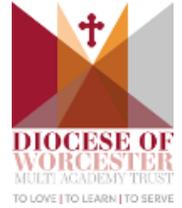




## Building number sense and fluency in Maths at Malvern Parish



Practise and consolidation play a central role to mathematics learning. We understand the importance of ensuring children regularly retrieve previous learning to ensure learning is not 'forgotten'. Daily maths lessons are supplemented by regular fluency sessions that are designed to reinforce and provide regular practice in the basic skills. Fluency in maths is often linked to number sense and calculations. When children are fluent they are able to calculate accurately and efficiently and be flexible in their choice of strategies. They feel confident in working with numbers and can explain their thinking and apply their understanding in different contexts.

### What are the expectations for children's number sense and fluency?(*adapted from NCETM/DFE Guidance for Mathematics 2020*)

- EYFS – Secure understanding of numbers to 10
- Y1 – Addition and subtraction facts within 10
- Y2 – Addition and subtraction facts across 10

+	0	1	2	3	4	5	6	7	8	9	10
0	0+0	0+1	0+2	0+3	0+4	0+5	0+6	0+7	0+8	0+9	0+10
1	1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+10
2	2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8	2+9	2+10
3	3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7	3+8	3+9	3+10
4	4+0	4+1	4+2	4+3	4+4	4+5	4+6	4+7	4+8	4+9	4+10
5	5+0	5+1	5+2	5+3	5+4	5+5	5+6	5+7	5+8	5+9	5+10
6	6+0	6+1	6+2	6+3	6+4	6+5	6+6	6+7	6+8	6+9	6+10
7	7+0	7+1	7+2	7+3	7+4	7+5	7+6	7+7	7+8	7+9	7+10
8	8+0	8+1	8+2	8+3	8+4	8+5	8+6	8+7	8+8	8+9	8+10
9	9+0	9+1	9+2	9+3	9+4	9+5	9+6	9+7	9+8	9+9	9+10
10	10+0	10+1	10+2	10+3	10+4	10+5	10+6	10+7	10+8	10+9	10+10

The full set of addition calculations that pupils need to be able to solve with automaticity are shown in the table below. Pupils must also be able to solve the corresponding subtraction calculations with automaticity.

Pupils must be fluent in these facts by the end of year 2, and should continue with regular practice through year 3 to secure and maintain fluency. It is essential that pupils have automatic recall of these facts before they learn the formal written methods of columnar addition and subtraction.

- Y3 – Secure and maintain fluency in addition and subtraction across 10, recall the 2, 3, 4, 5, 8, 10 multiplication tables and division facts
- Y4 – Recall the multiplication tables and division facts up to 12x12
- Y5 – Secure and maintain fluency in all multiplication tables and division facts, recall written methods for the four operations
- Y6 – Secure and maintain fluency in all multiplication tables, division facts and written methods for the four operations

1 × 1	1 × 2	1 × 3	1 × 4	1 × 5	1 × 6	1 × 7	1 × 8	1 × 9	1 × 10	1 × 11	1 × 12
2 × 1	2 × 2	2 × 3	2 × 4	2 × 5	2 × 6	2 × 7	2 × 8	2 × 9	2 × 10	2 × 11	2 × 12
3 × 1	3 × 2	3 × 3	3 × 4	3 × 5	3 × 6	3 × 7	3 × 8	3 × 9	3 × 10	3 × 11	3 × 12
4 × 1	4 × 2	4 × 3	4 × 4	4 × 5	4 × 6	4 × 7	4 × 8	4 × 9	4 × 10	4 × 11	4 × 12
5 × 1	5 × 2	5 × 3	5 × 4	5 × 5	5 × 6	5 × 7	5 × 8	5 × 9	5 × 10	5 × 11	5 × 12
6 × 1	6 × 2	6 × 3	6 × 4	6 × 5	6 × 6	6 × 7	6 × 8	6 × 9	6 × 10	6 × 11	6 × 12
7 × 1	7 × 2	7 × 3	7 × 4	7 × 5	7 × 6	7 × 7	7 × 8	7 × 9	7 × 10	7 × 11	7 × 12
8 × 1	8 × 2	8 × 3	8 × 4	8 × 5	8 × 6	8 × 7	8 × 8	8 × 9	8 × 10	8 × 11	8 × 12
9 × 1	9 × 2	9 × 3	9 × 4	9 × 5	9 × 6	9 × 7	9 × 8	9 × 9	9 × 10	9 × 11	9 × 12
10 × 1	10 × 2	10 × 3	10 × 4	10 × 5	10 × 6	10 × 7	10 × 8	10 × 9	10 × 10	10 × 11	10 × 12
11 × 1	11 × 2	11 × 3	11 × 4	11 × 5	11 × 6	11 × 7	11 × 8	11 × 9	11 × 10	11 × 11	11 × 12
12 × 1	12 × 2	12 × 3	12 × 4	12 × 5	12 × 6	12 × 7	12 × 8	12 × 9	12 × 10	12 × 11	12 × 12

