

TOPICAL PAST PAPER QUESTIONS WORKBOOK

**Edexcel International GCSE Mathematics B
(4MB1) Paper 2**

Exam Series: Jan 2017 – Jan 2022

Format Type A:

Answers to all questions are provided as an appendix

Introduction

Each Topical Past Paper Questions Workbook contains a comprehensive collection of hundreds of questions and corresponding answer schemes, presented in worksheet format. The questions are carefully arranged according to their respective chapters and topics, which align with the latest IGCSE or AS/A Level subject content. Here are the key features of these workbooks:

1. The workbook covers a wide range of topics, which are organized according to the latest syllabus content for Cambridge IGCSE or AS/A Level exams.
2. Each topic includes numerous questions, allowing students to practice and reinforce their understanding of key concepts and skills.
3. The questions are accompanied by detailed answer schemes, which provide clear explanations and guidance for students to improve their performance.
4. The workbook's format is user-friendly, with worksheets that are easy to read and navigate.
5. This workbook is an ideal resource for students who want to familiarize themselves with the types of questions that may appear in their exams and to develop their problem-solving and analytical skills.

Overall, Topical Past Paper Questions Workbooks are a valuable tool for students preparing for IGCSE or AS/A level exams, providing them with the opportunity to practice and refine their knowledge and skills in a structured and comprehensive manner. To provide a clearer description of this book's specifications, here are some key details:

- Title: Edexcel IGCSE Mathematics B (4MB1) Paper 1 Topical Past Paper Questions Workbook
- Subtitle: Exam Practice Worksheets With Answer Scheme
- Examination board: Pearson Edexcel
- Subject code: 4MB1
- Years covered: Jan 2017 – Jan 2022
- Paper: 2 and 2R
- Number of pages: 853
- Number of questions: 228

Contents

1	Number	7
2	Sets	69
3	Algebra	81
4	Functions	131
5	Matrices	297
6	Geometry	367
7	Mensuration	385
8	Vectors and transformation geometry	431
9	Trigonometry	515
10	Statistics and probability	587
A	Answers	697

Chapter 1

Number

1. 4MB1_02_que_20220118 Q: 1

(a) Write 248 000 000 in standard form. (1)

(b) Write 2.56×10^{-4} as an ordinary number. (1)

(c) Calculate, giving your answer in standard form

$$\frac{2.5 \times 10^{60} - 1.3 \times 10^{59}}{1.5 \times 10^{-48}}$$

(3)

(Total for Question 1 is 5 marks)

2. 4MB1_02_que_20220118 Q: 10

The production costs of building a *Kimo* boat are

\$ L for labour
 \$ M for materials
 \$ H for overheads

In 2020, the total of the production costs for a *Kimo* boat was \$120 000 where

$$L : M : H = 5 : 3 : 2$$

(a) Calculate the value of H in 2020

(2)

The production costs were different in 2021 from what they were in 2020

The labour costs had increased by 10%
 The cost of materials had increased by 5%
 The overheads had decreased by 4%

(b) Calculate the percentage increase, from 2020 to 2021, in the total of the production costs of building a *Kimo* boat.

(3)

Gordon bought a *Kimo* boat and sold it a year later for \$360 000, making a loss of 25% on the price for which he bought the boat.

(c) Calculate the price for which Gordon bought the boat.

(2)

Gordon sold the boat to a friend living in Hungary. Gordon's friend paid Gordon the \$360 000 in Hungarian forints.

Using exchange rates of

$$£1 = \$1.35 \quad £1 = 388.50 \text{ Hungarian forints}$$

(d) change \$360 000 to Hungarian forints.

(3)

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Question continued

A series of horizontal dotted lines for writing the answer to the question.

3. 4MB1_02R_que_20220118 Q: 7

There are 480 people in an airport departure lounge.

30% of these people are catching a plane to Dubai.

(a) Show that 336 of these people are **not** catching a plane to Dubai.

(2)

The people in the airport lounge who are not catching a plane to Dubai are catching a plane to Sweden or a plane to Greece or a plane to Brazil.

Of these 336 people

the number catching a plane to Sweden is s
 the number catching a plane to Greece is g
 the number catching a plane to Brazil is b where

$$s : g : b = 6 : 7 : 8$$

(b) Calculate the value of s

(3)

Pablo went by plane from Canada to Brazil in February 2020 and in February 2021

In February 2020, the cost of his ticket was \$680

In February 2021, the cost of his ticket was \$730

(c) Calculate the percentage increase, to one decimal place, in the cost of the ticket from February 2020 to February 2021

(2)

Pablo bought a ticket to go by plane to Sweden in June 2021

The cost of his ticket was \$468

The cost of this ticket was 4% greater than the cost of his ticket the last time he went by plane to Sweden, which was in December 2020

(d) Calculate the cost of Pablo's ticket to Sweden in December 2020

(2)

At the end of his trip, Pablo had 320 Swedish krona left.

