

**For students at risk working at  
Key Stage 3 levels (11 yrs +)**

# **RESCUE MATHS**

## **BOOK 1**

### **NUMBER: WRITTEN**

### **CALCULATIONS**

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# Information on the Series

## About The Rescue Maths Books (Key Stage 3: 11 years plus)

This series has been created for classroom teachers and parents to use for home or class work - with students of a range of abilities taken into consideration. The focus will be on reinforcement of “the basics” in maths, as well as activities aimed at developing understanding of classroom activities in mathematics.

Students with Specific Learning Difficulties experience a range of problems with their academic learning. These aspects include:-

- Difficulties with word recognition and comprehension
- Coping with pages that are too cluttered and with too many differing requirements
- Being able to sequence, recall and apply strategies in abstract situations
- Striving to process formation - while working to meet deadlines
- Having trouble with personal organization with their schoolwork.

The books in this series are designed with these problems in mind, and whilst pages are designed for the student with learning difficulties, they can also be used as a simple and straightforward introduction to concepts or a reinforcement of mathematical strategies for the whole class. The books will follow a basic format, with a variety of homework topics usually containing a choice of two worksheets.

## Content of the Books

The Three Books in the Series designed for Key Stage 3 students are:

Book One: Number - Written Calculations

Book Two: Measurement, Chance and Data

Book Three: Number - Applications

### Curriculum Links and Learning Outcomes

The aim of the activities is to focus on one concept per page, therefore, only one outcome in a strand from the relevant Mathematics outcomes will usually be addressed. Strands and Attainment Targets focused on in this book are shown on pages 4 to 6. Attainment targets for each page are specified at the top of the page.

### Information in Specific Learning Difficulties

This section will contain information from a variety of referenced sources including online literature and recommendations from trained and experienced consultants. Information will include descriptions of the various learning difficulties and ideas for strategies in the classroom and at home.

A list of website addresses containing information and ideas is provided for teachers and parents.

### Student Lifesavers

Many students with Specific Learning Difficulties become overwhelmed when expected to recall basic facts when carrying out more complex calculations. Students may grasp a concept, but be unable to apply the strategy because they are struggling to remember tables and combinations. To focus on the teaching point and alleviate stress for students, these tables and charts can be kept within easy access for the students. Charts include multiplication tables, addition and subtraction charts, number lines, rules and formulae and measurement conversions.

### “Parent Power” Pages

The information provided on Specific Learning Difficulties at the beginning of this book can also be photocopied and given to parents who are requesting additional information. However, it should be made clear that this is a guide only, and contact with local recognised Specific Learning Difficulty associations or Child Development Centres should be made if there are any particular concerns.

Parent Power pages can be photocopied and sent home at the commencement of each unit and include:

- terminology;
- mathematical strategies and examples;
- learning and practice ideas in the home and community.

It is also suggested that teachers photocopy **answers** to each section and include these when sending home the Parent Power Page. This enables parents to feel confident in checking their child’s work and giving them valuable, immediate feedback.

### Progress Charts

It is widely appreciated that success is built on success, and the more students are able to track their own progress, the more likely they are to be motivated to attempt the next stage in their learning. Students can keep these progress charts as an ongoing record of their homework.

### Skill Drills

Some students work best with structured, timed drills. Drill practice can be very helpful in developing skills in automatic recall. The drill charts in this book are designed so that the length of time and the starting position for the drill can be changed according to the student’s abilities. A record of the score can be kept so that the student can track their progress.

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# Curriculum Links - National Curriculum Documents

Activities in Book 1 mainly address the following outcomes in the **Ma2 Number and Alegbra** strand of the National Curriculum Programme of Study for **Key Stage 3**.

