

Neill Hamilton

CCEA

GCSE

FURTHER MATHS REVISION BOOKLET

PURE MATHS 2



**COLOURPOINT
EDUCATIONAL**

Name:

© Neill Hamilton and Colourpoint Creative Ltd 2021

ISBN: 978 1 78073 317 3

First Edition

First Impression

Layout and design: April Sky Design

Printed by: GPS Colour Graphics Ltd, Belfast

All rights reserved. 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, scanning, recording or otherwise, without the prior written permission of the copyright owners and publisher of this book.

The Author

Neill Hamilton will be well known to Mathematics teachers in Northern Ireland. Until his retirement in 2012, he was a teacher of GCSE Mathematics and Additional/Further Mathematics at a Northern Ireland comprehensive school. His previous publications include *Further Mathematics for CCEA GCSE*, and GCSE Mathematics Revision Booklets *M3* and *M4*, also published by Colourpoint.

Dedicated to Arlene, for everything she has done for me, and to Marley who is the best and most loyal friend I could ever have.



Colourpoint Educational

An imprint of Colourpoint Creative Ltd

Colourpoint House
Jubilee Business Park
21 Jubilee Road
Newtownards
County Down
Northern Ireland
BT23 4YH

Tel: 028 9182 0505

E-mail: sales@colourpoint.co.uk

Web site: www.colourpointeducational.com

Publisher's Note: This book has been written to help students preparing for the GCSE Further Mathematics specification from CCEA. While Colourpoint Educational and the authors have taken every care in its production, we are not able to guarantee that the book is completely error-free. Additionally, while the book has been written to closely match the CCEA specification, it is the responsibility of each candidate to satisfy themselves that they have fully met the requirements of the CCEA specification prior to sitting an exam set by that body. For this reason, and because specifications change with time, we strongly advise every candidate to avail of a qualified teacher and to check the contents of the most recent specification for themselves prior to the exam. Colourpoint Creative Ltd therefore cannot be held responsible for any errors or omissions in this book or any consequences thereof.

Neill Hamilton

CCEA | **GCSE**

FURTHER MATHS REVISION BOOKLET

PURE MATHS 2



**COLOURPOINT
EDUCATIONAL**

Contents

Revision Exercise 1	3
Revision Exercise 2	8
Revision Exercise 3	13
Revision Exercise 4	19
Revision Exercise 5	25
Answers	29

Revision Exercise 1

1. Write $\frac{x^2 - x - 6}{x(x + 2)} + \frac{4}{x - 1}$ as a single fraction in its simplest form.

Answer _____ [4]

2. Expand and simplify the expression $(x + 4)(x - 2)(3x - 5)$

Answer _____ [3]

3. A function $f(x)$ is defined by $f(x) = x^2 + 6x - 2$

- (a) Use the method of completing the square to rewrite $f(x)$ in the form $(x + a)^2$ where a and b are constants.

Answer _____ [2]

- (b) Hence find the minimum value of $f(x)$ and the value of x for which it occurs.

Answer _____ [2]

4. Solve the equations:

$$3x + 2y - z = 15$$

$$x - 3y + 2z = 3$$

$$2x + y - 3z = 20$$

Answer _____ [8]

5. Solve $3x^2 + 13x - 10 < 0$

Answer _____ [4]

6. (a) Sketch the graph of $y = \sin x$ for $0^\circ \leq x \leq 360^\circ$



[1]

(b) Solve the equations

(i) $\sin x = -0.4$ for $0^\circ \leq x \leq 360^\circ$

Answer _____ [2]

(ii) $\sin (2\theta - 15) = -0.4$ for $0^\circ \leq \theta \leq 180^\circ$

Answer _____ [2]

7. $\log a = x$, $\log b = y$ and $\log c = z$. Find, in terms of x , y and z :

(a) $\log \frac{ab}{c}$

Answer _____ [1]

(b) $\log \frac{b}{c^2}$

Answer _____ [1]

(c) $\log \sqrt{a^3 b}$

Answer _____ [2]