He changed the 320 Swedish krona into Canadian dollars.

Using the following exchange rates,

$$1 \text{ Canadian dollar} = 0.57 \text{ euros}$$

$$1 \text{ Swedish krona} = 0.094 \text{ euros}$$

(e) calculate the number, to 2 decimal places, of Canadian dollars that Pablo should have received.

(3)

5. 4MB1_02_que_20210304 Q: 7

Given that

a is inversely proportional to \sqrt{b} **and** b is inversely proportional to c^3

complete the following table.

a	c
16	240
250	
	135

(6)

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6. 4MB1_02_que_20210304 Q: 12

Indre buys 1000 Hungarian dolls in Budapest to sell in Austria.
She pays in Hungarian forints.

Indre pays 1900 forints for each small doll she buys.
She pays 10 300 forints for each large doll she buys.

The number of small dolls that Indre buys is 4 times the number of large dolls that she buys.

(a) Calculate the total cost, in forints, of the 1000 dolls that Indre buys.

(3)

Indre has to pay 100 euros to transport the dolls from Hungary so that she can sell them in Austria.

Initially the price of each small doll that Indre sells is 8 euros and the price of each large doll that Indre sells is 40 euros.

She sells 80% of the small dolls and $\frac{7}{8}$ of the large dolls at these prices.

Indre then reduces the price of each of her remaining dolls by 40%
She sells all of the remaining dolls.

When Indre bought the dolls, the exchange rate was 1 euro = 327.6 forints.

(b) Calculate the total profit, in euros to 2 decimal places, that Indre made by selling all 1000 dolls.

(8)

(c) (i) Calculate the percentage profit, to 3 significant figures, that Indre made.

(2)

(ii) State how the percentage profit in part (c) (i) would be affected if the total profit calculated in part (b) had been in forints.

(1)

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Question 12 continued

A series of horizontal dotted lines providing space for the student's answer.

Question 12 continued

Dotted lines for writing.

(Total for Question 12 is 14 marks)

7. 4MB1_02_que_20210427 Q: 1

The table gives the area, in km², and the population of each of three countries in 2017

Country	Area (km ²)	Population
Greenland	2.166×10^6	5.617×10^4
Sri Lanka	6.561×10^4	2.144×10^7
China	9.597×10^6	1.368×10^9

- (a) Write 5.617×10^4 as an ordinary number. (1)

- (b) Calculate by how many people the population of China in 2017 was greater than the population of Sri Lanka in 2017
Give your answer in standard form. (2)

- (c) Work out the number of people per km² for Greenland in 2017
Give your answer, to 3 significant figures, in standard form. (2)

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Question 1 continued

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(Total for Question 1 is 5 marks)

8. 4MB1_02_que_20210427 Q: 7

Lillian and Graham are co-owners of a small company.

Lillian has invested \$55 000 in the company.

Graham has invested \$25 000 in the company.

This year Lillian receives 20% of the profit made by the company in 2020

The rest of the profit made by the company in 2020 is shared between Lillian and

Graham in the same proportions as the amounts of money they invested in the company.

(a) Show that this year Lillian receives, in total, 75% of the profit made by the company in 2020

(2)

In 2020, the company made a profit of \$2000

Lillian puts all the money that she receives from the profit made by the company in 2020 in an account that pays interest at a fixed rate of 4.8% per year.

(b) Calculate the interest she receives in one year.

(2)

Graham goes to a travel agent to change his share of the profit from dollars (\$) into pounds (£).

The table gives information about the exchange rates that are available.

Exchange rate
1 euro = \$1.20
1 euro = £ x
\$1 = £0.76

Graham has to decide whether to

(i) change his dollars into euros **and** then change the euros into pounds

or

(ii) change his dollars straight into pounds.

He calculates that if he chooses to do (i) he will receive £20 more than if he chooses to do (ii)

(c) Calculate the value of x .

(5)

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Question 7 continued

A series of horizontal dotted lines for writing.

9. 4MB1_02R_que_20210304 Q: 2

Each year the students at a college organise a music concert.

In 2017, the total cost of organising the concert was \$675

In 2018, the total cost of organising the concert was 20% more than the total cost in 2017

(a) Calculate the total cost of organising the concert in 2018 (2)

The tickets sold each year were either adult tickets or student tickets.

In 2019, the total number of tickets sold was 385

In 2019, the number of adult tickets sold and the number of student tickets sold were in the ratio

$$\text{number of adult tickets} : \text{number of student tickets} = 19 : 16$$

(b) Calculate the number of adult tickets sold in 2019 (2)

In 2019, the price of each adult ticket sold was \$8.50 and the price of each student ticket sold was \$4.50

(c) Calculate the total amount of money, in \$, received for all the tickets sold in 2019 (2)

In 2019, the total cost of organising the concert was double the total cost in 2017

(d) Calculate the percentage profit made in 2019
Give your answer to 1 decimal place. (2)

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Question 2 continued

Dotted lines for writing.