Activity	Knowledge, Skills and Understanding
Skill Drills	<b>Calculations: 3 (a), Mental Methods 3 (g).</b>
Digit Value 1 & 2	<b>Numbers and the Number System 2 (a), Decimals 2 (d)</b>
Decimal Digit Value 1 & 2	<b>Numbers and the Number System 2 (a), Decimals 2 (d)</b>
Rounding 1 - 3	<b>Calculations: Mental Methods 3 (h)</b>
Estimating 1 & 2	<b>Calculations: Mental Methods 3 (h)</b>
Addition 1 & 2	<b>Calculations: Written Methods 3 (j)</b>
Addition Regrouping 1 & 2	<b>Calculations: Written Methods 3 (j)</b>
Addition Regrouping 3 & 4	<b>Calculations: Written Methods 3 (j)</b>
Subtraction 1 & 2	<b>Calculations: Written Methods 3 (j)</b>
Subtraction Regrouping 1 & 2	<b>Calculations: Written Methods 3 (j)</b>
Subtraction Regrouping 3 & 4	<b>Calculations: Written Methods 3 (j)</b>
Decimal Addition 1 & 2	<b>Calculations: Written Methods 3 (j)</b>
Decimal Subtraction 1 & 2	<b>Calculations: Written Methods 3 (j)</b>
Setting Out Sums 1 & 2	<b>Calculations: Written Methods 3 (j)</b>
Multiplication 1 & 2	<b>Calculations: Written Methods 3 (k)</b>
Multiplication Regrouping 1 & 2	<b>Calculations: Written Methods 3 (k)</b>
Multiplication Regrouping 3 & 4	<b>Calculations: Written Methods 3 (k)</b>
Multiplication Revision	<b>Calculations: Written Methods 3 (k)</b>
Division Revision	<b>Calculations: Written Methods 3 (k)</b>
Division 1 & 2	<b>Calculations: Written Methods 3 (k)</b>
Division with Remainders 1 & 2	<b>Calculations: Written Methods 3 (k)</b>
Division with Regrouping	<b>Calculations: Written Methods 3 (k)</b>

# Specific Learning Difficulties (SLDs)

## What are Specific Learning Difficulties?

Specific Learning Difficulties **ARE**:

- A range of conditions including dyslexia, dyscalculia, dyspraxia and dysgraphia.
- Significant difficulties in one or a few areas of learning, whilst demonstrating average to above average abilities in most or all other areas.

Specific Learning Difficulties **ARE NOT**:

- A result of global low intelligence, physical conditions such as visual or hearing impairments, or a lack of appropriate parenting or teaching.
- Attention difficulties (or behavioural disorders) such as Attention Deficit Disorder (ADD) and Attention Deficit Hyperactivity Disorder (ADHD). Specific Learning Difficulties are founded on a reduced *capacity to learn*, and attention difficulties stem from a reduced capacity to *concentrate and attend* to tasks when learning.

Specific Learning Difficulties **CAN**:

- Appear to overlap, as learning areas often merge. For example, a person with reading difficulties may struggle in maths in the presence of lengthy word problems or poorly set-out activities ([www.dyslexia-speld.com](http://www.dyslexia-speld.com)).

## Descriptions of the Types of Specific Learning Difficulties

**Dyslexia** is the most commonly recognised and well-researched SLD, characterised by difficulties in:

- Recognising, reading and spelling words;
- Comprehension of written information;
- Relating new written concepts to stored ideas and existing knowledge;
- *Phonological coding*, the process of associating sounds with letter groups;
- Producing written work (sequencing letters, recognising letter reversals).

([www.dyslexia-speld.com](http://www.dyslexia-speld.com))

**Dyscalculia** describes significant difficulties in the area of mathematics. People with dyscalculia may possess average to above average linguistic skills but struggle with:

- Mental recall of basic facts;
- Accurate calculation;
- Understanding and applying mathematical concepts, rules and formulas;
- Awareness of time, direction (such as spatial and mapping skills) and sequence;
- The ability to estimate and recognise errors in maths work;
- Money and budgeting;
- Games that involve strategic planning or complex scoring.

([www.dyscalculia.org](http://www.dyscalculia.org))

**Dysgraphia** outlines difficulties with the production of written language which may occur in isolation or in conjunction with other SLDs. Underlying causes include difficulties with sequencing and ordering of letters and words, attention difficulties leading to poor fine motor and organisational skills and reduced auditory processing. ([www.idonline.org](http://www.idonline.org))

**Dyspraxia** describes difficulties in the ability to plan and execute new or unfamiliar movements in a coordinated manner. During early childhood, many new tasks are being learned, so this is a time where dyspraxia can significantly impact upon daily living. Problems can appear with performing fine and gross motor tasks (Motor Dyspraxia) and / or speech-related tasks (Verbal or oral Dyspraxia). ([www.dyspraxiafoundation.org.uk](http://www.dyspraxiafoundation.org.uk))

## Associated Difficulties

### Visual and Visual-Perceptual Difficulties (Source: [www.children-special-needs.org](http://www.children-special-needs.org))

These difficulties **may** occur in conjunction with, or as a result of, other learning or attention difficulties. The problems listed below can also place a considerable strain on the reading process for a child, and can often go unnoticed until the child is in primary school, where the he / she spends longer periods of time focusing on print.

