

Write your name here

Surname

Other names

**Pearson Edexcel  
Functional Skills**

Centre Number

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# Mathematics

**Level 2**



14 – 18 March 2016

**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

**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 a **black** 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.*
- **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.**
- **This sign shows where marks will be awarded for showing your check.**

## Advice

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

Turn over ►

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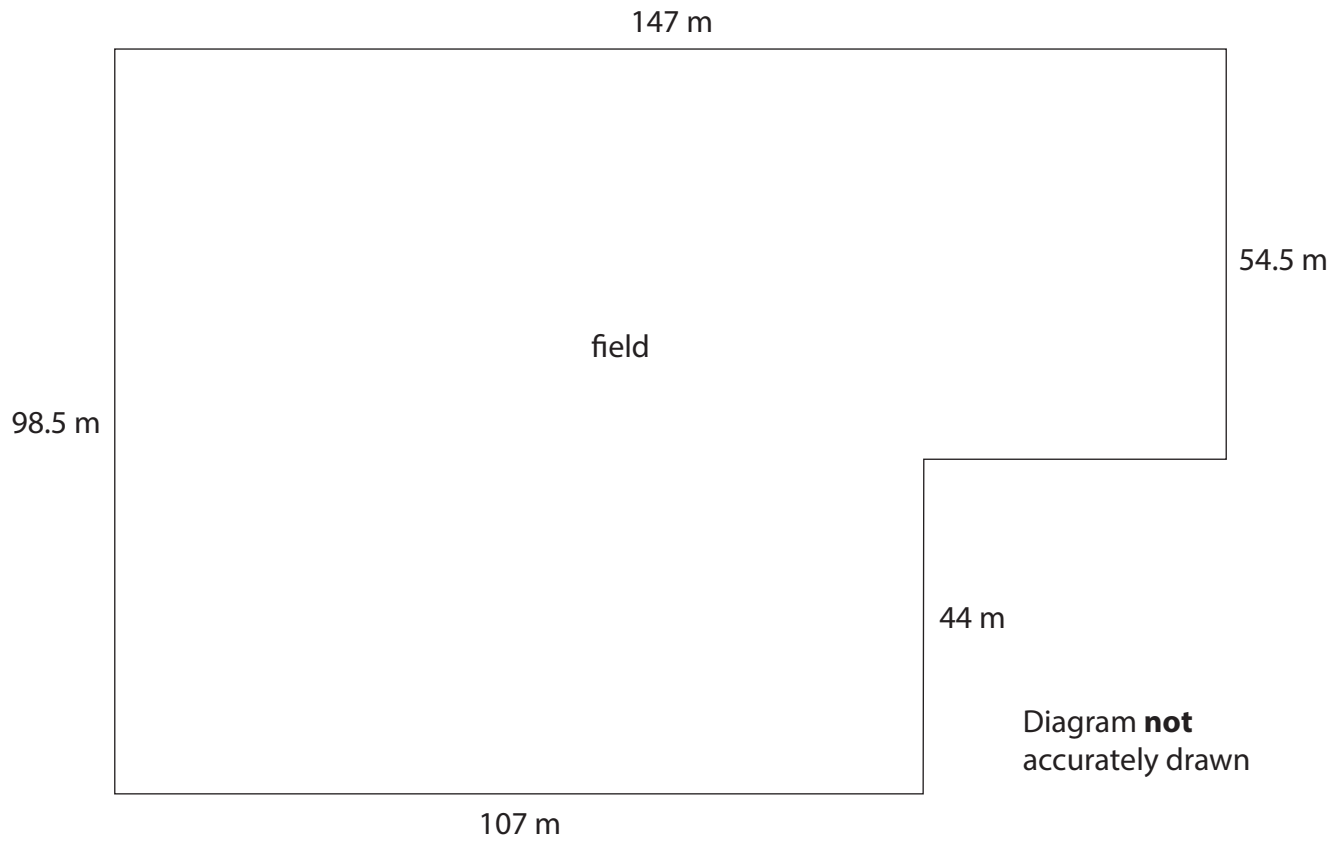
**PEARSON**

**SECTION A: Sheep farming**

**Answer all questions in this section.**

**Write your answers in the spaces provided.**

- 1 Martin is a farmer.  
He wants to keep sheep in one of his fields.  
The field is shown in the diagram below.



