Write your name here

Surname		Other names

Centre Number	Candidate Number

Mathematics
Level 2

7–11 October 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 ▶

P 4 4 2 9 4 A 0 1 2 0

PEARSON

Section A: Dog club

Answer all questions in this section.

Write your answers in the spaces provided.

1 Anca organises a dog club.

This year 87 people have paid the club membership fee.
The club membership fee is £9.50

Anca thinks it is going to cost £920 in total to run the club next year.

Anca wants to keep the fee the same next year.
She thinks she needs more than 87 people to pay the fee next year.

(a) How many more people does Anca need to pay the fee next year?

(3)

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

Gerald organises dog agility shows for the dog club.
Here are the heights in cm of dogs in the first competition.

Dog	A	B	C	D	E	F	G	H
Height (cm)	30	31	33	40	37	32	38	41

Gerald says

> Dogs that are taller than the mean average height are more likely to win.

(b) Which dogs are taller than the mean average height?
    Show a check of your answer.

(4)

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

Check your answer in the box below.

(Total marks for Question 1 is 7 marks)

2 Anca sells space for adverts in the show programme.
She uses this formula to calculate the cost of each advert.

$$C = 10 + 4N + 2L$$

C = cost in £
N = number of columns
L = length of advert in cm

A local vet has a budget of £50 for a full page advert.

Anca knows that a full page is

- 5 columns
- 14 cm in length.

(a) Can the vet afford the full page advert?

(3)

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

Gerald needs to record the points at the dog agility show.
The dogs are scored for

- Time faults
- Missed contact
- Off course
- Run out.

Gerald needs a sheet to record the scores for 4 dogs.
Each dog does 2 rounds in the competition.

(b) Design a score sheet for 4 dogs in 2 rounds.

(3)

Use the box below to show your score sheet.

(Total marks for Question 2 is 6 marks)

3 Gerald designs an agility course for the show.
The course has obstacles for the dogs.

Gerald draws a map of the course on a grid.
He draws each obstacle to scale.

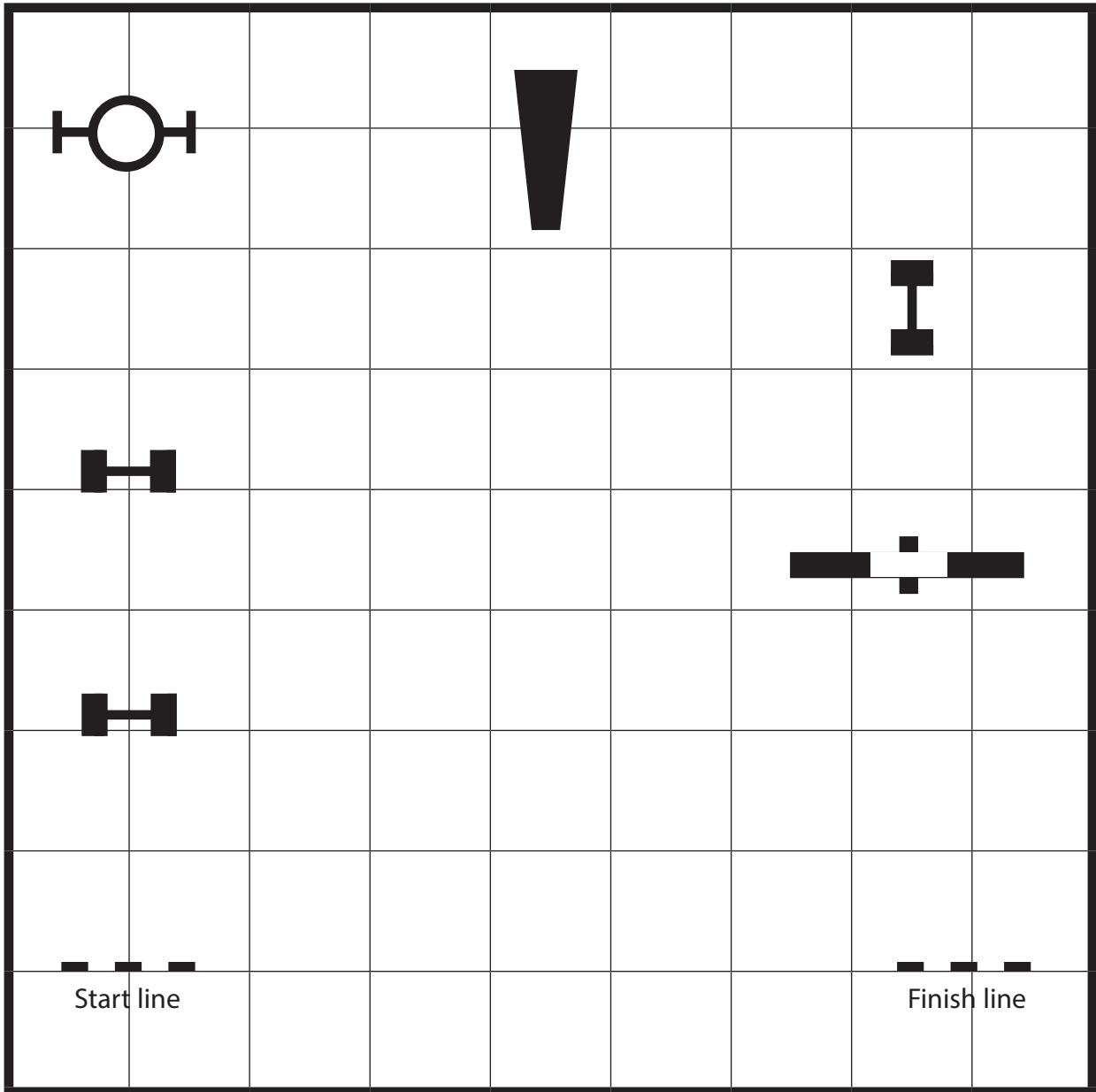He needs to put a 'dog walk' obstacle on the grid.

