AQA

PASS FUNCTIONAL SKILLS

Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____

Functional Skills Certificate
FUNCTIONAL MATHEMATICS

Level 2

Tuesday 26 February 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).

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.

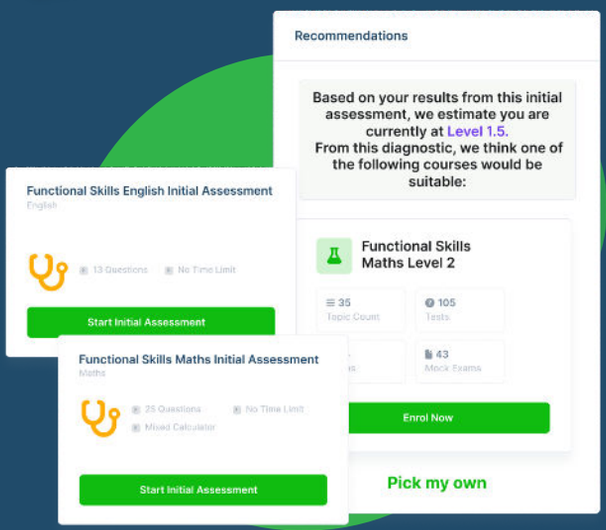
Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 60.
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.
- Evidence of checking is specifically assessed in Questions 2(a) and 4(a). These 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	
TOTAL	

