



Surname \_\_\_\_\_

Other Names \_\_\_\_\_

Centre Number \_\_\_\_\_

Candidate Number \_\_\_\_\_

Candidate Signature \_\_\_\_\_

## Functional Skills Certificate

# FUNCTIONAL MATHEMATICS

Level 1

**4367**

**Monday 14 January 2019    Morning**

**Time allowed: 1 hour 30 minutes**

**For this paper you must have:**

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



**At the top of the page, write your surname and other names, your centre number, your candidate number and add your signature.**

**[Turn over]**



## 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 on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- 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(d) and 2(c). These questions are indicated with a †.

**ADVICE**

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

**DO NOT TURN OVER UNTIL TOLD TO DO SO**



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

# **1 PART-TIME WORK**

**There is a DATA SHEET for Part-time work.**

**Emmie is a student.**

**She lives near Queens Road.**

**Emmie says, “I work one day each week in a shop in the Trafford Centre.”**

**Here are the details of Emmie’s journey to work.**

<b>5-MINUTE walk from home to the Queens Road tram stop</b>
<b>Get the tram from Queens Road to Piccadilly Gardens</b>
<b>Get the bus from Piccadilly Gardens to the Trafford Centre</b>
<b>10-MINUTE walk from the bus stop at the Trafford Centre to the shop</b>



**Emmie starts work at 10.00 am**

- **She leaves home at 8.30 am to catch the tram at Queens Road.**
- **The tram is on time.**

**1 (a) What time does she get to Piccadilly Gardens?  
[2 marks]**

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**[Turn over]**



**1 (b) Emmie says,**

**“I should arrive at the shop before 10.00 am”**

## Is she correct?

**You MUST show your working. [5 marks]**

[illegible]

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**[Turn over]**



**1 (c) One day, Emmie is paid £41.30**

**She pays these fares.**

- **Queens Road to Piccadilly Gardens  
£4.00 return**
- **Piccadilly Gardens to the Trafford Centre  
£3.70 return**

**Emmie says, “After paying for fares I have  
MORE THAN £35 of my pay left over.”**

**Is she correct?**

**You MUST show your working. [4 marks]**

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†1 (d) Gail works with Emmie.

She is 21 years old.

She is paid the National Minimum Wage.

She works for 8 hours.

How much is she paid? [2 marks]

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Check your answer.

Show how you have done your check. [1 mark]

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[Turn over]

14



**2 ON THE FARM**

There is a **DATA SHEET** for On the farm.

Ken says, “I am a farmer. I keep cows and pigs.”

- 2 (a)** One day, Ken records the milk yields, in litres, for 10 of his cows.

**20.82      22.03      22.24      21.42      21.36**

**21.91      22.14      23.12      21.81      21.55**

The UK mean milk yield per cow is **21.76** litres per day.

Ken says, “The mean milk yield for these 10 cows today is **MORE THAN 21.76** litres.”

Is he correct?

You **MUST** show your working. [4 marks]

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**[Turn over]**



**2 (b) In total, Ken has 150 cows.**

- **The mean milk yield per cow is 7944 litres per year.**
- **Ken sells all the milk for 33p per litre.**

**This year, his total costs for feeding and looking after the cows are £333 600**

**He says, “This year, my profit on the milk from these cows is MORE THAN £60 000”**

**Is he correct?**

**You MUST show your working. [5 marks]**

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**[Turn over]**



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- †2 (c) Ken wants to build a sty for one sow and one piglet.

Work out the minimum area of sty he needs to build. [2 marks]

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Check your answer.

Show how you have done your check. [1 mark]

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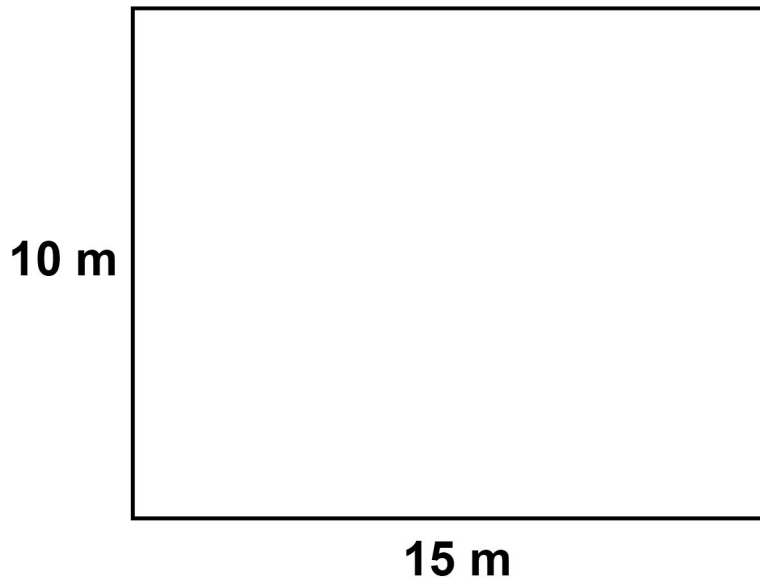
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[Turn over]



- 2 (d) Here is a sketch of the fence around some land that Ken will use for new sties.

