Functional Skills Certificate
FUNCTIONAL MATHEMATICS
Level 1

Thursday 10 November 2016   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 1(c) and 3(b). These questions are indicated with a †.

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

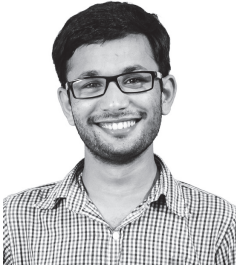Answer **all** questions in the spaces provided.

1   **Garden**

> I am designing a garden.
> It measures 10 metres by 14 metres.

Javed

Javed writes these notes about his design.

Patio

- a 10 m by 4 m rectangle
- at the front of the garden

Two flower beds

- each is a 1 m by 10 m rectangle
- one on the right side of the garden
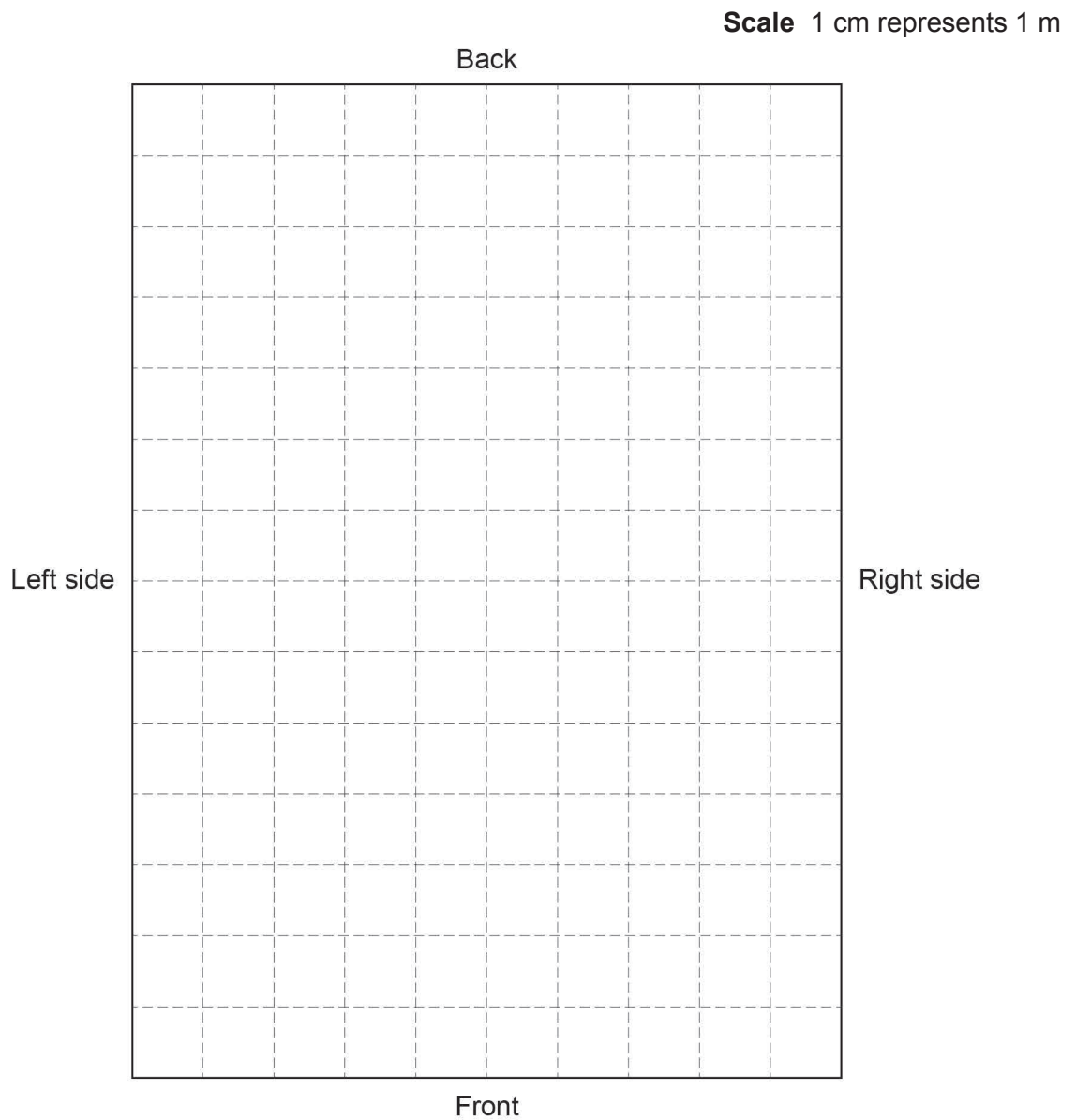- one on the left side of the garden

