

Write your name here

Surname

Other names

Pearson
Edexcel GCSE

Centre Number

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Candidate Number

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Statistics

Paper 1F

Foundation Tier

Thursday 18 June 2015 – Afternoon

Time: 1 hour 30 minutes

Paper Reference

5ST1F/01

You must have:

Ruler graduated in centimetres and millimetres, protractor, pen, HB pencil, eraser, electronic calculator.

Total Marks

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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.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*

Information

- The total mark for this paper is 80.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed – *you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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PEARSON

Foundation Tier Formulae

**You must not write on this page.
Anything you write on this page will gain NO credit.**

Mean of a frequency distribution $= \frac{\sum fx}{\sum f}$

Mean of a grouped frequency distribution $= \frac{\sum fx}{\sum f}$, where x is the mid-interval value.



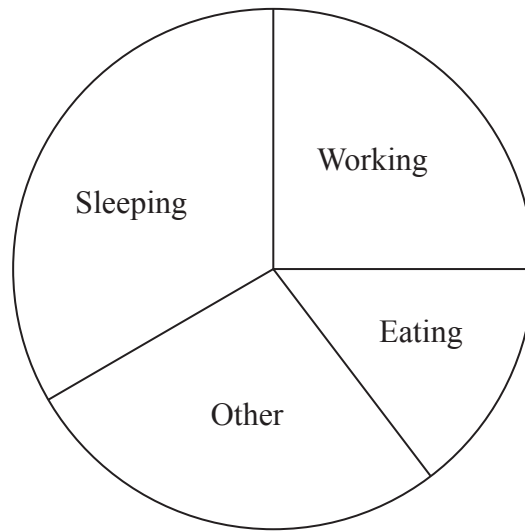
Answer ALL the questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 Alan records how he spends all the hours during one week.

The pie chart represents this information.



(a) What did Alan spend most hours doing?

.....
(1)

(b) Write down the fraction of the pie chart that represents working.

.....
(1)

(c) Estimate the average number of hours per day Alan was working.

..... hours
(1)

(Total for Question 1 is 3 marks)



