

# Lancasterian Primary School

## Maths Policy



Version No.	Date	Approved by	Review Frequency	Review Date
2	June 2018	Governing Body	+2 years	June 2020

At Lancasterian we aim to create confident mathematicians who enjoy tackling challenging tasks. We do this through teaching the following themes taken from the National Curriculum:

- **Fluency** - This is enabling the children to become fluent in number in order to be able to use skills and knowledge efficiently and with a deep understanding of the fundamental concepts of mathematics
- **Reasoning** - This includes following a line of enquiry, conjecturing relationships and generalisations and developing a mathematical argument
- **Problem solving** - This includes giving the children opportunities to apply what they have learnt, where they need to break down problems into smaller steps and persevere in seeking solutions

### Primary Advantage Maths

Primary Advantage Maths (PA Maths) is a framework developed in Hackney schools which takes elements from different places (e.g. the National Curriculum, Singapore, Shanghai Maths). The key principles are as follows:

- **Daily Counting**  
Each child experiences counting in some form every day (this may be outside of the Maths lesson). This is essential in order to provide the children with a secure understanding of place value and number.
- **Concrete → Pictorial → Abstract**  
This means that children are exposed to new ideas at a *concrete* level using a range of equipment such as Dienes' blocks, cubes, Numicon, etc. before moving on to *pictorial* representations. This may mean diagrams, sketches or the Singapore bar model. This allows the children to develop deep understanding before moving on to the *abstract* representation, which is the written calculation.
- **Bar Model**  
This is part of the pictorial representation of a problem, or the 'Real Story'. Children learn how to represent word problems using the bar to understand what is being asked, allowing them to then select the correct functions.
- **Real Story – Maths Story**  
We teach the children the difference between the 'Real Story' or what is actually happening (concrete and pictorial), and the 'Maths Story' or how it is represented by numbers (abstract). The children use both in their working out until their understanding is deep enough to allow them to go straight to the abstract or numerical representation.
- **Context**  
As far as possible, we aim to give maths questions a context or put into 'real life' situations so children have lots of opportunities to apply their learning.

## **Planning**

Teachers from Reception to Year 6 use the PA Maths document as a basis for their medium term and weekly planning, however, the needs of the children are first and foremost so flexibility is key. We also make regular use of our assessment tool to inform planning. Our daily lesson structures are flexible to allow teachers to adapt their teaching to the needs of their class. However, it is expected that certain elements will regularly be included such as:

- Daily counting
- Hook (question, statement or context to 'hook' the children's interest)
- Opportunities for paired/group/class discussion
- Careful consideration of what models and images will be most suitable to encourage deep understanding
- Oral/mental starters at least 3 times a week
- Investigative approaches to allow children to apply their skills and knowledge as much as possible, utilising resources from a range of online resources (e.g. NRICH, NCETM) and concrete examples (e.g. Brain Booster).
- Explicit teaching of mental maths strategies
- Test base skills (e.g. Test Base online resource, Rising Stars Topic questions)
- Assessment for Learning opportunities
- Mastery challenges linked to the learning objective

## **Differentiation**

Meaningful differentiation is vital in ensuring that each child can fully access the learning in every part of the lesson. At Lancasterian we teach using the Mastery Approach, where by all children are working towards the same learning challenge. Extension tasks aim to provide children with the opportunity to deepen their understanding of concepts, rather than moving on to the next thing too quickly. As part of the PA Maths framework, a range of equipment is available for every child in every lesson but differentiation for lower ability children should not be limited to simply using equipment.

## **Mental Maths**

Being able to calculate mentally is essential in order to be able to do more complex written calculations. Therefore, we focus on making sure the children have number facts at their fingertips (listed in the Learn Its, Appendix 1) and explicitly teaching mental skills (taken from the APP for the four operations).

## **Homework**

In line with the school Homework Policy, there is a focus on children developing their fluency around the following key facts:

KS1 – number bonds for all numbers up to 20 and selected times tables (*Learn Its*)

Lower KS2 – key addition facts and times tables up to 12x12 (*Learn Its*)

Upper KS2 – revision of key addition facts and times tables up to 12x12 (*Learn Its*)

## **Pupil recording**

We create work to be proud of. Lessons should be recorded in books 4-5 times a week, however, this will not always be handwritten. As in all lessons, worksheets should be kept to a minimum.

