

Level 3

Mathematics

Examination 2



Kilbaha Education

Quality educational content

SAMPLE

Kilbaha Education
PO Box 2227
Kew Vic 3101
Australia
ABN 47 065 111 373

Tel: +613 9018 5376
Email: kilbaha@gmail.com
Web: <https://kilbaha.com.au>

Click here for detailed information about this publication.



Quality educational content

Kilbaha Pty Ltd ABN 47 065 111 373 trading as
Kilbaha Education
PO Box 2227
Kew
Victoria 3101
Australia
Tel: (03) 9018 5376 +61 3 9018 5376

kilbaha@gmail.com
<https://kilbaha.com.au>



A catalogue record for this book is available from the National Library of Australia

<https://catalogue.nla.gov.au/>

<p>Creator: Judy Anders Title: Level 3 Mathematics Examination 2 with detailed answers ISBN: 9781876324476 (eBook) Series: Mathematics Examinations with detailed answers for High Schools Target Audience: School age. Secondary. Subject: Mathematics Other Creators: Barbara Healy, William Paul Healy</p>	<p>All rights reserved.</p> <p>No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form by any means whatsoever without the prior permission of the copyright owner.</p> <p>Apply in writing to the publishers.</p>
---	---

About the Authors: Barbara Healy BSc BEd and William Paul Healy BSc BA Dip Ed are principal writers for Kilbaha Education. They are experienced classroom teachers of mathematics with specialised skills in writing assessment questions and detailed answers for all levels of mathematics. Together they have been creating mathematics content for Australian schools for more than 30 years. Teachers and parents use their highly regarded educational content on a regular basis.

LEVEL 3

MATHEMATICS EXAMINATION 2



Kilbaha Education

Quality educational content

Kilbaha Education ABN 47 065 111 373
PO Box 2227
Kew Vic 3101
Australia

Tel: (03) 9018 5376

kilbaha@gmail.com
<https://kilbaha.com.au>

© KILBAHA PTY LTD

Kilbaha Education ABN 47 065 111 373
PO Box 2227
Kew Vic 3101
Australia

Tel: (03) 9018 5376

kilbaha@gmail.com
<https://kilbaha.com.au>



Kilbaha Education

Quality educational content

Notes to Teachers

This is a Digital Publication supplied in both PDF and WORD formats with a school site licence to reproduce for students in both print and electronic formats.

- This examination is based on a syllabus containing topics for Year 9 Mathematics. Some of these topics are: (not all are necessarily included in this examination)

powers, roots and reciprocals, directed number and scientific notation, ratio, percentages, angles and triangles, quadrilaterals and other polygons, congruent and similar triangles, transformations, Pythagoras' theorem, perimeter and area, surface area and volume, trigonometry, expansion and factorisation, fractions and indices, equations, linear and quadratic graphs, probability, reading and drawing graphs, analysis of data, practical graphs.
- Teachers should examine the questions to judge if they are suitable for their classes
- This is a 1.5 hour examination (total = 80 marks)
- The examination can be shortened if required by removing some of the questions
- A set of detailed answers with a marking scheme is supplied with this examination
- A multiple-choice answer sheet is supplied with this examination
- While every effort has been made to ensure the correctness of each question and answer, there is no guarantee of perfection. Please advise if you believe you have found an error.

STUDENT NAME _____

Examination 2

LEVEL 3 MATHEMATICS

Reading time: 15 minutes
Total writing time: 1.5 hours

QUESTION AND ANSWER BOOK

Structure of book

Section	Number of questions	Number of questions to be answered	Number of Marks
A	10	10	10
B	12	12	70

Directions to students

Materials

Question and answer book of 21 pages.

Working space is provided throughout the book.

You may use an approved calculator, ruler, protractor, set square and aids for curve sketching.

The Examination.

Ensure that you write your **name** in the space provided on the cover of this book.

Answer **all** questions.

There is a total of 80 marks available for the examination.

The marks for each part of each question are shown.

Unless otherwise indicated, the diagrams in this book are **not** drawn to scale.

