



Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

Functional Skills Certificate

FUNCTIONAL MATHEMATICS

Level 1

Wednesday 17 May 2017 Morning Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:

- a calculator
- mathematical instruments
- a copy of the Data Book (Examination) (enclosed).



Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.
- State the units of your answer where appropriate.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 60.
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.
- Evidence of checking is specifically assessed in Questions 2(c) and 4(d). These questions are indicated with a †.

Advice

- In all calculations, show clearly how you work out your answer.

For Examiner's Use	
Question	Mark
1	
2	
3	
4	
TOTAL	



J U N 1 7 4 3 6 7 0 1

IB/M/Jun17/E5

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QAN 500/8703/4

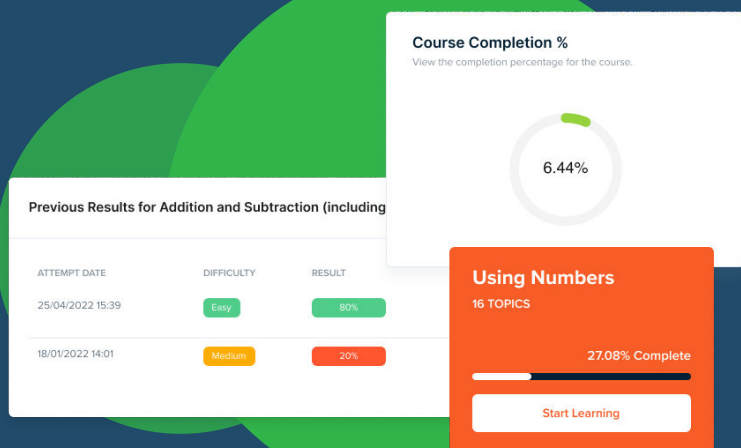
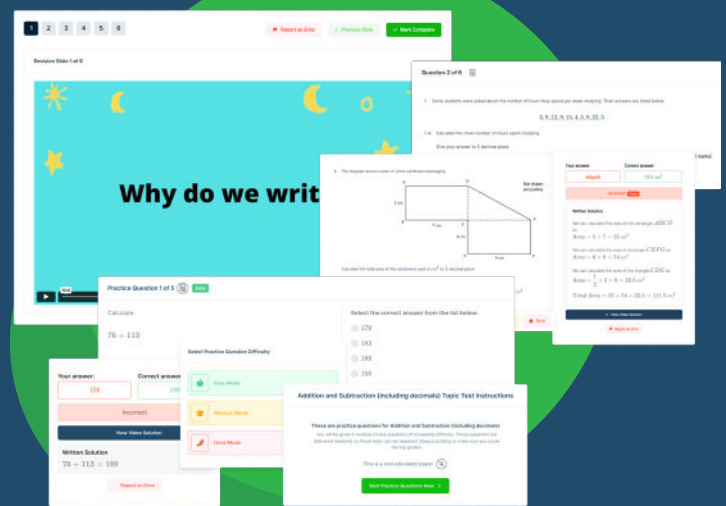


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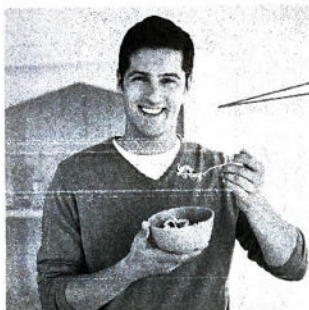


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Answer **all** questions in the spaces provided.

1 Muesli



I eat muesli for breakfast.

Rory

Rory finds the number of calories and the amount of sugar in different brands of muesli.

Muesli	For each serving	
	Calories	Sugar
Brand W	222	2 teaspoons
Brand X	<u>170</u>	$2\frac{1}{2}$ teaspoons
Brand Y	219	4 teaspoons
Brand Z	<u>188</u>	$2\frac{1}{2}$ teaspoons

- 1 (a)** For a healthy diet, Rory is allowed 6 teaspoons of sugar each day.
On Monday morning, he has one serving of Brand Z.

How many **more** teaspoons of sugar is he allowed during the day?

Circle your answer.

[1 mark]

2

$3\frac{1}{2}$

$4\frac{1}{2}$

6



- 1 (b) Rory has one serving of muesli each day.
This week he has Brand Z on all 7 days.
Next week he will have Brand X on all 7 days.

