with money and measures.

Year 6 Subtracting with increasingly large and more complex numbers and decimal values.



Empty decimal places can be filled with zero to show the place value in each column.

Pupils should be able to apply their knowledge of a range of mental strategies, mental recall skills and informal and formal written methods when selecting the most appropriate method to work out subtraction problems.

Year 1 Multiply with concrete objects, arrays and pictorial representations.

How many legs will 3 tadpoles have?
 $2 + 2 + 2 = 6$

There are 3 sweets in one bag. How many sweets are in 5 bags altogether?
 $3 + 3 + 3 + 3 = 15$

Gave children experience of counting equal group of objects in 2s, 5s and 10s.
 Present practical problem solving activities involving counting equal sets or groups, as above.

Year 2 Multiply using arrays and repeated addition (using at least 2s, 5s and 10s)

Use repeated addition on a number line:
 $4 \times 5 = \dots$
 Starting from zero, make equal jumps up on a number line to work out multiplication facts and write multiplication statements using \times and $=$ signs.
 $4 \times 5 = 20$

Use arrays:
 $5 \times 3 = 15$
 $3 \times 5 = 15$

Use practical apparatus:
 $5 \times 3 = 15$

Use mental recall:
 Children should begin to recall multiplication facts for 2, 5 and 10 times tables through practice in counting and understanding of the operation.

Year 3 Multiply 2-digits by a single digit number

Introduce the grid method for multiplying 2-digit by single-digits:
 Eg. $23 \times 8 = 184$

X	20	3
8	160	24

$160 + 24 = 184$

Partition numbers into tens and units. Multiply multiple of ten by a single digit (e.g. 20×4) using their knowledge of multiplication facts and place value.
 Recall and work out multiplication facts in the 2, 3, 4, 5, 8 and 10 times tables. Work out multiplication facts not known by repeated addition or other taught mental strategies (e.g. by commutativity, working out near multiples and adjusting using doubling etc.). Strategies to support this are repeated addition using a number line, bead bars and arrays.

To do this, children must be able to:
 Partition numbers into tens and units. Multiply multiple of ten by a single digit (e.g. 20×4) using their knowledge of multiplication facts and place value. Recall and work out multiplication facts in the 2, 3, 4, 5, 8 and 10 times tables. Work out multiplication facts not known by repeated addition or other taught mental strategies (e.g. by commutativity, working out near multiples and adjusting using doubling etc.). Strategies to support this are repeated addition using a number line, bead bars and arrays.

Year 4 Multiply 2 and 3-digits by a single digit, using all multiplication tables up to 12×12

Developing the grid method:
 Eg. $136 \times 5 = 680$

X	100	30	6
5	500	150	30

$500 + 150 + 30 = 680$

Encourage column addition to add accurately.
 Move into short multiplication (see Y5) if and when children are confident and accurate multiplying 2 and 3-digit numbers by a single digit this way, and are already confident in 'carrying' for written addition.

Children should be able to:
 Approximate before they calculate, and make this a regular part of their calculating, going back to the approximation to check the reasonableness of their answer, e.g. 365×9 is approximately $350 \times 10 = 3500$!
 Round an approximation to check the final answer against.
 Multiply multiple of ten and one hundred by a single-digit, using their multiplication table knowledge.
 Recall all times tables up to 12×12 .

Year 5 Multiply up to 4-digits by 1 or 2 digits

Introducing column multiplication:
 Introduce by comparing a grid method calculation to a short multiplication method, to see how the steps are related, but notice how there are less steps involved in the column method (see video).

Short multiplication for multiplying by a single digit:
 $327 \times 4 = 1308$

Introduce long multiplication for multiplying by 2 digits:
 $1234 \times 56 = 69064$

Moving towards more complex numbers:
 $3652 \times 8 = 29216$

Children should be able to use approximation to check the reasonableness of their answer against.

Year 6 Short and long multiplication as in Y5, and multiply decimals with up to 2 d.p by a single digit.

Short multiplication:
 $25.5 \times 8 = 204$

Long multiplication:
 $3.19 \times 52 = 165.88$

Line up the decimal points in the question and the answer.
 Round children that the single digit being in the 10th column.
 This one works for multiplying money (£p) and other measures.

