

Maths Handbook



Shoreditch Park
Primary School

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Maths at Shoreditch Park Primary School

At the heart of our curriculum design is our desire to engage our pupils and provide stimulating opportunities to learn and explore, that foster a love of mathematics and enjoyment in numbers. We aim to help children recognise the value of Maths as a life skill and solve problems by applying their mathematical knowledge to a variety of problems, as well as fostering a love of Maths. When teaching mathematics at Shoreditch Park Primary, we intend to provide a curriculum which caters for the needs of all individuals, supporting the needs of each cohort with carefully constructed and adapted lessons.

Lessons incorporate sustained levels of challenge through varied and high-quality activities with a focus on fluency, reasoning and problem solving. Planning builds a deep conceptual understanding of maths and its interrelated content in small steps so that children can apply their learning in different situations. Mathematical talk develops children's ability to articulate, discuss and explain their thinking using appropriate mathematical vocabulary.

Our teachers use the medium-term plans that are supported by a range of sources such as White Rose and NCETM, which link to the National Curriculum progression. Our teachers use these resources to plan adapted lessons using access and depth that meet the developmental needs of each child.

Times tables and arithmetic play an important part in our maths learning, with children developing their fluency in rapid recall of the multiplication tables up to 12 x 12 by the end of year 4. While the rapid recall of times tables is being developed, children are also learning how to apply and manipulate their understanding of this to reasoning and solve problems.

Within each maths lesson, the children have experiences of:

- Feedback
- Fluency
- Number talk
- Autonomy
- Adaptation

All our lessons are underpinned by concrete, pictorial and abstract opportunities.

The yearly outline for each year group is as follows:

Year 1

	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	Number: Place Value (within 10)				Number: Addition and Subtraction (within 10)					Geometry: Shape	Number: Place Value (within 20)		
Spring	Consolidation	Number: Addition and Subtraction (within 20)			Number: Place Value (within 50)			Measurement: Length and Height		Measurement: Weight and Volume		Consolidation	
Summer	Consolidation	Number: Multiplication and Division			Number: Fractions		Geometry: Position and Direction	Number: Place Value (within 100)		Measurement: Money	Measurement: Time		

Year 2

	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	Number: Place Value			Number: Addition and Subtraction					Measurement: Money		Number: Multiplication and Division	Consolidation
Spring	Number: Multiplication and Division				Statistics		Geometry: Properties of Shape		Number: Fractions			
Summer	Measurement: Length and Height		Geometry: Position and Direction		Consolidation and problem solving		Measurement: Time		Measurement: Mass, Capacity and Temperature		Consolidation	

Year 3

	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	Number: Place Value			Number: Addition and Subtraction					Number: Multiplication and Division			
Spring	Number: Multiplication and Division			Measurement: Money	Statistics		Measurement: Length and Perimeter			Number: Fractions		Consolidation
Summer	Number: Fractions			Measurement: Time			Geometry: Properties of Shape		Measurement: Mass and Capacity			Consolidation

Year 4

	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	Number: Place Value			Number: Addition and Subtraction			Measurement: Length and Perimeter		Number: Multiplication and Division			
Spring	Number: Multiplication and Division		Measurement: Area	Number: Fractions				Number: Decimals		Consolidation		
Summer	Number: Decimals	Measurement: Money		Measurement: Time		Statistics	Geometry: Properties of Shape		Geometry: Position and Direction		Consolidation	

Year 5

	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	Number: Place Value			Number: Addition and Subtraction		Statistics		Number: Multiplication and Division			Measurement: Perimeter and Area	
Spring	Number: Multiplication and Division			Number: Fractions					Number: Decimals and Percentages		Consolidation	
Summer	Consolidation	Number: Decimals			Geometry: Properties of Shape		Geometry: Position and Direction		Measurement: Converting Units		Measurement: Volume	

Year 6

	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	Number: Place Value		Number: Addition, Subtraction, Multiplication and Division				Number: Fractions					Geometry: Position and Direction
Spring	Number: Decimals	Number: Percentages		Number: Algebra		Measurement: Converting Units	Measurement: Perimeter, Area and Volume		Number: Ratio		Statistics	
Summer	Geometry: Properties of Shape			Consolidation or SATs preparation		Consolidation, investigations and preparations for KS3						

Maths in the EYFS

Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically.

Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built.

In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes."

Early learning goals that link to maths:

ELG Number:

- Have a deep understanding of number to 10, including the composition of each number.
- Subsidise (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.

ELG 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.

In the EYFS children...

- Sing lots of number songs and rhymes whilst learning to count forwards and backwards.
- Learn all about shapes and their properties so that they can describe them in simple terms.
- Use a range of equipment to explore capacity, weight, size and money in real-life situations (such as tape measures, balances, water toys, a till and coins).
- Learn number facts such as number bonds and doubles to enable fast recall.
- Practise counting regular and irregular arrangements of objects accurately.
- Learn how to add two numbers together and how to subtract a small number from a bigger number.

- Have daily opportunities to practise their maths skills indoors and outdoors in child-led provision.
- Are taught how to write numerals.
- Play lots of games in order to practise counting and recognising numerals.
- Learn how to put numbers in the correct order on a number-line.
- Take part in reasoning and problem-solving activities appropriate to their age.


Maths at the Shoreditch Park expected standard

Worksheets should be carefully planned and follow the structure seen below, with fluency, reasoning and problem solving featured in every lesson. Questions will then be adapted by depth of question.

Date:		
Success Criteria	Pupil assessment	Teacher assessment
LO: I am learning to multiply fractions		
I know to multiply the denominator by the denominator and numerator by the numerator		
I have underlined key information for reasoning		
I have simplified my answer to the lowest common denominator where possible		

Fluency			
<p>Work out the following:</p> <p>1. $\frac{1}{4} \times \frac{1}{5}$ 2. $\frac{1}{12} \times \frac{1}{3}$ 3. $\frac{2}{6} \times \frac{1}{8}$ 4. $\frac{4}{7} \times \frac{4}{5}$ 5. $\frac{12}{20} \times \frac{2}{3}$ 6. $\frac{7}{15} \times \frac{2}{5}$ 7. $\frac{2}{9} \times \frac{1}{10}$ 8. $\frac{8}{9} \times \frac{5}{9}$</p>			
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; border: 1px solid black; padding: 5px; text-align: center;">What is 1 ninth multiplied by 1 seventh?</td> <td style="width: 33%; border: 1px solid black; padding: 5px; text-align: center;">What is 1 quarter multiplied by 2 thirds?</td> <td style="width: 33%; border: 1px solid black; padding: 5px; text-align: center;">What is three fifths multiplied by two quarters?</td> </tr> </table>	What is 1 ninth multiplied by 1 seventh?	What is 1 quarter multiplied by 2 thirds?	What is three fifths multiplied by two quarters?
What is 1 ninth multiplied by 1 seventh?	What is 1 quarter multiplied by 2 thirds?	What is three fifths multiplied by two quarters?	

Reasoning		
<p>Ken is multiplying the following sum:</p> $\frac{1}{5} \times \frac{1}{6}$ <p>The answer he gets is</p> $\frac{2}{30}$ <p>Explain what he has done.</p>	<p>Naemah sees that when she multiplies 2 fractions together she ends up with a smaller fraction.</p> <p>She thinks she will eventually have a decimal fraction.</p> <p>Do you agree?</p> <p>Explain your answer.</p>	<p>Draw a diagram to represent the calculation below.</p> $\frac{1}{6} \times \frac{1}{8}$ <p>Explain what you have drawn and why.</p>

Problem Solving – Use pictures														
<p>Barbie has half a pizza. She cuts it into 4 slices.</p> <p>What fraction of the original pizza is each slice?</p> 	<p>The shaded square in the grid below is the answer to a multiplying fractions question.</p> <table style="border-collapse: collapse; margin: 5px 0;"> <tr> <td style="width: 20px; height: 20px; background-color: red;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table> <p>If that is the answer, what is the question? Explain your answer.</p>													<p>If $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$</p> <p>is $\frac{2}{8} \times \frac{2}{4} = \frac{2}{16}$?</p> <p>Explain your answer.</p>

