

# Level 2

## Mathematics

### Examination 3



**Kilbaha Education**

Quality educational content

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

Tel: +613 9018 5376  
Email: [kilbaha@gmail.com](mailto:kilbaha@gmail.com)  
Web: <https://kilbaha.com.au>

**Click here for detailed information about this publication.**

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

**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](mailto:kilbaha@gmail.com)  
<https://kilbaha.com.au>

<p>Creator: Judy Anders Title: Level 2 Mathematics Examination 3 with detailed answers ISBN: 9781876324445 (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 2

# MATHEMATICS EXAMINATION 3



**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](mailto: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](mailto: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 8 Mathematics. Some of these topics are: (not all are necessarily included in this examination)

whole number and directed number, fractions and decimals, ratio, percentages, angle properties, triangle geometry, quadrilateral properties, constructions and transformations, perimeter, area, volume, time, capacity and mass, equations, simplification and indices, factorisation and fractions, substitution in algebra, set language and Venn diagrams, statistics and chance, Cartesian plane, drawing graphs.

- Teachers should examine the questions to judge if they are suitable for their classes
- This is a 1.5 hour examination (total = 60 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 3

## LEVEL 2 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	16	16	16
B	6	6	24
C	2	2	20

#### Directions to students

##### Materials

Question and answer book of 20 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 60 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.

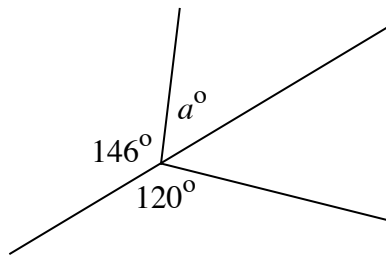
All written responses should be in English.

© KILBAHA PTY LTD

**SECTION A MULTIPLE CHOICE**

There are sixteen multiple choice questions. Write the letter which corresponds to your answer in the box at the right of each question. Each question is worth 1 mark. Show your working in the space provided. Marks will not be deducted for incorrect answers.

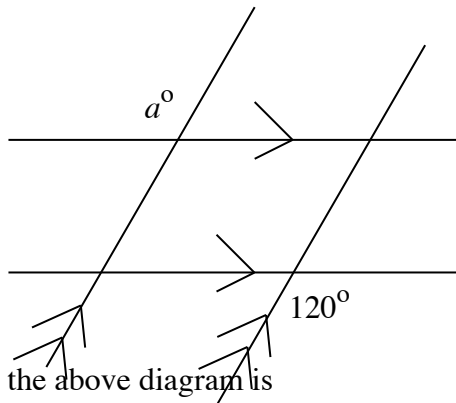
**Question 1**



The value of  $a$  in the above diagram is

- A.  $34^\circ$
- B.  $47^\circ$
- C.  $60^\circ$
- D.  $120^\circ$
- E.  $146^\circ$

**Question 2**



The value of  $a$  in the above diagram is

- A.  $30^\circ$
- B.  $60^\circ$
- C.  $120^\circ$
- D.  $150^\circ$
- E.  $180^\circ$

**SECTION B SHORT ANSWER**

There are six short answer questions.  
 Answer each question in the space provided. Show all working.  
 Write your final answer in the box where this is provided.

**Question 1 (4 marks)**

Simplify the following. Show all working. Do not use a calculator.

a.  $2\frac{1}{4} + 3\frac{5}{6} - 1\frac{11}{12}$

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

(2 marks)

b.  $-\frac{5}{6} \times 3\frac{1}{7} \div -3\frac{2}{3}$

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

(2 marks)

**SECTION C ANALYSIS TASKS**

There are two questions worth 10 marks each.  
 Answer each question in the space provided. Show all working.  
 Write your final answer in the box where this is provided.

**Question 1 (10 marks)**

a. Complete the table below.

$x$	-3	-2	-1	0	1	2	3
$y$	-7	-5	-3	-1			

(3 marks)

b. Find the rule which describes this linear relation.

.....  
 .....

(1 mark)



# LEVEL 2 MATHEMATICS

## EXAMINATION 3

### 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>B</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
11	A	B	C	D	E
12	A	B	C	D	E

13	A	B	C	D	E
14	A	B	C	D	E
15	A	B	C	D	E
16	A	B	C	D	E

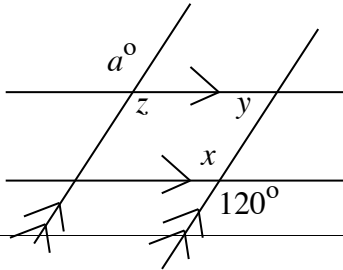
**SECTION A**

**1. Answer A**

$$a = 180 - 146 = 34^\circ \text{ (angles in a straight line add to } 180^\circ \text{)}$$


---

**2. Answer C**



$$x = 120^\circ \text{ (vertically opposite angles)}$$

$$y = 60^\circ \text{ (co-interior angles)}$$

$$z = 120^\circ \text{ (co-interior angles)}$$

$$a = 120^\circ \text{ (vertically opposite angles)}$$


---

**3. Answer D**

$$\frac{7}{6} : \frac{14}{9} = \frac{7}{6} \times 18 : \frac{14}{9} \times 18 = 21 : 28 = 21 \div 7 : 28 \div 7 = 3 : 4$$