He says,

"Next week, the muesli I eat will have 150 calories less than this week."

Is he correct?

You **must** show your working.

[4 marks]

$$188 - 170 = 18$$

$$18 \times 7 = 126 < 150$$

Rory is not correct.

Question 1 continues on the next page

Turn over ►



- 1 (c) For a healthy diet, Rory is allowed 2500 calories each day.
There are 260 calories in his breakfast each day.

He says,

"I have **more than** 10% of my allowed daily calories in my breakfast."

Is he correct?

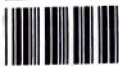
You **must** show your working.

[3 marks]

$$10\% = 0.1$$

$$0.1 \times 2500 = 250 < 260$$

Rory is correct.



- 1 (d) Lara makes her own muesli.
To make 500 g of muesli she needs

<u>350 g oats</u>	<u>25 g dried apricots</u>
25 g raisins	25 g dried cranberries
40 g nuts	35 g sunflower seeds

She makes these notes.

100 g of oats cost 8p

100 g of dried apricots cost 72p

For 500 g of muesli, the other ingredients cost a total of 95p

A box of similar muesli from a shop costs £2.65 for 500 g

She says,

"For 500 g, my muesli is cheaper than the shop muesli by **more than** £1.20"

Is she correct?

You **must** show your working.

[6 marks]

100 g costs 8p

$$8 \times 3.5 = 28$$

350 g costs 28p.

100 g costs 72p.

25g costs ~~22~~ 18p

$$28p + ~~22~~ 18p + 95p = £1.41.$$

$$£2.65 - £1.41 = £1.24 > £1.20$$

Lara is correct.



2 Hot Air Balloon

There is a **data sheet** for Hot Air Balloon.



Jo

Jo is a private balloon pilot.

She wants to qualify to carry passengers.

2 (a) Jo has already completed eight flights.

These flights lasted a total of 29 hours.

She completes two more flights.

	Day	Start time	Finish time
Flight 1	Friday	<u>1030</u>	<u>1300</u>
Flight 2	Saturday	<u>1600</u>	<u>2000</u>

Jo says,

"I have now completed the hours I need to qualify."

Is Jo correct?

You **must** show your working.

[4 marks]

$$1300 - 1030 = \cancel{2.5} \text{ 2.5 hours}$$

$$2000 - 1600 = 4 \text{ hours}$$

$$29 + 4 + 2.5 = 35.5 \text{ hours} \rightarrow 35 \text{ hours}$$

Jo is ~~not~~ correct.



- 2 (b) On one of the flights, the balloon reaches a height of 1620 metres.

Show that this height is more than 5000 feet.

Use the steps on the data sheet.

[3 marks]

$$1620 \div 3 = 540$$

$$540 \times 10 = 5400 > 5000$$

- †2 (c) Jo rents a balloon with an envelope volume of 3200 m³

A balloon can lift 1 kilogram for every 4 m³ of balloon volume.

Work out the maximum number of kilograms this balloon can lift.

[2 marks]

$$3200 \div 4 = 800 \text{ kg}$$

Check your answer.

Show how you have done your check.

[1 mark]

$$800 \times 4 = 3200$$



- 2 (d) Jo rents the balloon for a year.
It can carry the pilot and four passengers.
She makes these notes about the flights and costs for the year.

The flights will start on 1 April and end on 31 October.

There will be 8 flights each month.

I will charge each passenger £145 for a ticket.

My costs for the year will be

£5700 to rent the balloon

£2250 for fuel.

Jo says,

"If I sell 4 tickets for every flight, I will make a profit of **more than £25 000**"

Is she correct?

You **must** show your working.

[7 marks]

1 Apr - 31 Oct is 7 months.

$$\text{Make } 7 \times 8 \times 4 \times \pounds 145 = \pounds 32480$$

$$\pounds 32480 - \pounds 5700 - \pounds 2250 = \pounds 24530$$

$$\pounds 24530 < \pounds 25000$$

Jo is not correct.



3 Canteen Survey

Betty is the manager of the college canteen.



Betty

I want to improve the service we offer.
To help me I will carry out a survey.

20 students completed Betty's survey form.
Here is one of the completed forms.