Coverage

1. All planning is to be saved in T Drive: Subjects 2023/24 > Math > Year Groups
2. Books will evidence planning outcomes detailed in medium term plan and weekly overviews.
3. Coverage will be in line with national expectations, unless agreed

Productivity

1. Every lesson is evidenced in books.
2. Lessons build on prior knowledge.

Presentation

1. Maths margins to be 2 squares – drawn straight with a ruler
2. Work sheets to be trimmed neatly to fit the page and not folded when sticking in.
3. One digit in each square
4. All lines drawn must use a ruler
5. Handwriting will reflect end of year expectations.
6. Books have the maths book from cover and are tacky backed.

Assessment and feedback

KS1 and KS2 Teacher will:

1. Teacher assess daily against the success criteria.
2. Mark the success criteria with a tick (met), PM (partly met) and dash (not met).
3. Address misconceptions throughout the lesson by giving verbal feedback, asking questions, spotting errors and finding solutions.
4. Check books at the end of the lesson, to identify any misconceptions and address these at the start of the following lesson.
5. Mark each end of unit assessment.

All children will:

1. Receive verbal feedback from their teacher on their progress.
2. Peer-assess or self-assess their partners work against the success criteria.
3. Write in green pen, in full sentences, using the handwriting and English skills appropriate to the child's year group.

Working Walls

Maths Working Walls are clearly identifiable at the front of the classrooms. They will include the following:

1. The current fundamental focus, this will be visible and in line with planning overviews.
2. Supportive materials linking to current learning. E.g prompts for language, steps to learning
3. Include whole class shared ideas that reflect the progression in the maths strand e.g key vocabulary, definitions, methods, examples of the skill applied, key facts.
4. Include examples of pupils' work.



Maths Planning Expectation

Planning needs to be carefully constructed with your co-teacher and overviews need to be specifically targeting questions asked. The lesson content needs to be relevant and accessible for all children with teacher input targeting pre-skills and resources needed. The following links are excellent tools to support planning:

- White Rose Hub (<https://www.tes.com/teaching-resources/whiterosemathshub>)
- NCTEM Mastery Documents
- NRich - <https://nrich.maths.org/public/leg.php>

Planning must be both saved on the T Drive weekly.

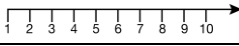


All lesson PowerPoints must show individualised lessons, building on resources provided that fit the group being taught, as well as reducing the cognitive load.

Powerpoints and worksheets should be saved chronologically with explicit learning intentions outlined.

Assessment within lessons

Each lesson to have clear Success Criteria which children understand and are able to identify if they have Met (tick), Partially Met (PM) or Need more practice (dot).

Ks1

DATE		
LO – I am learning to round numbers to the nearest 10		
Success Criteria I will know I have been successful when...	Teacher checks!	
I know if a number ends in 0,1,2,3,4 you round down		
I know if a number ends in 5,6,7,8,9 you round up		
I can identify the closest tens		
What did you use to help?		
Numberline? 	Number grid? 	Mental Methods? 
I	GG	TA

KS2

DATE	
LO – I am learning to round numbers to the nearest 10	
Success Criteria I will know I have been successful when...	Teacher checks!
I know if a number ends in 0,1,2,3,4 you round down	
I know if a number ends in 5,6,7,8,9 you round up	
I can identify the closest tens	
What did you use to help?	

I	GG	TA
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Throughout lesson, teachers will be 'on the move', asking questions, spotting errors and finding solutions.

Pupils will work with partners to talk and offer verbal feedback to the teacher and other pupils. Teachers will allow time for thinking and discussion, listening carefully to ascertain adaptations to questioning.

As pupils grapple with learning, time given without teacher intervention is used to encourage strategy finding and independent checking. At deeper stages of learning, feedback from peers can be used to evaluate.

Teachers offer feedback in the moment for maximum impact. When providing feedback, teacher will start with the assumption that children can work independently given prior input and only increase the amount of intervention if the pupil cannot move on without it.

Based on your observed teacher feedback from within lessons and the work completed in books, you will need to address any misconceptions at the start of the following lesson.

