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Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

# Functional Skills Certificate

## FUNCTIONAL MATHEMATICS

Level 1

Tuesday 28 February 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(c). 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	
<b>TOTAL</b>	



M A R 1 7 4 3 6 7 0 1

IB/M/Mar17/E7

4367

QAN 500/8703/4

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

**1 Tenpin bowling**

There is a **data sheet** for Tenpin bowling.

Sue, Mal and their two children are going to play a game of tenpin bowling.

**1 (a)** Here are the ticket prices.

Adult      £5.79

Child (under 16)      £4.79

Family (2 adults and 2 children under 16)      £18.99

Both children are under 16

Sue says,

“It is **more than** £3 cheaper to buy a family ticket than four separate tickets.”

Is she correct?

You **must** show your working.

**[4 marks]**

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1 (b) Sue has completed two frames of the game.

1		2	
3	5	2	7

Complete the scoreboard for the first two frames.

[2 marks]

1 (c) Later, Mal has one more ball to bowl.

1		2		3		4		5		6		7		8		9		10	
6	3	8	/	6	2	5	3	7	2	1	6	5	4	8	1	X		3	
9		25		33		41		50		57		66		75					

Mal knocks over 5 pins with his last ball.

He says,

“My final score is **more than** 100”

Is he correct?

You **must** show your working.

[4 marks]

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**Anna**

I am the captain of a tenpin bowling team.

Anna has to choose a new player for her bowling team.

She can choose either Jamil or Tom.

Jamil and Tom have each played five games against Anna.

Here are their final scores and results.

<b>Jamil</b>	
<b>Final Score</b>	<b>Result</b>
145	Lost
138	Lost
204	Won
186	Won
172	Won

<b>Tom</b>	
<b>Final Score</b>	<b>Result</b>
192	Won
165	Lost
144	Lost
210	Won
184	Lost



1 (d)



I have a greater chance of winning against Anna than Tom does.

**Jamil**

How do the results support Jamil's statement?

**[1 mark]**

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1 (e)



On average, my final scores were higher than Jamil's.

**Tom**

Show that Tom is correct.

**[3 marks]**

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**2 Sandwiches****Amir**

I make and sell sandwiches in my shop.

Amir makes sandwiches with these fillings.

