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AQA

Functional Skills Certificate
FUNCTIONAL MATHEMATICS

Level 2

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).

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 3(c) and 4(b). These questions are indicated with a †.

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

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

FUNCTIONAL SKILLS ONLINE COURSES

PASS FUNCTIONAL SKILLS

Recommendations

Based on your results from this initial assessment, we estimate you are currently at Level 1.5.
From this diagnostic, we think one of the following courses would be suitable:

Functional Skills Maths Level 2

≡ 35 Topic Count   ⏱ 105 Tests   📄 43 Mock Exams

Enrol Now

Pick my own

Functional Skills English Initial Assessment
English
▣ 13 Questions   ▣ No Time Limit
Start Initial Assessment

Functional Skills Maths Initial Assessment
Maths
▣ 25 Questions   ▣ No Time Limit
▣ Mixed Calculator
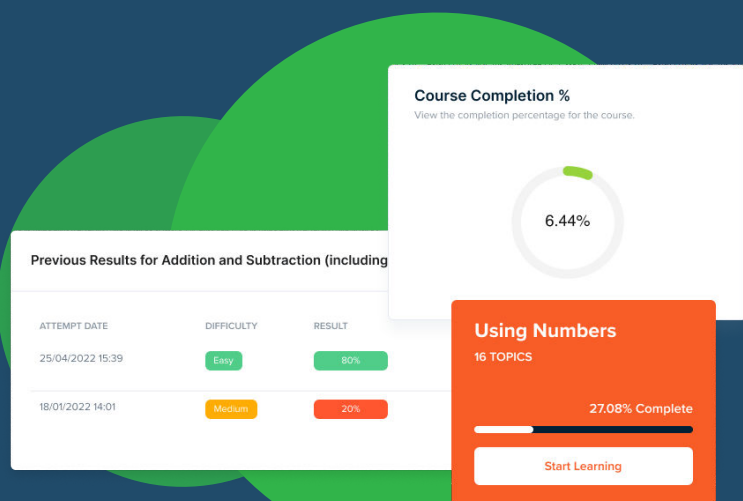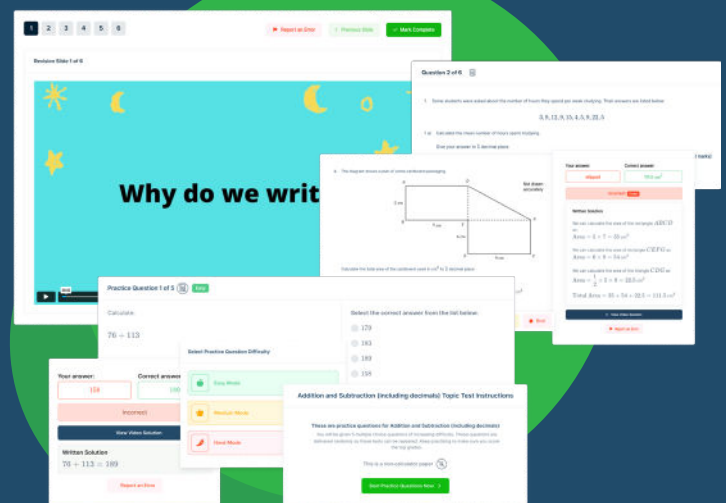Start Initial Assessment

- ✅ Your answers are analysed to determine your Current Level
- ✅ Suggested courses for you to enrol on based on your calculated level
- ✅ Always know the level you are currently working at
- ✅ Determine when you are ready to sit your exam

- ✅ Explainer videos on every topic
- ✅ Quick-fire style mutiple choice questions
- ✅ Test your knowledge with exam-style questions
- ✅ Written solutions for all questions

Why do we writ

Question 2 of 6

Practice Question 1 of 5
Calculate
78 + 113
Select the correct answer from the list below:
Written Solution
78 + 113 = 189

Course Completion %
View the completion percentage for the course.

6.44%

Previous Results for Addition and Subtraction (including

ATTEMPT DATE	DIFFICULTY	RESULT
25/04/2022 15:39	Easy	80%
18/01/2022 14:01	Medium	20%

Using Numbers
16 TOPICS
27.08% Complete
Start Learning

- ✅ See your progress through as you progress through each topic area
- ✅ Get your average scores for practice questions, topic tests and mock exams
- ✅ View all practice question, topic test and mock exam attempts over time
- ✅ View historical attempts to analyse your progress over time

Or visit
passfunctionalskills.co.uk

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ANSWER IN THE SPACES PROVIDED

3

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

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

1 (a)

I am going to Pets Corner by train and bus.