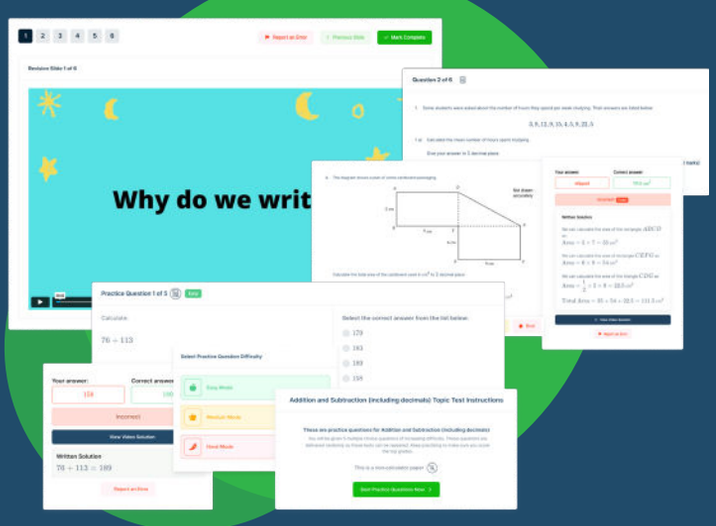
PASS FUNCTIONAL SKILLS

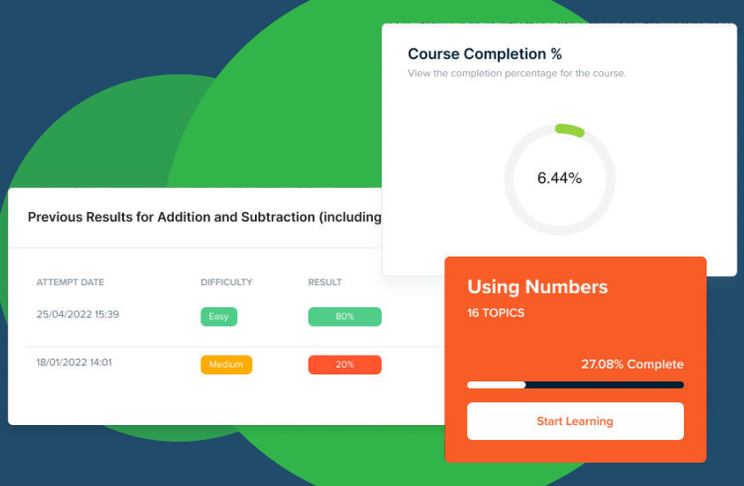
FUNCTIONAL SKILLS ONLINE COURSES



- 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





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

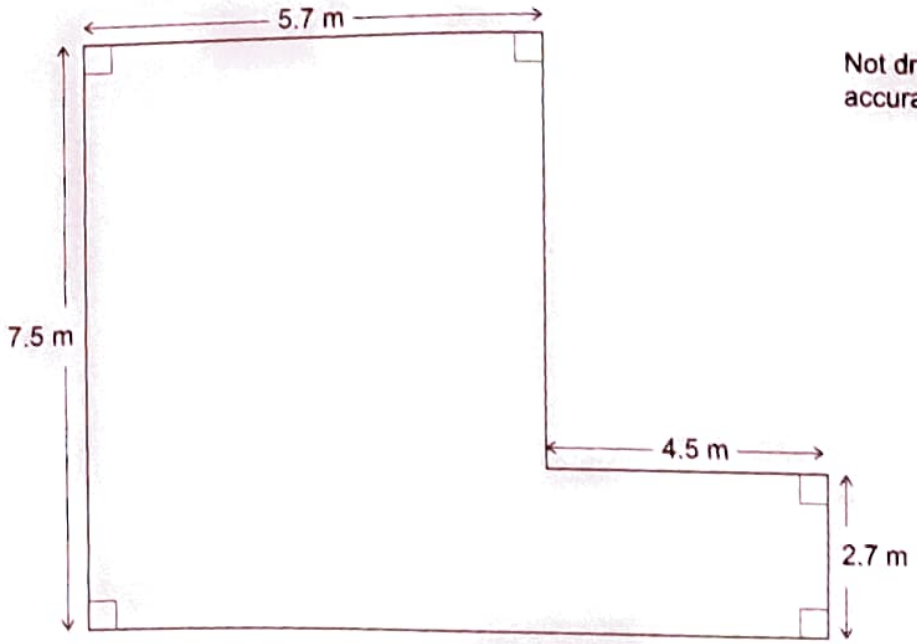
1 **Block paving**

There is a **data sheet** for Block paving.

Tom's company builds driveways.

Tom

Here is a sketch of a driveway.



Not drawn accurately

Tom is going to build this driveway using block paving.

1 (a) The depth of the foundation is 300 millimetres.

Tom works out the amount of material that he has to remove.

He is going to put this material into skips.

Each skip can contain 9 cubic metres of material.

Show that he needs 2 skips. **[4 marks]**

$(7.5 \times 5.7) + (4.5 \times 2.7) = 54.9\text{m}^2$.

$300\text{mm} = 30\text{cm} = 0.3\text{m}$.

$54.9\text{m}^2 \times 0.3\text{m} = 16.47\text{m}^3$.