The full set of multiplication calculations that pupils need to be able to solve by automatic recall are shown in the table below. Pupils must also have automatic recall of the corresponding division facts. Pupils must be fluent in these facts by the end of year 4, and this is assessed in the multiplication tables check. Pupils should continue with regular practice through year 5 to secure and maintain fluency. The 36 most important facts are highlighted in the table. Fluency in these facts should be prioritised because, when coupled with an understanding of commutativity and fluency in the formal written method for multiplication, they enable pupils to multiply any pair of numbers.

## How is children's confidence in number sense and fluency built in KS1 and KS2?



In Key Stage 1, teachers use the White Rose Education Fluency Bee programme to revisit and secure knowledge from prior year groups. In 15 minute daily sessions, all pupils revisit the fundamentals of number sense and mathematical fluency through frequent practise, the use of key representations and concrete resources to support conceptual understanding and exposure to mathematical talk.



In Key Stage 2, teachers use discrete arithmetic sessions to revisit and secure knowledge from their prior year groups. At least three times a week, all pupils have the opportunity to revisit the fundamentals of number bonds or times tables, practise or consolidate mental and written methods for calculation and revisit any gaps from their current learning. Staff draw on resources from Maths Shed, White Rose Education and Classroom Secrets as well as other resources to support these sessions.

## How is prior learning revisited regularly to support fluency?



Maths lessons begin with revisiting of prior learning through the use of Flashback 4 – this material offers 4 questions asking children to recall knowledge from their current unit of learning, their previous unit of learning and learning from prior year groups. A starter activity will then activate children's prior knowledge relevant to that lesson's content before teachers move on to their instruction for that lesson's content.

## How is children's confidence in number sense and fluency assessed?

Children's progress and attainment in fundamentals such as number bonds and times tables is monitored through weekly, low stakes testing in both KS1 and KS2. Throughout the year, the focus of this testing will progress: children will first have the opportunity to revisit previous year groups' fluency expectations in

these tests before moving onto their current fluency targets and ending the year by consolidating their year group expectations.

<p><b>Block 1</b></p> <p>Weekly low stakes testing to aid revision of previous year group fluency expectations</p>	<p><b>Block 2</b></p> <p>Weekly low stakes testing using Rocket Maths in KS1 or Mathletes in KS2 (see examples below) to support current fluency targets</p>	<p><b>Block 3</b></p> <p>Weekly low stakes testing using Rocket Maths or Mathletes to support current fluency targets</p> <p>Weekly low stakes testing to support consolidation of current year group expectations</p>
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### KS1 – Rocket Maths




Rocket Maths Moon 1		Name: _____ Date: _____	
$1 + 0 =$	$1 + 2 =$	$5 + 0 =$	$5 + 1 =$
$0 + 1 =$	$0 + 3 =$	$4 + 1 =$	$4 + 2 =$
$2 + 0 =$	$4 + 0 =$	$3 + 2 =$	$3 + 3 =$
$1 + 1 =$	$3 + 1 =$	$2 + 3 =$	$2 + 4 =$
$0 + 2 =$	$2 + 2 =$	$1 + 4 =$	$1 + 5 =$
$3 + 0 =$	$1 + 3 =$	$0 + 5 =$	$0 + 6 =$
$2 + 1 =$	$0 + 4 =$	$6 + 0 =$	$0 + 0 =$

### KS2 – Mathletes

Name: \_\_\_\_\_

Number of Questions: **30**  
Testing: **3×, 4×, 8×** (with **inverse**)

$36 \div 3 =$ _____	$56 \div 8 =$ _____	$30 \div 3 =$ _____
$6 \div 3 =$ _____	$3 \times 8 =$ _____	$4 \times 9 =$ _____
$72 \div 8 =$ _____	$21 \div 3 =$ _____	$12 \div 4 =$ _____
$8 \times 4 =$ _____	$12 \times 3 =$ _____	$2 \times 4 =$ _____
$8 \times 9 =$ _____	$8 \times 11 =$ _____	$40 \div 8 =$ _____
$24 \div 8 =$ _____	$8 \times 1 =$ _____	$4 \times 12 =$ _____
$6 \times 3 =$ _____	$80 \div 8 =$ _____	$10 \times 4 =$ _____
$2 \times 3 =$ _____	$24 \div 3 =$ _____	$33 \div 3 =$ _____
$3 \times 2 =$ _____	$3 \times 5 =$ _____	$9 \times 4 =$ _____
$4 \times 11 =$ _____	$8 \times 4 =$ _____	$12 \div 3 =$ _____