

Write your name here

Surname

Other names

**Edexcel**  
**Functional Skills**

Centre Number

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Candidate Number

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# Mathematics

Level 2



18–22 March 2013

**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 **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: Castle Abbey

Answer all questions in this section.

Write your answers in the spaces provided.

- 1 Castle Abbey is open to the public.  
People can visit the house and the gardens.

Jess wants to visit the gardens at Castle Abbey.  
Here are the opening times.



	Times	Mon	Tue	Wed	Thu	Fri	Sat	Sun
<b>House</b>								
19 Feb – 24 Jul	11 – 5			✓	✓	✓	✓	✓
25 Jul – 11 Sep	11 – 5	✓		✓	✓	✓	✓	✓
14 Sep – 30 Oct	11 – 5			✓	✓	✓	✓	✓
<b>Gardens</b>								
1 Jan – 18 Feb	11 – 4				✓	✓	✓	✓
19 Feb – 30 Oct	10 – 5.30	✓	✓	✓	✓	✓	✓	✓
2 Nov – 31 Dec	11 – 4			✓	✓	✓	✓	✓

✓ Open                      House also open on bank holidays

Jess wants to visit the gardens on a Tuesday in August.

(a) What times are the gardens open on Tuesdays in August?

(1)

Write your answer in the box below.



A school is going to take some children to Castle Abbey.  
Adults must go on the visit with the children.

The school needs to organise the adults and the children into groups.

- There are 44 children in total.
- Each adult can supervise up to 10 children.
- The maximum group size is 12 people.
  
- Two children each have their own adult carer.
- These adult carers cannot supervise any other children.

The school wants the smallest number of groups.

(b) Organise the adults and the children into groups for the visit.

(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.

**(Total for Question 1 is 5 marks)**



2 Lottie plans tours at Castle Abbey.

On Wednesday, 3 groups will tour the house and gardens.

### Castle Abbey tours

Tours start at 11:00

The house has 3 floors.

Only one group is allowed on a floor at the same time.

The groups have 20 minutes on each floor.

They can visit the floors in any order.

Each group also does one 30 minute practical activity.

There will be a 45 minute lunch break.

Groups can spend free time in the gardens.

The tours must finish at 14:30

Lottie needs a time plan for the tours on Wednesday.

