![AQA logo]

Please write clearly in block capitals.

Centre number ☐☐☐☐☐   Candidate number ☐☐☐☐

Surname _____

Forename(s) _____

Candidate signature _____

# Functional Skills Certificate
# FUNCTIONAL MATHEMATICS

## Level 2

Thursday 8 November 2018    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).

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

## 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.
* 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 2(d) and 3(a). 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** **Angling**

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

**1 (a)** In an angling competition there are seven quarter-finals.

The table shows the number of anglers in each of the quarter-finals.

| | | | |
|---|---|---|---|
| Quarter-final 1 | 15 anglers | | |
| Quarter-final 2 | 12 anglers | Semi-final 1 | |
| Quarter-final 3 | 12 anglers | | |
| Quarter-final 4 | 9 anglers | | Final |
| Quarter-final 5 | 12 anglers | | |
| Quarter-final 6 | 12 anglers | Semi-final 2 | |
| Quarter-final 7 | 12 anglers | | |

How many anglers qualify for the final?
You **must** show your working.

**[4 marks]**

*Do not write outside the box*

**1 (b)**   John and Lata are in one of the quarter-finals.

Here are the weights of the fish they have caught in the first 12 hours.

|  | | | | |
|---|---|---|---|---|
| John | 17 lb 2 oz | 19 lb 12 oz | 16 lb 13 oz | 20 lb 5 oz |
| Lata | 18 lb 4 oz | 17 lb 1 oz | 18 lb 11 oz | |

John says,

"The mean weight of my fish is **more than** the mean weight of Lata's fish."

Is he correct?

You **must** show your working.

**[5 marks]**

**Turn over ▶**

**1 (c)** The weight of the heaviest fish that John catches is 20 lb 3 oz

Last year, in Australia, he caught a fish weighing 9 kg 120 g

John says,

"The fish I caught in Australia was heavier."

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

**[5 marks]**

14

**2**     **Council Tax**

There is a **data sheet** for Council Tax.

**2 (a)**     Tom and Mary are both 47 years old.

They share a home in Kribly.

The Council Tax is band **G**.

They pay their Council Tax in 10 monthly payments.

Work out the Council Tax payment for April.

**[3 marks]**

**Question 2 continues on the next page**

**Turn over ▶**

*Do not write outside the box*

**2 (b)** Dan is disabled and lives on his own.

His home is **not** adapted for his needs.

He moves to a new home.

He makes these notes.

|  | **Old home** | **New home** |
|---|---|---|
| **Area** | Heath | Mossett |
| **Usual band** | **C** | **D** |
| **25% discount** | Yes | Yes |

Dan will adapt his new home in Mossett for his needs.

He says,

"My Council Tax will then be cheaper than I paid in Heath by at least £100"

Is he correct?

You **must** show your working.

**[6 marks]**

**2 (c)** In Waybridge, the total income from Council Tax is £38 320 000

Estimate how much of the £38 320 000 the council spends on buses each week.

Give your answer to a suitable degree of accuracy.

**[3 marks]**

*Do not write outside the box*

David is calculating the Council Tax in Bretton, another part of Waybridge.

The Council Tax for band **D** is £1504.44

He works out the Council Tax in the other bands using these proportions.

| | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** |
|---|---|---|---|---|---|---|---|---|
| Proportion of band **D** | $\frac{6}{9}$ | $\frac{7}{9}$ | $\frac{8}{9}$ | 1 | $\frac{11}{9}$ | $\frac{13}{9}$ | $\frac{15}{9}$ | $\frac{18}{9}$ |

†2 (d)  Work out the Council Tax in band **B**.

[2 marks]

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

[1 mark]

2 (e)  How many times bigger is the Council Tax in band **H** than in band **A**?

Circle your answer.

[1 mark]

$\frac{12}{9}$          2          3          12
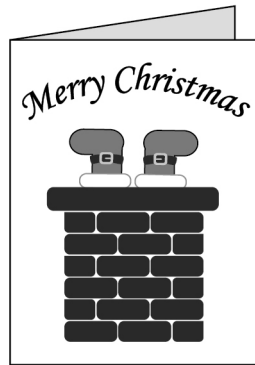
**16**

**Turn over for the next question**

**Turn over ▶**

**3** **Christmas Cards**



I make and sell Christmas cards.
I put designs onto card blanks.

**Leah**



**Card blank**



**Card blank with design**

**†3 (a)**    You buy card blanks in packs.

<div style="text-align:center">

**Card Blanks**

Packs of 15

Only £6.49

</div>

Work out the cost of 60 of these card blanks.