2 The list shows the numbers of children in a sample of families in a town.

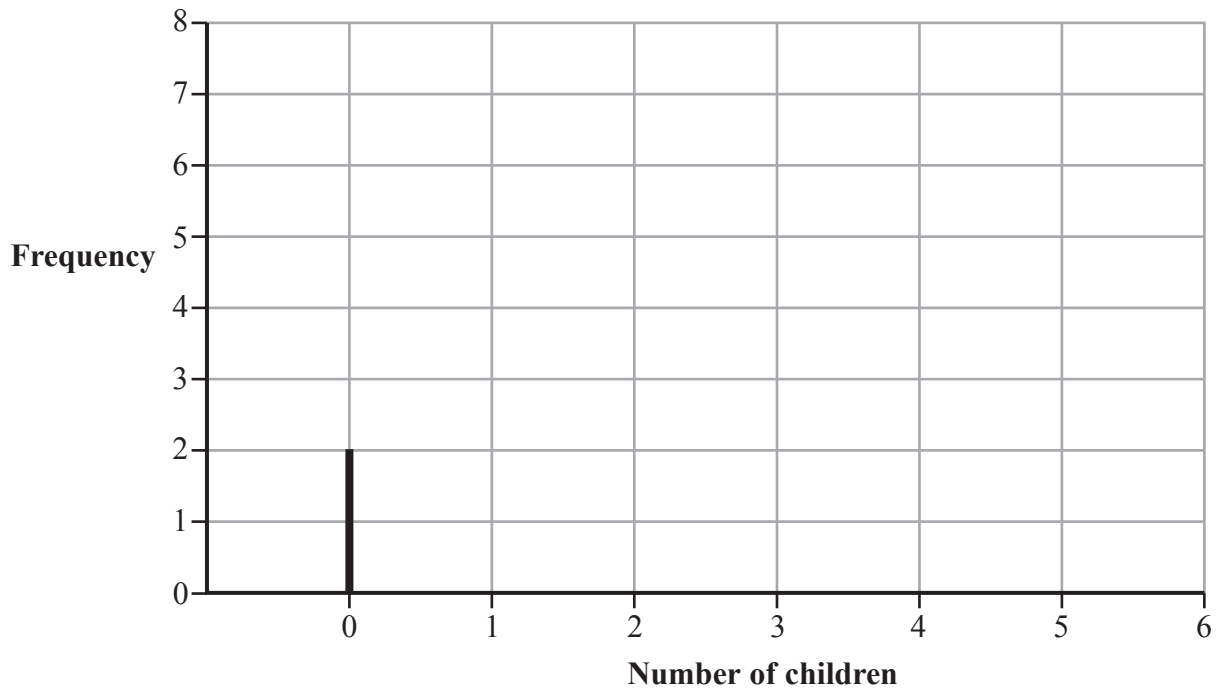
2 2 0 1 1 1 4 2 3 1 3 2 6 1 0 1

(a) Fill in the tally chart for this information **and** complete the frequency column.

Number of children	Tally	Frequency
0		2
1		
2		
3		
4		
5		
6		

(2)

(b) Complete the vertical line graph for this information.



(2)



(c) Find the total number of families in this sample.

.....
(1)

(d) Work out the mean number of children.

.....
(2)

A journalist is investigating the numbers of children in families in the town.

(e) Suggest a different average she could use instead of the mean.

.....
(1)

The journalist takes a new sample of 100 families in the town.

(f) Estimate the total number of children in these families.

.....
(1)

(Total for Question 2 is 9 marks)



3 Zoe thinks the cost of a concert ticket depends on how long the concert lasts.
She investigates this for a sample of concerts during one year.

(a) Write down a hypothesis Zoe can use.

.....
..... (1)

(b) Write down two variables Zoe needs to use.

Variable 1
Variable 2 (2)

(c) Suggest a suitable diagram to help Zoe decide if her hypothesis is correct.



..... (1)


(Total for Question 3 is 4 marks)



4 The pictogram gives some information about the number of people staying at a campsite one night.

Each person stayed in a tent or in a caravan or in a campervan.

Tent	
Caravan	
Campervan	

Key:
 = 2 people

12 people stayed in campervans that night.

(a) Complete the pictogram.

(1)

(b) Compare the number of people staying in campervans to the number of people staying in tents.

Give a reason for your answer.

.....

.....

.....

(2)

The campsite only makes a profit if at least 40 people stay each night.

*(c) Did the campsite make a profit that night?

(2)

(Total for Question 4 is 5 marks)



- 5 The table shows information about the amount of honey eaten in some EU countries in 2003, in 2005 and in 2007

Year	2003		2005		2007	
Honey eaten	Total (thousand tonnes)	Per person (kg)	Total (thousand tonnes)	Per person (kg)	Total (thousand tonnes)	Per person (kg)
Germany	96,050	1.16	90,741	1.10	95,506	1.16
United Kingdom	27,914	0.47	32,383	0.54	36,069	0.59
France	28,457	0.46	31,462	0.50	34,869	0.55
Spain	34,028	0.82	31,867	0.74	28,927	0.65
Italy	18,879	0.33	23,210	0.40	18,803	0.32
Greece	16,643	1.51	18,318	1.65	18,151	1.62
Poland	15,725	0.41	14,847	0.39	16,192	0.42
Austria	10,739	1.33	9,825	1.20	9,876	1.19
The Netherlands	7,876	0.49	6,272	0.38	7,890	0.48
Portugal	7,513	0.72	6,319	0.60	6,234	0.59
Sweden	6,017	0.67	6,015	0.67	6,067	0.67
Ireland	1,314	0.33	1,822	0.44	1,906	0.44
Hungary	4,000	0.39	4,300	0.43	1,800	0.18

Source: CBI Market Information Database

- (a) Write down the total amount of honey eaten in Ireland in 2007

..... thousand tonnes
(1)



The amount of honey eaten per person in Germany was more than 1 kg in each of the 3 years.
This is the same for two other countries.