Cheese

Ham

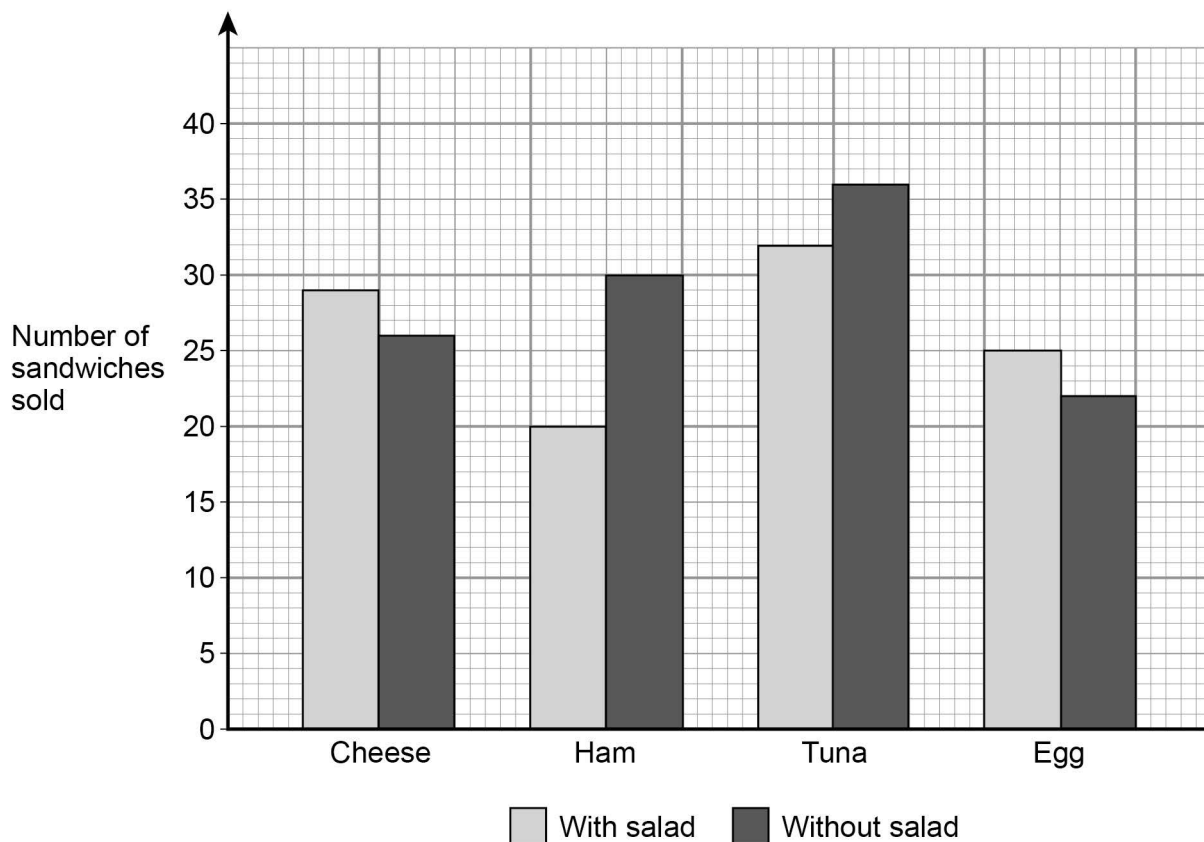
Tuna

Egg

Sandwiches can be **with salad** or **without salad**.

Each week, Amir makes a chart to show the number of sandwiches sold.

Here is his chart for last week.

**Sandwiches**

2 (a) What was the highest selling filling last week?

Circle your answer.

[1 mark]

Cheese

Ham

Tuna

Egg

2 (b) Amir says,

“Last week, I sold more sandwiches with salad than without salad.”

Is he correct?

You **must** show your working.

[3 marks]

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Question 2 continues on the next page

Turn over ►



Amir uses 300 grams of spread to make 25 sandwiches.

†2 (c)

How many grams of spread does he use to make one sandwich?

[2 marks]

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Check your answer.  
Show how you have done your check.

[1 mark]

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2 (d)

Amir uses tubs of spread.  
Each tub contains 2 kg of spread.  
1 kg = 1000 g  
Next week, Amir wants to make 500 sandwiches.

How many tubs will he need?  
You **must** show your working.

[4 marks]

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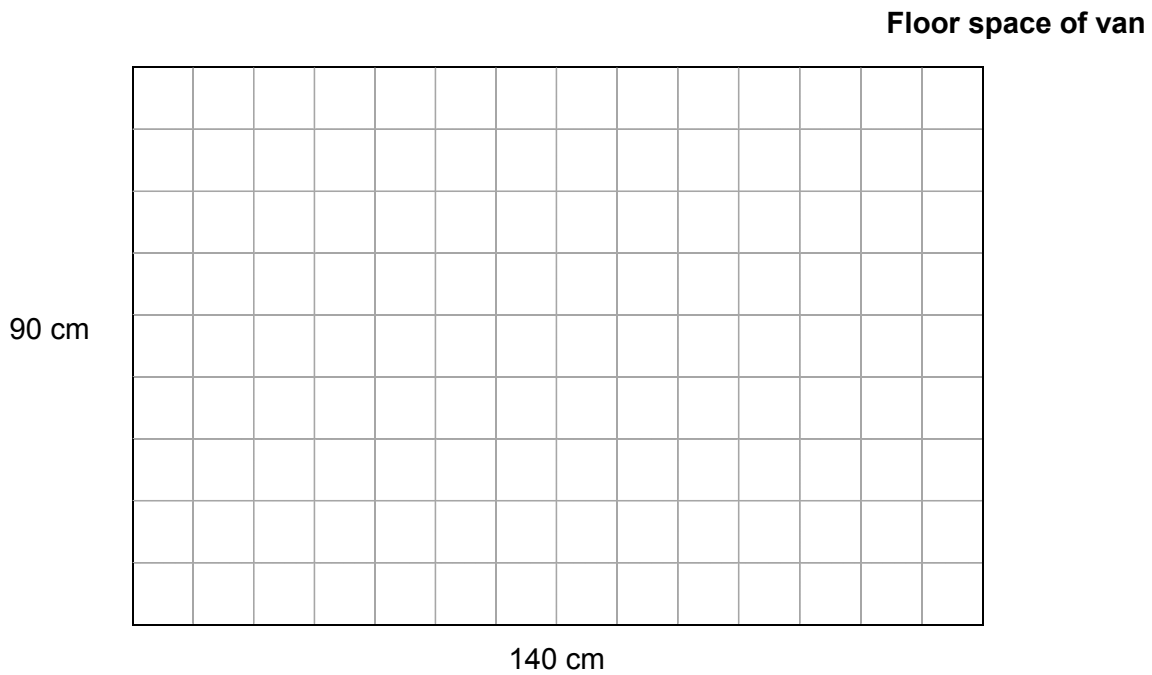
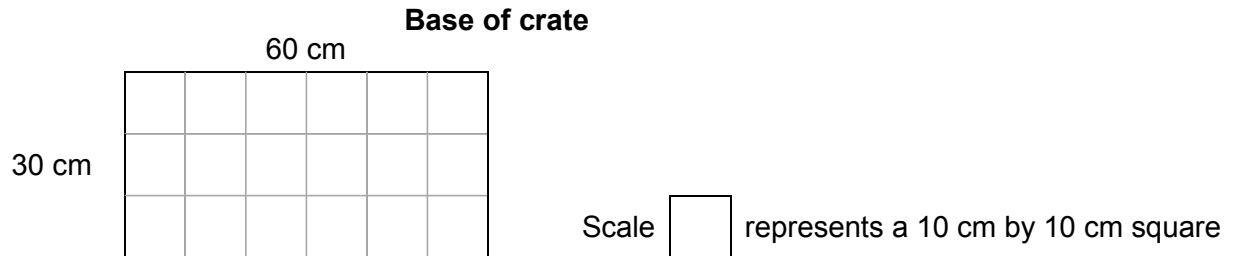
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- 2 (e)** Amir puts the sandwiches in crates.  
The crates are put on the floor space in the back of his van.  
The diagrams show the base of each cuboid crate and the floor space in the van.