Amy

Amy catches a train at 1.35 pm from Durham Station.
The train takes 16 minutes to travel to Central Station.
Amy then catches the next number 38 bus.

What time should this bus arrive at Corner House?

[2 marks]

1:35pm + 16mins ⇒ 1:51pm
                               2:01pm
Catches the ~~bus~~ bus.
     2:01pm + 20mins ⇒ 2:21pm.

Question 1 continues on the next page

Turn over ▶

Joe is making an enclosure for alpacas.

Here is a sketch of the fence for the enclosure.

39 m

Not drawn
accurately

43 m

18 m

56 m
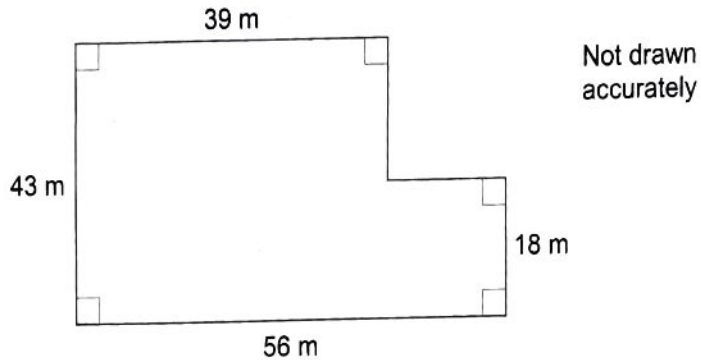
1 (b) The fence has 4 rows of electric tape.
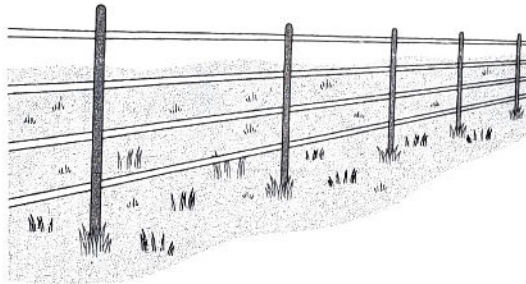
Electric tape is sold in rolls.
Each roll has 150 m of tape.

Joe says,

"I need to buy five rolls."

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

[5 marks]

$39m + 43 + 56 + 18 + 25 + 17 = $ ~~198m.~~ 198m

$198m$ ~~× 4 =~~ × 4 = ~~792m.~~ 792m.

$\dfrac{792}{150} = 5.28,$ he is incorrect –

he will need 6 rolls.

1 (c)   1 acre = 4840 square yards

Joe says,

"The enclosure will be big enough to keep three alpacas."

Is he correct?

You **must** show your working.

[6 marks]

Area = (39 × 43) + ~~(18 × (56-39))~~ (18 × (56-39))

= 1983m².

1983 × 1·196 = 2371·668 sq yd.

Half an acre = $\frac{4840}{2}$ = 2420 sq yds.

2371.7 < 2420,

so, he is incorrect.

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Turn over for the next question

2   Supermarket

Raj is the manager of a supermarket.

2 (a)   Workers in the supermarket work in shifts.

Each day there are shifts in the morning, the afternoon and the evening.
Each person can work a maximum of two shifts each day.

Raj needs Amy, Ben, Cathy, David and Eva to work the following shifts next week.

Monday	1 worker for the evening shift
Tuesday	1 worker for the evening shift
Wednesday	1 worker for the evening shift
Thursday	2 workers for each of the three shifts
Friday	2 workers for each of the three shifts
Saturday	2 workers for each of the three shifts
Sunday	1 worker for the afternoon shift

This table shows when Amy, Ben, Cathy, David and Eva can work next week.

Amy	can only work evening shifts
Ben	can only work on Thursday, Friday and Saturday
Cathy	**cannot** work on Monday or Friday
David	can only work on Friday and Saturday
Eva	can only work on Thursday and Friday

Work out a possible rota for Amy, Ben, Cathy, David and Eva for next week.
Show your rota on the opposite page.
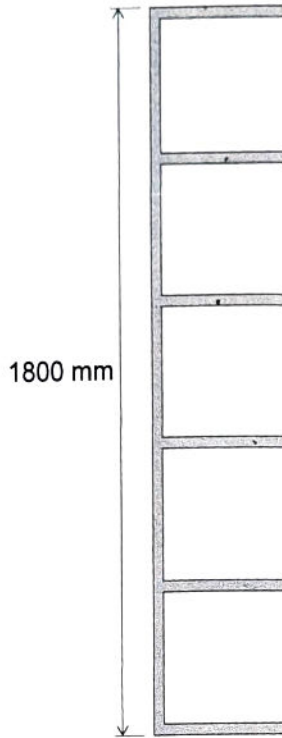
[3 marks]

Show your rota in the space below.