The time plan must show

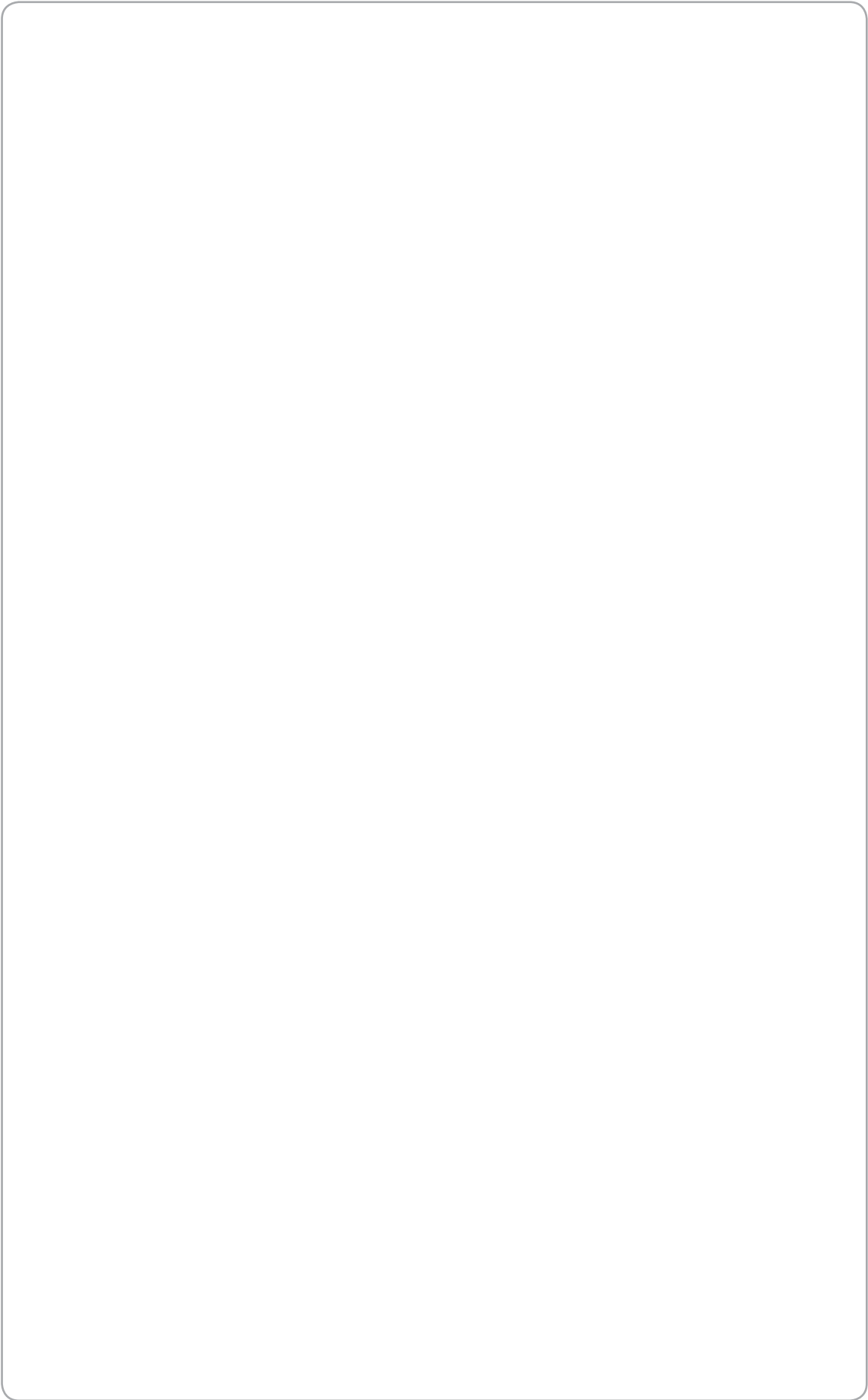
- the start time for each group on each floor
- the start time for the practical activity
- the start time for the lunch break
- time spent in the gardens.

(a) Make a time plan for the 3 groups for Lottie.  
Check that your plan is correct.

(4)



Use the box below to show your time plan.



A practical activity at Castle Abbey is making spice bags.

School groups visit on 84 days each year.

Up to 20 children a day each make a spice bag.

Each spice bag uses:

$\frac{1}{4}$  teaspoon cinnamon     $\frac{1}{2}$  teaspoon cloves     $\frac{1}{4}$  teaspoon nutmeg



1 teaspoon of nutmeg = 3 g of nutmeg

Lottie orders 2 kg of nutmeg for next year.

(b) Is 2 kg of nutmeg enough for one year?

(5)

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

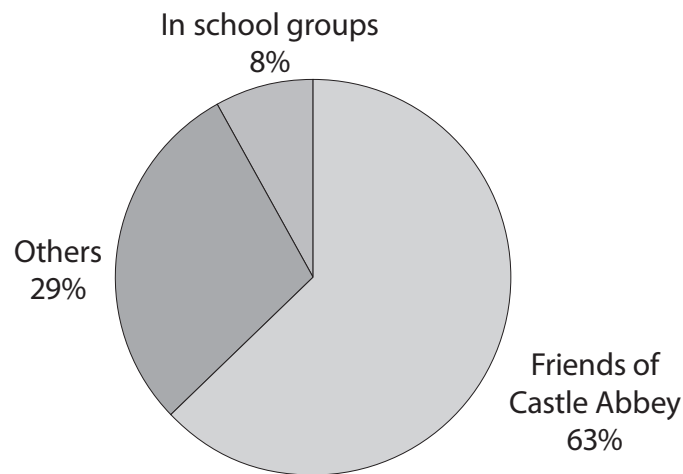


(Total for Question 2 is 9 marks)



- 3 The manager at Castle Abbey produces a report each year.  
The report has a pie chart of the type of visitors for each month.

