AQA

Functional Skills Certificate
FUNCTIONAL MATHEMATICS
Level 1

Monday 16 January 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(a) and 4(c). 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 **Cookies**

I make and sell cookies.

Chris

Chris makes batches of cookie dough.

Here are the ingredients he needs to make one batch.

One batch of cookie dough	
200 g	margarine
250 g	flour
100 g	sugar
2	eggs
1 teaspoon	baking powder

One batch makes exactly

16 large cookies

or

24 small cookies.

1 (a) On Monday, Chris wants to make 4 batches of cookie dough.

How much flour does he need?
Circle your answer.

[1 mark]

250 g   400 g   800 g   1000 g

On Tuesday, Chris is making 16 large cookies **and** 48 small cookies.

1 (b) How many batches of cookie dough does he need?

[2 marks]

1 (c) Chris has 1 egg.

Work out how many **more** eggs he needs.

[2 marks]

Question 1 continues on the next page

Each batch of cookie dough costs £1.92 to make.

On Wednesday, Chris makes 32 large cookies **and** 72 small cookies.

1 (d)   Chris says,

"The cost will be £9.60"

Show that he is correct.

[2 marks]

1 (e)   Chris sells the 32 large cookies and 72 small cookies in bags.

Here are his prices.

Bag of 4 large cookies	£1.15
Bag of 12 small cookies	£2.60

Chris says,

"If I sell all the cookies, I will make **more than** £15 profit."

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

[7 marks]

14

2   **Cars**

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

I am going to buy a new Renault Clio.

Alfie

†2 (a)   Alfie plans to buy the new car after 1 April 2017

Work out the **total** cost of vehicle tax for the first two years.

[3 marks]

_____

_____

_____

_____

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

[1 mark]

_____

_____

_____

For Alfie's Renault Clio,

the official mpg is 83
the actual mpg will be 8 less than this.

2 (b) Work out the actual mpg.

[1 mark]

2 (c) Alfie will use his new car for work.
He makes these notes.

> I drive a total of 60 miles each day for work.
> I work for 5 days each week.
> Fuel costs £4.90 per gallon.

Alfie says,
"I will spend **less than** £20 each week on fuel for work."

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

[5 marks]

2 (d)   Alfie buys a car.

For 5 days, he records the time he takes for

his journey to work by car

and

his journey home by car.

	Journey to work by car (minutes)	Journey home by car (minutes)
Monday	57	42
Tuesday	46	52
Wednesday	51	54
Thursday	40	46
Friday	44	58

He works out his total journey time by car each day.

He knows that his total journey time to work and home by **train** each day would be $1\frac{1}{2}$ hours.

He says,

"My total journey time by car on any day is likely to be more than it would be by train."

Based on these 5 days, is he correct?
You **must** show your working.

[3 marks]

13

3   **Hotel**

I am the manager of a hotel.

Kim

3 (a)   Amy, Brad, Cassie and Del work shifts on the hotel reception.

Each day

- there are three shifts
- one person works each shift
- nobody works more than one shift.

The manager makes a rota for working on reception for the next week.

- Amy works on Monday, Tuesday, Wednesday and Sunday only.
- Brad does **not** work on Sunday.
- Cassie does **not** work on Wednesday.
- Del works on **exactly** 5 days.

Complete a possible rota.

[3 marks]

You can practise on this table.

	Shift 1	Shift 2	Shift 3
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

Put your answer in this table.

	Shift 1	Shift 2	Shift 3
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

Turn over ▶

3 (b)   Each room is cleaned the day after it has been used.

Each cleaner
- takes 20 minutes to clean a room
- starts work at 8 am and finishes work at 3 pm
- has a 1-hour break.

180 rooms are used on Tuesday.

How many cleaners are needed on Wednesday?
You **must** show your working.

[5 marks]

Each day, the cleaners replace used milk cartons.

3 (c) Here are the numbers of milk cartons put in 10 rooms yesterday.

| 4 | 3 | 1 | 4 | 1 | 2 | 3 | 3 | 2 | 1 |

Show that 2.4 was the mean number of milk cartons put in the 10 rooms.

[2 marks]

3 (d) Kim estimates the cost of the milk cartons she needs next month.
She makes these notes.

> 3000 rooms used
> An average of 2.4 cartons for each room used
>
> 120 cartons in a box
> Each box costs £6

Kim says,

"The cost will be **more than** £350"

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

[5 marks]

15

4   **Transporting hamsters**

There is a **data sheet** for Transporting hamsters.

I organise the transport of hamsters.

Ola

4 (a)   Ola needs a box to transport a Syrian hamster.

One side of the box has width 10 cm
This side has a window.
The window is a 6 cm by 4 cm rectangle in the centre of the side.

Draw a possible diagram of this side of the box on the centimetre grid opposite.

[4 marks]

4 (b)   The table shows the ages of some Syrian hamsters Ola wants to transport.

Age	Number of hamsters
4 weeks	6
7 weeks	5

Ola says,

"A floor area of 600 cm^2 will be big enough for these hamsters."

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

[5 marks]

†4 (c) Ola needs to transport 270 Dwarf hamsters.
The maximum number of hamsters allowed in one box is 50

Work out the **minimum** number of boxes she needs.

[3 marks]

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

[1 mark]

Question 4 continues on the next page

Turn over ▶

4 (d) The maximum temperature allowed in a box used to transport hamsters is 85°F

The temperature in a box is 28°C

Can Ola transport hamsters in this box?
You **must** show your working.

[5 marks]

18

END OF QUESTIONS