AQA

Functional Skills Certificate
FUNCTIONAL MATHEMATICS
Level 2

Monday 14 January 2019   **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 1(c) and 3(a). These questions are indicated with a †.

Advice

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

FUNCTIONAL SKILLS ONLINE COURSES
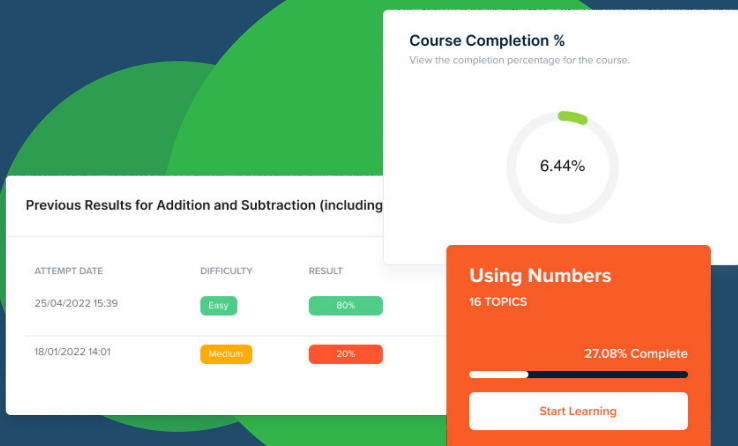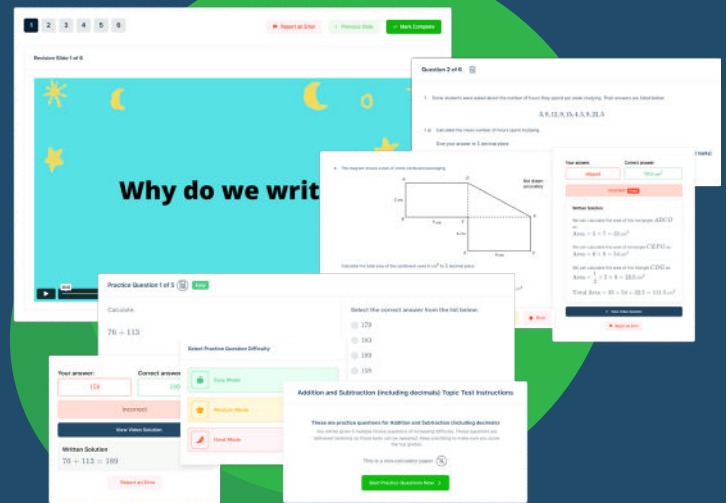
PASS FUNCTIONAL SKILLS

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
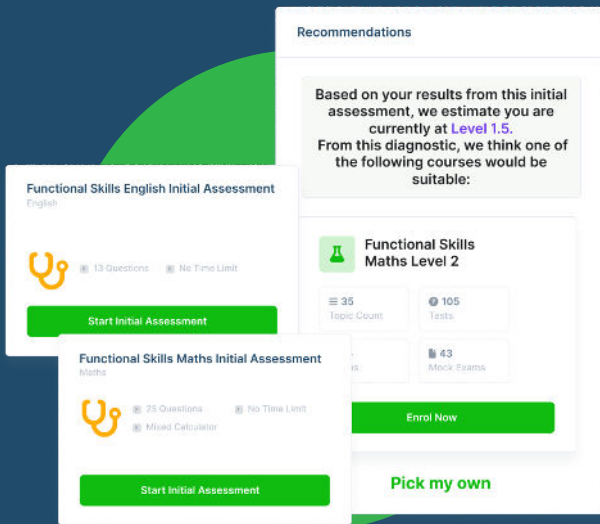
✅ Explainer videos on every topic

✅ Quick-fire style mutiple choice questions

✅ Test your knowledge with exam-style questions

✅ Written solutions for all questions

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

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

1   **On the farm**
There is a **data sheet** for On the farm.

I am a farmer.
I keep cows and pigs.

Ken

1 (a)   One day, Ken records the milk yields, in litres, for 30 of his cows.

Number of litres	Frequency
21.6	5
21.7	15
21.8	5
21.9	3
22.0	2

Work out the mean milk yield for these 30 cows.

[3 marks]

$(21.6 \times 5) + (21.7 \times 15) + (21.8 \times 5) + (21.9 \times 3) + (22 \times 2)$

$= 652.2$

$\dfrac{652.2}{30} = 21.74$

1 (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.

The table shows the cost of looking after his cows this year.

Milking	£385 per **cow**
Food	£48 per **tonne**
Other costs	£189 550

Ken buys 1800 tonnes of food per year.

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.

[6 marks]

£385 × 150 = £57750

£48 × 1800 = £86400

Total cost: 57750 + 86400 + 189550

= £333700

7944 × 150 × £0.33 = £393228.

£393228 - £333700

= £59528   profit.

No, he is incorrect.