**Visitors in June last year**



The total number of visitors for June last year was 7275  
The number of visitors in school groups in June this year was 612

Lottie says

'There are more visitors in school groups in June this year than in June last year.'

Is Lottie correct?  
Show why you think this. (2)

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



**(Total for Question 3 is 2 marks)**



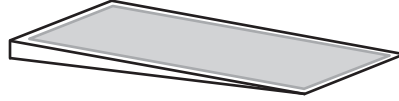
## SECTION B: Theatre

Answer all questions in this section.

Write your answers in the spaces provided.

- 4 Ravi works in a local theatre.  
He has a ramp for wheelchair users.

Here is the formula to find the length of a ramp.



$$L = \frac{H \times 100}{S}$$

L = length of ramp in m

H = height of step in m

S = slope in %

The height of the step is 0.3 m

A ramp for wheelchair users must have a slope of 8% or less.

The ramp in the theatre has a length of 4 m

Is this ramp suitable for wheelchair users?  
Show why you think this.

(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 work.

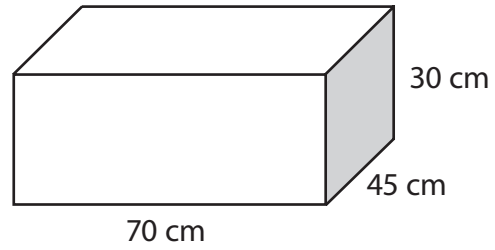
**(Total for Question 4 is 3 marks)**



5 Ravi builds scenery for the theatre.  
He needs to build a box.

The box is a cuboid with

length 70 cm  
width 45 cm  
height 30 cm



Ravi needs a sketch of a net of the box.  
The sketch does not need to be to scale.

(a) Draw a sketch of the net of the box.  
Write the dimensions clearly on your sketch.

(2)

Draw your sketch of the net in the space below.