**[2 marks]**

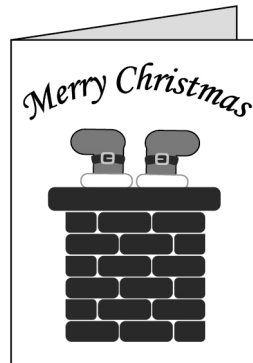Check your answer.
Show how you have done your check.
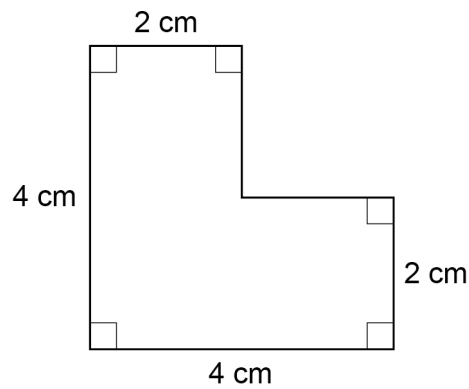
**[1 mark]**

**Question 3 continues on the next page**

**Turn over ▶**

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Leah is designing a card with a chimney and a **pair** of Santa's boots.

**3 (b)** Leah cuts the boots from sheets of paper measuring 13 cm by 10 cm

Here is a sketch of one of the boots.

2 cm

Not drawn accurately

4 cm

2 cm

4 cm

Show how 10 boots can be cut from a 13 cm by 10 cm sheet.

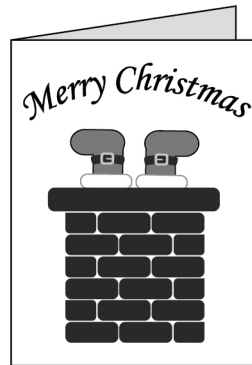Use the grids opposite.

**[3 marks]**

IB/M/Nov18/4368

Practise on this grid.

Put your answer on this grid.

**Turn over ▶**

**3 (c)**   Leah makes 150 cards with this design.



She uses 15 sheets of red felt for the chimneys.

She buys a bulk pack of 150 card blanks.

This table shows the costs of the items she needs for the cards.

| Item | Cost |
|------|------|
| Paper for boots | 75p per sheet |
| Red felt | £1.40 per sheet |
| 150 card blanks | £43.50 |
| Other costs | £16.50 |

Leah sells each card for £1.20

She says,

"My profit will be **more than** 65% of the cost of making the cards."

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

**[8 marks]**

**14**

**Turn over ▶**

**4** **Winter Wonderland**

# Winter Wonderland



**Lots of activities**

❄ **Fun for all ages**          ❄ **Overnight stays available**

This is Jane and her family.



**Jane**          **Mike**          **Jack, aged 8**          **Meg, aged 4**

Jane and her family are planning a visit to Winter Wonderland.

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

> **Ticket Prices**
>
> £38 per adult or child aged 5 and over
>
> £25 per child aged under 5
>
> plus £5 booking fee per family

Altogether, how much will Jane pay for herself and her family?

**[3 marks]**

_____

_____

_____

_____

_____

_____

**4 (b)** The activities at Winter Wonderland start at 10 am

Jane and her family want to arrive 45 minutes before the first activity starts.

They live 80 miles away.

Jane will drive at an average speed of 50 miles per hour.

What is the **latest** time they should set off?

**[4 marks]**

_____

_____

_____

_____

_____

_____

_____

**Turn over ▶**

**4 (c)** Jane has already booked the following activities.

| Time | Activity | Length of activity |
|---|---|---|
| 10 00 | Christmas theatre | 40 minutes |
| 13 30 | Mrs Christmas | 40 minutes |
| 16 10 | Elves | 30 minutes |

She has also booked lunch at the Boat Inn from 12 30 to 13 20

Jane is planning other activities for the rest of the day.

We need at least 10 minutes between activities and before and after lunch.

We want to do as many different activities as possible.

We will leave after the Elves activity.

Here are the other activities.

Each activity can start at any time.

| Activity | Length |
|---|---|
| Snow tubing | 40 minutes |
| Reindeer | 30 minutes |
| Ice skating | 50 minutes |
| Sleigh ride | 20 minutes |
| Winter crafts | 30 minutes |
| Treasure hunt | 40 minutes |

Write a plan for the day, showing the start and end times of each activity.

**[5 marks]**

**Turn over ▶**

*Do not write outside the box*

**4 (d)** Myra and some friends are going to Winter Wonderland.

They will stay for 3 nights.

Myra looks at the prices of different-sized lodges.

| Arrival date | Size of Lodge | | |
|---|---|---|---|
| | Sleeps 4 | Sleeps 5 | Sleeps 6 |
| Friday 23rd Nov (3 nights) | £320 | £385 | £455 |
| Friday 30th Nov (3 nights) | £378 | £439 | £495 |
| Friday 7th Dec (3 nights) | £410 | £450 | £545 |

Myra is booking lodges for 20 people.

They will arrive on Friday 30th November.

What is the cheapest possible price for her booking?
State clearly how many of each type of lodge to book.

**[4 marks]**

**16**

**END OF QUESTIONS**

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**ANSWER IN THE SPACES PROVIDED**

| Question number | **Additional page, if required.** <br> **Write the question numbers in the left-hand margin.** |
|---|---|
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