(b) Which two countries?

..... and (1)

(c) Compare the trend in the total amounts of honey eaten in France with the trend in the total amounts of honey eaten in Spain between 2003 and 2007

.....
.....
.....
..... (2)

(Total for Question 5 is 4 marks)



6 A fair dice is rolled once.

(a) Explain what is meant by the dice being 'fair'.

.....
.....
(1)

(b) Write down the probability of scoring 6

.....
(1)

A fair red dice and a fair blue dice are rolled at the same time.

The two scores are added to give a total score.

The table shows the total scores for all possible outcomes.

		Blue dice					
		1	2	3	4	5	6
Red dice	1	2	3	4	5	6	7
	2	3	4	5	6	7	8
	3	4	5	6	7	8	9
	4	5	6	7	8	9	10
	5	6	7	8	9	10	11
	6	7	8	9	10	11	12

(c) Find the probability

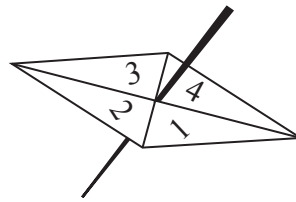
(i) that the total score is 6,

.....
.....
(2)

(ii) that the two dice show the same score.



A fair coin, with sides numbered 1 and 2, and a fair four-sided spinner numbered 1, 2, 3 and 4 are used in a game.



To play the game, a person throws the coin once and spins the spinner once. The number the coin shows and the number the spinner lands on are added to get a total score.

(d) Complete the sample space diagram for the coin and the spinner to show all the possible total scores.

		Spinner			
		1	2	3	4
Coin	1				
	2				

(1)

Rajesh plays the game.

To win the game he needs to get a total score of at least 5

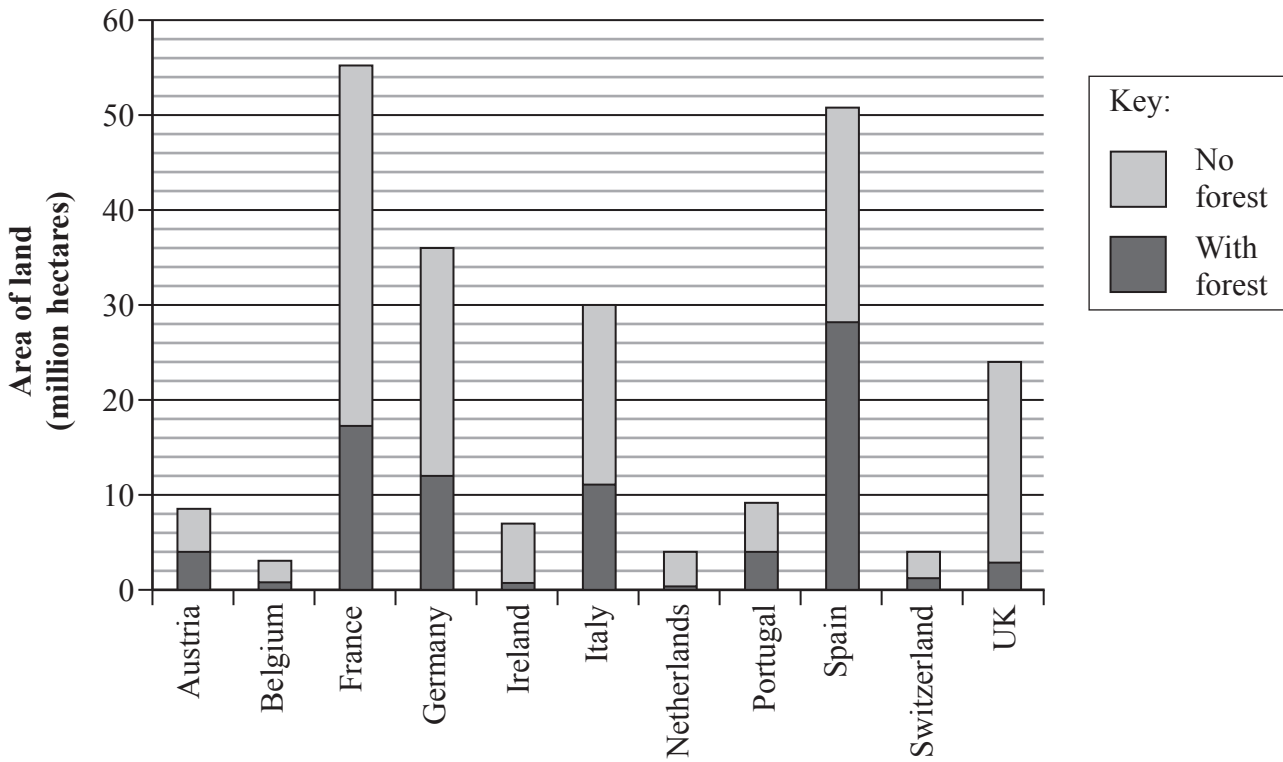
(e) Find the probability that Rajesh wins the game.