Children will be able to:
 Use rounding and place value to make approximations before calculating and use these to check answers against.
 Use short multiplication (see Y5) to multiply numbers with more than 4-digits by a single digit to multiply money and measure, and to multiply decimals with up to 2 d.p. by a single digit.
 Use long multiplication (see Y5) to multiply numbers with at least 4-digits by a 2-digit number.

Year 1 Group and share small quantities

Using objects, diagrams and pictorial representations to solve problems involving both grouping and sharing.

How many groups of 4 can be made with 12 stars? = 3

Grouping:
 $12 \div 4 = 3$

Sharing:
 $12 \div 3 = 4$

Example division problem in a familiar context:
 There are 6 pupils on this table and there are 18 pieces of fruit to share between us. If we share them equally, how many will we each get?
 Can they work it out and give a division statement?
 '18 shared between 6 people gives you 3 each.'

Pupils should:
 use lots of practical apparatus, arrays and pictorial representations
 Be taught to understand the difference between "grouping" objects (How many groups of 2 can you make?) and "sharing" (Share three sweets between 2 people)
 Be able to count in multiples of 2s, 5s and 10s.
 Find half of a group of objects by sharing into 2 equal groups.

Year 2 Group and share, using the + and - sign

Use objects, arrays, diagrams and pictorial representations, and grouping on a number line.

Arrays:
 $12 \div 3 = 4$

Know and understand sharing and grouping:
 4 sweets shared between 2 people, how many do they each get?
 There are 6 sweets, how many people can have 2 sweets each?

Grouping using a number line:
 Group from zero in equal jumps of the divisor to find 'fit' (how many groups of \dots ?). Pupils could use a bead string or practical apparatus to work out problems like 'A CD costs £3. How many CDs can I buy with £12?' This is an important method to develop understanding of division as grouping.

Place 12 \div 3 as 'How many groups of 3 are in 12?'

Year 3 Divide 2-digit numbers by a single digit (where there is no remainder in the final answer)

Grouping on a number line:
 $13 \div 4 = 3 \text{ r } 1$

Short division: Last number to 50.
 $32 \div 9 = 3 \text{ r } 5$

Short division: Last number to 60.
 $18 \div 7 = 2 \text{ r } 4$

Children continue to work out unknown division facts by practising the concept of remainders, as in the example. This should be introduced progressively and with arrays, as well as being transferred to a number line. Children should work towards calculating some basic division facts with remainders exactly for the 2s, 3s, 4s, 5s, 6s, 8s and 10s, using the 'carry' remainder sense with the short division method.

One child is shown with division as grouping and demonstrates the using number line array etc. Short division for larger 2-digit numbers should be introduced, initially with carefully selected examples requiring no calculation of remainders at all. Start by introducing the layout of short division by comparing it to an array.

Round children of correct place value, that 40 is equal to 40 and 6, but in short division, you.
 How many 2's in $17 \div 2$, and record it above the 7 tens.
 How many 2's in $17 \div 2$, and record it above the 6 units.

One child demonstrates a full understanding of remainders, and also the short division method, they can be taught how to use the method when remainders occur using the calculation (e.g. $25 \div 4$), and be taught to 'carry' the remainder onto the next digit. If needed, children should use the number line to work out individual division facts that occur which they are not yet able to recall mentally.

Year 4 Divide up to 3-digit numbers by a single digit (without remainders initially)

Continue to develop short division.

STEP 1: Pupils must be secure with the process of short division for dividing 2-digit numbers by a single digit (those that do not result in a final remainder - see step in Y3), but must understand how to calculate remainders, using this to 'carry' remainders within the calculation process (see example).

STEP 2: Pupils move onto dividing numbers with up to 3-digits by a single digit. However problems and calculations provided should not result in a final answer with remainder at this stage. Children who exceed this expectation may progress to Y5 level.

When the answer for the first column is zero (i.e. 5), as in example, children could initially write a zero above to acknowledge its place, and must always 'carry' the number 11, since to the next digit is a remainder.

Include money and measure contexts when confident.