Teacher approach when addressing misconceptions:

1. Show what to improve and where – make sure this is narrowed down and be very specific as to where the improvement can be made.
2. Model, before allowing children to find mistakes.
3. Provide prompts if necessary.
4. Allow children to check through their own work and improve it based on the feedback, using a green pen.

If children are secure in their learning, the teacher will provide a challenge question.

Productivity and evidence

1. All work is recorded in books.
2. Every lesson is evidenced in books through a scrapbook page and evidence of lesson content (be it pupil response in books, shrunken A3 partner work or photo evidence with child led response).
3. Assessment and Feedback policy follows Shoreditch Park Standard expectations for maths.

Times table starters

The aim of these sessions is not to learn by chanting but to have a conceptual understanding of both times tables and number related facts based on the times table. Although times tables are often thought of as multiplication tables they also include division tables.

Multiplication tables are sets of relationships between three number facts: the table, the multiplier (or factor) and the multiple: a quick way of doing multiple addition. When you can instantly recall the third fact given the other two, without having to stop and think, then you are fluent. Research shows that children who have learnt to simply repeat, “Seven times eight is fifty-six” know nothing of its relation either to the real world or to the world of numbers.

Lesson content could include:

- Using counters, pictures, arrays
- Using doubling 2 times table to get the 4's and doubling the 4's to get the 8 times table and halving the 10 times table to get the 5 times table
- Applying the commutative law for working out the 7 times table
- Tricks and tips for multiples (finger method for 9 times table/see below for 3 x's table etc

Research NCETM and STEM for ideas, here are a few:

<https://www.stem.org.uk/elibrary/list/25046/times-3wtables>

Times Tables Rock Stars

This is a system that the children use to practise the instant recall of their multiplication and division facts.

When it comes to times tables, speed AND accuracy are important – the more facts a child remembers, the easier it is for them to complete harder calculations. Times Table Rock Stars is a fun and challenging programme designed to help children master the times tables. To be a Times Table Rock Star they need to answer any multiplication fact up to 12×12 in less than 3 seconds!

World famous rock musicians are the best at what they do because they've spent hours practising guitar chords, writing music or playing on the drums. It's just the same with times tables – all Times Table Rock Stars need to practise and practise and practise.

Each class or group within a class will be set a schedule of times tables to work on by their teacher.

The quicker a child can answer a times tables question, the higher their Rock Status.

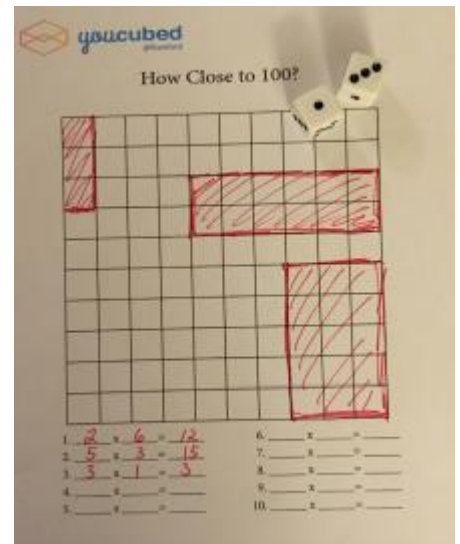
Games to encourage mastery of times tables

How Close to 100? This game is played in partners. Two children share a blank 100 grid. The first partner rolls two number dice. The numbers that come up are the numbers the child uses to make an array on the 100 grid. They can put the array anywhere on the grid, but the goal is to fill up the grid to get it as full as possible. After the player draws the array on the

grid, she writes in the number sentence that describes the grid. The game ends when both players have rolled the dice and cannot put any more arrays on the grid. How close to 100 can you get?

Maths Cards

The aim of the activity is to match cards with the same numerical answer, shown through different representations. Lay all the cards down on a table and ask children to take turns picking them; pick as many as they find with the same answer (shown through any representation). For example 9 and 4 can be shown with an area model, sets of objects such as dominoes, and the number sentence. When students match the cards they should explain how they know that the different cards are equivalent. This activity encourages an understanding of multiplication as well as rehearsal of math facts. There is a full set of cards on the T Drive.



