

Write your name here

Surname

Other names

**Pearson Edexcel  
Functional Skills**

Centre Number

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# Mathematics

Level 2



6–10 January 2014

**Time: 1 hour 30 minutes**

Paper Reference

**FSM02/01**

**You must have:**

Pen, calculator, HB pencil, eraser, ruler graduated in cm and mm, protractor, compasses.

Total Marks

|  |
|--|
|  |
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**My signature confirms that I will not discuss the content of the test with anyone until the end of the 5 day test window.**

Signature: \_\_\_\_\_

## Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Sign the declaration.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- **Calculators may be used.**

## Information

- The total mark for this paper is 48.
- The marks for each question are shown in brackets – *use this as a guide as to how much time to spend on each question.*
- **Where you see this sign you must show clearly how you get your answers because marks will be awarded for your working out.**
- **Check your working and your answers at each stage.**



## Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.

Turn over ►

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**PEARSON**

## SECTION A: An international company

Answer all questions in this section.

Write your answers in the spaces provided.

- 1 Amy works for an international company.

The company has offices in London, Athens and New York.

Amy uses this information.

| City     | Time difference from London | Note                        |
|----------|-----------------------------|-----------------------------|
| Athens   | + 2 hours                   | 2 hours later than London   |
| New York | - 5 hours                   | 5 hours earlier than London |

At 4.30 pm in London Amy rings the New York office.

(a) What is the time in New York when it is 4.30 pm in London?

(1)

Write your answer in the box below.



The offices in each city are open from 8 am until 6 pm local time.

Amy has to arrange a video conference for London, Athens and New York.  
The conference is going to last 1 hour.

Amy needs to choose a time when all the offices are open.

(b) When can Amy arrange the conference for? (3)

Fill in the table to show the local time of the conference in each city.

| City     | Start time | Finish time |
|----------|------------|-------------|
| Athens   |            |             |
| London   |            |             |
| New York |            |             |

(Total for Question 1 is 4 marks)



2 The number of people who work in the London office is going to increase.

Amy needs to work out if there is going to be enough space in the office when the number of people increases.

She has this information.

- There are 10 people who work at the London office now.
- The total number of people is going to increase by 30%.
- The office has a rectangular floor space of length 15 m and width 9 m.
- There must be at least  $12 \text{ m}^2$  of floor space for each person.

Is the office large enough for the total number of people after the increase?

(5)

Use the box below to show clearly how you get your answer.



A large empty rectangular box for the student to show their working out.



[Empty rectangular box for writing]

**(Total for Question 2 is 5 marks)**



**3** Manos is the manager in the Athens office.

The company needs some sales people in Athens.  
They decide to employ 3 sales people for every 2 office workers.

The company has 12 office workers in Athens.  
Manos thinks 15 sales people are needed.

(a) Is Manos correct?  
Show why you think this.

**(3)**

Use the box below to show how you get your answer.



A large, empty rectangular box intended for the student to show their working out for the problem.



Manos wants to rearrange one of the rooms in the Athens office.  
He is going to put the printer in a separate section of the room.

Manos knows

- the printer needs a rectangular space 0.75 m by 1 m
- the maximum distance it can be from the power point is 1.5 m.

Manos also wants to put a table outside the printer section.

The top of the table is rectangular 2.5 m by 1.5 m.