**Myopia** (short-sightedness) - may lead to difficulties in reading information written on the blackboard or on charts around the classroom, if not rectified with glasses or contact lenses.

**Binocular coordination** - the action of both eyes moving together, a process required to read effectively.

**Convergence** - the movement of both eyes inwards, reaching an accurate point of focus.

**Fixation** - where the eyes meet on a specific point so that the image is clear.

**Pursuit** - smoothly tracking across an image or follow a moving object.

**Saccades** - a "jump" from one point of focus to another without losing place. This is particularly important as skilled reading involves a series of fixations on words across a line rather than one continuous movement.

- Children who have difficulty with any of the above may show signs such as skipping or re-reading lines, misreading small words, using their finger or moving their head as they read.

# Tables Chart

- Use this chart to learn your tables. Trace your finger down and across from the two numbers being multiplied to find your answer where the two fingers meet.

0	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

## Things to remember:

- Reversals / pairs - If you reverse the question, the answer is the same:  
 $5 \times 7 = 35$                        $7 \times 5 = 35$
- All 2 times tables are even numbers - 2, 4, 6, 8, 10
- All 5 times tables end in 5 or 0 - 5, 10, 15, 20, 25
- All 10 times tables are the number with a zero on the end - 10, 20, 30

## Maths Words

- Here are some meanings for words that you might read in maths work.  
Examples are underneath.

**Addition** - Plus, add or “what is the sum of?”

e.g.  $2 + 4 = 6$

**Subtraction** - Minus, take away or “how much is left?”

e.g.  $5 - 2 = 3$

**Multiplication / Multiplied by** - Times, “lots of” or “what is the product of?”

e.g.  $3 \times 5 = 15$

**Division / Divided by** - Shared into groups or “how many times does x go into y?”

e.g.  $10 \div 2 = 5$  or 10 shared into groups of 2 = 5 groups

**Whole Number** - 0, 1, 2, 3, 4... (counting numbers as well as zero)

**Even Numbers** - 2, 4, 6, 8, 10... (numbers divisible by 2)

**Odd Numbers** - 1, 3, 5, 7, 9... (numbers not divisible by 2)

**Prime Numbers** - A number that can only be divided by 1 and itself.

e.g. 1, 3, 5, 7, 11, 13, 17, 19, 23, 29

**Composite Numbers** - Numbers that have more than 2 numbers (*factors*) that divide into it,

e.g. 2, 4, 6, 8, 9, 10, 12, 14, 15, 16, 18

e.g. Factors of 16 are 1, 2, 4, 8 and 16 so it is a composite number.

**Rounding** - Finding the closest 10, 100 or 1000 for the number.

e.g. Round 46 to the nearest 10 = 50

Round 530 to the nearest 100 = 500

Round 2978 to the nearest 1000 = 3000

- If the number to be rounded is “in the middle”, e.g. 35 is in between 30 and 40, most sources agree that it is best to round *up* i.e. round 35 to 40.

## Symbols

- +** Plus or add, e.g.  $2 + 5 = 7$
- Take away, subtract or minus, e.g.  $6 - 3 = 3$
- x** Times, multiply, e.g.  $3 \times 4 = 12$
- ÷** Divided by, e.g.  $10 \div 2 = 5$
- =** Equals, answer to the sum
- ≠** Not equal, e.g.  $4 + 5 \neq 6$
- ~** Approximately (close to), e.g.  $235 + 220 \sim 500$
- ...** Continue the pattern, e.g. 2, 4, 6, 8, ...
- >** More than or greater than, e.g.  $8 > 4$
- <** Less than, e.g.  $5 < 9$
- %** Percent, e.g.  $\frac{30}{60}$  in a test = 50%

## Roman Numerals

- I = one
- II = two
- III = three
- IV = four
- V = five
- VI = six
- VII = seven
- VIII = eight
- IX = nine
- X = ten
- L = fifty
- C = one hundred
- M = one thousand

# Pairs To 10

- Fill in the number that **adds** to give **10**.  
The first few have been done for you:

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

Time Taken: \_\_\_\_\_

Number Completed: \_\_\_\_\_

Number Correct: \_\_\_\_\_

Keep this sheet and try to beat your score next time!