Work out the **maximum** number of crates that can fit on the floor.  
You **must** show your working.

**[3 marks]**

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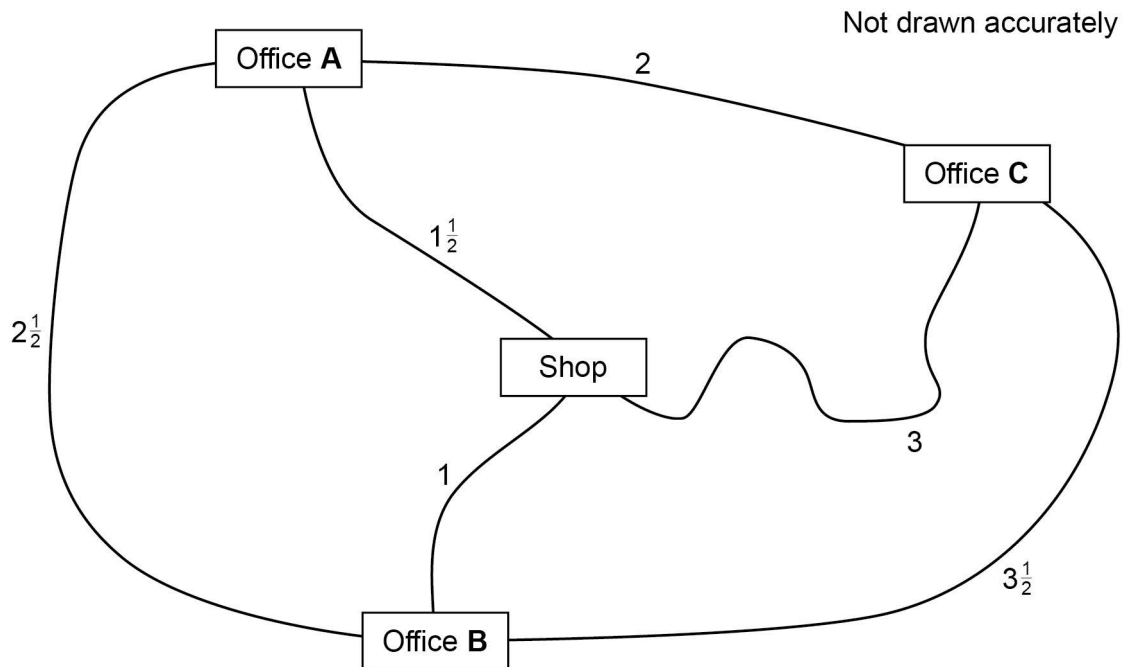
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**Turn over ►**



2 (f) Amir delivers sandwiches to three offices.

The diagram shows the driving distances between his shop and the offices.  
The distances are in miles.



Amir drives from his shop to Office A.

He visits the other two offices.

He then drives back to his shop.

Work out the shortest possible route.

Include the route and the total distance he drives.

**[3 marks]**

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### 3 Hairdressing salon



**Jenny**

I am opening a hairdressing salon.

