



Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

Functional Skills Certificate

FUNCTIONAL MATHEMATICS

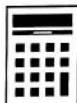
Level 1

Monday 6 November 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).



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.
- 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(a) and 3(b). These questions are indicated with a †.

Advice

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

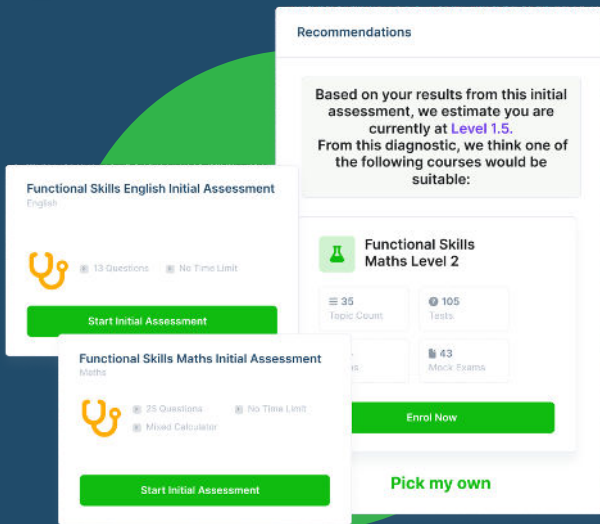


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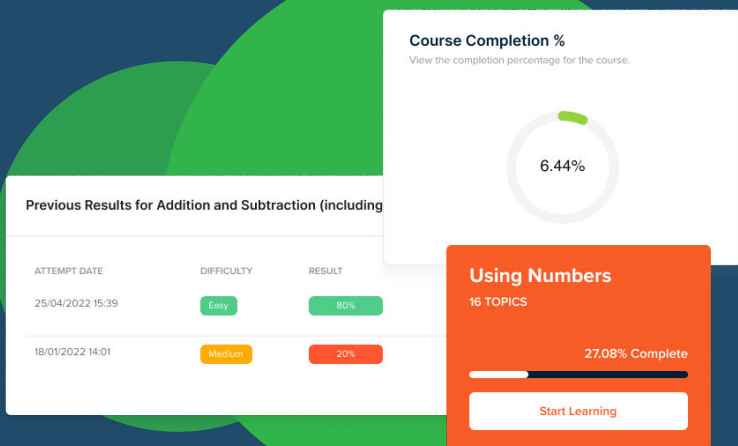
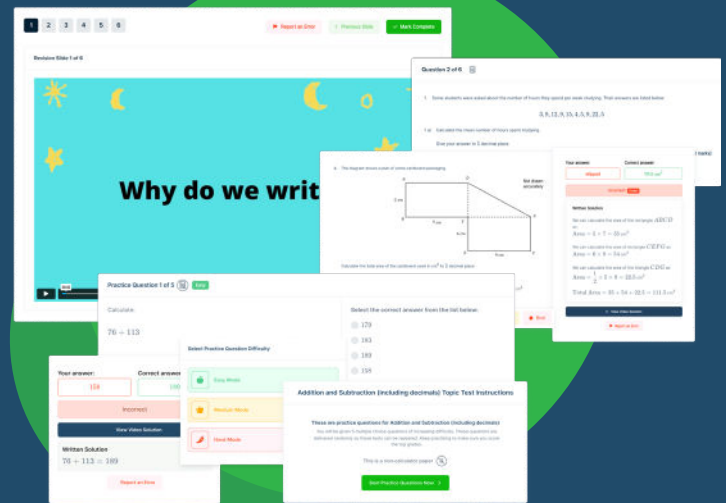


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Answer **all** questions in the spaces provided.

1 Water

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

Liam wants to save water.

- 11 (a)** He puts a brick in the toilet cistern.
This saves 1.5 litres of water each flush.
One week he flushes the toilet 30 times.

Work out the number of litres of water he saves this week.

[2 marks]

$$1.5 \times 30 = 45 \text{ litres}$$

Check your answer.

Show how you have done your check.