(Total for Question 2 is 8 marks)

10. 4MB1_02_que_20201106 Q: 5

Tahina travels to work by bus.
Her total bus fare last week was £12.50
This week her total bus fare has increased by 8%

- (a) Calculate her total bus fare for this week. (2)

Tahina works in a kiosk selling hot drinks.
She sells coffee, tea and hot chocolate.

On Monday, Tahina sold a total of 378 hot drinks.
The numbers of cups of coffee, tea and hot chocolate she sold were in the ratios 5 : 3 : 1

- (b) Calculate the difference between the number of cups of coffee and the number of cups of hot chocolate that Tahina sold on Monday. (3)

On Monday, $\frac{3}{14}$ of the number of cups of coffee Tahina sold were sold without milk.

- (c) Calculate the number of cups of coffee that Tahina sold without milk. (2)

The cost of each cup of coffee that Tahina sells from the kiosk is £2.80

Tahina went on holiday to the USA and to Canada.
She bought a cup of coffee in the USA for \$3.20

Using an exchange rate of £1 = \$1.24

- (d) compare the cost of each cup of coffee sold from Tahina's kiosk with the cost of the cup of coffee that Tahina bought in the USA. (2)

In Canada, Tahina bought a sandwich for 5.28 Canadian dollars.

Using exchange rates of

$$£1 = \$1.24 \quad \text{and} \quad 1 \text{ Canadian dollar} = \$0.75$$

- (e) convert 5.28 Canadian dollars to pounds (£)
Give your answer to 2 decimal places. (3)

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Question 5 continued

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11. 4MB1_02R_que_20201106 Q: 1

The manufacturer’s price for a *Jinko* car is \$ x

Ben was given a 7% discount on the manufacturer’s price when he bought a *Jinko*.
Ben paid \$23 622 when he bought his *Jinko*.

(a) Calculate the value of x . (2)

After a year Ben sold his *Jinko* for \$19 880

(b) Calculate the percentage loss, to 3 significant figures, on the price Ben paid for his *Jinko*. (2)

During the year that Ben owned the *Jinko*, he travelled d km in the car.

The average fuel consumption of the car was 10 km per litre.

The average cost of the fuel he used was \$1.40 per litre.

Other costs for the car in the year came to \$938

The cost per km, including the loss in value, of his *Jinko* to Ben during the year that he owned the car was \$0.40

(c) Calculate the value of d . (4)

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12. 4MB1_02R_que_20201106 Q: 2

(a) Find the Highest Common Factor (HCF) of 75, 90 and 120

(2)

Bhu sets the alarm on her phone to sound at 09 10
Her alarm then sounds every 12 minutes.

Dax sets the alarm on his phone to sound at 09 30
His alarm then sounds every 8 minutes.

Bhu's alarm sounds at 09 10 and Dax's alarm sounds at 09 30

(b) Find the first time after 09 30 that both alarms will sound at the same time.

(2)

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14. 4MB1_02_que_20190116 Q: 3

The original price of each 6-day ski pass is reduced by 15% in a sale.

In the sale the price of each 6-day ski pass is \$272

(a) Calculate the original price of each 6-day ski pass.

(2)

The price of each 3-day ski pass is £110

The exchange rate is £1 = \$1.70

(b) Calculate how much Andrew will save by buying one 6-day ski pass in the sale rather than two 3-day ski passes.

(3)

(Total for Question 3 is 5 marks)

15. 4MB1_02_que_20190116 Q: 4

(a) Express 56 as the product of its prime factors.

(1)

Trains to Watson leave Denby station every 56 minutes.

Trains to Barbe leave Denby station every 24 minutes.

A train to Watson and a train to Barbe both leave Denby station at 12 00.

(b) Find the next time that a train to Watson and a train to Barbe leave Denby station at the same time.

(3)

(Total for Question 4 is 4 marks)

16. 4MB1_02_que_20190607 Q: 2

In 2017, country *A* had a population of 2.35×10^7 people.

Of these people, 48% were male.

(a) Calculate the number of males in country *A* in 2017 (2)

Country *A* is divided into three regions. These three regions are called East Region, Central Region and West Region.

In 2017, the ratio of the number of males in the East Region to the number of males in the Central Region to the number of males in the West Region was 5 : 3 : 2

(b) Calculate the number of males in the Central Region in 2017
Give your answer in standard form. (2)

In 2017, the number of females in the Central Region was 12.5% greater than the number of males in the Central Region.

(c) Calculate the number of females in the Central Region in 2017 (2)

In 2010, country *B* had a population of 2.5×10^7 people.