Angles in all diagrams are measured in degrees.

All written responses should be in English.

© KILBAHA PTY LTD

SECTION A consists of ten multiple choice questions. Write the letter which corresponds to your answer in the box at the right of each question. Each question is worth 2 marks. Show your working in the space provided. Marks will not be deducted for incorrect answers.

Question 1

The common factor to be cancelled in $\frac{3x^2 + 12x}{x - 3} \times \frac{x + 3}{x^2 - 4x}$ is

- A. 3
- B. x
- C. x^2
- D. $x - 4$
- E. $x + 4$

Question 2

Steve bought a chair that was on sale for \$260 after it had been discounted by 20%. This means that the chair had originally cost

- A. \$65
- B. \$273
- C. \$312
- D. \$318
- E. \$325

SECTION B consists of twelve short answer questions.
Answer each question in the space provided. Show all working.
Write your final answer in the box provided.
The marks for each part of each question are shown at the end of the part.
The total number of marks for Section B is 70

Question 1 (5 marks)

- a. A shopkeeper buys 24 m of ribbon for \$19.20 and then sells the ribbon for \$1.00 per metre. If he sells all the ribbon, what is his percentage profit?

.....
.....
.....

(2 marks)

- b. The ratio of boys to girls in a country school is 3 : 5. If there are 39 boys in the school, how many students are there in the school?

.....
.....
.....

(1 mark)

- c. At the beginning of 2001, Sarah invested \$300 at 4% simple interest for 5 years. How much will she have at the beginning of 2006?

.....
.....
.....

(2 marks)

LEVEL 3 MATHEMATICS

EXAMINATION 2

ANSWER SHEET



Kilbaha Education

Quality educational content

NAME _____

INSTRUCTIONS

- Write your name in the space provided above.
- Marks will **NOT** be deducted for incorrect answers.
- **NO MARK** will be given if more than **ONE** answer is completed for any question.
- All answers must be completed like **THIS** example.

A	B	C	D	E
---	----------	---	---	---

SECTION A

1	A	B	C	D	E
2	A	B	C	D	E
3	A	B	C	D	E
4	A	B	C	D	E
5	A	B	C	D	E
6	A	B	C	D	E
7	A	B	C	D	E
8	A	B	C	D	E
9	A	B	C	D	E
10	A	B	C	D	E

1. Answer B

$$\frac{3x^2 + 12x}{x - 3} \times \frac{x + 3}{x^2 - 4x}$$

Common factor to be cancelled is x .

$$= \frac{3\cancel{x}(x + 4)}{x - 3} \times \frac{x + 3}{\cancel{x}(x - 4)}$$

2. Answer E

$$80\% \equiv 260$$

$$100\% \equiv x$$

$$\Rightarrow x = 260 \times \frac{100}{80}$$

$$\Rightarrow x = \$325$$

3. Answer B

Horizontal lines have the equation $y = \text{constant}$. The constant y value here is 7.
Therefore, $y = 7$

4. Answer D

$$x^2 + 12^2 = (3x)^2$$

$$\Rightarrow 9x^2 = x^2 + 144$$

$$\Rightarrow 8x^2 = 144$$

$$\Rightarrow x^2 = 18$$

$$\Rightarrow x = \sqrt{18}$$

$$\Rightarrow x = 4.24$$

$$\text{Hypotenuse} = 3x$$

$$= 3 \times 4.24$$

$$= 12.73$$

5. Answer C

2 red kings + 4 queens = 6 favourable cards out of 52

$$\text{Probability} = \frac{6}{52} = \frac{3}{26}$$

Question 1

a. Total S.P. = \$24
 Profit = 24 - 19.20 = \$4.80 [1 mark]

$$\% = \frac{4.80}{19.20} \times 100$$

$$= \frac{480}{1920} \times 100$$

$$= \frac{100}{4}$$

$$= 25\% [1 \text{ mark}]$$

b.