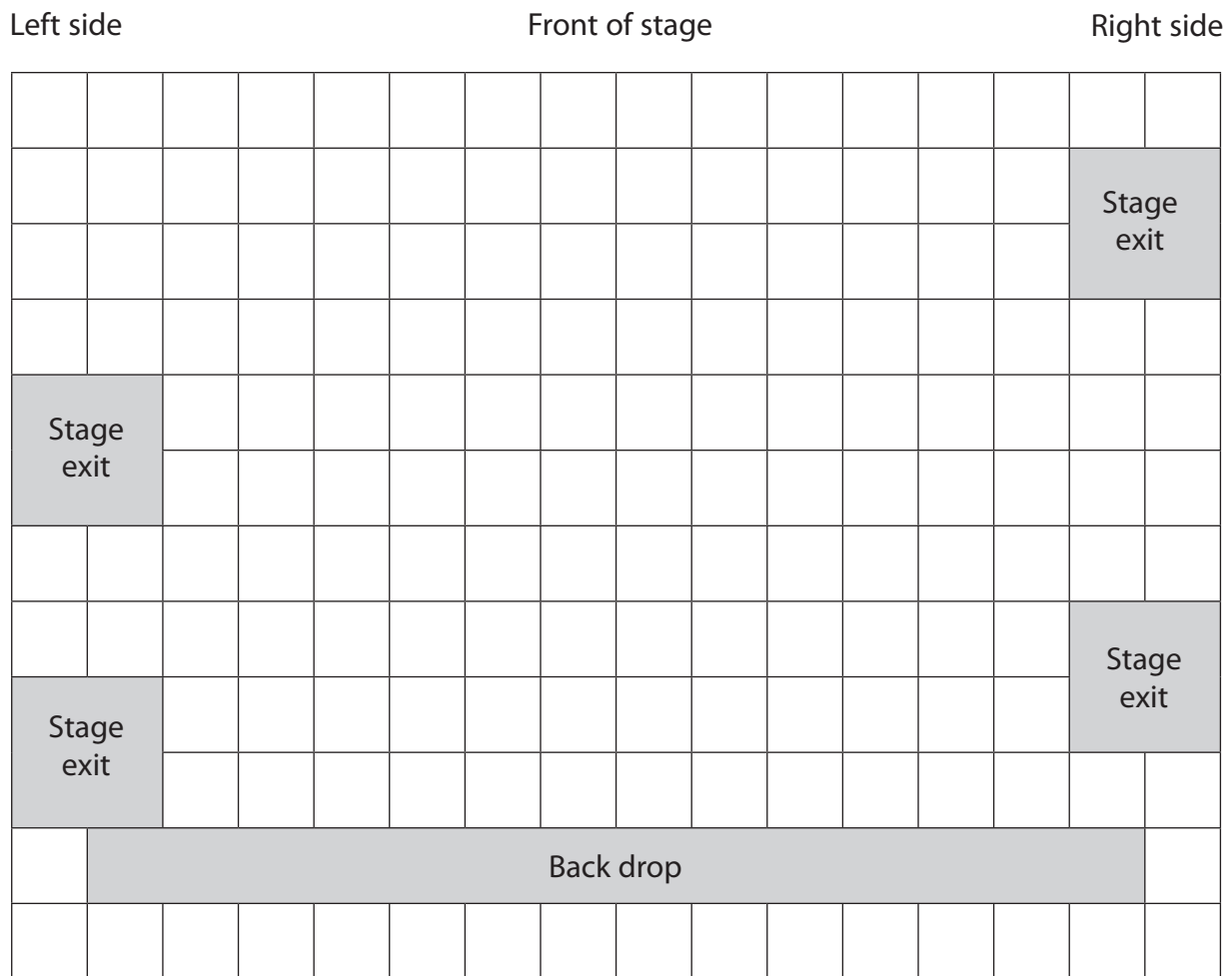
Ravi needs to place a seat on the stage.  
The seat needs a rectangular space 50 cm by 75 cm.

Ravi knows that the seat must be

- at least 1 m from a stage exit
- 1.5 m from the front of the stage.

Ravi draws a plan of the stage on a grid.

(b) Draw the space for the seat on the grid. (3)



Key: 1 cm on the grid = 0.5 m on the stage

(Total for Question 5 is 5 marks)



6 Zack organises a group trip to the theatre to see a musical.

**Ticket prices**

**Adults** £12.50 each

**Concessions** £11.00 each

**Children** £9.50 each

**Groups 10 +** £10.50 each

The group is 2 adults, 3 concessions, and 6 children.

Zack says 'I will save £2.50 if I buy group tickets.'

(a) Is Zack correct?

Show a check of your working.

(5)

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



Zack drives to the theatre.  
He arrives at 2.00 pm and buys a parking ticket.

Charges apply between 8 am and 6.30 pm

Up to 1 hour	1 to 3 hours	3 to 4 hours	4 hours +
70p	£1.80	£2.70	£4.50

Zack knows

- the musical starts at 2.30 pm
- it lasts for 135 minutes
- he needs 20 minutes to walk back to the car park.

(b) How much should Zack pay for parking?

(3)

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



(Total for Question 6 is 8 marks)



## SECTION C: Football

Answer all questions in this section.

Write your answers in the spaces provided.

7 Su is captain of a football team.

The team is going to play these games this season:

- 2 home games each month from September to May.
- 2 away games each month from September to May.
- 2 home games in August.

The table shows the costs for each game.

	Pitch hire	Refreshments
Home	£45 per team	£4.50 per player
Away	£50 per team	£1.50 per player

The 11 players pay at each game to cover the costs.

