



Please write clearly in block capitals.

Centre number

Candidate number

Surname \_\_\_\_\_

Forename(s) \_\_\_\_\_

Candidate signature \_\_\_\_\_

# Functional Skills Certificate

## FUNCTIONAL MATHEMATICS

Level 2

Monday 15 January 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).



### 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 3(a). 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	
<b>TOTAL</b>	



J A N 1 8 4 3 6 8 0 1

IB/M/Jan18/E7

4368

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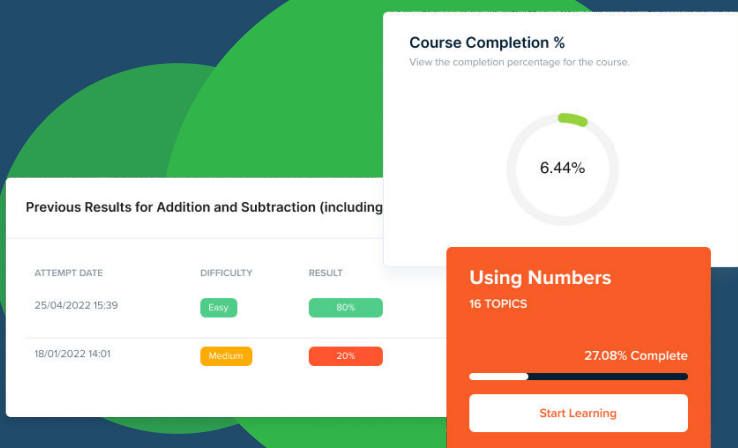
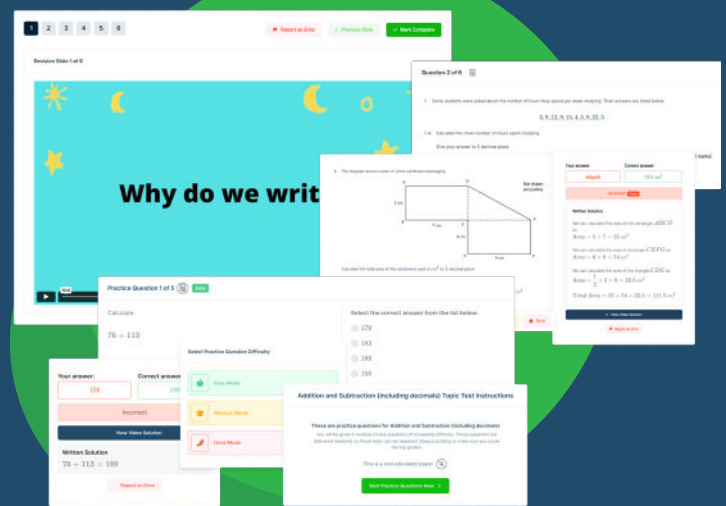


# FUNCTIONAL SKILLS ONLINE COURSES



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- ✓ Determine when you are ready to sit your exam

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- ✓ See your progress through as you progress through each topic area
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Or visit  
[passfunctionalskills.co.uk](https://passfunctionalskills.co.uk)

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

**1 Dance Show**

Sue runs a dance school.



**Sue**

The students at my dance school are in a show.

**1 (a)** The show has four tap dances and one ballet dance.

Each dance has three of these students.

Amy      Dita      Fiona      Grace      Leah      Mel      Tia

- Amy, Dita and Tia are in the 5th dance.
- Amy is **not** in the 1st dance.
- Grace is **not** in the ballet dance.
- Each student is in at least two dances.
- No student is in consecutive dances.

Show one possible plan for the students.

**[5 marks]**



Practise on this grid.

Dance	Type	Students		
1st	Tap			
2nd	Tap			
3rd	Ballet			
4th	Tap			
5th	Tap			

Put your answer on this grid.

Dance	Type	Students		
1st	Tap	Grace	Fiona	Tia
2nd	Tap	Dita	Leah	Mel
3rd	Ballet	Amy	Fiona	Tia
4th	Tap	Grace	Leah	Mel
5th	Tap	Amy	Dita	Tia

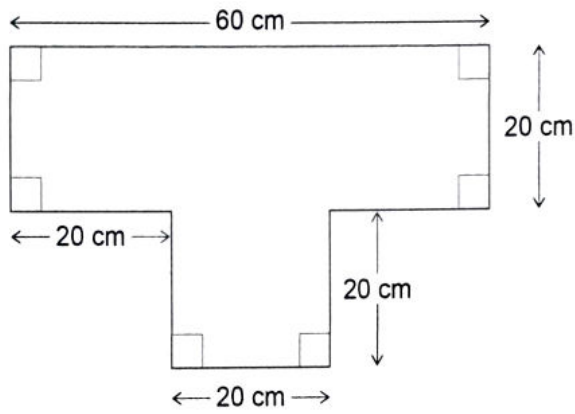
Question 1 continues on the next page

Turn over ►



1 (b) Sue makes costumes for the show.