Martin wants to put fencing around the perimeter of the field.  
He needs to leave a 3 m gap for a gate.

Martin has 500 metres of fencing.

(a) Does Martin have enough fencing?

(4)

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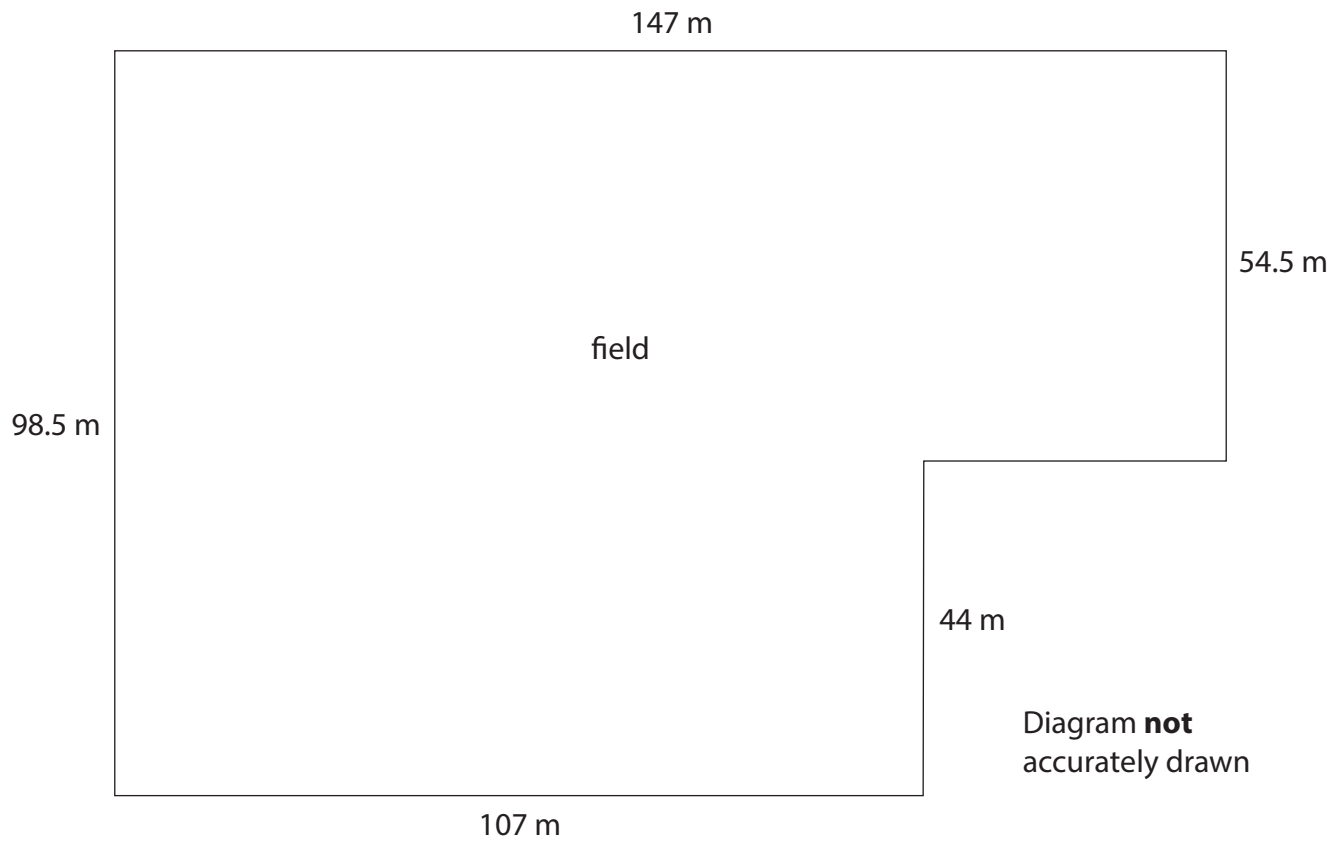
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Martin finds out he can keep 6 sheep per acre on this field.  
He wants to know the total number of sheep he can keep on this field.