The 'dog walk' obstacle must

- have a rectangular space 3 ft wide and 30 ft long
- be at least 20 ft away from the fence
- be at least 15 ft away from any other obstacle.

Draw the space for the 'dog walk' on the grid.

(3)

Start line

Finish line

Key: 1 square on the grid is 10 ft by 10 ft on the course

fence

(Total for Question 3 is 3 marks)

Section B: The cinema

Answer all questions in this section.

Write your answers in the spaces provided.

4 Daniel is the manager of a small cinema.
He plans times for the films.

For his cinema, Daniel knows

- U rated films end before 18:00
- 18 rated films start after 18:30
- Sinking Ship must go in screen 1

He must leave a 15 minute gap after each film for cleaning.
Films must not start at the same time.

These are the films Daniel must add to the plan for Tuesday.

Film title	Length of film	Rated
Happy Hippo	2 hours 15 min	U
Sinking Ship	2 hours 30 min	PG
Magic Lamp	1 hour 45 min	12
Dark Shadow	1 hour 30 min	18

Daniel must show clearly on the plan

- the start and end time of each film
- the cleaning time at the end of each film.

Complete the plan for Daniel.

(5)

Time	Tuesday		
	screen 1	screen 2	screen 3
14:00			
14:30		↕ Jungle Song	
15:00			
15:30			
16:00		↕ Cleaning	
16:30			
17:00			↕ Space Battle
17:30			
18:00		↕ Storm	
18:30			↕ Cleaning
19:00			
19:30			
20:00		↕ Cleaning	
20:30			
21:00	↕ Horror Show		
21:30			
22:00			
22:30			
23:00	↕ Cleaning		

(Total for Question 4 is 5 marks)

Turn over ▶

5 Nina has £10 to spend on snacks at the cinema shop.

She chooses

large cola	£3.20
popcorn	£3.70

pick and mix sweets

£1.45 for 100 g

She also wants

pick and mix sweets   350 g

Can Nina afford the large cola, the popcorn and 350 g of pick and mix sweets?

(4)

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

(Total for Question 5 is 4 marks)

6 Daniel is going to sell reduced salt popcorn.

He knows that standard popcorn has 1.5 g of salt per portion.
Reduced salt popcorn is made with 55% less salt.

Daniel thinks 150 portions of reduced salt popcorn need 130 g of salt.

(a) Is Daniel correct?
Show why you think this. **(4)**

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

Daniel wants a new design for the boxes of reduced salt popcorn.
He organises a competition for children to design the new box.

He needs a net of a box for children to draw their designs.

The box is a cuboid with

- a square base 80 mm by 80 mm
- a height of 200 mm
- no lid.

(b) Draw a sketch of the net of the box.
Write the dimensions clearly on your sketch. **(2)**

Draw your sketch in the space below.

Daniel can buy card in four sizes.

Type	Size	Tick
A4	210 mm by 297 mm	
A3	297 mm by 420 mm	
A2	420 mm by 594 mm	
A1	594 mm by 841 mm	

(c) What size card should Daniel use for the net of the box?

(1)

Tick the correct size of card.

(Total for Question 6 is 7 marks)

7 Gurbinder works at the Tower theme park.
He sells slush drinks.

Slush drink is made from 1 part syrup to 7 parts water.