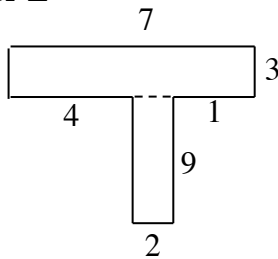

---

**4. Answer B**

$$47 \div 1000 = 0.047 \text{ km}$$


---

**5. Answer E**



$$\text{Area} = (7 \times 3) + (9 \times 2)$$

$$= 21 + 18$$

$$= 39 \text{ m}^2$$


---

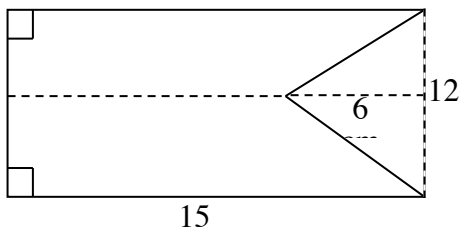
**6. Answer C**

$$\text{Perimeter} = 11 + 11 + \frac{1}{2}\pi D = 22 + \frac{1}{2} \times \pi \times 7$$

$$= 33 \text{ cm to the nearest whole number}$$


---

**7. Answer D**



$$\text{Total area} = \text{area of rectangle} - \text{area of triangle}$$

$$= (12 \times 15) - \frac{1}{2} \times 12 \times 6$$

$$= 180 - 36$$

$$= 144 \text{ cm}^2$$


---

**8. Answer B**

All of the shapes except **B** can be folded to make a cube.

---

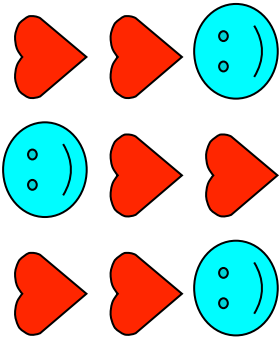
**SECTION B**

**Question 1**

<p><b>a.</b></p> $2\frac{1}{4} + 3\frac{5}{6} - 1\frac{11}{12}$ $= 2\frac{3}{12} + 3\frac{10}{12} - 1\frac{11}{12}$ $= 5\frac{13}{12} - 1\frac{11}{12}$ $= 4\frac{2}{12}$ $= 4\frac{1}{6}$ <p style="text-align: right;">[2 marks]</p>	<p><b>b.</b></p> $-\frac{5}{6} \times 3\frac{1}{7} \div -3\frac{2}{3}$ $= -\frac{5}{6} \times \frac{22}{7} \div -\frac{11}{3}$ $= -\frac{5}{6} \times \frac{22}{7} \times -\frac{3}{11}$ $= -\frac{5}{1} \times \frac{1}{7} \times -\frac{1}{1}$ $= +\frac{5}{7}$ <p style="text-align: right;">[2 marks]</p>
--	---

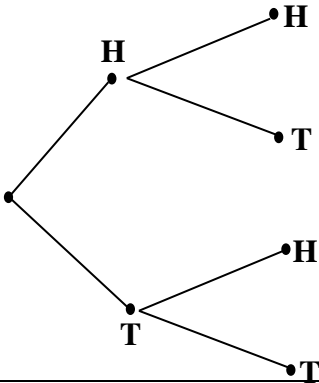
Total = 4 marks

**Question 2**

<p><b>a.</b> 6 : 3 = 2 : 1</p> <p style="text-align: right;">[2 marks]</p>	<p><b>b.</b> <math>\frac{3}{9} \times 100 = 33\frac{1}{3}\%</math></p> <p style="text-align: right;">[1 mark]</p>
<p><b>c.</b></p>  <p style="text-align: right;">[1 mark]</p>	

Total = 4 marks

**Question 3**

<p><b>a.</b></p>  <p style="text-align: right;">[1 mark]</p>	<p><b>b.</b> Outcomes are HH , HT , TH , TT</p> <p style="text-align: right;">[1 mark]</p>
<p><b>c.</b> Probability of getting one head and one tail</p> $= \frac{2}{4} = \frac{1}{2}$ <p style="text-align: right;">[2 marks]</p>	

Total = 4 marks

**Question 6**

<p><b>a.</b> 15 metres in 1 second  <math>= 15 \times 60 \times 60 = 54\,000</math> in one hour  <math>= 54\,000 \div 1000</math> km in one hour  <math>= 54</math> km/hr</p> <p style="text-align: right;">[1 mark]</p>	<p><b>b.</b>                  After Sue takes her share, there is <math>\frac{5}{6}</math> left.  <math>\Rightarrow</math> Bert gets <math>\frac{2}{5}</math> of <math>\frac{5}{6} = \frac{2}{5} \times \frac{5}{6} = \frac{2}{6}</math>  <math>\Rightarrow</math> Sue and Bert together get <math>\frac{1}{6} + \frac{2}{6} = \frac{3}{6} = \frac{1}{2}</math>                  Rose receives the remainder <math>\Rightarrow</math> Rose gets <math>\frac{1}{2}</math>  <math>\Rightarrow \\$1800 = \frac{1}{2} \Rightarrow</math> One whole = \$3600  <math>\Rightarrow</math> Bert gets <math>\frac{2}{6}</math> of 3600 = <math>\frac{1}{3}</math> of 3600 = \$1200</p> <p style="text-align: right;">[3 marks]</p>
--	--

Total = 4 marks

**SECTION C**

**Question 1**

<p><b>a.</b>                  Missing numbers in the table are 1, 3 and 5</p> <p style="text-align: right;">[3 marks]</p>	<p><b>b.</b>  <math>y = 2x - 1</math></p> <p style="text-align: right;">[1 mark]</p>
<p><b>c. and e.</b></p>	
<p><b>d.</b> (i) and (ii)  <math>x = 2.5, y = 4</math>  <math>y = 9, x = 5</math></p> <p style="text-align: right;">[2 marks]</p>	<p><b>f.</b> Point of intersection = (2, 3)</p> <p style="text-align: right;">[1 mark]</p>

Total = 10 marks

# Kilbaha Education Mathematics Examinations High Schools

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

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

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

**Email to [kilbaha@gmail.com](mailto:kilbaha@gmail.com)**