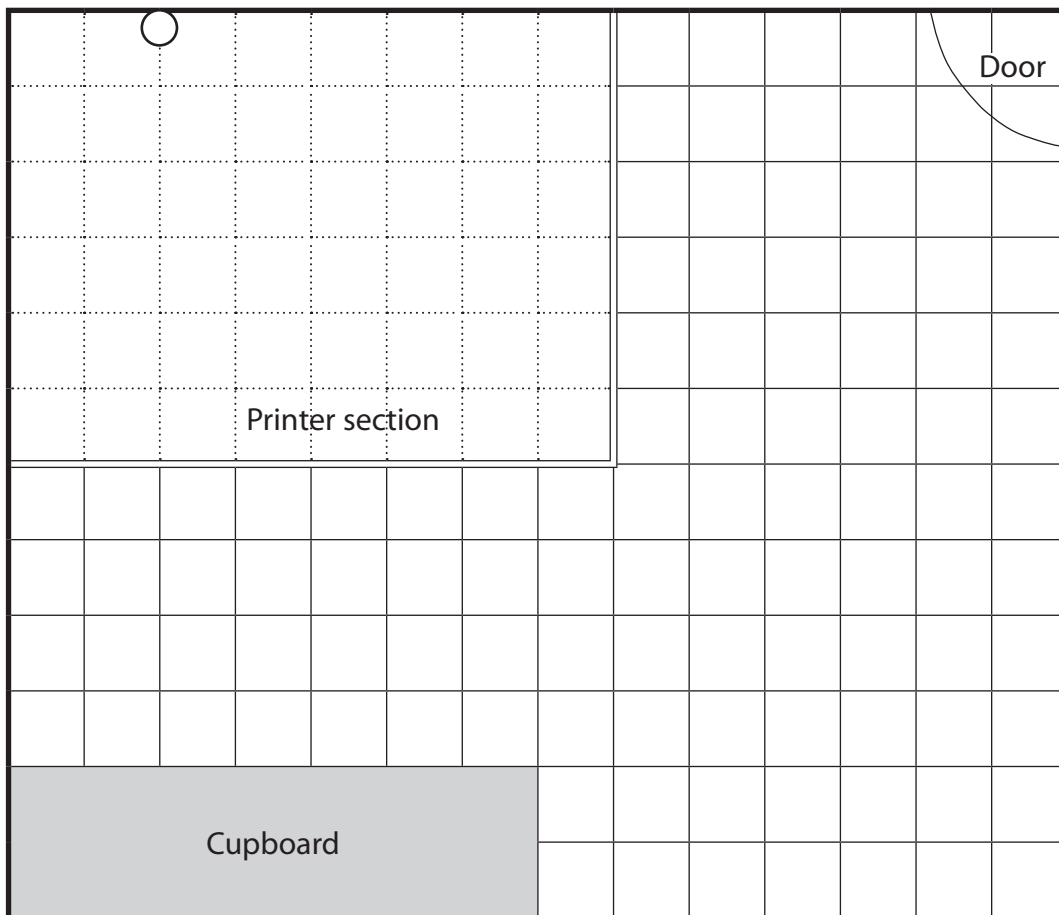
The table must be put

- against a wall
- at least 1 m from the door
- at least 1 m from the cupboard.

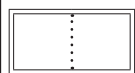
Manos draws a plan of the room on a grid.

(b) Draw the space for the printer and the table on the grid.  
Remember to use the key.

(4)



Key: 1 cm on the grid is 0.5 m in the office



Printer section



Power point



Wall

(Total for Question 3 is 7 marks)



## SECTION B: Light aircraft

Answer all questions in this section.

Write your answers in the spaces provided.

- 4 A group of 8 people share the cost of keeping a light aircraft.

These are the costs of keeping the aircraft.

| Cost                    | Frequency | Amount |
|-------------------------|-----------|--------|
| Insurance               | Yearly    | £2340  |
| Annual inspection       | Yearly    | £2884  |
| Parking on the airfield | Monthly   | £262   |
| Radio licence           | Yearly    | £20    |

Each person in the group pays £90 every month.