Gurbinder thinks he needs 2 litres of syrup to make 16 litres of slush drink.

Is Gurbinder correct?
Show why you think this. **(3)**

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

(Total for Question 7 is 3 marks)
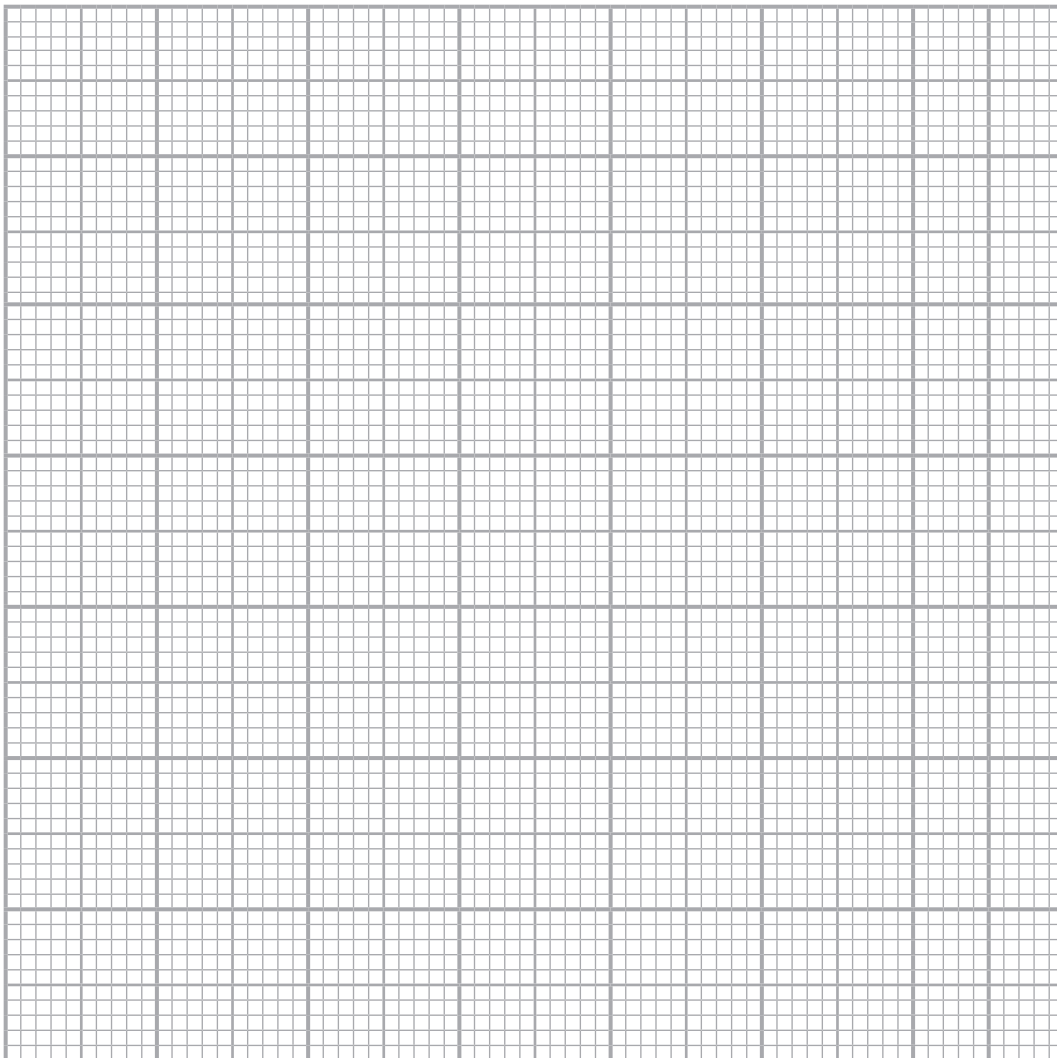
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8 Joy is a manager at Tower theme park.
She has to write a report about visitor numbers.

Joy gets this information from the ticket office.

	Summer visitors (000s)		
Year	**June**	**July**	**August**
2012	333	352	362
2013	345	375	391

(a) Draw a graph or chart for Joy.

(3)

Joy wants to report on how many people can go on a new ride.

She has this information about the ride.