.....
(2)

(Total for Question 6 is 7 marks)



7 The composite bar chart shows information about the area of land with forest and the area of land with no forest in some countries.



Source: fao.org

(a) Write down the country

(i) with the largest total area of land,

.....

(ii) with the largest area of forest.

.....

(2)

(b) Work out the area of land with no forest in the UK.

..... million hectares

(2)

(Total for Question 7 is 4 marks)



- 8 Felix knits jumpers to sell online.
 He knits patterned jumpers and plain jumpers.
 He knits some of the jumpers for males and some of the jumpers for females.

The two-way table shows information about the jumpers Felix sold last year.

	Patterned	Plain	Total
Male	8	12	
Female	56		80
Total			100

- (a) Complete the two-way table.

(2)

Felix uses this information to predict future sales.

- (b) Estimate the probability that the next jumper he sells will be patterned.

.....
(1)

Felix thinks he will sell one jumper next week.

He says there is a more than evens chance that the jumper will be for a female.

- (c) Is Felix correct?

You must explain your answer.

(2)

(Total for Question 8 is 5 marks)



9 A new train line is planned to go near to a small town.

David wants to find out what people living in the town think about this train line.

He is going to send a questionnaire to all the homes in the town.

David thinks using questionnaires is better than using a telephone survey.

(a) Give one reason why David thinks this.

(1)

David wants to put the two questions below on the questionnaire.

Question A

How far do you live from where the new train line is going to be built?

Question B

Do you think that the new train line will

- be too expensive to build?
- not be needed?
- spoil the area?
- be too noisy?

Tick every answer you agree with.

Both Question A and Question B are **not** good questions.

(b) Give one reason why for each question.

Question A

.....

.....

Question B

.....

.....

(2)



David wants to check if the questionnaire will work.
Then he can send it to each home.

*(c) How can David check if the questionnaire will work?

Explain your answer.

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(3)

(Total for Question 9 is 6 marks)