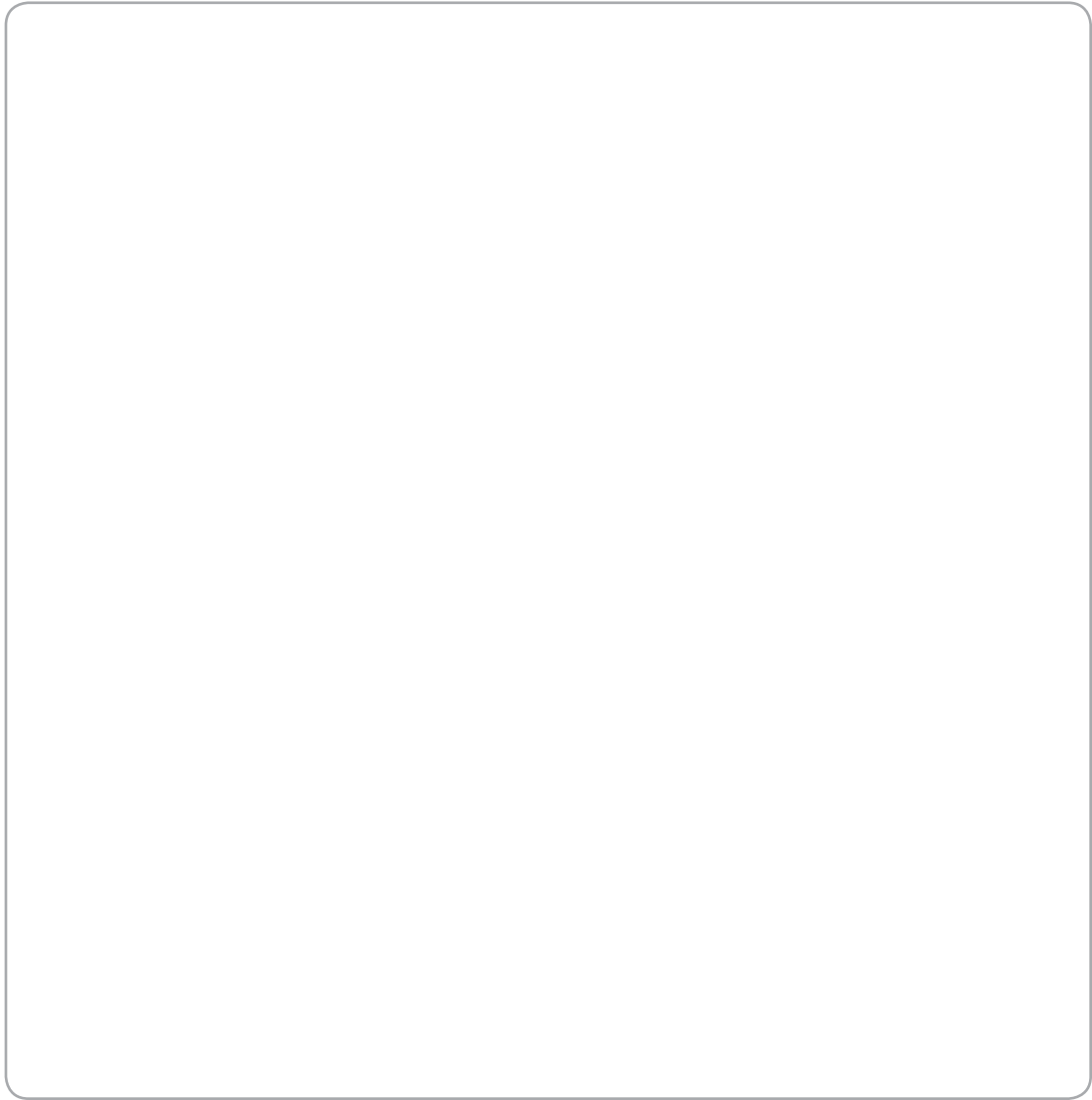
Are they paying enough to cover the cost of keeping the aircraft?  
You must show how you have checked your working.

(5)

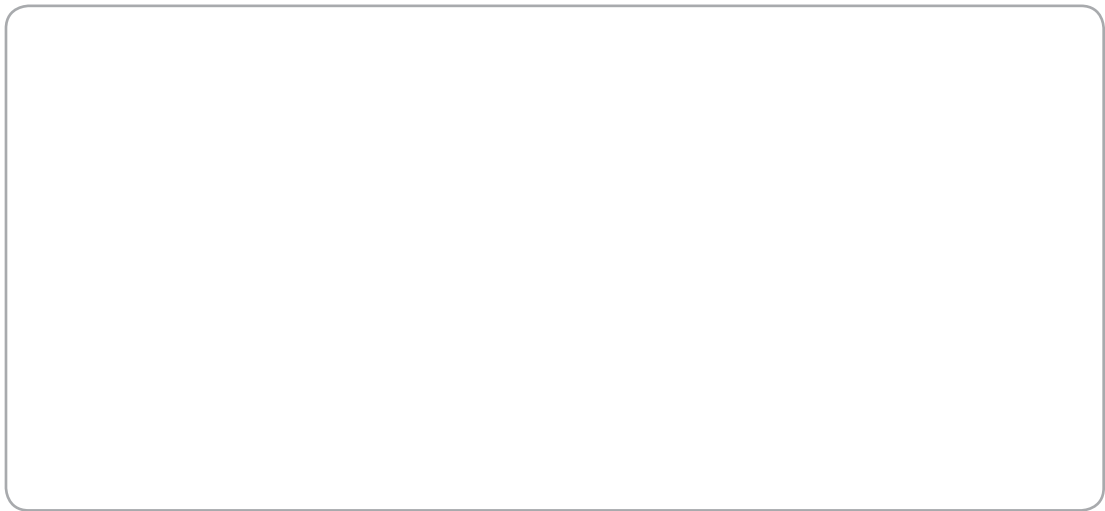
Use the box below to show clearly how you get your answer.