$\frac{16.47}{9} = 1.83 \rightarrow 2$ skips needed

1 (b) The usual cost of the stone that Tom needs for the foundation is £924

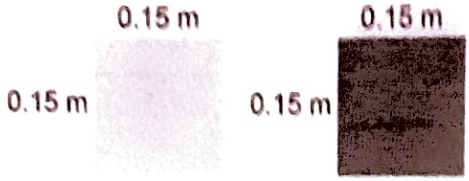
He gets a discount of 20%

How much does he pay for the stone? **[3 marks]**

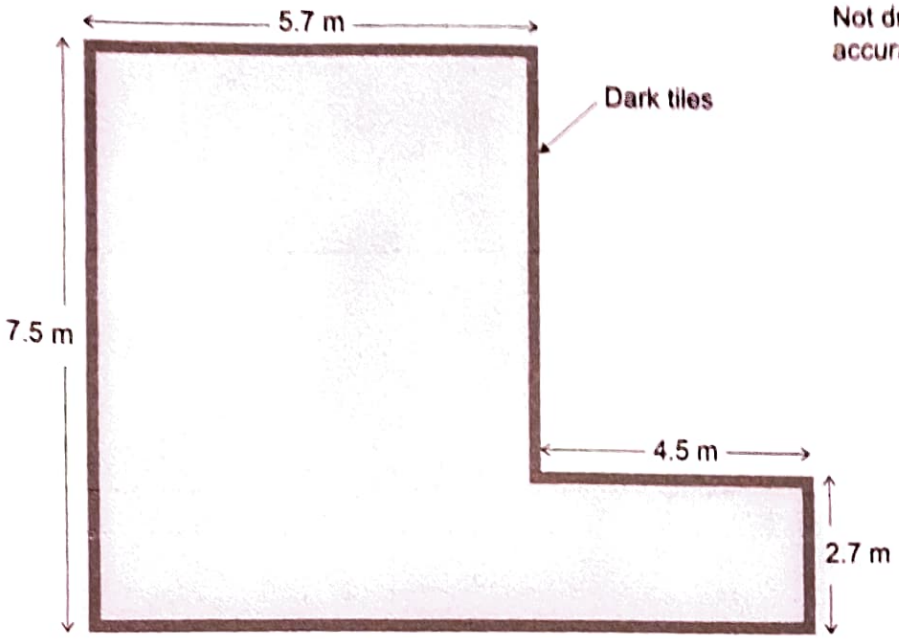
$1 - 0.2 = 0.8$.

$£924 \times 0.8 = £739.20$

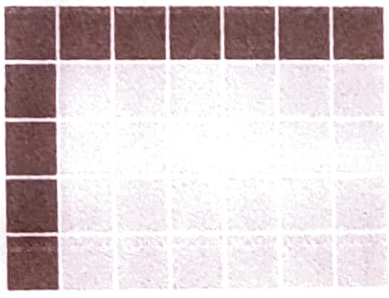
Tom is going to cover the driveway using light tiles and dark tiles.



He first puts dark tiles along the edges of the driveway.



This diagram shows how the tiles are arranged at a corner of the driveway.



1 (c) Work out the total number of dark tiles needed for the edges of the driveway.

[4 marks]

$5.7 + (7.5 - 2.1) + 4.5 + 2.7 + (5.1 + 4.5) + 7.5$

$= 35.4$

$\frac{35.4\text{m}}{0.15\text{m}} = 236$

Need to remove 4 tiles at overlapping tiles.

$236 - 4 = 232.$

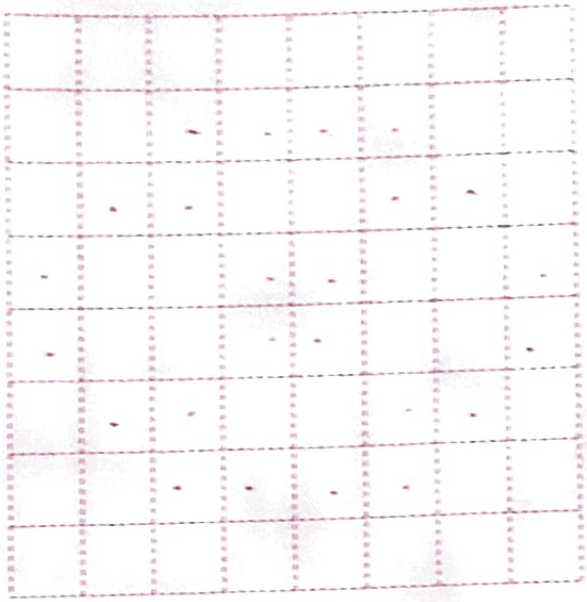
1 (d) Tom is designing a pattern of square tiles for part of the driveway.

He wants to put 24 dark tiles into this grid.