**3 (a)** Jenny is designing the salon.

Each sink will need a square space with sides of 0.5 m

Each chair will need a circular space with radius 0.5 m

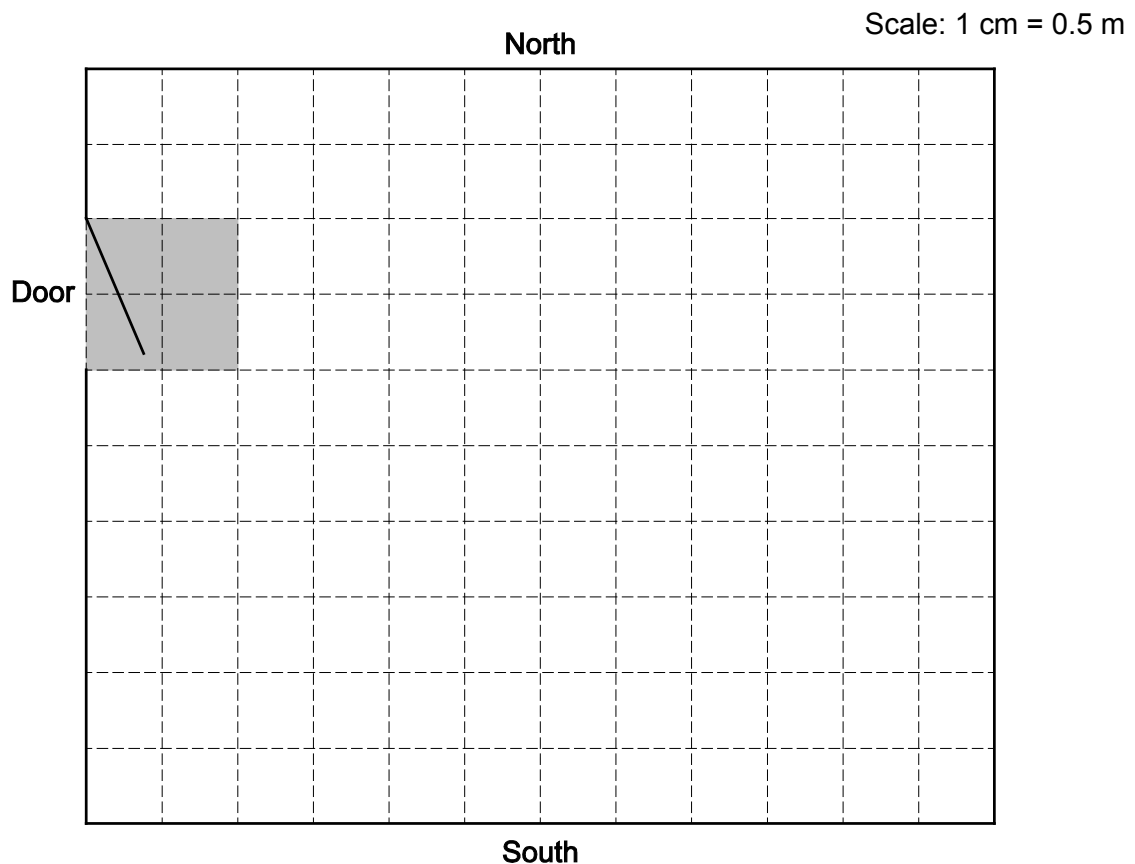
She wants

- two sinks against the North wall
- three chairs in a line in the South half of the salon
- a rectangular reception desk measuring 1 m by 0.5 m
- a rectangular waiting area measuring 2 m by 1 m

The area near the door (shaded) must be kept clear.

Show a possible design on the scale drawing below.

**[5 marks]**



**Turn over ►**



- 3 (b)** The salon opens six days each week, from Monday to Saturday.  
There are two shifts each day.  
Two people work each shift.

Jenny, Craig and Mia work in the salon.

Each week,

- each person works 8 shifts
- Craig does **not** work on Saturday
- each person has at least 1 full day off.

Make a possible rota for one week.

**[4 marks]**

Practise on this grid.

	Morning shift		Afternoon shift	
	Worker 1	Worker 2	Worker 1	Worker 2
<b>Monday</b>				
<b>Tuesday</b>				
<b>Wednesday</b>				
<b>Thursday</b>				
<b>Friday</b>				
<b>Saturday</b>				



Put your answer on this grid.

	Morning shift		Afternoon shift	
	Worker 1	Worker 2	Worker 1	Worker 2
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				

Question 3 continues on the next page

Turn over ►





**4 Electricity**

There is a **data sheet** for Electricity.

**4 (a)** Joe has an electric fire with three settings.

Setting	Power
High	3 kW
Medium	2 kW
Low	1 kW

In very cold weather he puts the fire on **High** for 6 hours each night.

Electricity costs 15p per unit.

He says,

“6 hours on High will cost **more than** £2.50”

Is he correct?

You **must** show your working.

**[4 marks]**

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**Turn over ►**



Joe uses an ordinary 100 W light bulb in a lamp.  
When the bulb wears out he replaces it with a new 100 W bulb.  
The lamp is switched on for 500 hours each year.

**4 (b)** Show that the lamp uses 200 units of electricity in **4 years**.

**[3 marks]**

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Joe is thinking of changing to a low energy bulb in the lamp.

A low energy bulb uses  $\frac{1}{5}$  of the electricity of an ordinary bulb.

**†4 (c)** How many units of electricity will a low energy bulb use in **4 years**?

**[2 marks]**

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Check your answer.  
Show how you have done your check.

**[1 mark]**

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