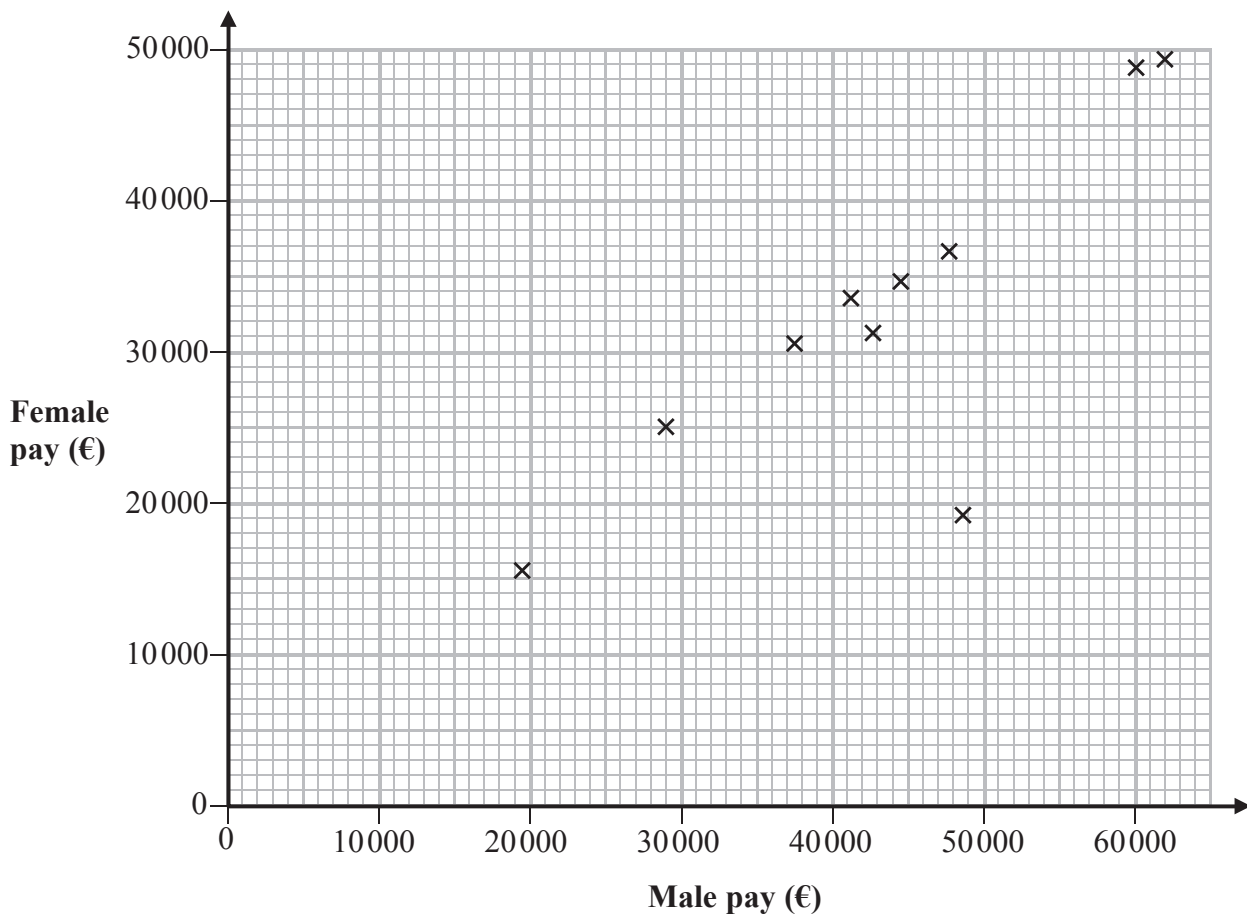
P 4 4 8 1 3 A 0 1 5 2 4

10 The table shows the average gross pay, in euros (€), for males and for females in ten countries in 2010

Country	Average gross pay (€)	
	Male	Female
Denmark	62 120	49 254
Germany	44 465	34 740
Ireland	48 459	19 177
Spain	29 009	25 101
France	37 627	30 406
Netherlands	47 373	36 696
Portugal	19 424	15 299
Sweden	41 311	33 305
United Kingdom	42 710	31 115
Switzerland	60 135	48 972

Source: Eurostat

The data have been plotted on the scatter diagram.



Here is a list of statistical words.

- | | | | | | |
|------|--------------|-----------|---------|-----------|-------------|
| rank | quantitative | dependent | primary | bivariate | categorical |
|------|--------------|-----------|---------|-----------|-------------|

(a) Circle the **two** words that describe the data on pay for the scatter diagram. (2)

* (b) Using information from the table and the scatter diagram, discuss the relationship between male pay and female pay in these ten countries.