[1 mark]

$$45 \div 30 = 1.5$$

- 1 (b)** Liam has 3 baths each week.
He decides to have 3 showers instead.
He says,

"This will save **more than** 120 litres of water each week."

Is he correct?

You **must** show your working.

[5 marks]

$$6 \text{ showers} = 216 \text{ litres.}$$

$$3 \text{ showers} = 108 \text{ litres}$$

$$1 \text{ bath} = 77 \text{ litres}$$

$$3 \text{ baths} = 231 \text{ litres}$$

$$231 - 108 = 123 \text{ litres} > 120 \text{ litres}$$





I share a house with friends.
We use a total of 600 litres of
water per day.

Ella

- 1 (c) Show that they use 219 cubic metres of water per year.
1 year = 365 days

[2 marks]

$$600 \times 365 = 219\,000 \text{ Litres}$$

$$= 219 \text{ cubic metres.}$$

- 1 (d) Ella and her friends find this information about water charges per year.

With a water meter
£125
plus
£3 per cubic metre of water used

Without a water meter
£720

They want to pay for the water they use in the way that is cheaper.

Should they have a water meter fitted?
You **must** show your working.

[4 marks]

$$£125 + £3 \times 219 = £125 + £657 = £782 > £720$$

They should not get a water
meter.



2 Swimming

One event in a swimming competition is the men's 100 metres freestyle.
Here are the results from the two semi-finals.

The fastest eight swimmers qualify for the final.
The letter Q shows that the swimmer qualified.

Semi-final 1	
Name	Time (seconds)
Jack	52.83 Q
Ahmed	52.92 Q
Cheng	52.97 Q
Ian	53.26
Mike	53.28
Ralf	53.37
Simon	53.49
Harry	53.70

Semi-final 2	
Name	Time (seconds)
Kev	52.88 Q
Paul	52.93 Q
Zain	53.14 Q
Dai	53.20 Q
Tom	53.23 Q
Yan	53.28
Louis	53.57
Greg	53.66

- 2 (a) What was the time, in seconds, of the slowest swimmer who qualified?
Circle your answer.

[1 mark]

53.70

53.23

52.97

52.83



- 2 (b) In the final, each of the eight swimmers who qualified is given a lane number. The table shows how the lane numbers are decided.

Time in semi-finals	Lane number
1st fastest	4
2nd fastest	5
3rd fastest	3
4th fastest	6
5th fastest	2
6th fastest	7
7th fastest	1
8th fastest	8

Complete the table below for the final.
Lane 4 has been done for you.

[3 marks]

Lane number	Name
1	David
2	Cheng
3	Ahmed
4	Jack
5	Kev
6	Paul
7	Zain
8	Tom

Turn over ►



- 2 (c) Ben and Duncan are members of a swimming club.
They both swim in 100 metres freestyle races.

Here are Ben's times, in seconds, for six of his races.

50.6 51.7 52.6 49.6 50.2 49.8

Here are Duncan's times, in seconds, for six of his races.

50.2 49.6 51.2 48.2 49.5 51.3

For the next race the club wants to choose the better swimmer.

Use the data to decide which swimmer the club should choose.

You **must** show your working.

[4 marks]

$$\begin{aligned} \text{Ben's mean} &= \frac{50.6 + 51.7 + 52.6 + 49.6 + 50.2 + 49.8}{6} \\ &= 50.75 \end{aligned}$$

$$\begin{aligned} \text{Duncan's mean} &= \frac{50.2 + 49.6 + 51.2 + 48.2 + 49.5 + 51.3}{6} \\ &= 50 \end{aligned}$$

The club should choose Duncan.



- 2 (d) Erin is the manager of a junior swimming team.



I need to buy

10 swimsuits

5 swim caps

5 tracksuits.

Erin

She sees this advert.

Swimming kit	
<u>Swimsuit £49.50</u>	<u>Swim cap £7.00</u>
<u>Tracksuit £58.00</u>	
<u>10% off orders over £100</u>	

She says,

"The total cost of all the kit I need to buy is **less than** £750"

Is she correct?

You **must** show your working.