From 2010 to 2014, the population of country *B* increased by 2.4%

From 2014 to 2018, the population of country *B* decreased by 2.4%

(d) Calculate the population of country *B* in 2018 (2)

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Question 2 continued

Dotted lines for writing

(Total for Question 2 is 8 marks)

17. 4MB0_02_que_20180116 Q: 4

Sannia works in a shop. She is paid \$7.60 for each hour she works. She is also paid 4% of the value of the items she sells in a week.

In one week Sannia works for 36 hours and the value of the items she sells is \$4250

(a) Calculate Sannia’s total pay for that week. (2)

In another week Sannia works for 41 hours and her total pay for this week is \$430.80

(b) Calculate the value of the items Sannia sells this week. (2)

Sannia invested an amount of money for 3 years in a savings account. At the end of each year interest was added to her account.

At the end of the first year the interest added was 5.1% of the amount in the account.

At the end of the second year the interest added was 4.5% of the amount in the account.

At the end of the third year the interest added was 4.5% of the amount in the account.

At the end of the 3 years the amount in the account was \$2123.28

(c) Calculate the amount of money that Sannia invested.
Give your answer to the nearest \$.

(3)

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18. 4MB0_02_que_20180608 Q: 6

Chen buys watches in America to sell in England.

Chen borrowed \$800 000 for two years from a bank in America.
He used all this money to buy watches at \$200 each.

In the first year, Chen sold 62% of the watches in England for £270 each.

(a) Calculate how many watches Chen sold in the first year. (2)

In the second year, Chen sold in England 70% of the watches that he had left at £220 each.
He then sold in England all the remaining watches by the end of the second year at £150 each.

At the end of the second year, Chen paid back to the bank in America \$800 000 plus interest of 8% of this money.

At the end of the two years the exchange rate was £1 = \$1.30

(b) Calculate the total profit in dollars (\$) that Chen made. (6)

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Appendix A

Answers

1. 4MB1_02_rms_20220118 Q: 1

Question	Working	Answer	Mark		Notes
(a)		2.48×10^8	1	B1	cao
(b)		0.000256	1	B1	cao
(c)	Numerator of 2.37×10^{60} or 23.7×10^{107} oe or an answer in the form 1.58×10^n or $m \times 10^{108}$		3	M1	Allow eg 23.7×10^{59} or $(25-1.3) \times 10^{59}$ Implied by a correct single value in any form
	15.8×10^{107} or 158×10^{106} oe			A1	A correct single value seen in their working but need not be in standard form.
		1.58×10^{108}		A1	
Total 5 marks					

2. 4MB1_02_rms_20220118 Q: 10

Question	Working	Answer	Mark		Notes
(a)	$\frac{2}{5+3+2} \times 120\,000$		2	M1	
		24 000		A1	Ignore any units eg condone \$24 000
(b)	$5 \times 1.1 + 3 \times 1.05 + 2 \times 0.96 [= 5.5 + 3.15 + 1.92 = 10.57]$ or $60\,000 \times 1.1 + 36\,000 \times 1.05 + "24\,000" \times 0.96 [= 66000 + 37800 + 23040 = 126840]$		3	M1	Allow any multiple.
	$\frac{"10.57"}{"5+3+2"} [= 1.057]$ or $\frac{"126840"-120000}{120\,000} [= \frac{"6840"}{120\,000} \times 100]$ or $\frac{"126840"}{120000}$ oe			M1	Ft their total from the step before. Allow multiples eg is a multiply of $\frac{"10.57"}{"5+3+2"}$
		5.7[%]		A1	
(c)	$\frac{360\,000}{0.75}$ or $\frac{360\,000}{3} \times 4$		2	M1	
		[\$]480 000		A1	
(d)	$\frac{360\,000}{1.35} [= 266\,666.6.]$		3	M1	A correct first step for example $360\,000 \times 388.5 [= 139\,860\,000]$ or $\frac{1.35}{388.5} [= 0.00347...]$ or $\frac{388.5}{1.35} [= 287.7...]$
	$\frac{360\,000}{1.35} \times 388.5$			M1	A fully correct method.
		103 600 000		A1	oe awrt 103600000
Total 10 marks					

3. 4MB1_02R_rms_20220118 Q: 7

Ques	Working	Answer	Mark	Notes
(a)	$0.3 \times 480 (=144)$ oe or $1 - 0.3 = 0.7$ or $\frac{336}{480} \times 100 = 70$ oe		2	M1 allow M1 for 70% of 480
	$480 - 144 = 336$ or $0.7 \times 480 = 336$ or $100 - 70 = 30$	336 shown		A1 dep on M1 or clearly showing that 336 is 70(%) and $100 - 70 = 30(\%)$
(b)	$336 \div (6 + 7 + 8) (=16)$ $6 \times "16"$		3	M1 M1 M2 for $\frac{6}{21} \times 336$ oe
		96		A1
(c)	$\frac{730 - 680}{680} \times 100$		2	M1 fully correct method
		7.4(%)		A1 awrt 7.4
(d)	$468 \div 1.04$		2	M1
		(\$)450		A1
(e)	$320 \times 0.094 (= 30.08)$ or $\frac{0.57}{0.094} (=6.0638...)$ or $\frac{0.094}{0.57} (=0.1649...)$		3	M1
	"30.08" $\div 0.57$ or $320 \div "6.06.."$ or $320 \times "0.1649..."$			M1
		52.77		A1
				Total 12 marks