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(3)

(Total for Question 10 is 5 marks)

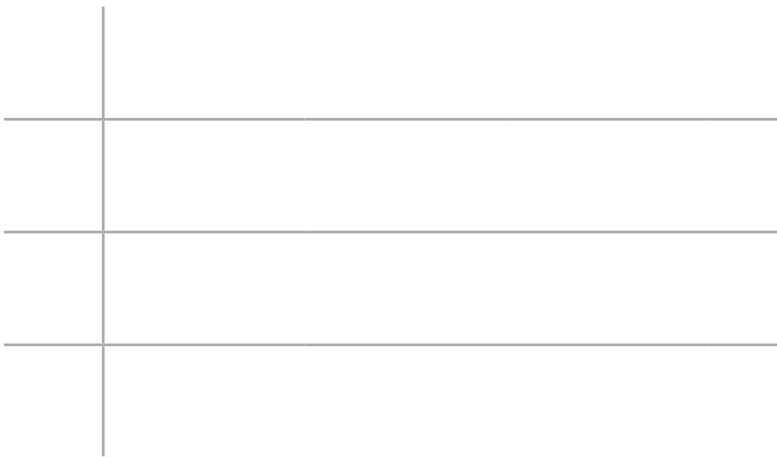


11 The Bolton Boys are a basketball team.

Here is a list of the points scored by the team in 16 games this season.

97 74 89 81 78 85 102 100
76 103 87 101 76 82 98 95

(a) Complete an ordered stem and leaf diagram for these points.



(3)

(b) Find the median.

.....points
(2)

(c) Work out the range.

.....points
(2)



The Durham Dribblers are also a basketball team.
They have a median score of 96 points and a range of 18 points.

(d) Compare the distributions of points scored by the Bolton Boys and the Durham Dribblers.

.....

.....

.....

.....

(2)

The Bolton Boys and Durham Dribblers each have a basketball game next week.

(e) Discuss which team is likely to score most points in their game.

.....

.....

.....

.....

(2)

(Total for Question 11 is 11 marks)



12 The table shows a summary of the results of a long jump competition.

Distance jumped (x m)	Frequency (f)		
$7.1 < x \leq 7.3$	1		
$7.3 < x \leq 7.5$	2		
$7.5 < x \leq 7.7$	5		
$7.7 < x \leq 7.9$	9		
$7.9 < x \leq 8.1$	8		
$8.1 < x \leq 8.3$	3		