Year 5 Divide up to 4-digits by a single digit, including those with remainders.

Short division, including remainder answers.

Short division with remainders: Now that pupils are introduced to examples that give rise to remainder answers, division needs to have a real life problem setting context, where pupils consider the meaning of the remainder and use to express it, as a fraction, a decimal, or as a rounded number or value - depending upon the context of the problem.

The answer to $5309 \div 8$ could be expressed as 663 and five eighths, 663.625, or as a decimal, or rounded as appropriate to the problem, needed.

Use Y5 for how to continue the short division to give a decimal answer for children who are confident.

Include money and measure contexts.

If children are confident and accurate:
 Introduce long division for pupils who are ready to divide any number by a 2-digit number (e.g. $2678 \div 19$). This is a Year 6 expectation.

Year 6 Divide at least 4-digits by both single-digit and 2-digit numbers (including decimal numbers and quantities)

Short division: for dividing by a single digit: $4 \times 6 = 24$

Short division with remainders: Pupils should continue to use the method but with numbers to at least 4-digits, and understand how to express remainders as fractions, decimal values, whole number remainders, or rounded numbers. Real life problem setting contexts need to be the starting point where pupils have to consider the most appropriate way to express the remainder.

Calculating a decimal remainder: In this context, rather than expressing the remainder as a 1/2, a decimal point is added after the last whole there is still a remainder, and the remainder is carried onto some after the decimal point to show there was no decimal value in the original number! Use division to an appropriate degree of accuracy for the problem being solved.

Introduce long division by chunking for dividing by 2 digits:
 $27 \div 7 = 3 \text{ r } 6$

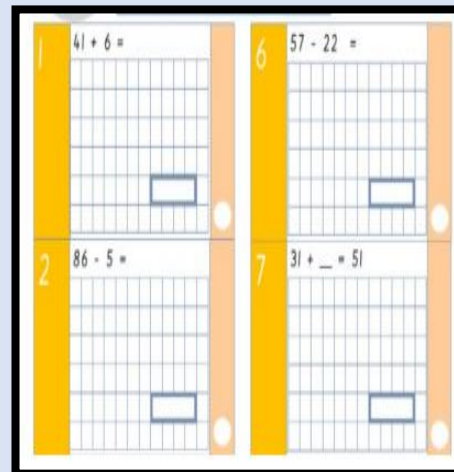
Find out how many 30s are in 270 by subtracting groups of 30, until one is reached (or until there is a remainder). Teach pupils to write a 'scaled list' first or the side that will help them decide what to try to do next.

When remainders occur, pupils should express them as fractions, decimals or rounded numbers, depending on the context of the problem.

Include money and measure contexts when confident.

Arithmetic

Arithmetic tests are to be completed at least once per every 2 weeks to provide the children with the opportunity to develop their fluency. The test aims to develop their recall of important facts and concepts and practise their application of efficient strategies and methods.



Maths Journey Of The Week

Maths journey of the week is to provide extra time to support the children with their understanding and recapping of the work they have explored that week.

This lesson is based on a carousel system where different tables are completing a variety of different activities to strengthen, secure and explore maths further. It enables small groups to go over previous arithmetic test misconceptions. Children are able to use ICT and manipulatives to support their work.

Gaskell Primary School on Twitter: "Class 4H are enjoying and working hard in their maths journey of the week lesson."

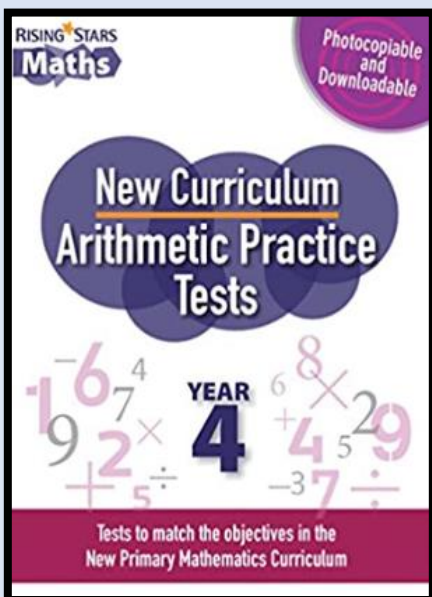


Statistics



Gaskell Primary School
@GaskellPrimary

Scores are recorded weekly so that the progress of individual children and whole cohorts can be tracked.