Su wants them to pay the same amount for home games and away games.

She needs to work out how much each player should pay at each game.

How much should each player pay at each game?

(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 Su wants to compare her team with other local teams.

Su has this information at the end of the season.

	Su's team	Pumas	Charlie's Rangers	Ashwell
Goals for	0.96	1.39	0.97	1.07
Goals against	1.30	1.89	1.59	1.79

**Goals for** is the average number of goals scored per game by each team.

**Goals against** is the average number of goals scored per game against each team.

Su wants to put this information on the team's website.

(a) Write a comment about Su's team performance to put on the website.

(1)

Write your comment in the box below.

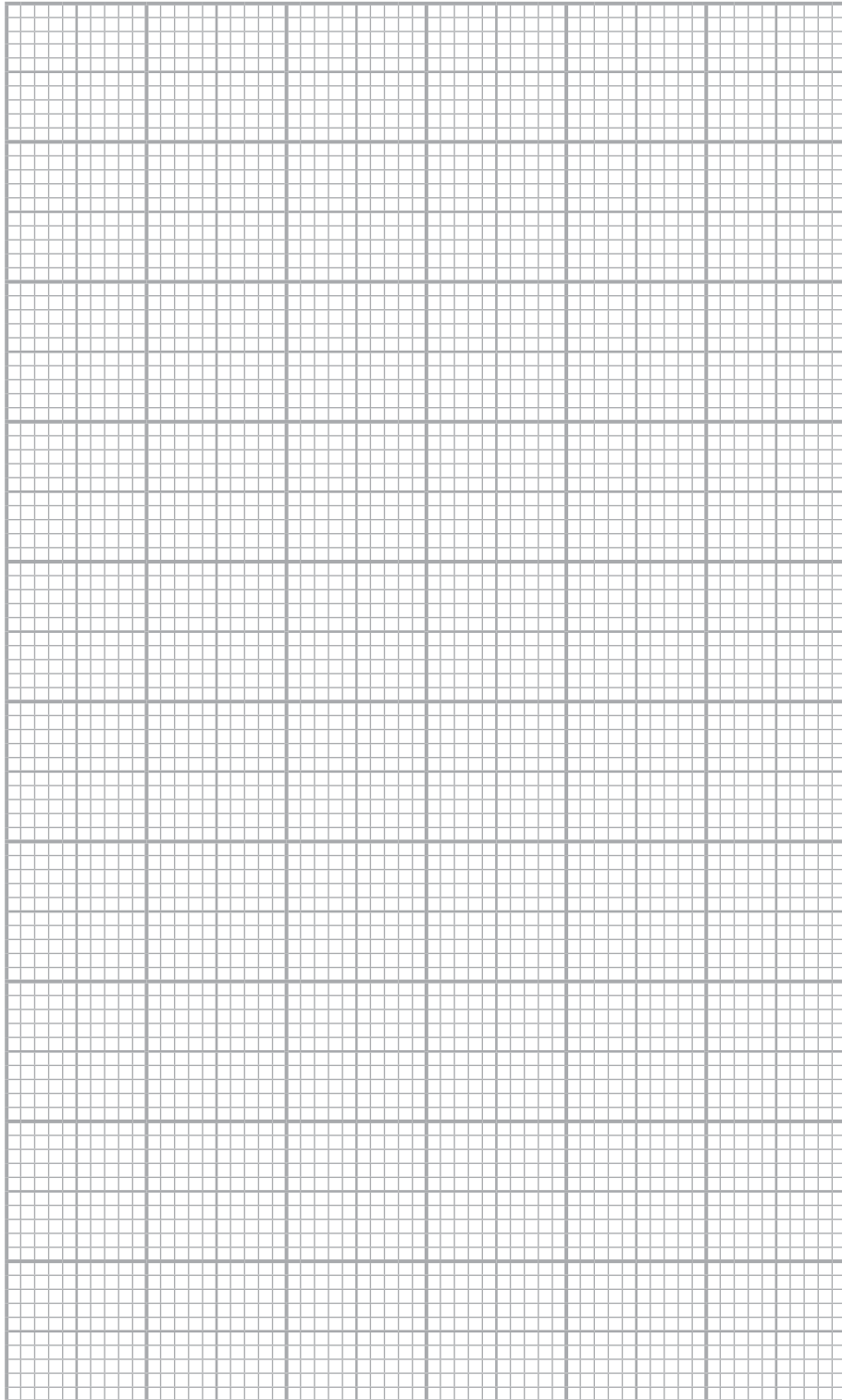
Su also wants to display the information in a graph or chart.