- Age appropriate presentation, e.g. 1 number in 1 square; blank books
- Use of pencil only in Maths books, apart from green or blue pen when responding to marking (*green is for self-assessment, blue is for peer-assessment*)
- Short date and objective underlined for each piece of work
- When appropriate, blank page used for 'Real Story' and facing squared page used for 'Maths Story'
- Photos recording practical work
- Photocopies of work completed on whiteboards
- Evidence of different opportunities of different methods of recording
- High expectations of neatness

### **Assessment**

We follow the school Assessment Policy, along with the following:

#### **Formative assessment**

- Quality marking and discussion with/observations of the children are the most valuable sources of formative assessment. The children are given regular opportunities to respond to marking in their books, either in writing or verbally. (See Feedback and Marking Policy for more information).
- Teacher assessment is mainly informed by APP; this is the starting point used when planning. Three representative children are chosen (one higher ability, one middle and one lower).
- Objectives intended to be covered that week are dated in the classes APP folder. At the end of each week, class teachers are to indicate the level of understanding of each target using the triangle system (see Assessment Policy). Any objectives not met should then be addressed the following week.

#### **Summative assessment**

- We also do termly tests which are used to support teacher assessment and allow for staff to carry out gap analysis (e.g. Rising Stars).

### **EYFS**

Maths is an integral part of the provision in EYFS, with practitioners developing early maths skills through routines and organisation of the environment, as well as stories, rhymes and songs. Parents are regularly involved in their child's mathematical development, for instance during Stay and Play, and it is highlighted during parent courses. In Reception, parents of focus children are given feedback on their mathematical progress.

## Appendix A – Learn Its

### Year 1: Learn At Home

As part of our new Maths Curriculum, the children will have a set of **key facts to learn at home** each term. It is important that the children know these facts **by heart** so please help them practise!

Term 1	Term 2	Term 3
1 + 9	4 + 2	6 + 6
2 + 8	5 + 2	7 + 7
3 + 7	6 + 2	8 + 8
4 + 6	7 + 2	9 + 9
5 + 5	8 + 2	
	9 + 2	Multiples of 2
Multiples of 5		2
5	4 + 3	4
10	5 + 3	6
15	6 + 3	8
20		10
25		12
30		14
35		16
40		18
45		20
50		22
55		24
60		
		2 times table
5 times table		1 x 2 = 2
1 x 5 = 5		2 x 2 = 4
2 x 5 = 10		3 x 2 = 6
3 x 5 = 15		4 x 2 = 8
4 x 5 = 20		5 x 2 = 10
5 x 5 = 25		6 x 2 = 12
6 x 5 = 30		7 x 2 = 14
7 x 5 = 35		8 x 2 = 16
8 x 5 = 40		9 x 2 = 18
9 x 5 = 45		10 x 2 = 20
10 x 5 = 50		11 x 2 = 22
11 x 5 = 55		12 x 2 = 24
12 x 5 = 60		

## Year 2: Learn At Home

As part of our new Maths Curriculum, the children will have a set of **key facts to learn at home** each term. It is important that the children know these facts **by heart** so please help them practise!

Term 1	Term 2	Term 3
4 + 9	6 + 7	6 + 8
4 + 8	5 + 6	5 + 8
4 + 7	5 + 4	5 + 7
3 + 8	8 + 7	5 + 9
3 + 9	8 + 9	6 + 9
		7 + 9
10 times table	5 times table	2 times table
1 x 10 = 10	1 x 5 = 5	1 x 2 = 2
2 x 10 = 20	2 x 5 = 10	2 x 2 = 4
3 x 10 = 30	3 x 5 = 15	3 x 2 = 6
4 x 10 = 40	4 x 5 = 20	4 x 2 = 8
5 x 10 = 50	5 x 5 = 25	5 x 2 = 10
6 x 10 = 60	6 x 5 = 30	6 x 2 = 12
7 x 10 = 70	7 x 5 = 35	7 x 2 = 14
8 x 10 = 80	8 x 5 = 40	8 x 2 = 16
9 x 10 = 90	9 x 5 = 45	9 x 2 = 18
10 x 10 = 100	10 x 5 = 50	10 x 2 = 20
11 x 10 = 110	11 x 5 = 55	11 x 2 = 22
12 x 10 = 120	12 x 5 = 60	12 x 2 = 24
These should be known in any order and the division facts should be learnt too eg $80 \div 10 = 8$ and $70 \div 7 = 10$	The 5 times table is covered in Y1, so should now focus on learning in any order and the division facts eg $30 \div 5 = 6$ and $55 \div 11 = 5$	The 2 times table is covered in Y1, so should now focus on learning in any order and the division facts eg $8 \div 4 = 2$ and $10 \div 2 = 5$