Use 1 acre = 4050 m<sup>2</sup>

(b) How many sheep can Martin keep on this field?

(6)

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(Total for Question 1 is 10 marks)

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2 A ewe is a female sheep.  
Martin has 54 ewes.

The vet gives Martin a bottle of wormer to treat his ewes for worms.

The vet says

Use 2 ml of the wormer for each  
10 kg of body weight

The bottle of wormer contains 0.25 litres.

Martin wants to treat his ewes with the wormer.  
The average body weight of Martin's ewes is 23 kg.

(a) Does Martin have enough wormer for 54 ewes?

(3)

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

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Martin wants to check that one of his lambs is gaining enough weight.

He weighs the lamb each day for 6 days.

|                     | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 |
|---------------------|-------|-------|-------|-------|-------|-------|
| Weight of lamb (kg) | 4.56  | 4.79  | 5.04  | 5.31  | 5.49  | 5.80  |

Martin knows that lambs should gain a mean average of 250 g of weight per day.

(b) Has this lamb gained a mean average of 250 g of weight per day?

(3)

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

(Total for Question 2 is 6 marks)



**SECTION B: Football**

**Answer all questions in this section.**

**Write your answers in the spaces provided.**

- 3** Jason organises football leagues for senior players and junior players. All matches are on Saturday or Sunday.

Jason has to provide referees for all the matches in the leagues. Referees are qualified at different levels as shown in the table.

| <b>Referee level</b> | 5               | 6               | 7      |
|----------------------|-----------------|-----------------|--------|
| <b>Matches</b>       | senior & junior | senior & junior | junior |

Jason has this information about four referees.

**Mo**  
level 5 referee  
available any day  
email Mo@mo.web

**Chris**  
level 6 referee  
available on Saturday only  
email Chris@chris.web

**Paul**  
level 7 referee  
available on Saturdays only  
email Paul@paul.web

**Zaph**  
level 7 referee  
available any day  
email Zaph@zaph.web

Jason wants to organise all this information in a table.

On Saturday, he needs 2 junior referees and 3 senior referees.

On Sunday, he needs 2 junior referees and 3 senior referees.

Each referee can only run one match per day.

Design and fill in a table for Jason.

How many more referees at each level does Jason need each day?

(5)

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Use the box below to show your table and answer.

Empty box for showing the table and answer.

(Total for Question 3 is 5 marks)

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4 Jason keeps the league table up to date.

Here is part of the senior league table.

|                  | matches won | matches drawn | matches lost | goals for | goals against | goal difference | points |
|------------------|-------------|---------------|--------------|-----------|---------------|-----------------|--------|
| <b>Lancaster</b> | 1           | 1             | 1            | 5         | 4             | 1               | 4      |
| <b>Coppice</b>   | 1           | 1             | 1            | 4         | 4             | 0               | 4      |
| <b>Seaton</b>    | 1           | 0             | 2            | 5         | 5             | 0               | 3      |
| <b>Northway</b>  | 1           | 0             | 2            | 5         | 7             | -2              | 3      |

Teams in the league get  
 3 points for a match won  
 1 point for a match drawn  
 0 points for a match lost

Goal difference = goals for – goals against

There were only two matches on Saturday.

| <b>Match 1</b> |   | <b>Match 2</b> |   |
|----------------|---|----------------|---|
| Lancaster      | 3 | Seaton         | 2 |
| Coppice        | 1 | Northway       | 1 |

Update the league table for Jason.

(3)

Update the table below.

|  | matches won | matches drawn | matches lost | goals for | goals against | goal difference | points |
|--|-------------|---------------|--------------|-----------|---------------|-----------------|--------|
|  |             |               |              |           |               |                 |        |
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You may use the box below for your working.



**(Total for Question 4 is 3 marks)**

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5 Jason has this formula for working out the total cost to hire stewards for a match.

$$C = \frac{t}{250} \times 3.5h$$

where  $C$  is the total cost to hire stewards (£)

$t$  is the number of tickets sold

$h$  is the hourly rate of pay for the stewards (£)

Jason knows 1500 tickets have been sold for a match on Sunday.

He has a budget of £200 to pay the stewards.