(b) Draw a graph or chart for Su.

(3)







Su wants to compare her performance with other strikers for the website.

The table shows the number of goals scored by other strikers last season.

	<b>Meg</b>	<b>Helen</b>	<b>Katy</b>	<b>Mo</b>	<b>Jessie</b>	<b>Lyn</b>
<b>Goals scored</b>	11	10	8	8	20	16

Su scored 12 goals last season.

She calculates the average number of goals scored by the other strikers.

Su wants to use the average that makes her performance look better.

(c) Does the mean or the median make Su's performance look better?  
Explain your answer.

(4)

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

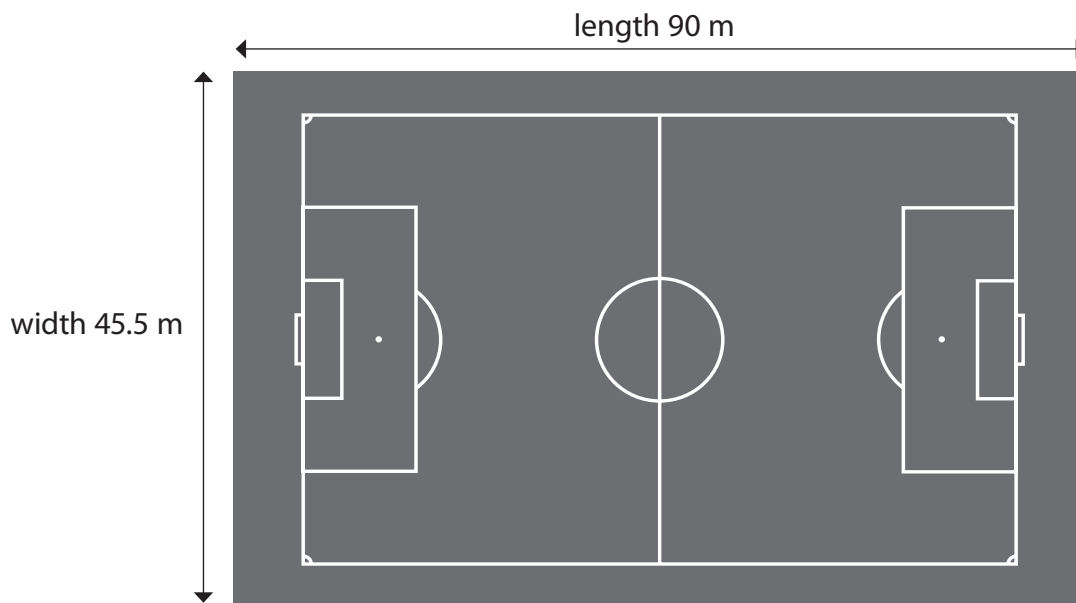


**(Total for Question 8 is 8 marks)**



9 Cale looks after the football pitch.

He needs to know the area of the pitch in hectares to put weed killer on the grass.



Cale thinks the area of this pitch is less than 5 hectares.

Use  $1000 \text{ m}^2 = 1 \text{ hectare}$

Is Cale correct?  
Show why you think this.

(3)

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



A large empty rectangular box for writing the answer.

(Total for Question 9 is 3 marks)

TOTAL FOR PAPER IS 48 MARKS



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