Homework

IXL is an outline learning tool which assesses the understanding children have of mathematical strands by providing progressive questioning. As children enter the school, they will be provided with a log in for IXL. Children are then able to access maths

All Year groups 1-6 classes should be setting weekly IXL homework to be completed at home. This is to be assigned on Friday's for the weekend. Homework should always link in with topics already taught so that home learning links with topics taught in class. Children should be advised to spend an hour a week on IXL. IXL will automatically mark and send data to teachers regarding completion and accuracy.

Year 3 maths

IXL offers hundreds of year 3 maths skills to explore and learn! Not sure where to start? Go to your personalised [Recommendations wall](#) and choose a skill that looks interesting!

Counting and number patterns

- A.1 Skip-counting by 2, 5 and 10
- A.2 Skip-counting by 4
- A.3 Skip-counting by 8
- A.4 Skip-counting by 100
- A.5 Skip-counting sequences
- A.6 Skip-counting stories
- A.7 Skip-counting puzzles
- A.8 Number lines - up to 100
- A.9 Counting patterns - up to 100
- A.10 Hundred chart
- A.11 Number lines - up to 1,000
- A.12 Counting patterns - up to 1,000
- A.13 Even or odd
- A.14 Identify numbers as even or odd
- A.15 Select even or odd numbers
- A.16 Even or odd numbers on number lines
- A.17 Which even or odd number comes before or after?

Comparing and ordering

- B.1 Comparing numbers up to 100
- B.2 Comparing numbers up to 1,000
- B.3 Put numbers up to 100 in order

Subtraction - three digits

- J.1 Subtract multiples of 100
- J.2 Subtract a one-digit number from a three-digit number
- J.3 Subtract a two-digit number from a three-digit number
- J.4 Subtract a three-digit number from a three-digit number
- J.5 Subtract a multiple of 100 from a three-digit number
- J.6 Subtract three-digit numbers
- J.7 Subtraction input/output tables - up to three digits
- J.8 Subtract a one-digit number from a three-digit number: word problems
- J.9 Subtract a two-digit number from a three-digit number: word problems
- J.10 Subtract a three-digit number from a three-digit number: word problems
- J.11 Subtraction word problems - up to three digits
- J.12 Complete the subtraction sentence - up to three digits
- J.13 Write the subtraction sentence - up to three digits
- J.14 Balance subtraction equations - up to three digits

Two-dimensional shapes

- T.1 Name the two-dimensional shape
- T.2 Select two-dimensional shapes
- T.3 Count sides and vertices
- T.4 Compare sides and vertices
- T.5 Angles: greater than, less than or equal to a right angle
- T.6 Flip, turn and slide
- T.7 Identify congruent shapes
- T.8 Symmetry
- T.9 Fractions of a turn

Three-dimensional shapes

- U.1 Name the three-dimensional shape
- U.2 Select three-dimensional shapes
- U.3 Count vertices, edges and faces
- U.4 Compare vertices, edges and faces
- U.5 Identify shapes traced from solids
- U.6 Identify faces of three-dimensional shapes
- U.7 Shapes of everyday objects I
- U.8 Shapes of everyday objects II

Geometric measurement and lines

Teachers can then set a strand, for example A1, for children to complete at home. When children click on the strand, they are given the opportunity to learn with an example or complete a range of questions, as seen below:

Learn with an example

Count the tomatoes by 5s.

How many tomatoes are there?

Submit

Questions answered: 0

Time elapsed: 00:00:02

SmartScore: 0 out of 100

Children are encouraged to practise their times tables at home by using 'Times Tables Rock Stars'. Each class or group within a class will be set a schedule of times tables to work on by their teacher.

Presentation expectation in books

5.6.17

LO – I am learning to round numbers to the nearest 10

Success Criteria

I will know I have been successful when...

I know if a number ends in 0,1,2,3,4 you round down

I know if a number ends in 5,6,7,8,9 you round up

I can identify the closest tens

What did you use to help?

Teacher checks!

I GG TA

Date on top of SC

Success criteria stuck 1 square under top of the page

Margins 2 squares drawn with a ruler