Jason wants to pay the stewards as much as possible.

(a) What is the maximum hourly rate of pay Jason can afford to pay the stewards for this match?

Show a check of your working.

(4)

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

Use the box below to show your check.



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Jason has to go to a meeting at the Sports Council office.  
He needs to work out what time to leave home.

Jason will drive 40 miles from his home to the Sports Council office.  
He will drive at an average speed of 30 miles per hour.

The meeting starts at 1:00 pm.

Jason wants to arrive 20 minutes before the meeting.

(b) What is the latest time Jason can leave home?

(4)

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

(Total for Question 5 is 8 marks)



**SECTION C: Hair products**

**Answer all questions in this section.**

**Write your answers in the spaces provided.**

**6** Emma runs a network marketing agency.

Emma sells hair products directly to customers.  
She also has agents who sell hair products.

Emma gets a percentage of the sales value as commission every time she sells to a customer or an agent.

Her friend Claire wants to buy £135 of hair products.

Emma has two options.

Option 1: Sell the hair products to Claire as a customer and get 24% commission.

Option 2: Recruit Claire as an agent and get £25 plus 8% commission.

Emma thinks she will make more money on this sale if she chooses option 2

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

(3)

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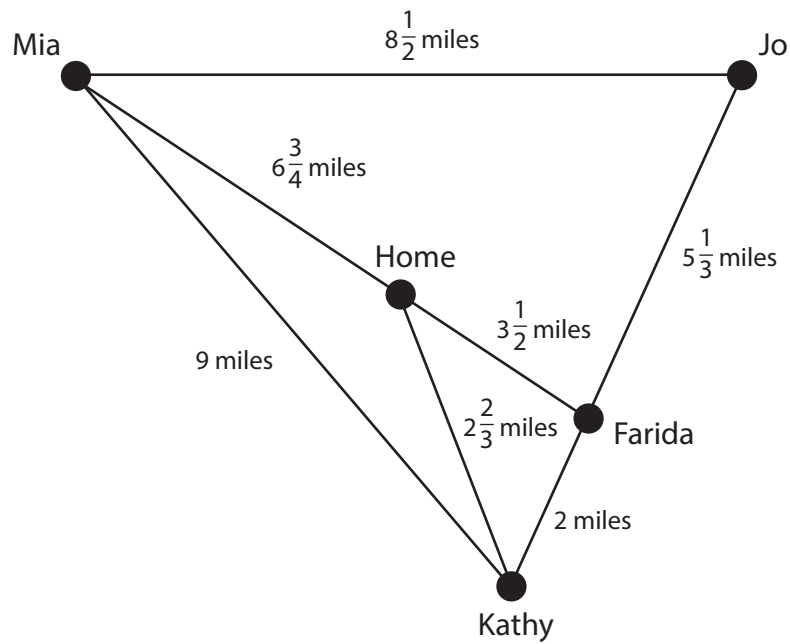
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Emma has to deliver hair products to 4 of her agents.  
She needs to start and finish at her home.

Emma uses this diagram to help her find a route.



- (b) Find a route for Emma.  
How far does she travel?  
Evaluate your route.

(3)

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

(Total for Question 6 is 6 marks)



- 7 Mia and Jo are agents for Emma.  
Emma keeps a record of their sales for 4 months.

|     | Jan  | Feb  | Mar  | Apr  |
|-----|------|------|------|------|
| Mia | £56  | £78  | £105 | £154 |
| Jo  | £123 | £231 | £94  | £156 |

Emma wants to draw a graph that can be used to compare their sales.

(a) Draw a graph for Emma.

(3)

Use the graph paper on page 17 to draw your graph.

(b) Write a comment to compare their sales.

(2)

Write your comment in the box below.