Mon	Evening	Amy
Tues	Evening	Amy
Weds	Evening	Amy
Thu	Morning	Cathy + Ben
	Afternoon	Cathy + Ben
	Evening	Amy + Eva
Fri	Morning	Ben + Eva
	Afternoon	Ben + David
	Evening	David + Amy
Sat	Morning	David + Cathy
	Afternoon	Ben + David
	Evening	Ben + Amy
Sun	Afternoon	Cathy

Question 2 continues on the next page

2 (b) Here is a set of shelves in the supermarket.

Not drawn
accurately

1800 mm

Each of the **six** shelves is 20 mm thick.
Each gap between the shelves is the same.

A bottle of lemonade is 320 mm high.

Will the bottle fit on the bottom shelf?
You **must** show your working.

[4 marks]

1800mm – (20×6)mm = 1680mm

$$\frac{1680mm}{5} = 336mm.$$
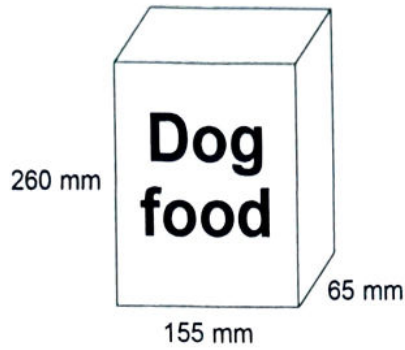
Yes, it will fit.

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2 (c)   Raj puts these boxes of dog food on another set of shelves.

260 mm

Dog food

65 mm

155 mm

He stacks the boxes in the space within the dotted lines shown on this diagram.

550 mm

Dog food
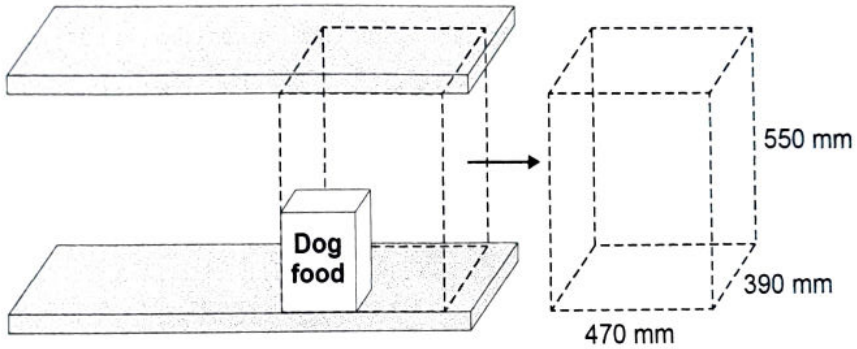
390 mm

470 mm

The space is shaped like a cuboid with

    height 550 mm
    width 470 mm
    depth 390 mm

Work out the maximum number of boxes of dog food that can fit in the space.

You **must** show your working.

[4 marks]

$$\frac{550}{260} = 2.11 \to 2, \quad \frac{390}{65} = 6, \quad \frac{470}{155} = 3.03 \to 3.$$

$$2 \times 6 \times 3 = 36.$$

2 (d)   Raj buys and sells plastic carrier bags.

He pays £11.41 per 1000 bags.
He uses this to work out the cost per bag.
He sells the bags for 5p each.

He gives 80% of the **profit** on each bag to a local charity.
One month he sold 384 carrier bags.

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

[5 marks]

$$\frac{11.41}{1000} = £0.01141 \Rightarrow 1.141\text{p per bag.}$$

$$5p - 1.141p = 3.859p \quad \text{profit per bag}$$

$$£0.03859 \times 384 = £14.81856$$

$$0.8 \times £14.81856 = £11.854848$$

$$\approx £11.85.$$

16

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

3 (a)   Mia uses her dishwasher 15 times.
          Circle the amount of water this uses.

                                                                                    [1 mark]

          45 litres   57 litres   (225 litres)   675 litres

3 (b)   Liam normally uses 1200 litres of water each week.
          One week he decides to save water.

                Normally, he has 3 baths each week.
                He decides to have 3 showers instead.

                He puts a brick in the toilet cistern.
                This saves 1.5 litres of water each flush.
                He flushes the toilet 30 times that week.

          He says,

          "This saved $\frac{1}{6}$ of the total amount of water I normally use each week."

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

                                                                                    [7 marks]

Bath: $3 \times 77 = 231L$

Shower: $3 \times \frac{216}{6} = 108L$

Toilet: $\frac{30}{32} \times 288 = 270L.$

$1.5L \times 30 = 45L$ saved.

$270 - 45 = 225L$

$231 - 108 = 123L$ saved   by showering

$123 + 45 = 168L$ saved.