Vegetable patch and lawn

- divide the rest of the garden into **two equal** rectangles
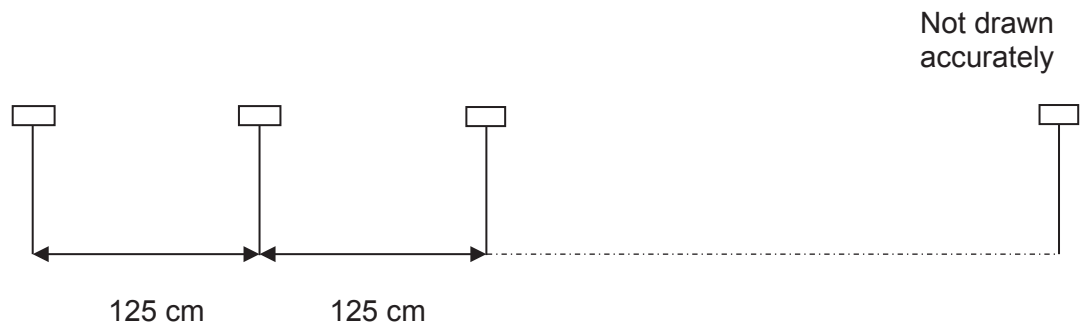- one is the vegetable patch
- one is the lawn

1 (a) Use Javed's notes to draw a layout of the garden on the scale drawing below.

Label all parts of the garden.

[5 marks]

Scale 1 cm represents 1 m

Back

Left side

Right side

Front

1 (b) Javed puts lights in a straight line along the 10 metres at the back of the garden.

Not drawn accurately

125 cm   125 cm

He leaves gaps of 125 cm between the lights.

How many lights does he need?

1 m = 100 cm

[3 marks]

Javed buys paving stones to make the patio.

†1 (c) He works out the area of the 10 m by 4 m patio in square metres.

He uses

area of rectangle = length × width

Work out the area of the patio in square metres.

[1 mark]

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

[1 mark]

1 (d) He buys the paving stones in packs.

Each pack covers 9 m^2
Each pack costs £152

Javed says,

"I will have to pay **more than** £750"

Is he correct?
You **must** show your working.

[5 marks]

15

Turn over ▶

2 **Concert**

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

I am organising a concert.

Jane

2 (a) Jane hires a concert hall.

The hall has 240 m^2 of floor space.
There are four exit doors.
Their widths are 1150 mm, 1120 mm, 1080 mm and 800 mm

Jane says,

"More than 450 people are allowed in this hall."

Is she correct?
You **must** show your working.

[5 marks]

Two bands, The Crackers and The Whales, will play at the concert.

2 (b) Jane will pay The Crackers £750

The Crackers

Ruth is the lead singer.

She will get $\dfrac{1}{3}$ of the money.

The rest will be shared equally between the other four members.

How much will each of the other four members get?

[4 marks]

Turn over ▶

2 (c)   Here are Jane's costs for the concert.

The Crackers	£750
The Whales	£320
Hiring the hall	£250
Staff	£120
Advertising	£70

Jane sells 300 tickets for £8.50 each.

She says,

"My profit is more than £1000"

Is she correct?
You **must** show your working.

[5 marks]

2 (d) The concert starts at 8.00 pm

Ruth will take 1 hour 30 minutes to drive to the concert.
She has to arrive one and a quarter hours before the concert starts.

She says,

"I need to leave at 5.20 pm"

Is she correct?
You **must** show your working.

[4 marks]

Turn over for the next question

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3 **Calories**

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

3 (a) Jack uses the bike for 30 minutes.

How many calories does he use up?
Circle your answer.

[1 mark]

330   450   600   660

†3 (b) Jack uses the treadmill.

How many minutes does it take him to use up 300 calories?

[3 marks]

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

[1 mark]

3 (c) Jack is planning an exercise session at the gym.

He wants to

- exercise for 60 minutes
- use each of the three machines at least once
- spend no more than 30 minutes on any machine
- use up between 800 and 900 calories.

He starts on the treadmill.

Complete the table to show a possible plan for Jack's exercise session.

[6 marks]

Machine	Number of minutes	Calories used up
Treadmill		
		Total =

3 (d) Jack makes a smoothie using

200 g watermelon   8 strawberries   100 ml yoghurt

He finds this information.

	Calories
400 g watermelon	120
1 strawberry	4
100 ml yoghurt	90

Jack says,

"My smoothie has less than 200 calories."

Is he correct?
You **must** show your working.

[5 marks]

4   **Customer satisfaction**

There is a **data sheet** for Customer satisfaction.

I work out customer ratings for a pet food company.

Kim

At the end of April 2016 the company reduced its prices.

Kim records the first ten scores for **question A** in May 2016

5	5	4	4	3	5	4	5	5	5

4 (a)   Use these values to work out the customer rating for these ten scores.

[4 marks]

4 (b)   Here are the customer ratings for **question A** for the first four months of 2016

Jan	Feb	Mar	Apr	May
76%	78%	80%	78%	

How did the customer rating change after the prices were reduced?

[1 mark]

4 (c) Here is some information about the replies to **question B** in May 2016

Number of happy customers = 490
Number of unhappy customers = 28
Total number of replies to the survey = 550

Work out the customer rating for **question B** for May 2016

[4 marks]

4 (d) Kim sends surveys to 878 customers in October 2016

440 customers reply.

She says,

"I can only use the survey when more than 50% of the customers reply."

Can Kim use the survey from October 2016?
You **must** show your working.

[2 marks]

END OF QUESTIONS

11

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