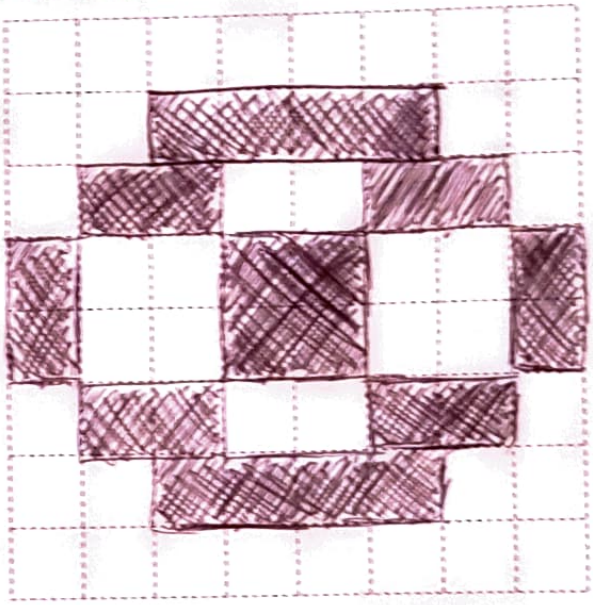
Shade 24 tiles so that the grid has exactly **four** lines of symmetry.

[3 marks]

Practise on this grid.



Put your answer on this grid.



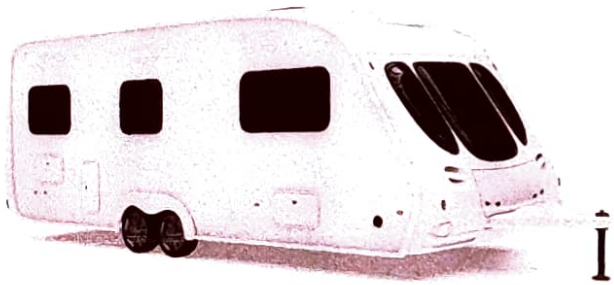
14

2 **Caravan**

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

Jane and Paul

Jane and Paul decide to buy this caravan.



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†2 (a) A loan company offers these loans.

Amount of loan	Amount of repayment per month				
	For 12 months	For 24 months	For 36 months	For 48 months	For 60 months
£2000	£191	£107	£80	£66	£57
£3000	£286	£161	£119	£99	£86
£4000	£381	£213	£159	£131	£115
£5000	£457	£248	£179	£144	£123
£10 000	£913	£497	£358	£288	£247
£15 000	£1370	£745	£537	£433	£370

Jane and Paul need to borrow £4000 to buy the caravan.

In total, how much **more** will they pay back if they borrow the money over 48 months rather than over 24 months?

[3 marks]

£213 × 24 = £5112

£131 × 48 = £6288

£6288 − £5112 = £1176

Check your answer by rounding the monthly repayments to the nearest £10

[1 mark]

£1176 → £1200.

24 × £210 = £5040, 48 × £130 = £6240

£6240 − £5040 = £1200.

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Jane and Paul book a holiday at Clover Meadow Caravan Park.

2 (b) They are planning their journey.

Paul makes these notes.

> The journey is 189 miles.
>
> We will travel at an average speed of 36 mph
>
> We will stop for a 40-minute break during the journey.

They set off from home at 2 pm

Paul says,

"We should arrive at the caravan park **before** 8 pm"

Is he correct?

You **must** show your working.

[5 marks]

189mi / 36mph = 5.25hrs = 5hr 15min.

2pm + 5hr 15min + 40min

= 7:55pm.

Yes, he is correct.

Question 2 continues on the next page

2 (c) Jane makes these notes about the cost of the holiday.

Petrol

We will drive 378 miles in total

Our car travels 42 miles per gallon of petrol

1 gallon = 4.5 litres

One litre of petrol costs £1.20

Caravan park

We will stay 5 nights

We need to pay the fees for

the pitch

the electricity

the awning

We get Caravanners Society discount of £9 per night

Spending money

Between us we will spend £70 per day for 6 days

Jane says,

"The total cost should be less than £600"

Is she correct?

You **must** show your working.

[7 marks]

$\frac{378}{42mpg} = 9$ gallons.

$9 \times 4.5 = 40.5L$

$40.5L \times £1.20/L = £48.60$ (travel).

£27.42 + £3.50 = £32.50 per night (fees).

£32.50 ◆ × 5 = £162.50 (fees).