Turn over ▶

†1 (c) Ken wants to build a rectangular sty for 1 sow and 7 piglets.

Work out the minimum area of sty he needs to build.

[2 marks]

$2 \cdot 25 + (7 \times 1 \cdot 64) = 13 \cdot 73 \, m^2.$

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

[1 mark]

$13 \cdot 73 - 2 \cdot 25 = 11 \cdot 48, \quad \dfrac{11 \cdot 48}{7} = 1 \cdot 64$

1 (d) Ken has

        12 sections of fencing, each of length 1 metre
        one gate, of width 2 metres.

He uses **all** the fencing and the gate to build the rectangular sty.
He does not cut the sections of fencing.

Can he build a sty large enough for 1 sow and 7 piglets?
You **must** show your working.

[4 marks]

Perimeter: $(12 \times 1) + (1 \times 2) = 12 + 2 = 14$

Let length be x and width be y.

$2x + 2y = 14 \Rightarrow x + y = 7.$

Area $= xy$ is maximised when $x = 4, y = 3.$

$4 \times 3 = 12.$

$12 < 13 \cdot 73$, so no, he cannot.

16

2   **Part-time work**
There is a **data sheet** for Part-time work.

Emmie lives near Queens Road.

I work part-time in a shop in the Trafford Centre.

Emmie

Here are the details of Emmie's journey to work.

5-minute walk from home to the Queens Road tram stop
Get the tram from Queens Road to Piccadilly Gardens
Get the bus from Piccadilly Gardens to the Trafford Centre
10-minute walk from the bus stop at the Trafford Centre to the shop

2 (a)   Emmie starts work at 10.00 am

She says,
        "If I leave home at 8.40 am I should get to work on time."

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

[5 marks]

8:40 + 5min walk = 8:45am

Next tram is at 8:49am,

arriving at Piccadilly Gardens at 9am.

Set off at 9:12am from PG,

arrive at 9:45am at TC.

9:45am + 10min = 9:55am.

Yes, she is correct.

Turn over ▶

2 (b) Emmie is 21 years old.

She is paid the National Minimum Wage.

She works for 2 days each week.

On each of the 2 days, she

> works for 4 hours
>
> pays £4 in tram fares
>
> pays £3.70 in bus fares.

Emmie pays the fares from her wages.

How much money does she have left from her wages each week?

[4 marks]

$2 \times 4 \times £7.38 = £59.04$ earned.

$(2 \times £4) + (2 \times £3.70) = £15.40$

$£59.04 - £15.40 = £43.64$

2 (c) Emmie changes jobs.

In her new job, she is paid the Real Living Wage.

She works for 3 days each week.

On each of the 3 days she works 4 hours.

She has no travel costs.

Emmie says,

> "In my new job, I am better off by **more than £60** per week."

Is she correct?

You **must** show your working.

[3 marks]

$£8.75 \times 3 \times 4 = £105$

$£105 - £43.64 = £61.36$

Yes, she is correct.

Do not write outside the box

2 (d) Jo works with Emmie.

She is paid a salary of £21 105

She uses these steps to work out the Income Tax she should pay.

Step 1 Subtract £11 850 from her salary

Step 2 Work out 20% of the answer to **Step 1**

The answer to **Step 2** is the Income Tax Jo should pay.

How much should she pay? **[3 marks]**

£21 105 − £11 850 = £9 255

£9 255 × 0.2 = £1851

15

Turn over for the next question

Turn over ▶

3   **Log burner**

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

Here is some information about four log burners.

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

		Dimensions of log burner (mm)		
	Heat output (kW)	Height	Width	Depth
Aston	3.75	510	389	291
Brunel	4	524	385	290
Chester	6	592	553	397
Dover	11	678	759	403

†3 (a)   How many **centimetres** wider is the Dover than the Aston?

[3 marks]

$$759 - 389 = 370 \, mm$$

$$\frac{370}{10} = 37cm.$$

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

[1 mark]

$$37 \times 10 = 370mm$$
$$389 + 370 = 789.$$

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

Here is a floor plan of the room.

← 5 m →
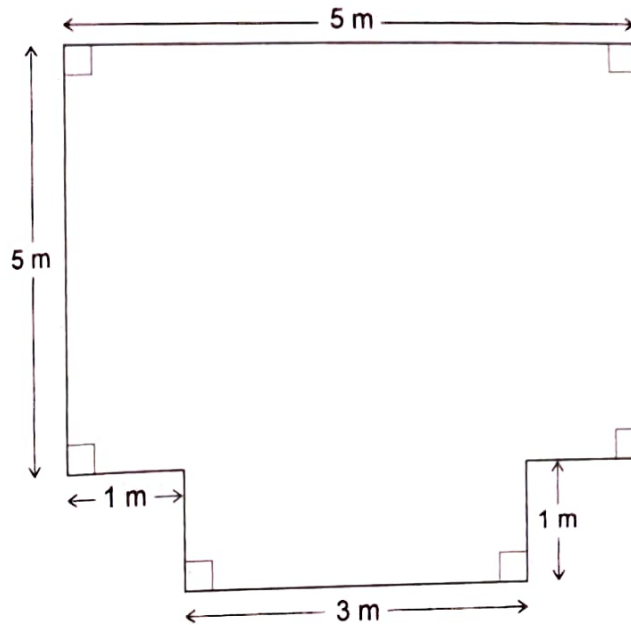
Not drawn
accurately

5 m

← 1 m →

1 m

← 3 m →

Rohan uses this formula to work out the heat output needed for the room.