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

AT: Students will identify the value of a digit in a whole or decimal number up to 3 decimal places.

# Digit Value Revision

**Digit Value** tells you how much a digit is **worth** in a number:

1 874 296.523

The **last whole** digit is 6. It goes in the **ONES** column.

The **first decimal** digit is 5. It goes into the **TENTHS** column.

	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
<b>Digit</b>	1	8	7	4	2	9	6	5	2	3
<b>Value</b>	1 000 000	800 000	70 000	4 000	200	90	6	0.5	0.02	0.003

● Write the value of the **bold** number for each of these:

Number	Value	Number	Value	Number	Value
848 .....	40	5.251 .....	0.05	£4.65 .....	£0.05
2 39 <b>6</b> .....	_____	7.231 .....	_____	£ <b>32.40</b> .....	_____
<b>7</b> 432 .....	_____	<b>6</b> .285 .....	_____	£1 <b>00.00</b> .....	_____
7 211 .....	_____	2021 .....	_____	£0.90 .....	_____

● Place a decimal point in these amounts so that they make sense, and then write the digits in the correct columns.

Item	Amount	Decimal	Thousands	Hundreds	Tens	Ones	Tenths	Hundredths
An ice-cream	£ 2 5 0	£2.50				2	5	0
A CD	£ 2 7 9 5							
A stereo	£ 5 6 3 0 0							
An apple	£ 0 6 0							
An old car	£ 8 5 6 0 0 0							

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

AT: Students will round whole numbers to the nearest 10.

# Rounding 1

Rounding means finding the closest whole or decimal number that is asked for.

Use the **bold** numbers to find the closest 10.

1	2	3	4	5	6	7	8	9	<b>10</b>	11	12	13	14	15	16	17	18	19	<b>20</b>	21	22
---	---	---	---	---	---	---	---	---	-----------	----	----	----	----	----	----	----	----	----	-----------	----	----

- Circle the number 12. Is it closer to 10 or 20? 12 is closer to 10. So you round 12 to 10.

**When the number ends in 5, you can round up OR down (usually up).**

- Round these numbers to 10 or 20 (the nearest 10).

7 = \_\_\_\_\_      11 = \_\_\_\_\_      19 = \_\_\_\_\_

20 = \_\_\_\_\_      15 = \_\_\_\_\_ or \_\_\_\_\_

- Use these numbers to find the rounded answers to the nearest 10:

<b>10</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>60</b>	<b>70</b>	<b>80</b>	<b>90</b>	<b>100</b>
-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	-----------	------------

21 = \_\_\_\_\_      45 = \_\_\_\_\_      63 = \_\_\_\_\_      99 = \_\_\_\_\_

- Circle the correct rounding to the **nearest 10** for these numbers.  
Hint: Look at the **tens** column first, then the **ones**. Do you round up or down?

Round to the nearest 10	Circle the correct one			
466	460	400	465	470
912	900	920	910	950
599	590	600	650	500
1 347	1 340	1 350	1 300	1 400
44 444	44 400	44 445	44 450	44 440

# Addition Regrouping 1 (previously known as carrying)

$$\begin{array}{r} 565 \\ + 359 \\ \hline \end{array}$$

First add the **ones**,  **WORK FROM RIGHT TO LEFT**

$$\begin{array}{r} 5 \\ + 9 \\ \hline 14 \end{array}$$

Look at the number 14:

Tens	Ones
1	4

Put 4 in the Ones.

	H	T	O
	5	6	5
+	3	5	9

Regroup 1 to the Tens.

		1	
	5	6	4
+	3	5	2
			6

Add **all** the digits in the **Tens**.

$$\begin{array}{r} 1 \\ 6 \\ + 5 \\ \hline 12 \end{array}$$

Hundreds	Tens
1	2

Put 2 in the Tens and

		1	
	5	6	4
+	3	5	2
		2	6

regroup 1 to the Hundreds.

	1		
	5	6	4
+	3	5	2
	9	2	6

	1	1	
	4	6	4
+	4	5	9
	9	2	3

	2	5	7
+	4	4	7

	7	7	6
+	1	3	5

● Now try without the box:

$$\begin{array}{r} 667 \\ + 363 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 355 \\ + 476 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 265 \\ + 649 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 563 \\ + 178 \\ \hline \\ \hline \end{array}$$