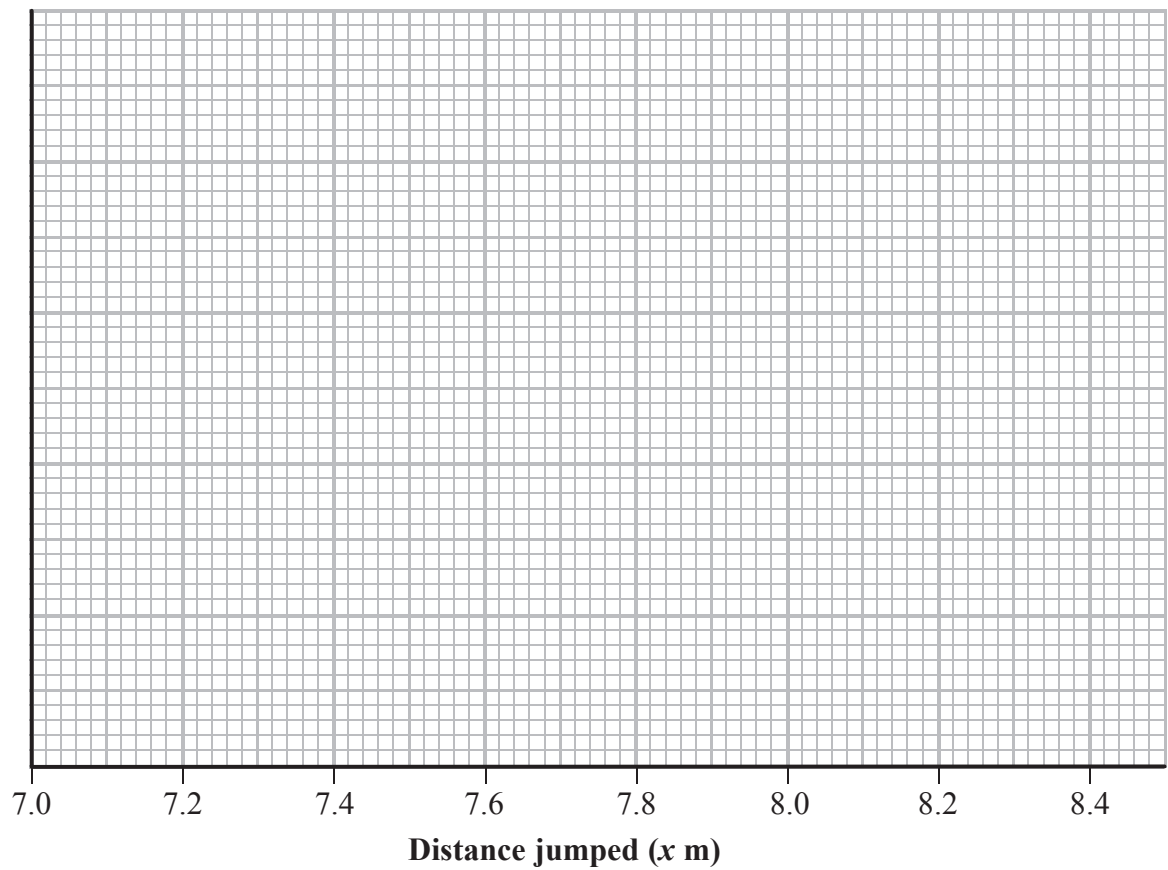
Source: IAAF

- (a) Find an estimate of the mean distance jumped.
You may use the extra columns in the table.

.....m
(3)



(b) Draw a frequency polygon for the data.



(3)

(c) Comment on any skew shown by the data.

(1)

(Total for Question 12 is 7 marks)



13 The Daily Dispatch and The Morning Chronicle are two newspapers in a town.

Each newspaper conducted a survey in the town to see who the voters will vote for in a local election.

The population for each survey is all the voters in the town.

Complete the sentence below with the correct statistical term.

(a) A **list** of all voters in the town is known as a (1)

Each newspaper conducted a random sample of all the voters in the town.

(b) Explain what is meant by the word ‘random’.

.....
.....
(1)

One of the candidates is Mr Lopez.

The table shows some information about the results of each newspaper’s survey.

	Number of people who will vote for Mr Lopez	Total number of people surveyed
The Daily Dispatch	54	120
The Morning Chronicle	38	80

There is a total of 1000 voters in the town.

The Daily Dispatch estimates that 450 of these voters will vote for Mr Lopez.

The Morning Chronicle estimates that 475 of these voters will vote for Mr Lopez.

(c) Discuss which newspaper’s estimate should be more reliable.

.....
.....
.....
(2)

(Total for Question 13 is 4 marks)



14 The table shows information about houses for sale in Oxford.

Number of bedrooms	1	2	3	4	5 or more
Houses for sale	140	300	420	235	105

Source: adapted from rightmove.co.uk

(a) Write down the most common number of bedrooms in these houses.

.....
(1)

An estate agent wants to investigate the prices of these houses.
He is going to use a stratified sample of the houses.

A stratified sample would be better than a simple random sample.

(b) Explain why.

.....
.....
(1)

There is a total of 1200 houses for sale.

The estate agent wants to use a sample of 60 of the houses, stratified by number of bedrooms.

(c) (i) Show that there should be 7 houses with 1 bedroom in the sample.

(ii) How should these 7 houses be selected?

.....
.....
(2)

(Total for Question 14 is 4 marks)



15 With 2009 as the base year, the price index in 2010 for heating oil was 128

Source: www.gov.uk

(a) Describe how much the price of heating oil increased between 2009 and 2010

.....
.....
(1)

Between 2009 and 2010 the price of electricity fell by 2.5%.

(b) With 2009 as the base year, write down the price index for electricity in 2010
Give your answer to 1 decimal place.

.....
(1)

(Total for Question 15 is 2 marks)

TOTAL FOR PAPER IS 80 MARKS