[8 marks]

$$10 \times £49.50 = £495.00$$

$$5 \times £7.00 = £35.00$$

$$5 \times £58.00 = £290.00$$

$$£495.00 + £35.00 + £290.00 = £820.00$$

$$10\% \text{ off is } \times 0.9$$

$$£820.00 \times 0.9 = £738.00 < £750.00$$

Erin is correct.



3 Supermarket

3 (a) Amy, Ben, Cathy, David and Eva work at a supermarket.

There are two shifts each day from Monday to Saturday.

Two people work on each shift.

Nobody works more than one shift each day.

Next week

- Eva can only work shift 1
- Cathy can only work shift 2
- Amy **cannot** work on Monday
- Ben can only work on Monday, Thursday and Friday
- David can only work on four days.

Complete a possible rota for Amy, Ben, Cathy, David and Eva for next week.

Use the grids on the opposite page.

[5 marks]



Practise on this grid.

	Shift 1		Shift 2	
Monday	Eva	Ben	Cathy	David
Tuesday	Eva	Amy	Cathy	David
Wednesday	Eva	Amy	Cathy	David
Thursday	Eva	Amy	Cathy	Ben
Friday	Eva	Amy	Cathy	Ben
Saturday	Eva	Amy	Cathy	David

Put your answer on this grid.

	Shift 1		Shift 2	
Monday	Eva	Ben	Cathy	David
Tuesday	Eva	Amy	Cathy	David
Wednesday	Eva	Amy	Cathy	David
Thursday	Eva	Amy	Cathy	Ben
Friday	Eva	Amy	Cathy	Ben
Saturday	Eva	Amy	Cathy	David

Question 3 continues on the next page

Turn over ►



- †3 (b) Amy is paid £7.50 per hour.
One week, she works for 24 hours.
How much is Amy paid that week?

[2 marks]

$$24 \times \text{£}7.50 = \text{£}180$$

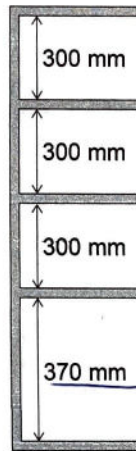
- Check your answer.
Show how you have done your check.

[1 mark]

$$\text{£}180 \div 24 = \text{£}7.50$$



- 3 (c) David is stacking tins on these shelves.



Not drawn
accurately

Tins of beans are 120 mm high.

David wants to stack three tins on top of each other.

Will this stack fit on the **bottom** shelf?

You **must** show your working.

[3 marks]

$$120 \times 3 = 360 \text{ mm} < 370 \text{ mm}$$

Yes.

Question 3 continues on the next page

Turn over ►



- 3 (d) The supermarket manager buys plastic carrier bags for 1p each.
He sells the bags for 5p each.
He gives 50% of the **profit** on each bag to a local charity.

One month, he sold 460 carrier bags.

How much did he give to the charity for that month?

[4 marks]

$$5p - 1p = 4p \text{ profit.}$$

$$50\% = 0.5$$

$$0.5 \times 4p = 2p \text{ to charity.}$$

$$2p \times 460 = \pounds 9.20.$$



4 Pets Corner

There is a **data sheet** for Pets Corner.



I work at Pets Corner.

Joe

- 4 (a)** Joe is going to work.
He arrives at the bus stop on Whickham View at 1030
He catches the next number 38 bus.

What time should this bus arrive at Corner House?
Circle your answer.

[1 mark]

1042

1102

1121

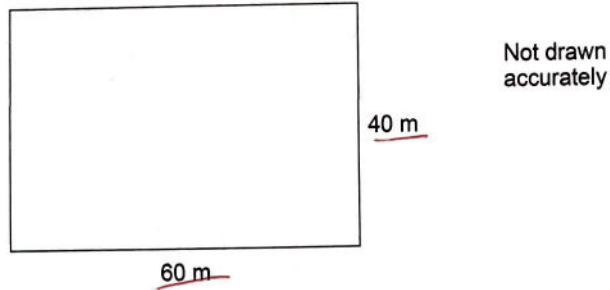
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Question 4 continues on the next page

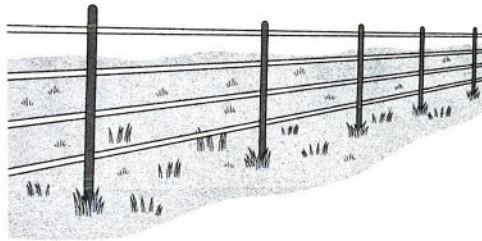
Turn over ►



Joe is making a rectangular enclosure for three alpacas.
Here is a sketch of the fence for the enclosure.