$$3 : 5 = 39 : 65$$

$\times 13$
 $\times 13$
 Total number of students
 $= 39 + 65 = 104$ [1 mark]

c.

$$SI = \frac{PRT}{100}$$

$$= \frac{300 \times 4 \times 5}{100} \quad [1 \text{ mark}]$$

$$= \$60$$

At the beginning of 2006 she will have $300 + 60 = \$360$ [1 mark]

Question 2

a. i. $x^2 + 8x - 9 = (x + 9)(x - 1)$ [1 mark]

ii.

$$2(x - 3)^2 - 32$$

$$= 2[(x - 3)^2 - 16]$$

$$= 2[(x - 3)^2 - 4^2] [1 \text{ mark}]$$

$$= 2(x - 3 - 4)(x - 3 + 4)$$

$$= 2(x - 7)(x + 1) [1 \text{ mark}]$$

b.

$$\frac{x^2 + 2x - 8}{x^2 + 5x + 6} \div \frac{x^2 - 5x + 6}{x^2 - 9}$$

$$= \frac{x^2 + 2x - 8}{x^2 + 5x + 6} \times \frac{x^2 - 9}{x^2 - 5x + 6} [1 \text{ mark}]$$

$$= \frac{(x + 4)(x - 2)}{(x + 3)(x + 2)} \times \frac{(x - 3)(x + 3)}{(x - 3)(x - 2)} [1 \text{ mark}]$$

$$= \frac{x + 4}{x + 2} [1 \text{ mark}]$$

Kilbaha Education Mathematics Examinations High Schools

Kilbaha Education (Est. 1978) (ABN 47 065 111 373) PO Box 2227 Kew Vic 3101 Australia	Tel: (03) 9018 5376 Email: kilbaha@gmail.com Web: https://kilbaha.com.au
---	--

SCHOOL ORDER NUMBER (required) _____ DATE _____

NAME _____

SCHOOL _____

ADDRESS _____

POSTCODE _____ TEL _____

EMAIL _____

Please mark (X) those required.

- *Kilbaha Mathematics Exams for high schools with detailed answers.*
- *For use with students in Years 6, 7, 8, 9, 10, 11 depending on ability levels*
- *School site licence for each exam.*
- *Print and use in hard copy with all students.*
- *Copy and distribute to all students for electronic use on all devices.*
- *All 12 exams are supplied in WORD format for easy editing and PDF format for easy printing.*
- *Teachers can create their own exams by mixing and matching questions and detailed answers*
- *Each of the three exams for each level covers topics from current mathematics curricula.*
- *Each exam has different questions.*
- *All exams are 1.5 hours with 15 minutes reading time.*
- *Samples of each exam can be downloaded from the website <https://kilbaha.com.au>*

Level 1 Mathematics Exam 1 with detailed answers supplied in both WORD and PDF formats	\$30
Level 1 Mathematics Exam 2 with detailed answers supplied in both WORD and PDF formats	\$30
Level 1 Mathematics Exam 3 with detailed answers supplied in both WORD and PDF formats	\$30
Level 2 Mathematics Exam 1 with detailed answers supplied in both WORD and PDF formats	\$30
Level 2 Mathematics Exam 2 with detailed answers supplied in both WORD and PDF formats	\$30
Level 2 Mathematics Exam 3 with detailed answers supplied in both WORD and PDF formats	\$30
Level 3 Mathematics Exam 1 with detailed answers supplied in both WORD and PDF formats	\$30
Level 3 Mathematics Exam 2 with detailed answers supplied in both WORD and PDF formats	\$30
Level 3 Mathematics Exam 3 with detailed answers supplied in both WORD and PDF formats	\$30
Level 4 Mathematics Exam 1 with detailed answers supplied in both WORD and PDF formats	\$30
Level 4 Mathematics Exam 2 with detailed answers supplied in both WORD and PDF formats	\$30
Level 4 Mathematics Exam 3 with detailed answers supplied in both WORD and PDF formats	\$30

Total Amount = \$ _____ (All prices include GST)

Email to kilbaha@gmail.com