She wants to cut out 10 of these shapes from a piece of material.



Not drawn  
accurately

Each scale drawing opposite shows the piece of material.

Sue says,

"I can cut out 10 of these shapes from this piece of material."

Is she correct?

Use the scale drawings to show your working.

[5 marks]

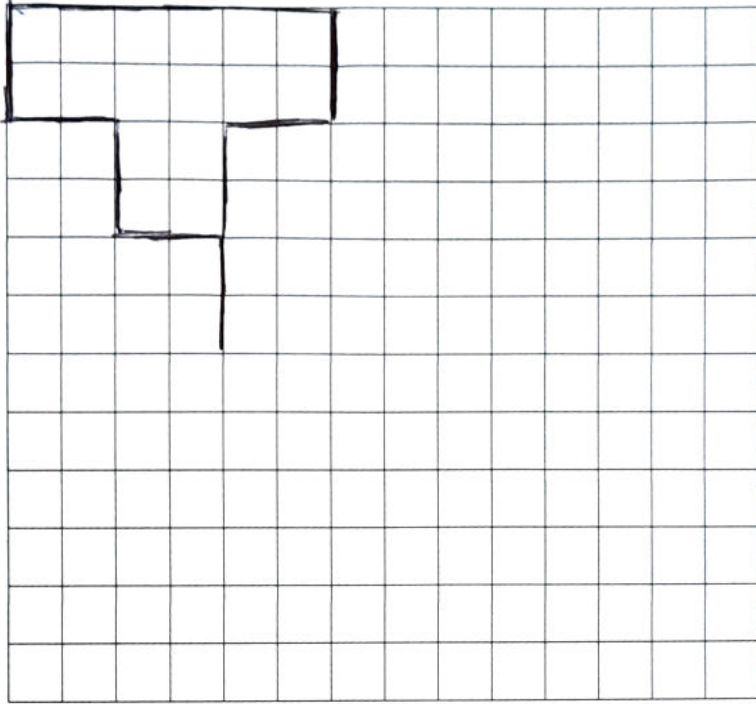
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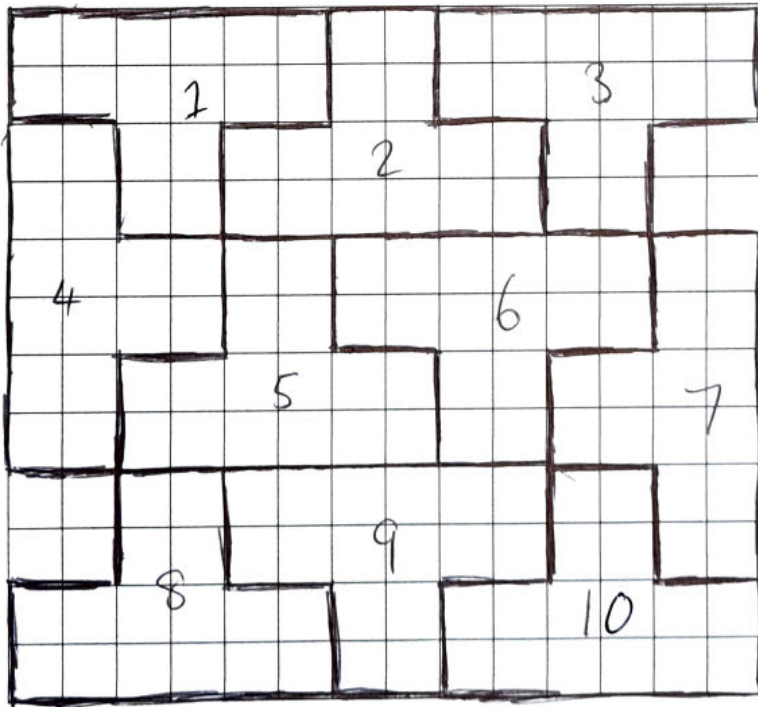
Practise on this scale drawing.

Scale  represents a 10 cm by 10 cm square



Put your answer on this scale drawing.

Scale  represents a 10 cm by 10 cm square



Turn over ►



1 (c) The show is on for **two** nights.

For each night, there are

80 adult tickets at £10.50 each

and

60 child tickets at £7.20 each.

The **total** cost of putting on the show for two nights is £925

Sue sells 90% of the adult tickets and  $\frac{2}{3}$  of the child tickets.

She says,

"We have made **more than** £1200 profit."

Is she correct?

You **must** show your working.