Maths Journey Of The Week

Time in words	24 hour clock	12 hour clock
seven o'clock in the evening	19:00	07:00pm
quarter to ten in the morning	14:20	
midnight	22:15	
midday		02:15am
half past eleven in the evening		

What Time Is It?

Write the times in 12-hour digital format using am or pm.

24-hour digital	06:10	18:10	21:12	12:45	00:45
12-hour digital					

Draw the time on each clock:

5 o'clock 11 o'clock 4 o'clock 9 o'clock

Key stage 1

Mathematics
Paper 1: arithmetic

First name _____
Middle name _____
Last name _____

Total marks _____

Key stage 2

Mathematics
Paper 1: arithmetic

TIMES TABLES

ROCKSTARS

SOUNDCHECK
25 questions

Times table recall speed is fundamental to success in Mathematics and therefore it is crucial that the children are provided with regular opportunities to practise their recall of times table facts.

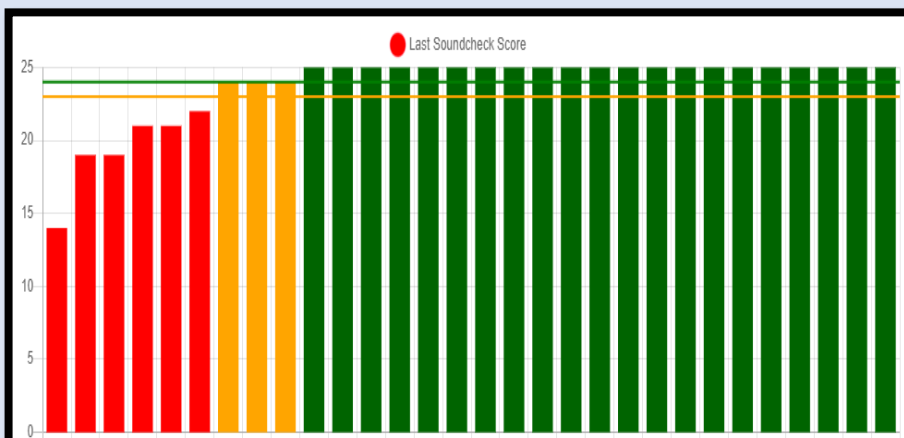
SoundCheck

All the children within KS2 to complete 5 soundchecks each week. All scores will be recorded and the children are aware of their own targets and goals.



Statistics

Statistics are accessed online and scores are tracked. Children understand where they need to be and have their own personalised goals. Children identified who require further practice are put into small interventions.



Assessment

	Assessment for Learning (AFL)	Formative	Summative
Definition	Any activity that is primarily designed to improve learning	Gives the teacher previously unknown information about the children's achievements that is used to inform next steps	Allows us to draw conclusions about the children's attainment in relation to agreed standards
Purpose	To help the children to remember, apply facts to build knowledge and to develop reasoning	To check what the children remember and understand in the short to medium term, to determine the efficacy of teaching methods, and to decide what to do in response to this information	To check what the children remember and understand in the long term and to decide whether this meets agreed standards
Audience	Teachers, children	Teachers, children, subject leaders and parents	Teachers, children, subject leaders, school leaders, governors, parents and (where applicable) other schools and government departments
Frequency	Every lesson, every day	From the mid-point of a topic onwards, with variable time-scales	End of unit
Types	Questioning, checking, feedback, Gaskell Principles of Learning, Metacognition, Retrieval Practice	Learning By Questions LBQ Feedback to learners' policy	Teacher judgement against Rising Star Use of LBQ

Children are assessed against their year group key knowledge, which are split into the following strands:

- Addition and subtraction
- Geometry
- Fraction
- Measurement
- Statistics
- Multiplication and division

The information we gather during each unit about the performance of individual children and groups will enable the teacher to provide carefully tailored feedback, questioning, explanation and support, according to their needs.