Canteen Survey

A Circle the number of days that you used the canteen last week.

0

1

2

3

4

5

B Tick a box to show which of these sandwiches you like best.

Egg and Cress	<input type="checkbox"/>
Bacon, Lettuce and Tomato	<input checked="" type="checkbox"/>
Chicken Salad	<input type="checkbox"/>

C The canteen is thinking of selling sushi.

Tick a box to show what type of sushi you would like best.

Salmon	<input type="checkbox"/>
Vegetable	<input checked="" type="checkbox"/>
Tuna	<input type="checkbox"/>
None	<input type="checkbox"/>

Turn over ►



3 (a) The mean number of days the 20 students used the canteen that week was 2.5.
Betty put some more seats in the canteen.
The following week she asked the same 20 students question A again.

Here are the answers.

0 3 5 3 2 2 0 3 3 5
3 4 4 5 3 1 2 2 4 4

Betty says,

"The mean number of days the students used the canteen has increased."

Is she correct?

You **must** show your working.

[4 marks]

$$\frac{0+3+5+3+2+2+0+3+3+5+2+4+4+5+3+1+2+2+4+4}{20} = 2.9$$

$$2.9 > 2.5$$

The mean has increased.



The table shows information about the answers to question B.
It also shows the price of each type of sandwich.

Sandwich	Number of people	Price
Egg and Cress	5	£2
Bacon, Lettuce and Tomato	10	£3
Chicken Salad	5	£3
Total = 20		

- 3 (b) Betty makes 80 sandwiches each day.
She uses the survey results to work out how many of each sandwich to make.
Betty works out how much money she could take from selling the sandwiches.
She says,

"If I sell all 80 sandwiches I will take **more than** £200 each day."

Is she correct?

You **must** show your working.

[6 marks]

$$80 \div 20 = 4$$

$$\text{Egg} \quad 4 \times 5 = 20 \quad 20 \times £2 = £40$$

$$\text{Bacon} \quad 4 \times 10 = 40 \quad 40 \times £3 = £120$$

$$\text{Chicken} \quad 4 \times 5 = 20 \quad 20 \times £3 = £60$$

$$£40 + £120 + £60 = £220 > £200$$

She is correct.

Turn over ►



3 (c) The table shows information about the answers to question C.

Type of sushi	Number of people
Salmon	3
Vegetable	7
Tuna	4
None	6
	Total = 20

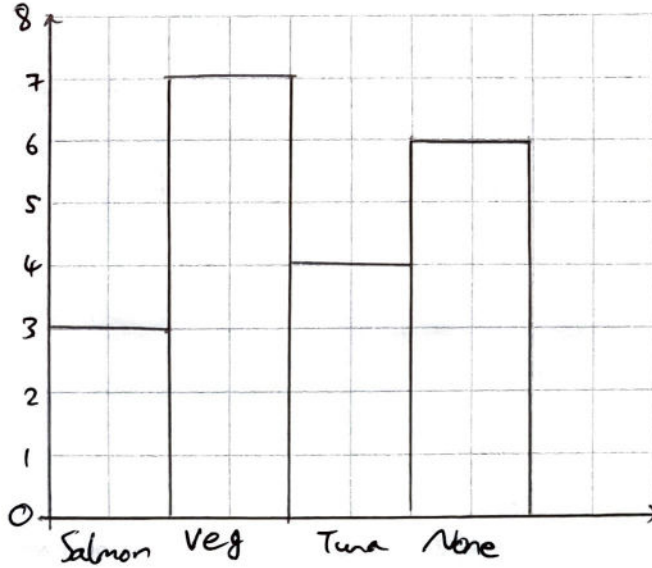
Betty wants to show this information in a diagram.

Draw a pictogram or a bar chart that Betty could use.

Use the space below or the grid opposite.

[3 marks]





Turn over for the next question

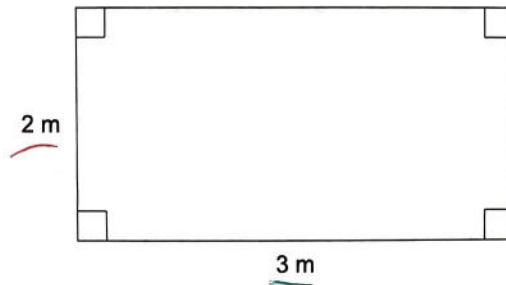
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4 Room Makeover

There is a **data sheet** for Room Makeover.