4. 4MB1_02_rms_20210304 Q: 2

Question	Working	Answer	Mark	Notes
	$365 \times 24 \times 60 \times 60 [=31536000]$ or $1.5 \times 10^8 \times 1000 [=1.5 \times 10^{11}]$		4	M1 Convert days to seconds or km to m, may be seen within a calculation eg $[2 \times \pi \times] 1.5 \times 10^8 \times 1000$
	$2 \times \pi \times 1.5 \times 10^8$ or $2 \times \pi \times 1.5 \times 10^8 [\times 1000]$			M1 For a correct method to find the circumference of a circle. May be seen within a calculation. Note Circ = 942477796.1..
	$\frac{2 \times \pi \times 1.5 \times 10^8 \times 1000}{365 \times 24 \times 60 \times 60}$			M1 An attempt to use distance divided by time. If it is incorrect we need to see on the numerator 1.5×10^8 or 1.5×10^{11} or a number clearly derived from these and see on the denominator 365 or a number clearly derived from 365
		29 900		A1 awrt 29 900 from correct working
				Total 4 marks

5. 4MB1_02_rms_20210304 Q: 7

Question	Working	Answer	Mark	Notes
	$\left(a = \frac{p}{\sqrt{b}} \text{ or } ap = \frac{1}{\sqrt{b}}\right)$ or $\left(b = \frac{q}{c^3} \text{ or } bq = \frac{1}{c^3}\right)$ oe		6	M1 Allow equivalent statements eg $a^2 = \frac{p^2}{b}$ or $a^2 = \frac{p}{b}$ Allow any letter for p or q Allow with $a = 16$ and/or $c = 240$ substituted
	$ka^2 = c^3$ or $a^2 = lc^3$ or $a = \frac{p}{\sqrt{\frac{q}{c^3}}}$ oe			M1 Combine correct proportionality statements. Allow any letters. Condone $a = \frac{k}{\sqrt{\frac{k}{c^3}}}$ oe Allow with $a = 16$ and/or $c = 240$ substituted
	$k16^2 = 240^3 [\Rightarrow k = 54000]$ or $16^2 = l240^3 [\Rightarrow l = \frac{1}{54000}]$ or $16 = \frac{p}{\sqrt{\frac{q}{240^3}}} [\Rightarrow \frac{p}{\sqrt{q}} = \frac{16}{\sqrt{240^3}}]$ oe			M1 dep on previous M mark. Substituting of 240 and 16 into their combined proportionality statement. Condone $16 = \frac{k}{\sqrt{\frac{k}{240^3}}} [\Rightarrow \frac{k}{\sqrt{k}} = \frac{16}{\sqrt{240^3}}]$ oe
	$c = \sqrt[3]{54000 \times 250^2}$ or $a = \sqrt{\frac{135^3}{54000}}$			M1 dep on previous M mark. Substituting their constant into the combined proportionality statement with either $a = 250$ or $c = 135$
		$c = 1500$		A1 does not need to be in the table.
		$a = 6.75$		A1 does not need to be in the table. Allow \pm
				NB Correct answers gains full marks.
				Total 6 marks