£162.50 - (£9 × 5) = £117.50

£70 × 6 = £420 (spending money).

£420 + £117.50 + £48.60
= £586.10

Yes, she is correct.

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3 Flower shop

Anaya makes and sells bouquets of flowers in her flower shop.

Anaya

Bouquet of flowers

Anaya sells standard bouquets and luxury bouquets.

She makes the bouquets using roses, lilies and carnations.

The table shows the number of each type of flower in each type of bouquet.

	Roses	Lilies	Carnations
Standard	6	4	10
Luxury	9	7	4

3 (a) What fraction of the flowers in a **standard** bouquet are lilies?

Circle your answer.

[1 mark]

$\frac{1}{4}$ $\frac{1}{5}$ $\frac{7}{20}$ $\frac{11}{40}$

3 (b) On Monday, Anaya makes 24 bouquets.

She makes twice as many standard bouquets as luxury bouquets.

Work out how many of each type of bouquet she makes.

[2 marks]

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S : L

→ 2 : 1 → 3 parts.

$(24 \times \frac{2}{3}) : (24 \times \frac{1}{3})$ = 16 small, 8 luxury

3 (c) Anaya sells

standard bouquets for £22 each

luxury bouquets for £35 each.

On Tuesday

Anaya makes 14 standard bouquets and 18 luxury bouquets

she sells all the standard bouquets and $\frac{5}{6}$ of the luxury bouquets.

How much money does she get from selling these bouquets?

[3 marks]

14 × £22 (standard) = £308.

$\frac{5}{6}$ × 18 × £35 (luxury) = £525.

£308 + £525 = £833

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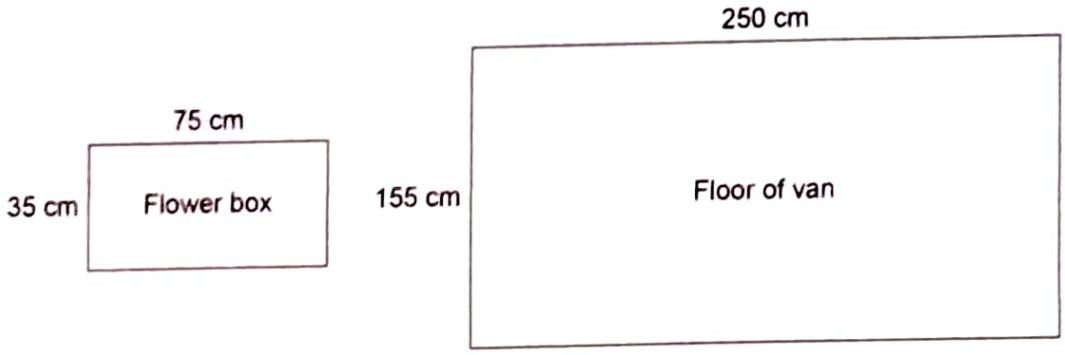
3 (d) On Saturday, Anaya packs bouquets into 40 boxes for delivery.

The base of each box is a 75 cm by 35 cm rectangle.

The floor of the van is a 250 cm by 155 cm rectangle.

Not drawn accurately



Anaya **cannot** stack more than 3 boxes on top of each other.

Can she fit all 40 boxes in the loading space of her van?
You **must** show your working.

[5 marks]

$\frac{250}{35} = 7.14 \rightarrow 7$, $\frac{155}{75} = 2.06\dot{} \rightarrow 2$.

$7 \times 2 = 14$ boxes on each layer.

$\frac{250}{75} = 3.\dot{3} \rightarrow 3$, $\frac{155}{35} = 4.43 \rightarrow 4$

$3 \times 4 = 12$ boxes on each layer.