## Year 3

### Learn At Home



As part of our new Maths Curriculum, the children will have **key facts to learn at home** each term. It is important that the children know these facts **by heart** so please help them practise!

Term 1	Term 2	Term 3
<p><b>3 times table</b>  <math>1 \times 3 = 3</math>  <math>2 \times 3 = 6</math>  <math>3 \times 3 = 9</math>  <math>4 \times 3 = 12</math>  <math>5 \times 3 = 15</math>  <math>6 \times 3 = 18</math>  <math>7 \times 3 = 21</math>  <math>8 \times 3 = 24</math>  <math>9 \times 3 = 27</math>  <math>10 \times 3 = 30</math>  <math>11 \times 3 = 33</math>  <math>12 \times 3 = 36</math></p> <p>These should be known in any order and the division facts should be learnt too eg  <math>4 \times 3 = 12</math>  <math>3 \times 4 = 12</math>  <math>12 \div 3 = 4</math>  <math>12 \div 4 = 3</math></p>	<p><b>4 times table</b>  <math>1 \times 4 = 4</math>  <math>2 \times 4 = 8</math>  <math>3 \times 4 = 12</math>  <math>4 \times 4 = 16</math>  <math>5 \times 4 = 20</math>  <math>6 \times 4 = 24</math>  <math>7 \times 4 = 28</math>  <math>8 \times 4 = 32</math>  <math>9 \times 4 = 36</math>  <math>10 \times 4 = 40</math>  <math>11 \times 4 = 44</math>  <math>12 \times 4 = 48</math></p> <p>These should be known in any order and the division facts should be learnt too eg  <math>6 \times 4 = 24</math>  <math>4 \times 6 = 24</math>  <math>24 \div 4 = 6</math>  <math>24 \div 6 = 4</math></p>	<p><b>9 times table</b>  <math>1 \times 9 = 9</math>  <math>2 \times 9 = 18</math>  <math>3 \times 9 = 27</math>  <math>4 \times 9 = 36</math>  <math>5 \times 9 = 45</math>  <math>6 \times 9 = 54</math>  <math>7 \times 9 = 63</math>  <math>8 \times 9 = 72</math>  <math>9 \times 9 = 81</math>  <math>10 \times 9 = 90</math>  <math>11 \times 9 = 99</math>  <math>12 \times 9 = 108</math></p> <p>These should be known in any order and the division facts should be learnt too eg  <math>5 \times 9 = 45</math>  <math>9 \times 5 = 45</math>  <math>45 \div 9 = 5</math>  <math>45 \div 5 = 9</math></p>

Year 4



Learn At Home

As part of our new Maths Curriculum, the children will have **key facts to learn at home** each term. It is important that the children know these facts **by heart** so please help them practise!