6. 4MB1_02_rms_20210304 Q: 12

Question	Working	Answer	Mark	Notes
(a)	$\frac{4}{5} \times 1000 (= 800)$ or $\frac{1}{5} \times 1000 (= 200)$ oe "800" \times 1900 + "200" \times 10300		3	M1 Method to find the correct number of either size of doll. M1 Method to find total cost. Ft their number of dolls. A1
		3 580 000		
(b)				Working must be seen in part (b) May work in forints We will follow through their number of dolls in part(a) and their answer to part (a)
	Cost in Euros = "3 580 000" \div 327.6 (= 10927.96)		8	M1 for conversion to € or forints. May be as part of Total cost. Allow 10927.96... or awrt 10928 seen. (Forints award when change to euros)
	(Total cost =) "3 580 000" \div 327.6 + 100 (= 11027.96)			M1 correct method to find total cost. The 100 must be used correctly somewhere. Allow 11027.96... or awrt 11028 seen (Forints 3612760)
	$0.8 \times "800" (= 640)$			M1 Correct method to find 80% of the number of small dolls bought. ft the number from part(a) Allow for 640 seen. Implied by 5120 or 768 or 5888 or 13488 (Forints 1677312 or 241596.8 or 1918908.8 or 4418669)
	$\frac{7}{8} \times "200" (= 175)$			M1 Correct method to find $\frac{7}{8}$ of the number of large dolls bought. ft the number from part(a) Allow for 175 seen. Implied by selling price of 7000 or 600 or 1300 or 13488 (Forints 2293200 or 196560 or 2489760 or 4418669)
	$0.6 \times 8 (= 4.80)$ or $8 - 0.4 \times 8 (= 4.80)$ $0.6 \times 40 (= 24)$ or $6 - 0.4 \times 40 (= 24)$			M1 A correct method to reduce at least one selling price by 40% Allow for 4.8 or 4.80 seen or 24 seen Implied by 768 or 600 as selling prices or 13488 (Forints 251596.8 or 196560 or 4418669)
	(Total income =) "640" \times 8 + ("800" - "640") \times "4.80" + "175" \times 40 + ("200" - "175") \times "24" (= 13488)			M1 dep (on 3rd, 4th and 5th M marks) 5120 + 768 + 7000 + 600 or 13488 seen (Forints 1677312 + 251596.8 + 2293200 + 196560 or 4418669)
	"13488" - "11027.96"			M1 dep on all previous M marks awarded (Forints 4418669 - 3612760)
		2 460.04		A1 Award full marks for awrt 2460 must be in Euros

Question	Working	Answer	Mark	Notes
(c)(i)	$\frac{2460.04}{11027.96} \times 100$ or $\frac{13488}{11027.96} \times 100$			2 M1 Ft values from part (b) Allow "their 10927.96..." or "11027.96" for their denominator A1 awrt 22.3
		22.3(%)		
(ii)		The percentage profit would have been the same.	1	B1 indep
				Total 14 marks

7. 4MB1_02_rms_20210427 Q: 1

Question	Working	Answer	Mark	Notes
(a)		56170	1	B1
(b)	$1.368 \times 10^9 - 2.144 \times 10^7$ or 1346560000			M1 for evidence of the correct subtraction (so M0 for $2.144 \times 10^7 - 1.368 \times 10^9$ unless recovered later) or for a correct answer (to at least 3 significant figures) in non-standard form (e.g., 1346560000, 13.4656×10^8 , 1350000000, etc.). The correct answer implies this mark
		1.34656×10^9	2	A1 allow answers which round to (awrt) 1.35×10^9
(c)	$\frac{5.617 \times 10^4}{2.166 \times 10^6}$ or 0.02593...			M1 for evidence of division of the correct two values (condone for M1 $\frac{2.166 \times 10^6}{5.617 \times 10^4}$) or a correct answer (to at least 3 significant figures) in non-standard form (e.g., 0.0259, 0.259×10^{-1} , 0.0259326, etc.) or for 2.59×10^{-n} where n is a positive integer
		2.59×10^{-2}	2	A1 for awrt 2.59×10^{-2} (e.g., $2.593259464 \times 10^{-2}$ scores both marks, but M1A0 for 2.6×10^{-2} if more accurate answer not seen)
				Total 5 marks

8. 4MB1_02_rms_20210427 Q: 7

Question	Working	Answer	Mark	Notes
(a)	$0.2P + 0.8P \times \dots$ or $\frac{25}{80} \times 80\% [= 25\%]$			M1 P may be any value e.g., $20[\%] + 80[\%] \times \dots$
	$\left(0.2P + 0.8P \times \frac{55000}{80000}\right) \times 100 = 75\%$ or $100 - \frac{25}{80} \times 80\% = 75\%$		2	A1 also allow $\left(20[\%] + 80[\%] \times \frac{55000}{80000}\right) = 75[\%]$ or e.g., $\left(0.2 + 0.8 \times \frac{55000}{80000}\right) = 0.75$ which is equivalent to 75% (if working in decimals/fractions then must relate to equivalent percentage). Allow equivalent fractions e.g., $\frac{11}{16}$ for $\frac{55000}{80000}$.
(b)	$0.048 \times 2000 [= 0.75]$			M1 no need for the 0.75 For M1 allow 1.048×2000
		\$72	2	A1 (\$ sign not required)
(c)	$0.25 \times 2000 [= 500]$			M1 for calculating Graham's share in dollars (implied by use of 500 in an equation to find x)
	$"500" \times 0.76 [= 380]$			M1 for converting Graham's share in dollars into pounds or for 2000×0.76 (converting the \$2000 into pounds)
	$\frac{500}{1.2} x \left[= \frac{1250}{3} x \right]$			M1 for converting Graham's share in dollars into euros or for converting the \$2000 into euros $\frac{2000}{1.2} y \left[= \frac{5000}{3} y \right]$ for some value y
	$x = ("380" + 20) \times \frac{1.2}{500}$			M1 for a complete, correct method for calculating x (in any equivalent form, e.g., $\frac{500}{1.2} x = "380" + 20$) – the correct answer can imply this mark
		0.96	5	A1
				Total 9 marks