$$K = \frac{A \times h}{14}$$

K is the heat output in kilowatts (kW)

A is the area of the floor in square metres (m^2)

h is the height of the room in metres (m)

What is the smallest log burner with enough heat output for this room?
You **must** show your working.   [5 marks]

$(5 \times 5) + (3 \times 1) = 28 \, m^2$

$K = \frac{28 \times 3}{14} = 6$

Chester.

Turn over ▶

IB/M/Jan19/4368

3 (c) Dania has a log burner.

The log burner can burn smokeless fuel or wood.

The table shows information about the amount used per hour and the cost.

	Smokeless Fuel	Wood
Amount used	0.8 kg per hour	1.5 kg per hour
Cost	£4.40 for an 8 kg bag	£5.40 for a 10 kg bag

Dania uses her log burner for

   4 hours per day

   5 days per week.

She says,

   "Using smokeless fuel is cheaper than using wood by **more than £7 per week.**"

Is she correct?
You **must** show your working.   [7 marks]

$4 \times 5 \times 1.5 = 30$ kg per week (wood)

$4 \times 5 \times 0.8 = 16$ kg per week (SF).

$\frac{30}{10} = 3$ bags (wood), $\frac{16}{8} = 2$ bags (SF).

$3 \times £5.40 = £16.20$ (wood)

$2 \times £4.40 = £8.80$ (SF).

$£16.20 - £8.80 = £7.40$

Yes, she is correct.

16

4   **Apricot jam**

Here is a recipe for apricot jam.

> **Ingredients for one batch of jam**
>
> Apricots   1.8 kg
>
> Sugar   700 g
>
> Water   125 ml
>
> **Method**
>
> Put the ingredients into a pan
>
> Heat the mixture to 105 °C
>
> Cook for 40 minutes

4 (a)   How many batches of jam can be made using 2 litres of water?

Circle your answer.

[1 mark]

0.8   1.6   8   (16)

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

He has

7.2 kg of apricots

2.5 kg of sugar.

He says,

"I have enough sugar to make the jam using **all** 7.2 kg of apricots."

Is he correct?

You **must** show your working.

[5 marks]

$$\frac{7.2 \text{ kg}}{1.8 \text{ kg}} = 4.$$

$$4 \times 700g = 2800g = 2.8kg$$

No, he is not correct.

4 (c)   Peter buys more apricots and sugar.

Altogether, he makes $17\frac{3}{4}$ pounds of jam.

1 pound = 16 ounces

He puts the jam into jars.

Each jar holds 11 ounces of jam.

How many jars can Peter fill with jam?

[3 marks]

$17.75 \times 16 = 284oz.$

$\dfrac{284}{11} = 25.\dot{8}\dot{1}$ jars

$\rightarrow$ 25 jars can be filled.

4 (d) Peter's costs for each jar of jam are

Apricots	£2.20
Sugar	11p
Jar	70p
Other costs	3p

Peter says,

"**More than** 70% of the cost is for apricots."

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

[4 marks]

$£2.20 + £0.11 + £0.70 + £0.03$

$= £3.04.$

$£3.04 \times 0.7 = £2.128.$

Yes, more than 70% of the cost
is for apricots.

END OF QUESTIONS

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ANSWER IN THE SPACES PROVIDED

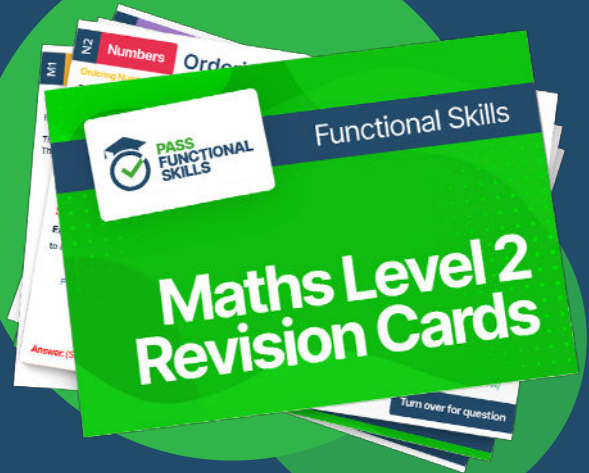# PASS FUNCTIONAL SKILLS

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