Here is a sketch of Tom's bedroom floor.



Not drawn
accurately

- 4 (a) The gripper rods in one pack have a total length of 10.6 metres.

Show that one pack has enough gripper rods to go around the edge of the bedroom.

[2 marks]

$$2 + 3 + 2 + 3 = 10 < 10.6$$

- 4 (b) The bedroom has height 2.5 metres.

Tom wants a new radiator.

Work out the smallest length of radiator he should buy.

You **must** show your working.

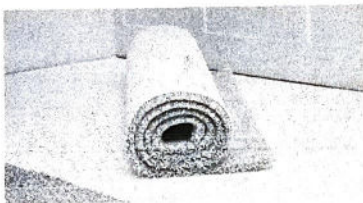
[5 marks]

$$2 \times 3 \times 2.5 \times 141 = 2115$$

Need 600mm radiator



- 4 (c) Tom is buying a carpet for his bedroom.
He buys this carpet piece, which fits the room exactly.



Carpet piece
Only £95

The shop sells

underlay for £3.99 per square metre
gripper rods for £5.79 per pack.

Tom buys

the carpet piece
enough underlay for the bedroom
one pack of gripper rods.

He says,

"I can buy all these items for **less than** £125"

Is he correct?

You **must** show your working.

[5 marks]

$$2 \times 3 = 6 \text{ m}^2$$

$$6 \times \pounds 3.99 = \pounds 23.94$$

$$\pounds 23.94 + \pounds 5.79 + \pounds 95 =$$

$$\pounds 124.73 < \pounds 125.00$$

He is correct.

Turn over for the next question

Turn over ►



- †4 (d) Tom hires Ali to paint the bedroom.
Ali charges £28 per hour, plus £55 for paint.
He works for 6 hours.

How much does Ali charge in total?

[3 marks]

$$£28 \times 6 = £168$$

$$£168 + £55 = £223.$$

Check your answer.

Show how you have done your check.

[1 mark]

$$(223 - 55) \div 6 = 28.$$

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END OF QUESTIONS

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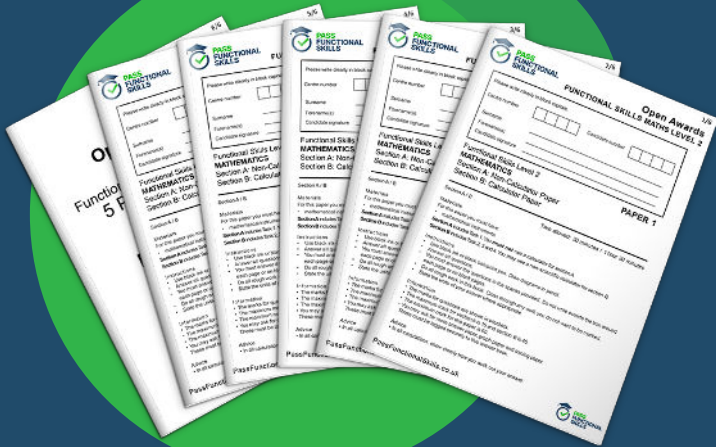
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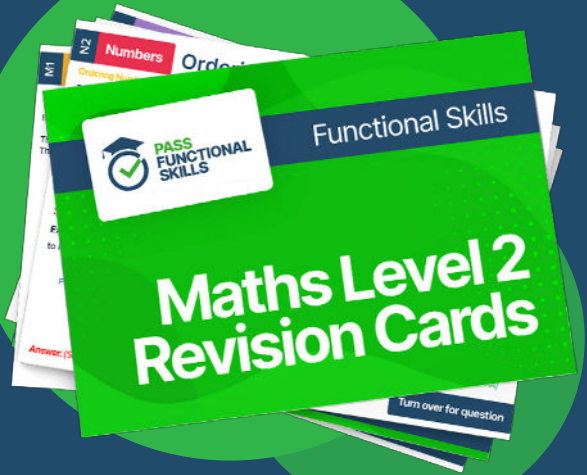




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