$\frac{168}{1200} = 0.14.$ $\frac{1}{6} = 0.1\dot{6}$, So he is incorrect.

Turn over ▶

Ella, Seema and Jane are going to share a house for the whole of 2018

Ella   Seema   Jane

The house does **not** have a water meter.

Altogether they will use 450 **litres** of water per day.

†3 (c)   How many **cubic metres** of water will the three girls use in the whole of 2018?

[2 marks]

$$450 \times 365 = \text{ } 164250 \text{ L per year.}$$

$$\frac{164250}{1000} = 164.25 \text{ m}^3 \text{ per year.}$$

Check your answer.

Show how you have done your check.

[1 mark]

$$164.25 \times 1000 = 164250$$

$$\frac{164250}{365} = 450 \text{ L.}$$

3 (d)   Here are the ways they can pay their water charges for the **year**.

With a water meter
£134
plus
£2.96 per cubic metre of water used

Without a water meter
12 fixed monthly payments of £53.50

The girls want the cheapest way to pay for the water they will use.

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

[5 marks]

w/ WM: £134 + (£2.96 × 164.25)

= £620.18

w/o WM: £53.50 × 12

= £642

They   should   fit   the   water   meter.

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4   Swimming

4 (a)   One event in a swimming competition is the men's 100 metres freestyle.

Here are the times from the two semi-finals.

Semi-Final 1		Semi-Final 2	
Name	**Time (seconds)**	**Name**	**Time (seconds)**
Ralf	53.37	Tom	53.23
Simon	53.49	Zain	53.14
Harry	53.70	Paul	52.93
Cheng	52.97	Kev	52.88
Ahmed	52.92	Dai	53.20
Ian	53.26	Greg	53.66
Mike	53.28	Yan	53.28
Jack	52.83	Louis	53.57

The eight fastest swimmers from the semi-finals go into the final.

Each swimmer in the final is given a lane number.

The table below 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 for the final.

[4 marks]

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

†4 (b)   The winning time in the final is 52.28 seconds.
The competition record is 51.91 seconds.

How much slower is the winning time than the record time?

[1 mark]

52.28 − 51.91 = 0.37s.

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

[1 mark]

51.91 + 0.37 = 52.28.

4 (c)   Beth and Daisy are members of a swimming club.
They both swim in 100 metres backstroke races.

Here are their times, in seconds, for their races in 2017

Beth

65.7   66.6   67.4   63.6   65.2   64.8   66.5   64.9   68.5   66.8

Daisy

62.5   63.2   67.4   62.6   64.2   66.2   64.8   65.9

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]

Beth: $65.7 + 66.6 + \ldots + 68.5 + 66.8 = 660$

Daisy: $62.5 + 68.2 + \ldots + 64.8 + 65.9 = 516.8$

$$\frac{660}{10} = 66, \quad \frac{516.8}{8} = 64.6.$$

They should ~~be~~ choose Daisy.

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

I need to buy swimming kit for six swimmers.
I also need to hire a minibus.

Erin

She sees these adverts

Swimming kit

Swimsuit   £46.95
Swim cap   £6.50
Tracksuit   £62.95
15% off orders over £500

Minibus Hire

£370

Erin wants to buy each of the six swimmers a swimsuit, swim cap and tracksuit.

Show that it will cost **less than** £1000 for the kit and minibus.

[5 marks]

$46.95 + 6.50 + 62.95 = £116.40$

$116.4 \times 6 = £698.40.$ $1 - 0.15 = 0.85$

$698.4 \times 0.85 = £593.64$

$593.64 + 370 = £963.64$

She is correct, it will cost less than £1000.

END OF QUESTIONS

15

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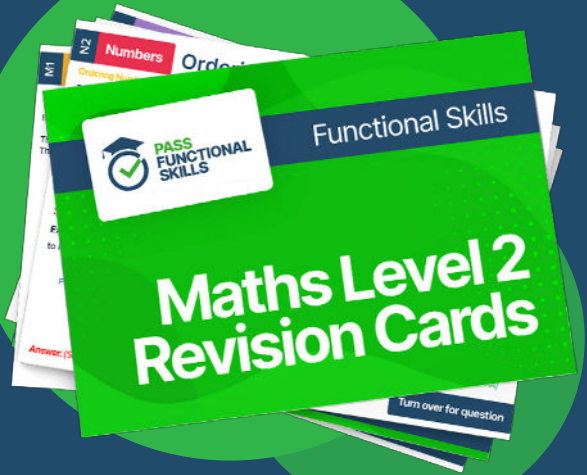**DO NOT WRITE ON THIS PAGE
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