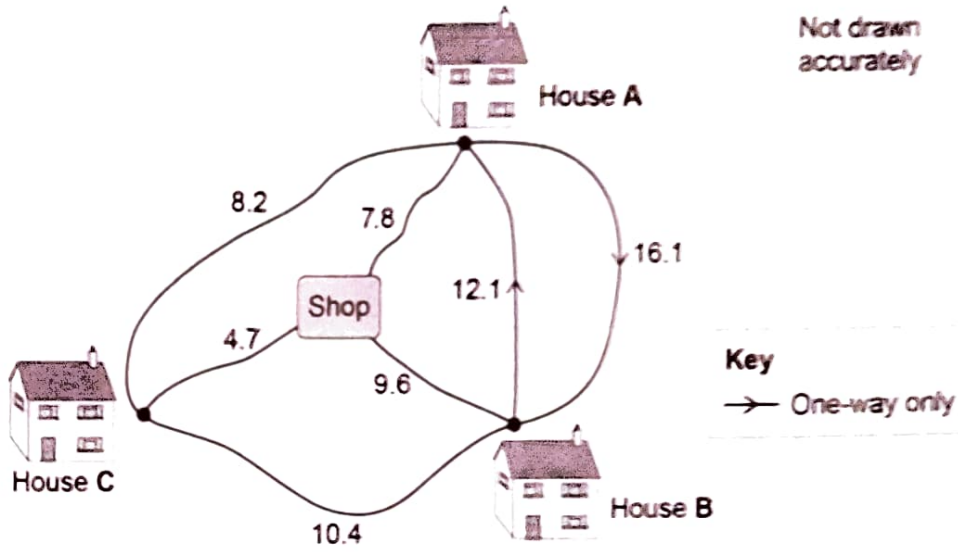
14 boxes on each ~~floor~~ layer x 3 layers

= 42 boxes (max).

Yes, she can.

3 (e) Anaya sets off from her shop to deliver flowers to three houses, A, B and C.

This diagram shows distances in miles.



Anaya wants to

- start and finish at her shop
- visit House C earlier than House A
- visit each house once only
- take the shortest route.

Work out a possible route **and** the total distance she drives.

[4 marks]

SCBAS :

4.7 + 10.4 + 12.1 + 7.8 = 35 miles.

15

Turn over ▶

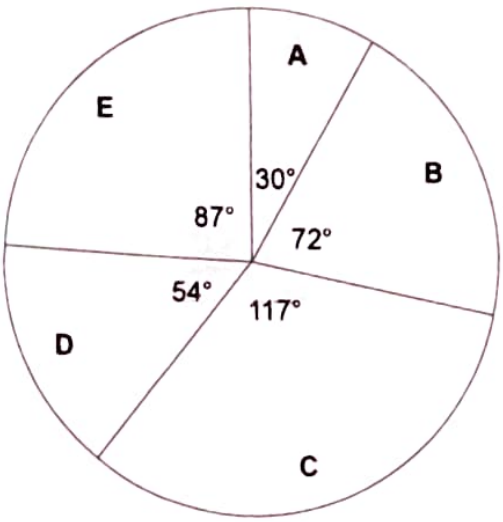
4 **Telephone operator**

Lizzie is a telephone operator.

Lizzie's manager produces this pie chart.

The pie chart shows information about 120 of Lizzie's calls.

Times of calls in minutes



Key

A	Less than 2 minutes
B	At least 2 and less than 4 minutes
C	At least 4 and less than 6 minutes
D	At least 6 and less than 8 minutes
E	At least 8 minutes

14 (a) How many of the 120 calls were **less than** 2 minutes?

[2 marks]

$\frac{30^\circ}{360^\circ} = \frac{1}{12}$.

$\frac{1}{12} \times 120 = 10$ calls.

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

[1 mark]

$\frac{10}{120} = \frac{1}{12}$, $\frac{1}{12} \times 360^\circ = 30^\circ$.

4 (b) Lizzie has this target for her calls.

> At least 75% of the calls should be **less than** 8 minutes.

Has she met her target with these 120 calls?
You **must** show your working.

[4 marks]

$360^\circ - 87^\circ = 273^\circ$.

