

A Year 8 workbook based on Level 4 of the New Zealand Mathematics & Statistics Curriculum

Dragon Maths 6

A Mathematics Workbook

W. Geldof

© W. Geldof 2018
© Sigma Publications Ltd. 2018

4th Edition



This book is copyright.
Under the Copyright Act 1994, no part of this publication may be reproduced,
stored in a retrieval system, or transmitted, in any form, or by any means,
electronic, mechanical, photocopying, recording, or otherwise,
without the prior written permission of the publisher or its agent.

Licences for limited reprographic reproduction by
educational institutions may be obtained from
Copyright Licensing Limited,
P.O. Box 33-1488, Takapuna 0740,
North Shore City, New Zealand
info@copyright.co.nz Ph 0800 480 271

Proudly printed and bound in New Zealand

Published by Sigma Publications Ltd
Tauranga, New Zealand
Phone 0800 274 462
Email : mail@sigmapublications.co.nz
Website : www.sigmapublications.co.nz



ISBN 978-1-877567-78-0

2 Contents

Introduction

NUMBER and ALGEBRA

Chapter 1 - Whole Numbers

Basic Facts 1	4
Basic Facts 2	5
Basic Arithmetic	6
Strategies + and –	7
Paperwork - Addition	8
Paperwork - Subtraction	9
Mental $\times$ and $\div$	10
Multiplication Strategies	11
Paperwork - Multiplication	12
Paperwork - Division	13
Thinking About Numbers	14
Number Problems 1	15
Number Problems 2	16
Whole Numbers - Test	17

Chapter 2 - Number Facts

Roots and Powers	18
Multiples and Factors	19
Prime Numbers	20
Investigating a Number	21
Negative Numbers	22
Integer Arithmetic	23
Order of Operations	24
Puzzles	25
Solving Problems	26
Number Facts - Test	27

Chapter 3 - Decimals

Understanding Decimals	28
Strategies + and –	29
More Strategies + and –	30
Paperwork + and –	31
Strategies $\times$ and $\div$	32
More Strategies $\times$ and $\div$	33
Advanced Strategies $\times$ and $\div$	34
Rounding Decimals	35
Paperwork - Multiplication	36
Paperwork - Division 1	37
Paperwork - Division 2	38
Decimal Problems 1	39
Decimal Problems 2	40
Decimals - Test	41

Chapter 4 - Fractions

Equivalent Fractions	42
Using Fractions	43
Mixed Numbers	44
Fractions + and –	45
Fractions $\times$ and $\div$	46
Fractions and Decimals	47
Percentages, Fractions, Decimals	48
Using Percentages	49
Percentages Greater than 100%	50
Fractions and Percentages - Problems	51
Calculator Problems	52
Fractions - Test	53

Chapter 5 - Algebra

Number Patterns	54
Relations	55
Writing a Formula	56
Graphs of Relationships	57
Time Graphs	58
Solving Relationship Problems	59
Shorter Sentences	60
True Number Sentences	61
Equations 1	62
Equations 2	63
Algebra - Test	64

Chapter 6 - Number and Algebra

Task 1 - Great Grandparents	65
Task 2 - Explaining Percentages	66
Task 3 - A Square Courtyard	67
Task 4 - Polygon Numbers	68

GEOMETRY and MEASUREMENT

Chapter 7 - Measurement

Scales	69
Metric Units	70
Time	71
Rates	72
Perimeter	73
Area 1	74
Area 2	75
Solving Problems	76

Introduction

Chapter 7 - continued

Fractions and Area	77
Volume	78
Perimeter, Area, Volume	79
Maps and Plans	80
Measurement Problems	81
Measurement - Test	82

Chapter 8 - Geometry

Vocabulary	83
3D Shapes	84
Views	85
Classes of Shapes	86
Angles in Polygons	87
Angle Rules	88
Compass Directions	89
Bearings From North	90
Constructions	91
Transformations	92
Using Transformations	93
Properties of Transformations	94
Symmetry	95
Tessellations	96
Geometry - Test	97

Chapter 9 - Measurement and Geometry

Task 1 - Octahedron & Dodecahedron	98
Task 2 - Trimming Trees	99
Task 3 - Polygons	100
Task 4 - A Square Design	101

STATISTICS

Chapter 10 - Statistics

Example of an Investigation	102
Plan an Investigation	103
Questionnaires	104
Tables and Graphs 1	105
Tables and Graphs 2	106
Tables and Graphs 3	107
Tables and Graphs 4	108
Select a Graph	109
Measures of Centre 1	110
Measures of Centre 2	111
Evaluating a Conclusion	112
Comparing Graphs	113
Reaching a Conclusion 1	114

Chapter 10 - continued

Reaching a Conclusion 2	115
A Survey - 'Shoe Sales'	116-118
Real Life Probability	119
Probability Theory	120
Variation	121
An Experiment	122
Investigating Games 1	123
Investigating Games 2	124
Statistics - Test	125 & 126
Task 1 - An Investigation - 'Mobile Phones'	127
Task 2 - A Game for Two Players	128
Task 3 - Invent a Fair Game	129

Removable Answers (perforated)back pages A1 - A11

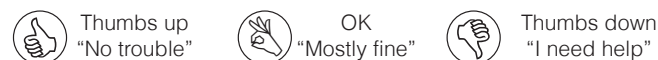
Note to Teachers and Parents

The Dragon Maths series includes appropriate work for the strands Number and Algebra, Geometry and Measurement, and Statistics from the *New Zealand Mathematics and Statistics Curriculum*.

Dragon Maths 6 is written for the majority of pupils in Year 8. It covers curriculum Level 4 and the Advanced Multiplicative Stage (Stage 7) of *The Number Framework*.

The chapters in this book follow the order of the curriculum document but it is not suggested that the work be done in this order. Teachers may wish to break up the number chapters. A possible working order may be : Whole Numbers, Number Facts, Geometry, Decimals, Measurement, Fractions, Algebra and Statistics. Once a chapter has been completed the skills learnt need to be practised regularly for the remainder of the year.

On the top of each page you will find the feedback icons :



These are provided for pupils to let their teacher know how well they've managed the work on that page. Encourage your pupils to colour the icon that most closely reflects how they are coping and you will have a valuable window on their attitude towards this maths topic.

I hope you and your students have fun working through Dragon Maths 6 this year. Remember Sigma also has a Secondary mathematics workbook series, so able students may benefit from working through 'On Track 1', the first book in this series, when they complete this book.

Wiesje Geldof