[7 marks]

Adult:

$$80 \times 0.9 = 72.$$

$$72 \times \pounds 10.50 = \pounds 756$$

Child:  $60 \times \frac{2}{3} = 40.$

$$40 \times \pounds 7.20 = \pounds 288$$

$$\pounds 756 + \pounds 288 = \pounds 1044 \text{ per night.}$$

$$\Rightarrow \pounds 2088 \text{ total.}$$

$$\pounds 2088 - \pounds 925 = \pounds 1163$$

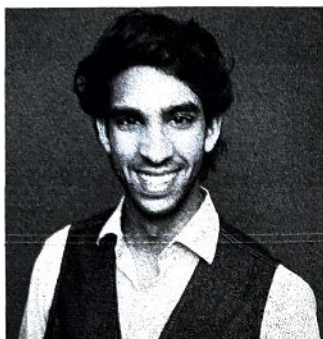
She is not correct.



**2 Minibus**

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

- †2 (a) Samir wants to hire some minibuses to go to a hockey match.



**Samir**

I need enough minibuses to carry 96 people.

Each minibus can carry 15 people.

How many minibuses does Samir need to hire?

**[2 marks]**

$$\frac{96}{15} = 6.4 \rightarrow 7 \text{ minibuses needed}$$

Check your answer.

Show how you have done your check.

**[1 mark]**

$$6.4 \times 15 = 96.$$

**Question 2 continues on the next page**

**Turn over ►**



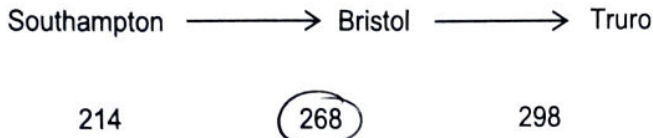


14 friends are going to Truro for a weekend.

12 of the friends will travel from Southampton.

They will pick up the other 2 friends in Bristol.

- 2 (b) Circle the total number of miles for the journey to Truro.



[1 mark]

- 2 (c) The friends look at this advert.

**Minibus hire**

£28 per day

plus

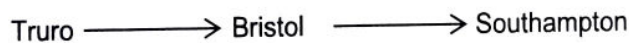
65p per mile

They drive the minibus for 3 days.

On Friday the minibus will travel



On Sunday the minibus will travel



Each friend from Southampton will pay £10 more than each friend from Bristol.

Will each friend from Southampton pay **less than** £35?

You **must** show your working.

[7 marks]

$$£28 \times 3 = £84$$

$$£0.65 \times 2 \times 268 = £348.40$$

$$\Rightarrow £84 + £348.40 = £432.40$$



Let  $x$  be the amount that each friend from Southampton pays.

$$12x + 2(x-10) = 432.40$$

$$14x - 20 = 432.4$$

$$\Rightarrow 14x = 452.4$$

$$\Rightarrow x = \del{32.31} \text{ } \pounds 32.31$$

Yes, they pay less than  $\pounds 35$  each.

Question 2 continues on the next page

Turn over ►



- 2 (d) On the journey, they come to a low bridge.



The height of the minibus with a loaded roof rack is 3.1 metres.

Will the minibus pass under the bridge?

You **must** show your working.

[4 marks]

$$10' - 6'' = 126'' = 10.5'$$

$$10.5 \times 0.3048 = 3.2004 \text{ m.}$$

$$3.1 < 3.2004$$

Yes, it will pass under.



**3 Guide Dogs in training**

Guide Dogs train at a centre each day from Monday to Friday.

In the evenings and at weekends, people look after them at home.



Sarah looks after Buddy.

Sarah takes Buddy from her home to the centre.

She then travels to work.

Sarah makes these notes.

Home to centre	10 miles average speed 30 miles per hour
At centre	5 minutes
Centre to work	$\frac{3}{4}$ of an hour



- †3 (a) How many minutes does Sarah take to travel from her home to the **centre**?

[2 marks]

$$\frac{10}{30} = \frac{1}{3} \text{ hour, or, } 20 \text{ minutes.}$$

Check your answer.

Show how you have done your check.

[1 mark]

$$\frac{20}{60} \times 30 = 10 \text{ mi}$$

- 3 (b) Sarah needs to arrive at **work** by 9.00 am

Work out the **latest** time that she can leave home.

[3 marks]

$$\frac{3}{4} \text{ hr} = 45 \text{ mins.}$$

$$\begin{aligned} 9:00 \text{ am} - (45 \text{ min} + 5 \text{ min} + 20 \text{ min}) \\ = 7:50 \text{ am.} \end{aligned}$$

Question 3 continues on the next page

Turn over ►



The daily amount of food for a dog depends on the weight of the dog.

Weight of dog	Daily amount of food
10 kg	176 g
20 kg	296 g
30 kg	402 g
40 kg	494 g

25 kg is halfway between 20 kg and 30 kg  
The daily amount of food for a 25 kg dog is 349 g

Dogs get two feeds each day.

Morning feed      Half the daily amount  
Evening feed      Half the daily amount

3 (c) Buddy weighs 35 kg

Sarah uses a cup to measure out the **morning** feed.