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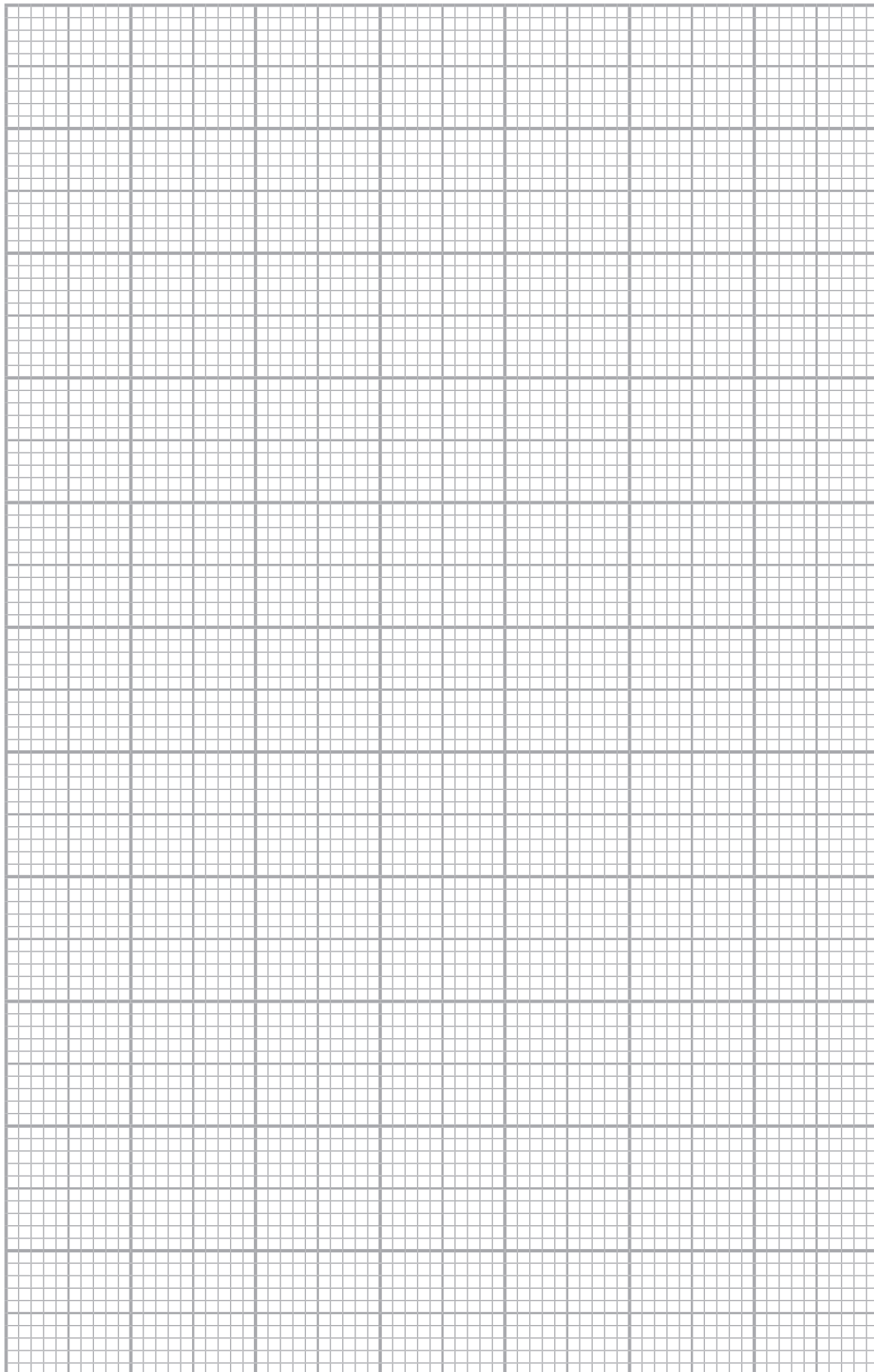
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(Total for Question 7 is 5 marks)



8 Emma is going to buy some hair products to sell to customers.

| Hair products   | Cost price | RRP   |
|-----------------|------------|-------|
| styling wax     | £6.50      | £7.99 |
| curling creme   | £5.50      | £6.99 |
| superhold spray | £5.00      | £5.99 |

Emma buys hair products for the cost price and sells them for the RRP (recommended retail price) to make a profit.

She wants to spend up to £50 on hair products.

What is the maximum profit Emma could make?  
Show how you have checked your working.

(5)

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



**(Total for Question 8 is 5 marks)**

**TOTAL FOR PAPER IS 48 MARKS**



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