Use the box below to show how you have checked your working.



**(Total for Question 4 is 5 marks)**



5 Sue wants to buy 12 gallons of fuel for the aircraft.

Fuel at the airfield is £2.16 per litre.

Sue thinks £150 is enough to pay for the fuel.

Use 1 gallon = 4.55 litres

(a) Is £150 enough to pay for 12 gallons of fuel?

(3)

Use the box below to show clearly how you get your answer.



A large, empty rectangular box with rounded corners, intended for the student to show their working out for the problem.



Clive wants to fly from Manchester to Ramsey.

He knows

- the distance is 160 miles
- the aircraft flies at 140 mph
- it uses 7 gallons of fuel per hour
- the fuel tank contains 20 gallons of fuel
- he must take extra fuel for 45 minutes additional flying time (for emergencies).

(b) Is there enough fuel in the tank for the flight?

(4)

Use the box below to explain how you get your answer.



A large empty rectangular box for writing an explanation.

**(Total for Question 5 is 7 marks)**



6 Pilots can rent the light aircraft to go flying with passengers.

The cost to rent the aircraft is £150 per hour of flying.  
The pilot must not pay less than each of the passengers.

Kim is a pilot.  
She wants to go flying with 2 passengers.

She makes these notes.

take off at 9:25 am  
land at 10:40 am

cost per hour £150

I must pay at least  $\frac{1}{3}$  of the cost

Passengers pay the rest of the cost

What is the maximum total amount the 2 passengers will pay?

(4)

Use the box below to show clearly how you get your answer.



A large empty rectangular box for writing the solution to the problem.



A large empty rectangular box with rounded corners, intended for the student's answer to Question 6.

**(Total for Question 6 is 4 marks)**

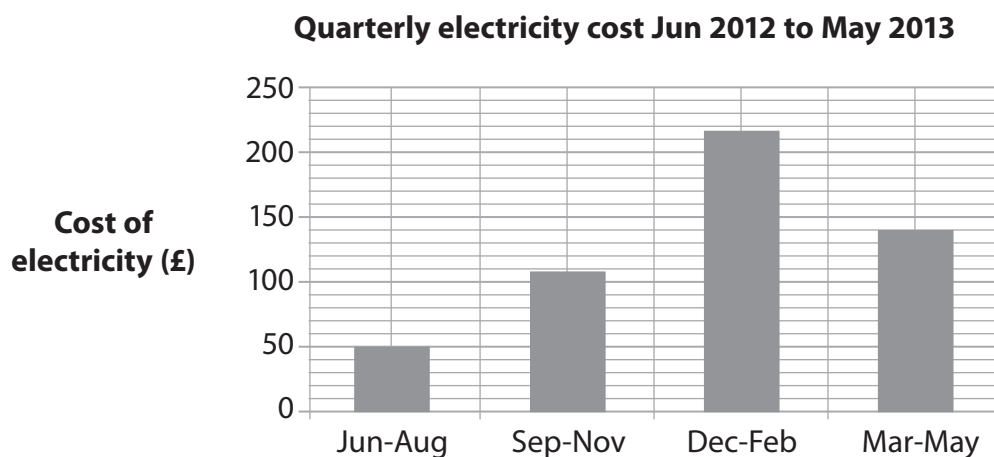


## SECTION C: Energy costs

Answer all questions in this section.

Write your answers in the spaces provided.