- 36 people can go in each train on the ride
- A train goes every 3 minutes on average

- The first ride goes at 9:30 am
- The last ride goes at 8 pm

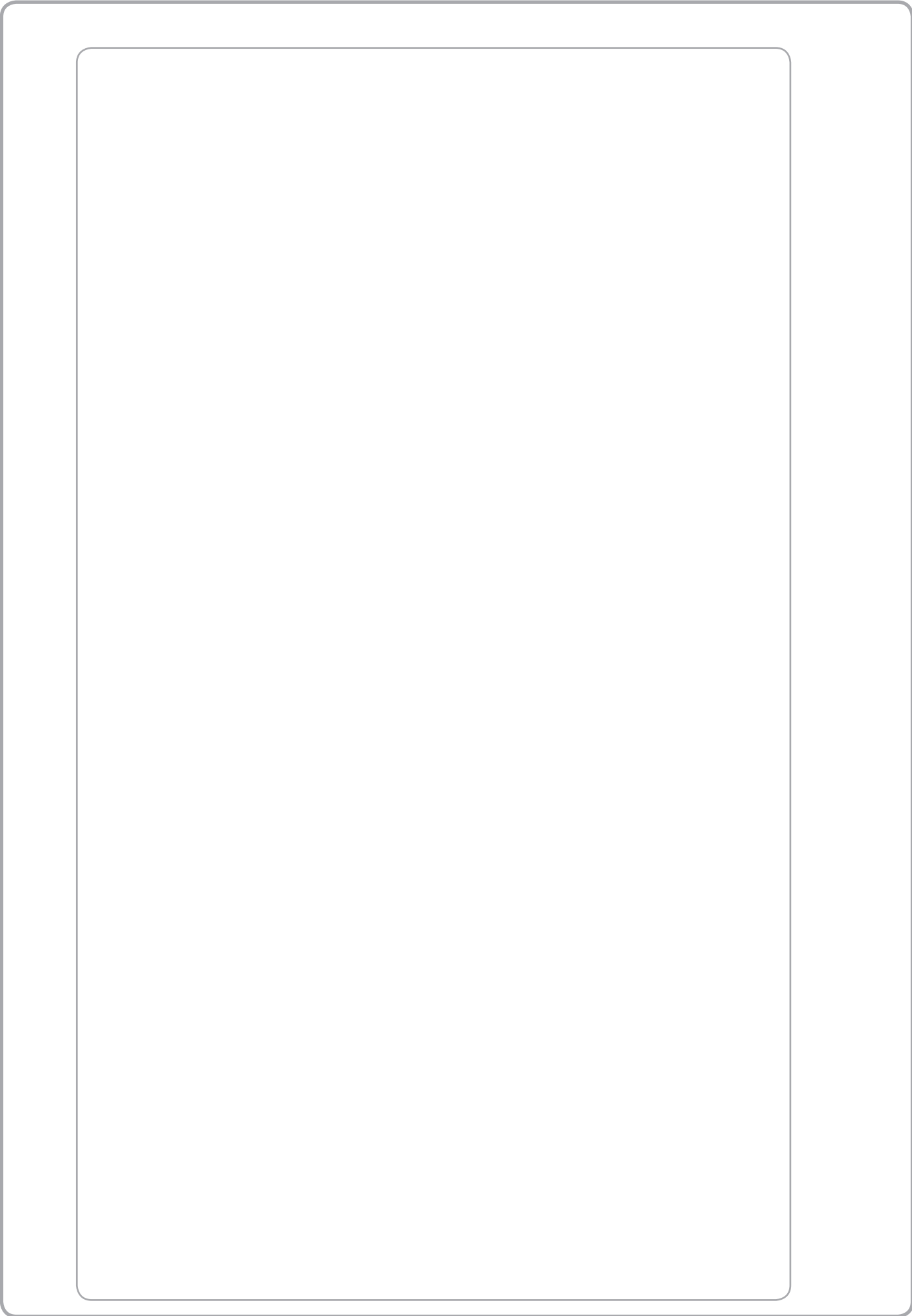(b) How many people can go on the ride in one day?

(5)

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

Joy wants to compare the number of visitors at Tower theme park with the number of visitors at Manor theme park in her report.

Here are the visitor numbers for Tower theme park and Manor theme park for 2013.

Year 2013	Visitors (000s)		
	June	July	August
Tower theme park	345	375	391
Manor theme park	230	242	249

(c) Write a statement to compare the visitor numbers at the two theme parks for 2013.

(1)

Write your statement in the box below.

(Total for Question 8 is 9 marks)

9 Joy plans the number of car park attendants needed at the theme park.
She thinks 21,000 people will visit the theme park on Saturday.

Joy knows
90% of these people come to the theme park by car
the average number of visitors in each car is 4.

A car park attendant is needed for every 400 cars at the theme park.

How many car park attendants must Joy plan to work on Saturday?

(4)

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

(Total for Question 9 is 4 marks)

TOTAL FOR PAPER = 48 MARKS

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