Term 1	Term 2	Term 3																																																																																																																																																																																																																																																			
<p>6 times table</p> <p>These should be known in any order and the division facts should be learnt too eg</p> $1 \times 6 = 6$ $2 \times 6 = 12$ $3 \times 6 = 18$ $4 \times 6 = 24$ $5 \times 6 = 30$ $6 \times 6 = 36$ $7 \times 6 = 42$ $8 \times 6 = 48$ $9 \times 6 = 54$ $10 \times 6 = 60$ $11 \times 6 = 66$ $12 \times 6 = 72$ <p>8 x 6 = 48 6 x 8 = 48 48 ÷ 6 = 8 48 ÷ 8 = 6</p>	<p>7 times table</p> <p>These should be known in any order and the division facts should be learnt too eg</p> $1 \times 7 = 7$ $2 \times 7 = 14$ $3 \times 7 = 21$ $4 \times 7 = 28$ $5 \times 7 = 35$ $6 \times 7 = 42$ $7 \times 7 = 49$ $8 \times 7 = 56$ $9 \times 7 = 63$ $10 \times 7 = 70$ $11 \times 7 = 77$ $12 \times 7 = 84$ <p>3 x 7 = 21 7 x 3 = 21 21 ÷ 7 = 3 21 ÷ 3 = 7</p>	<p>8 times table</p> <p>These should be known in any order and the division facts should be learnt too eg</p> $1 \times 8 = 8$ $2 \times 8 = 16$ $3 \times 8 = 24$ $4 \times 8 = 32$ $5 \times 8 = 40$ $6 \times 8 = 48$ $7 \times 8 = 56$ $8 \times 8 = 64$ $9 \times 8 = 72$ $10 \times 8 = 80$ $11 \times 8 = 88$ $12 \times 8 = 96$ <p>7 x 8 = 56 8 x 7 = 56 56 ÷ 8 = 7 56 ÷ 7 = 8</p>																																																																																																																																																																																																																																																			
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## Year 5

### Learn At Home



As part of our new Maths Curriculum, the children will have **key facts to learn at home** each term. It is important that the children know these facts **by heart** so please help them practise!

#### Term 1

+	2	3	4	5	6	7	8	9
2	4	5	6	7	8	9	10	11
3	5	6	7	8	9	10	11	12
4	6	7	8	9	10	11	12	13
5	7	8	9	10	11	12	13	14
6	8	9	10	11	12	13	14	15
7	9	10	11	12	13	14	15	16
8	10	11	12	13	14	15	16	17
9	11	12	13	14	15	16	17	18

Revision of any times tables not known.

Times tables should be known in any order and the division facts should be learnt too eg

$$\begin{aligned}7 \times 8 &= 56 \\8 \times 7 &= 56 \\56 \div 8 &= 7 \\56 \div 7 &= 8\end{aligned}$$

#### Term 2

+	2	3	4	5	6	7	8	9
2	4	5	6	7	8	9	10	11
3	5	6	7	8	9	10	11	12
4	6	7	8	9	10	11	12	13
5	7	8	9	10	11	12	13	14
6	8	9	10	11	12	13	14	15
7	9	10	11	12	13	14	15	16
8	10	11	12	13	14	15	16	17
9	11	12	13	14	15	16	17	18

Revision of any times tables not known.

Times tables should be known in any order and the division facts should be learnt too eg

$$\begin{aligned}7 \times 8 &= 56 \\8 \times 7 &= 56 \\56 \div 8 &= 7 \\56 \div 7 &= 8\end{aligned}$$

#### Term 3

+	2	3	4	5	6	7	8	9
2	4	5	6	7	8	9	10	11
3	5	6	7	8	9	10	11	12
4	6	7	8	9	10	11	12	13
5	7	8	9	10	11	12	13	14
6	8	9	10	11	12	13	14	15
7	9	10	11	12	13	14	15	16
8	10	11	12	13	14	15	16	17
9	11	12	13	14	15	16	17	18

Revision of any times tables not known.

Times tables should be known in any order and the division facts should be learnt too eg

$$\begin{aligned}7 \times 8 &= 56 \\8 \times 7 &= 56 \\56 \div 8 &= 7 \\56 \div 7 &= 8\end{aligned}$$



## Year 6

### Learn At Home



As part of our new Maths Curriculum, the children will have **key facts to learn at home** each term. It is important that the children know these facts **by heart** so please help them practise!



Term 1	Term 2	Term 3
<p>Revision of any times tables not known.</p> <p>Times tables should be known in any order and the division facts should be learnt too eg</p> $7 \times 8 = 56$ $8 \times 7 = 56$ $56 \div 8 = 7$ $56 \div 7 = 8$	<p>Revision of any times tables not known.</p> <p>Times tables should be known in any order and the division facts should be learnt too eg</p> $7 \times 8 = 56$ $8 \times 7 = 56$ $56 \div 8 = 7$ $56 \div 7 = 8$	<p>Revision of any times tables not known.</p> <p>Times tables should be known in any order and the division facts should be learnt too eg</p> $7 \times 8 = 56$ $8 \times 7 = 56$ $56 \div 8 = 7$ $56 \div 7 = 8$