- 7 Darren looks at this graph which shows the cost of the electricity he used over the last 12 months.



Darren wants to make monthly payments for his electricity.

He thinks his electricity is going to cost the same for the next 12 months.

Darren works out he should pay £40 per month to cover the cost over 12 months.

Is Darren correct?  
Show why you think this.

(5)



Use the box below to show clearly how you get your answer.



A large, empty rectangular box with rounded corners, intended for the student to show their work.

**(Total for Question 7 is 5 marks)**



8 Mark wants to check the calculations on his gas bill.

He finds this formula to work out the number of kWh of gas he has used.

$$\text{Gas used in kWh} = \frac{\text{GCV}}{3.6}$$

G is the units of gas used

C is the calorific value

V is a volume correction

Mark's bill shows

units of gas used is 260

the calorific value is 39

the volume correction is 1.02

The calculation on the bill shows

Gas used in kWh = 2873

(a) Is the calculation on the gas bill correct?

Show why you think this.

(3)

Use the box below to show clearly how you get your answer.





Mark wants to work out how much his gas costs each month.

His gas bill is made up of two parts

- a standing charge of 19.2p per day
- 7.03p per kWh.

Mark's online account tells him his daily average consumption is 23 kWh.

(b) Work out the cost of gas for one month (31 days) for Mark.

(3)

Use the box below to show clearly how you get your answer.



A large empty rectangular box for writing the solution to the problem.

**(Total for Question 8 is 6 marks)**



9 Sonia sees this newspaper headline.

**Gas prices to rise by a fifth**

Sonia pays £38 per month for gas.

She wants to know how much she will pay after the price rise.

(a) How much will Sonia pay?

(2)

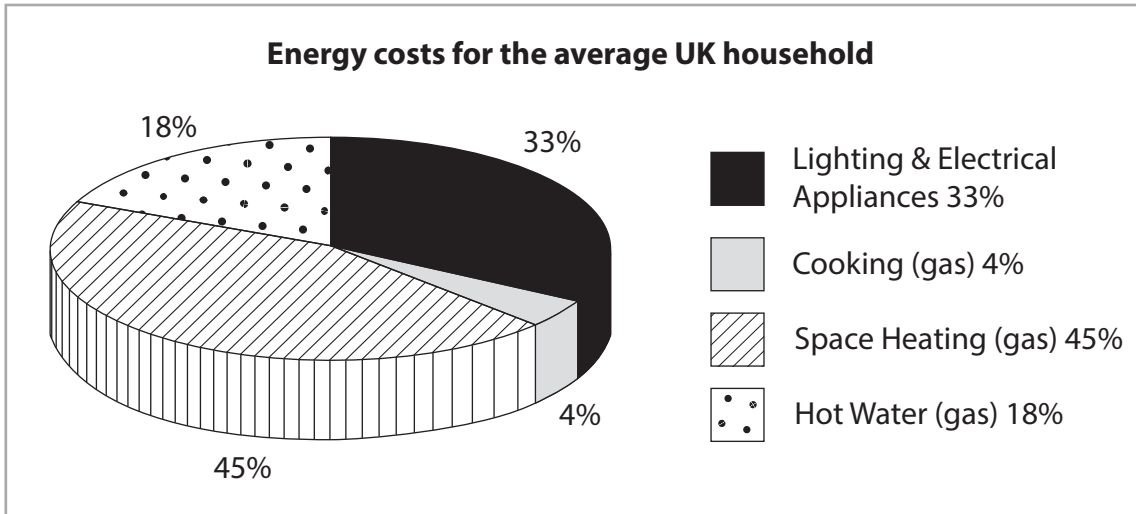
Use the box below to show clearly how you get your answer.



A large empty rectangular box for writing the solution to the problem.



Zaria finds this pie chart.



Zaria pays £30 each month for electricity.  
She pays £85 each month in total for energy.

Zaria says,

'My electricity cost is a smaller percentage of my total energy cost than for the average UK household.'

(b) Is Zaria correct?  
Show why you think this.

(3)

Use the box below to show clearly how you get your answer.



(Total for Question 9 is 5 marks)

**TOTAL FOR PAPER IS 48 MARKS**



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