It is not drawn accurately.



Ken wants five square sties around the edges of the land, each 4 m by 4 m

The rest of the land will be open space.

Each sty must have at least one side facing the open space.

In the open space he wants

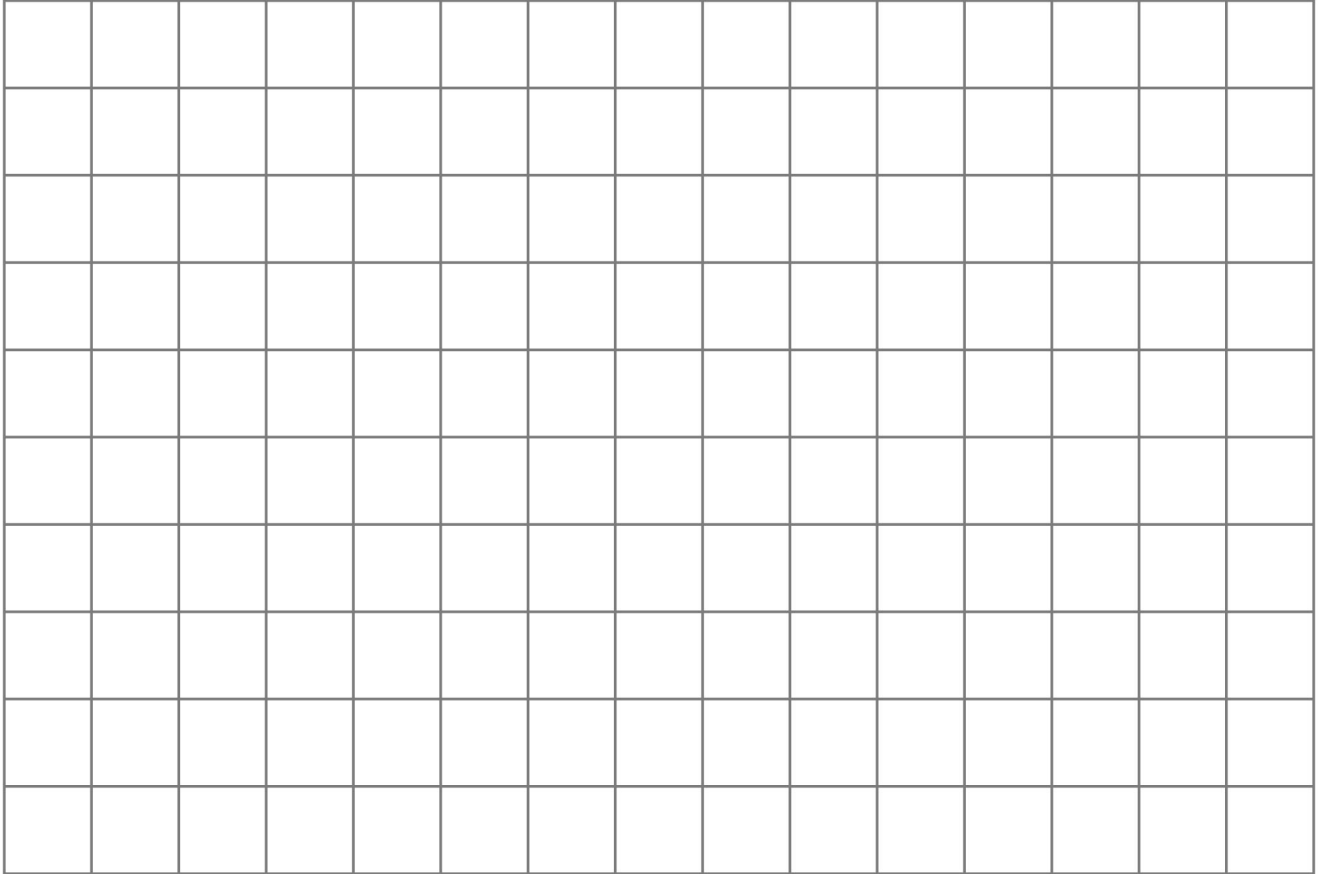
- a rectangular digging area of at least  $30 \text{ m}^2$
- a rectangular feeding trough, 2 m by 3 m

Show a possible design for the land. [3 marks]



**Practise on this grid.**

**SCALE 1 square represents 1 m<sup>2</sup>**



**[Turn over]**



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Put your answer on this grid.

SCALE 1 square represents 1 m<sup>2</sup>


[Turn over]

15



### 3 LOG BURNER

Rohan wants to put a log burner in his living room.

Here is some information about three log burners.

The log burners are called the Brunel, the Chester and the Dover.