$\frac{273^\circ}{360^\circ} = 0.758\dot{3} = 75.8\dot{3}\%$.

Yes, she has met her target.

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4 (c) Lizzie is paid the basic rate for the first 37 hours she works each week.
She is paid the overtime rate for every hour over 37 hours.

Basic rate	£8.64 per hour
Overtime rate	Basic rate + 50%

The table shows the times that she worked one week.

	Start	**Finish**
Sunday	-	-
Monday	07.30	16.30
Tuesday	09.00	17.00
Wednesday	09.00	17.00
Thursday	16.30	21.30
Friday	09.00	17.00
Saturday	13.30	17.30

Lizzie has a 30-minute break on any day when she is at work for more than 6 hours.
The times in the table include the breaks.
She is **not** paid for these breaks.

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Lizzie says,

"My pay this week will be **more than** £350"

Is she correct?

You **must** show your working

[8 marks]

Mon: 9hr - 30 min = 8hrs, 30min = 8.5hrs

Tues: 8hr - 30 min = 7hrs, 30min = 7.5hrs

Weds: " " = 7.5hrs

Thu: 5hrs

Fri: 8hr - 30min = 7hrs, 30min = 7.5hrs

Sat: 4hrs.

8.5 + 7.5 + 7.5 + 5 + 7.5 + 4 = 40 hrs.

(37 x £8.64) + (3 x 1.5 x £8.64)

= £319.68 + £38.88

= £358.56

Yes, she is correct.

END OF QUESTIONS

15

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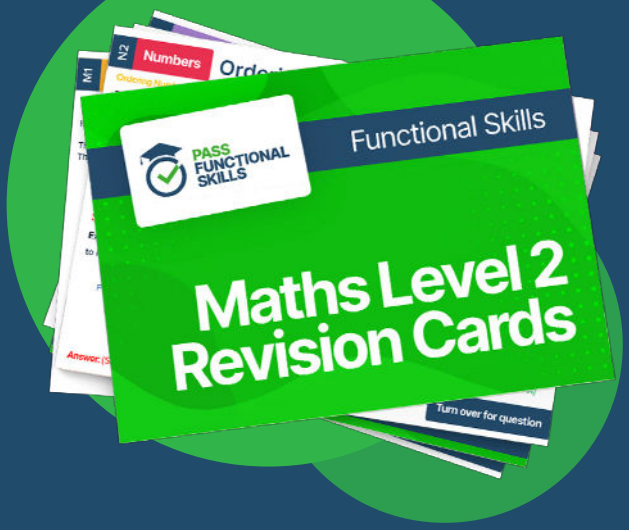
PASS FUNCTIONAL SKILLS

Functional Skills Maths
Level 2 Practice Papers



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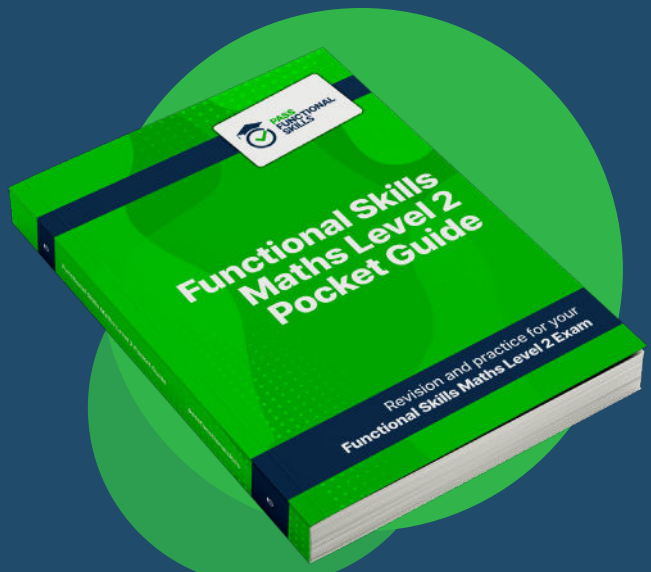

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