- 4 (b) The fence has 4 rows of electric tape.



Electric tape is sold in rolls.
Each roll has 150 m of tape.
Joe says

"I need to buy five rolls."

Is he correct?

You **must** show your working.

[5 marks]

$$60 + 40 = 100$$

$$100 \times 2 = 200$$

$$200 \times 4 = 800 \text{ m}$$

$$5 \times 150 = 750 \text{ m}$$

No.



- 4 (c) The area of the enclosure should be at least half an acre.

1 acre = 4840 square yards

Area of a rectangle = length \times width

Joe says,

"The enclosure will be big enough."

Is he correct?

You **must** show your working.

[6 marks]

$$40 \times 60 = 2400 \text{ m}^2.$$

$$2400 \div 5 = 480$$

$$480 \times 6 = 2880 \text{ sq yd.}$$

$$4840 \div 2 = 2420 < 2880.$$

The enclosure is big enough.

Question 4 continues on the next page

Turn over ►



- 4 (d) Some visitors to Pets Corner give a donation.
Anna is going to take the donations to the bank.
She starts to fill in the paying-in slip.

Complete the slip.

[3 marks]

	Number	Amount
£20	1	£20.00
£10	2	£20.00
£5	5	£25.00
£2	1	£2.00
£1	16	£16.00
50p	9	£4.50
20p	31	£6.20
Other coins		£13.18
Total		£106.88

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END OF QUESTIONS

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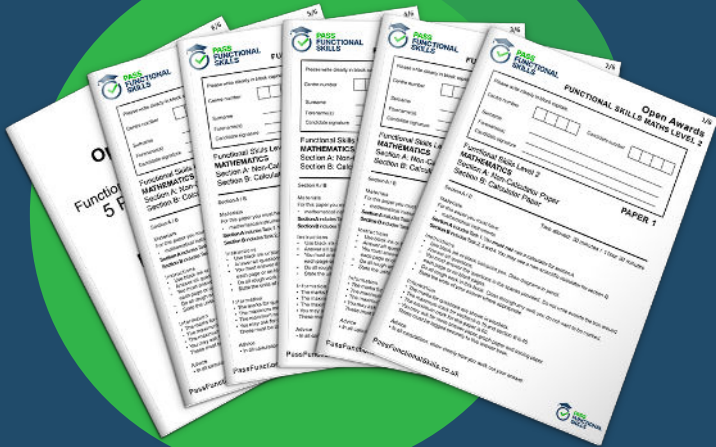
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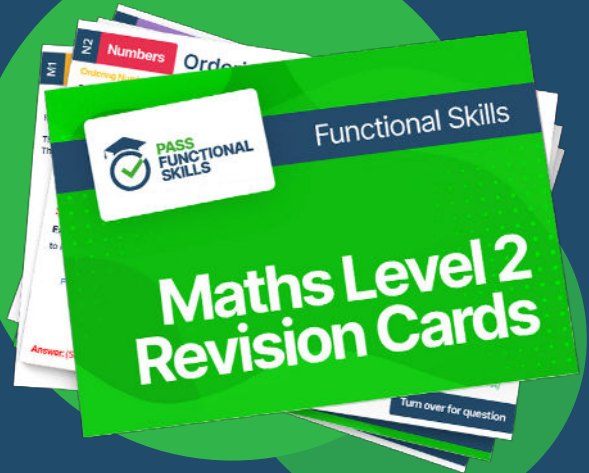




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