9. 4MB1_02R_rms_20210304 Q: 2

Question	Working	Answer	Mark	Notes
(a)	675×1.2 or $675 + 0.2 \times 675$			M1 complete method to increase by 20%
		(\$)810	2	A1
(b)	$\frac{19}{19+16} \times 385$			M1 oe e.g. $\frac{385}{19+16} \times 19$
		209	2	A1
(c)	"209" $\times 8.50 + (385 - "209") \times 4.50$			M1
		(\$)2568.50	2	A1 allow (\$)2568.5
(d)	$\frac{"2568.50" - 2 \times "675"}{2 \times "675"} \times 100$ or $\frac{"2568.50"}{2 \times "675"} \times 100 - 100$			M1 complete method to find % profit.
		90.3(%)	2	A1 allow awrt 90.3
Total 8 marks				

10. 4MB1_02_rms_20201106 Q: 5

Question	Working	Answer	Mark	Notes
(a)	12.5×1.08 oe		2	M1
		(£)13.5(0)		A1
(b)	$378 \div (5 + 3 + 1)$ (= 42)		3	M1
	$5 \times \frac{378}{9} - \frac{378}{9}$ oe			M1 or 210 - 42
		168		A1
(c)	$(5 \times "42") \times \frac{3}{14}$ oe eg 3×15		2	M1ft their 42 or their 210 in part(b) ie ("their 210") $\times \frac{3}{14}$
		45		A1
(d)	2.80×1.24 [=(£)3.47(2)] or $3.20 \div 1.24$ [(£)2.58...]		2	M1 Allow for 3.47... or 2.58... if working not shown. Allow $n \times 2.80 \times 1.24$ and $n \times 3.2$ NB for $n = 210$ the figures are (\$)729.12 and (\$)672 Allow $m \times 3.20 \div 1.24$ and $m \times 2.80$ NB for $m = 210$ the figures are (£)541.94 and (£)588
		The coffee is more expensive from the kiosk		A1 dep oe must have a correct conversion and comparison in words. eg the difference is (\$)0.27 or (\$)57.12 the difference is (£)0.22 or (£)46.06 NB the difference must be correct for these 2 statements. coffee is more expensive in UK, coffee is cheaper in the USA etc.
(e)	5.28×0.75 (= 3.96)		3	M1
	$5.28 \times 0.75 \div 1.24$ or "3.96" $\div 1.24$			M1
		(£)3.19		A1 Ignore incorrect currency signs.
Total 12 marks				

11. 4MB1_02R_rms_20201106 Q: 1

Question	Working	Answer	Mark	Notes
(a)	$\frac{23622}{0.93}$			M1 Alt $x - 0.07x = 23622$ oe
		(\$) 25 400	2	A1
(b)	$\frac{23622 - 19880 [= 3742]}{23622} \times 100$ or $\frac{19880}{23622} \times 100 (= 84.158\dots)$			M1 dep
		15.8(%)	2	A1
(c)	$\frac{d}{10} \times 1.4(0)$			M1
	$\frac{d}{10} \times 1.4(0) + 938 + "3742" = 0.4d$ oe			M1 dep ft their 3742 from (b)
	$0.4d - \frac{d}{10} \times 1.4 = 938 + "3742"$ oe			M1 dep collecting like terms on opposite sides
		18 000(km)	4	A1
Total 8 marks				

12. 4MB1_02R_rms_20201106 Q: 2

Question	Working	Answer	Mark	Notes												
(a)	$75 = 3 \times 5 \times 5$ $90 = 2 \times 3 \times 3 \times 5$ $120 = 2 \times 2 \times 2 \times 3 \times 5$ or correct factor trees or <table style="display: inline-table; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding: 0 5px;">3</td> <td style="padding: 0 5px;">75</td> <td style="padding: 0 5px;">90</td> <td style="padding: 0 5px;">120</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 0 5px;">5</td> <td style="border-top: 1px solid black; padding: 0 5px;">25</td> <td style="border-top: 1px solid black; padding: 0 5px;">30</td> <td style="border-top: 1px solid black; padding: 0 5px;">40</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 0 5px;"></td> <td style="padding: 0 5px;">5</td> <td style="padding: 0 5px;">6</td> <td style="padding: 0 5px;">8</td> </tr> </table>	3	75	90	120	5	25	30	40		5	6	8			M1 implied by correct answer
3	75	90	120													
5	25	30	40													
	5	6	8													
		15	2	A1												
(b)	Both could sound together at 9.22 and LCM of 8 and 12 is 24 or 930 938 946 910 922 934 946			M1												
		09 46 oe	2	A1												
Total 4 marks																