		Dimensions of log burner (mm)		
	Heat output (kW)	Height	Width	Depth
Brunel	4	524	385	290
Chester	6	592	553	397
Dover	11	678	759	403



- 3 (a) Rohan says, “The width of the Dover is MORE THAN double the width of the Brunel.”**

## Is he correct?

**You MUST show your working. [3 marks]**

[illegible]

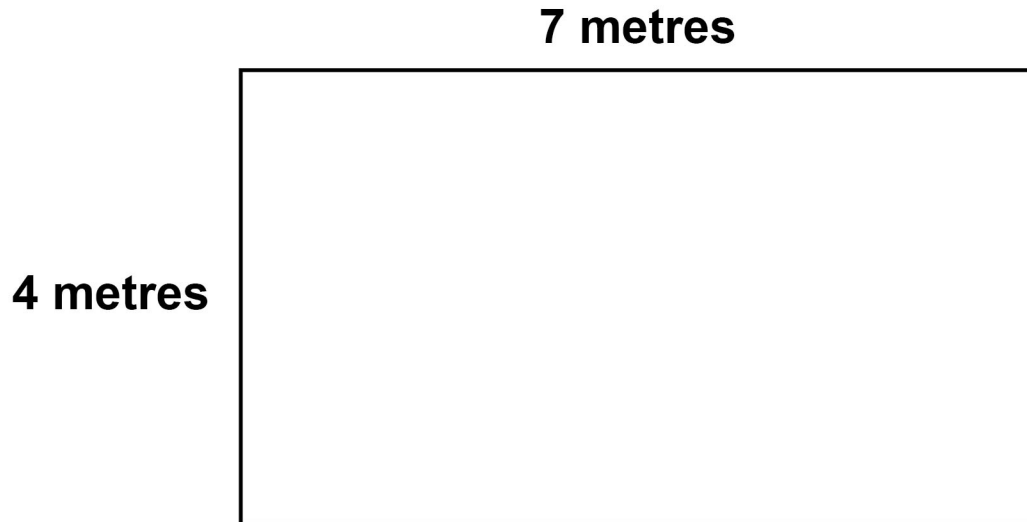
**[Turn over]**



**3 (b) The height of Rohan's living room is 3 metres.**

**Here is a floor plan of the room.**

**It is not drawn accurately.**



**Rohan uses these steps to work out the heat output needed for the room.**

**STEP 1 Work out    length of room  $\times$  width of room**

**STEP 2 Work out    answer to STEP 1  $\times$  height of room**

**STEP 3 Work out    answer to STEP 2  $\div$  14**

**What is the smallest log burner with enough heat output for this room?**

**You MUST show your working. [5 marks]**

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**3 (c) Dania has a log burner.**

**The log burner can burn smokeless fuel or wood.**

**She finds these costs.**

- **16 kg bag of smokeless fuel costs £7.50**
- **12 kg bag of wood costs £6.90**

**Dania's log burner uses 2 kg of smokeless fuel or wood per hour.**

**She uses the log burner for 24 hours per WEEK.**

**Dania says, "Using smokeless fuel is cheaper than using wood by MORE THAN £5 per week."**

**Is she correct?**

**You MUST show your working. [7 marks]**

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**4 APRICOT JAM**

Here is a recipe for apricot jam.

**Ingredients for one batch of jam**

**Apricots    2 kg**

**Sugar       600 g**

**Water       250 ml**

**METHOD**

**Put the ingredients into a pan**

**Heat the mixture to 105 °C**

**Cook for 40 minutes**

**4 (a) Convert 250 ml to litres.**

**Circle your answer. [1 mark]**

**0.025 litres**

**0.25 litres**

**2.5 litres**

**25 litres**



- 4 (b) Peter is going to use this recipe to make apricot jam.

He has

- 8 kg of apricots
- 2500 g of sugar.

He says, "I have enough sugar to make the jam using ALL 8 kg of apricots."

Is he correct?

You MUST show your working. [4 marks]

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[Turn over]



Peter starts to heat the mixture.

- 4 (c) This thermometer shows the temperature of the mixture after a few minutes.



The thermometer has a reading of 98.4 °C.

How many degrees hotter does the mixture need to be to reach 105 °C? [2 marks]

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4 (d) The temperature reaches 105 °C at 3.35 pm

At what time should Peter finish cooking the jam? [2 marks]

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[Turn over]



**4 (e) Peter makes 20 pounds of jam.**

**1 pound = 16 ounces**

**He puts the jam into jars.**

**Each jar holds 10 ounces of jam.**

**How many jars can Peter fill with jam? [3 marks]**

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**4 (f) Sandra also makes apricot jam.**

**She makes 25 jars of jam.**

- **Each jar of jam costs £3.04 to make.**
- **She sells each jar of jam for £3.99**





**She says, “I have made a profit of MORE THAN £24”**

## Is she correct?

**You MUST show your working. [4 marks]**

[illegible]

**END OF QUESTIONS**



**Additional page, if required.**

**Write the question numbers in the left-hand margin.**

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Question	Mark
1	
2	
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<b>TOTAL</b>	

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