1 cup holds 96 g

Sarah says,

"I need to measure out between  $2\frac{1}{4}$  and  $2\frac{1}{2}$  cups."

Is she correct?

You **must** show your working.

[5 marks]

$$35 \text{ kg} : \frac{402 + 494}{2} = 448 \text{ g needed for the day}$$

$$\frac{448 \text{ g}}{2} = 224 \text{ g for morning feed.}$$

$$\frac{224}{96} = 2\frac{1}{3}.$$

Yes, she is correct.



- 3 (d) Omar looks after a different dog.  
The **daily** amount of food for his dog is 349 g

Omar says,

"A 20 kg bag of food is enough to feed my dog for 60 days."

Is he correct?

You **must** show your working.

[4 marks]

$$20\text{kg} = 20000\text{g}.$$

$$\frac{20000\text{g}}{349\text{g}} = 57.3 \text{ days}.$$

He is incorrect.

15

Turn over for the next question

Turn over ►



4

**Wages**

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

**Bob**

My company makes T-shirts.

The table shows the number of T-shirts 20 piece workers made in one hour.

Number of T-shirts	Number of workers
7	9
8	4
9	5
10	2
Total	20





- 4 (a) Show that the mean number of T-shirts made per worker is 8

[3 marks]

$$(7 \times 9) + (8 \times 4) + (9 \times 5) + (10 \times 2) =$$

$$63 + 32 + 45 + 20$$

$$= 160.$$

$$\frac{160}{20}$$

$$= 8.$$

- 4 (b) The workers are all 25 years old or over.

Bob says,

"The fair rate is £1.05 per T-shirt."

Is he correct?

You **must** show your working.

[5 marks]

$$NMW = £7.50.$$

$$\frac{£7.50}{8} = £0.9375$$

$$£0.9375 \times 1.2 = £1.125.$$

No, he is incorrect.

Turn over ►



- 4 (c) One week, the company needs to make at least 3600 T-shirts.  
The mean number of T-shirts each worker makes per hour is 8

Bob will use

10 full-time workers, each working 7 hours per day for 5 days

and

some part-time workers, each working for  $4\frac{1}{2}$  hours per day for 4 days.

How many part-time workers does he need?

You **must** show your working.

[5 marks]

$$10 \times 7 \times 5 = 350 \text{ total hours by full-time workers per week.}$$

$$350 \times 8 = 2800 \text{ shirts per week by FTWs.}$$

$$3600 - 2800 = 800 \text{ shirts required.}$$

$$4.5 \times 4 \times 8 = 144 \text{ shirts made by one PTW in a week.}$$

$$\frac{800}{144} = 5.5 \rightarrow 6 \text{ PTWs needed.}$$

END OF QUESTIONS



**There are no questions printed on this page**

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ANSWER IN THE SPACES PROVIDED**

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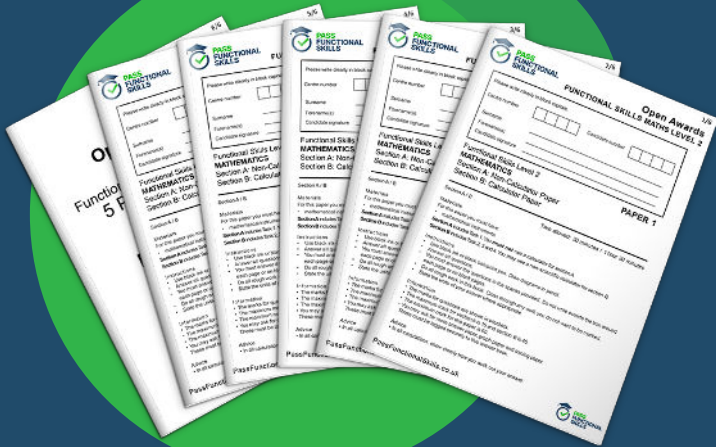
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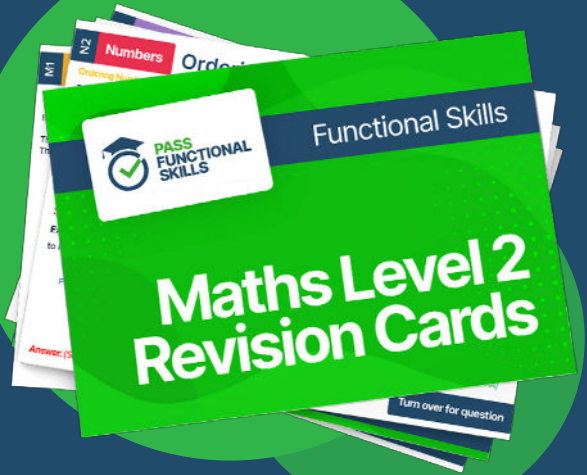




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