13. 4MB1_02R_rms_20201106 Q: 8

Question	Working	Answer	Mark	Notes
	5010, 4990, 10100, 9900, 33.5, 34.5, 68.5, 67.5			M1 at least 1 from each row.
	Colin $\frac{10100}{67.5}$ or $\frac{10.1}{67.5}$			A1
	Jenny $\frac{4990}{34.5}$ or $\frac{4.99}{34.5}$			A1
	$\left(\frac{10100}{67.5} - \frac{4990}{34.5}\right) \times 60$ 1000			M1
		0.2995 (km/h)	5	A1
<i>Total 5 marks</i>				

14. 4MB1_02_rms_20190116 Q: 3

Question	Working	Answer	Mark	Notes
(a)	$\frac{272}{85} \times 100$	320	2	M1 A1
(b)	220×1.7 or $\frac{272}{1.7}$ $220 \times 1.7 - 272$ or $220 - \frac{272}{1.7}$	\$102 or £60	3	M1 M1 A1

15. 4MB1_02_rms_20190116 Q: 4

Question	Working	Answer	Mark	Notes
(a)		$2 \times 2 \times 2 \times 7$ or $2^3 \times 7$	1	B1
(b)	Method to find the LCM $2 \times 2 \times 2 \times 3$ or 56, 112, 168 and 24, 48, 72, 96, 120, 144, 168 or 12 00, 12 56, 13 52, 14 48 and 12 00, 12 24, 12 48, 13 12, 13 36, 14 05, 14 00, 14 24, 14 48 LCM = 168	14:48 or 2.48 pm	3	M1 A1 A1

16. 4MB1_02_rms_20190607 Q: 2

Question	Working	Answer	Mark	Notes
(a)	$2.35 \times 10^7 \times 0.48$		2	M1 NB $2.35 \times 10^7 \times 48\%$ is not sufficient for this mark unless it leads to the correct answer. A1 Allow 1.13×10^7 oe eg 11.3×10^6
		1.128×10^7 or $11\,280\,000$		
(b)	$\left(\frac{11\,280\,000}{10} \times 3\right)$		2	M1 A1 Allow answers between 3.38×10^6 and 3.39×10^6 inclusive must be in standard form. Allow a final answer of 3.4×10^6 if an acceptable value is seen not written in standard form.
		3.384×10^6		
(c)	$"3\,384\,000" \times 1.125$		2	M1 NB $"3\,384\,000" \times 112.5\%$ is not sufficient for this mark unless their answer is equal to their value $\times 1.125$ A1 Allow answers between 3.8×10^6 and 3.814×10^6 inclusive oe
		3.807×10^6 or $3\,807\,000$		
(d)	$2.5 \times 10^7 \times 1.024 \times 0.976$		2	M1 A1 Allow answers between $24\,986\,000$ and $24\,990\,000$ inclusive oe ISW rounding.
		2.49856×10^7 or $24\,985\,600$		
				Total 8 marks

17. 4MB0_02_rms_20180116 Q: 4

Question	Working	Answer	Mark	Notes
(a)	$36 \times 7.60 + \frac{4}{100} \times 4250$	\$443.60	2	M1A1
(b)	$430.8 = 41 \times 7.6 + \frac{4}{100} \times N$ $\Rightarrow N = 119.2 \times 100 \div 4$	\$2980	2	M1A1
(c)	$1.051 \times 1.045^2 = 1.147718\dots$ $2123.28 \div '1.147718\dots' = 1850$	\$1850	3	M1 M1 A1

18. 4MB0_02_rms_20180608 Q: 6

Question	Working	Answer	Mark	Notes
(a)	$\frac{800\,000}{200} \times \frac{62}{100}$	2480	2	M1 Full method for 2480
				A1
(b)	Income yr 1 "2480" \times 270 (= £669 600)	\$ 399 704	6	M1
	Income yr 2 (i) $(4000 - "2480") \times \frac{70}{100} \times 220 (= 234\,080)$			M1 indep Both parts of yr 2
	Income yr 2 (ii) $\left(4000 - "2480" - (4000 - "2480") \times \frac{70}{100}\right) \times 150 (= 68\,400)$			
	Total income in £ ("669 600" + "234080" + "68400" = 972080)			
	Total income in \$ "972 080" \times 1.30 = 1 263 704			M1 indep (Any attempt to convert an amount of £ to \$)
	Borrowings + interest = $800\,000 \times 1.08 = \$864\,000$			M1 indep
	Profit = "\$1263 704" - "\$864 000"			M1 dep all previous M marks A1 cao NB Ignore labelling or (a) and (b) in this question. Award marks wherever gained.
Total 8 marks				

19. 4MB0_02R_rms_20180116 Q: 1

Question	Scheme	Answer	Mark	Notes
(a)	$348 \times \frac{100}{60}$ oe	(\$) 580	2	M1 A1
(b)	"\$580" $\times \frac{75}{100} - \348 OR $(0.40 - 0.25) \times "580"$ OR $(0.75 - 0.60) \times "580"$	(\$)87	2	M1 A1