Write your name here

Surname	Other names

Centre Number | Candidate Number

Edexcel GCSE

Statistics

Paper 1F

Foundation Tier

Monday 18 June 2012 – 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

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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6/4/6/6/6/4

P 4 0 6 4 8 R A 0 1 2 4

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 $= \dfrac{\sum fx}{\sum f}$

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

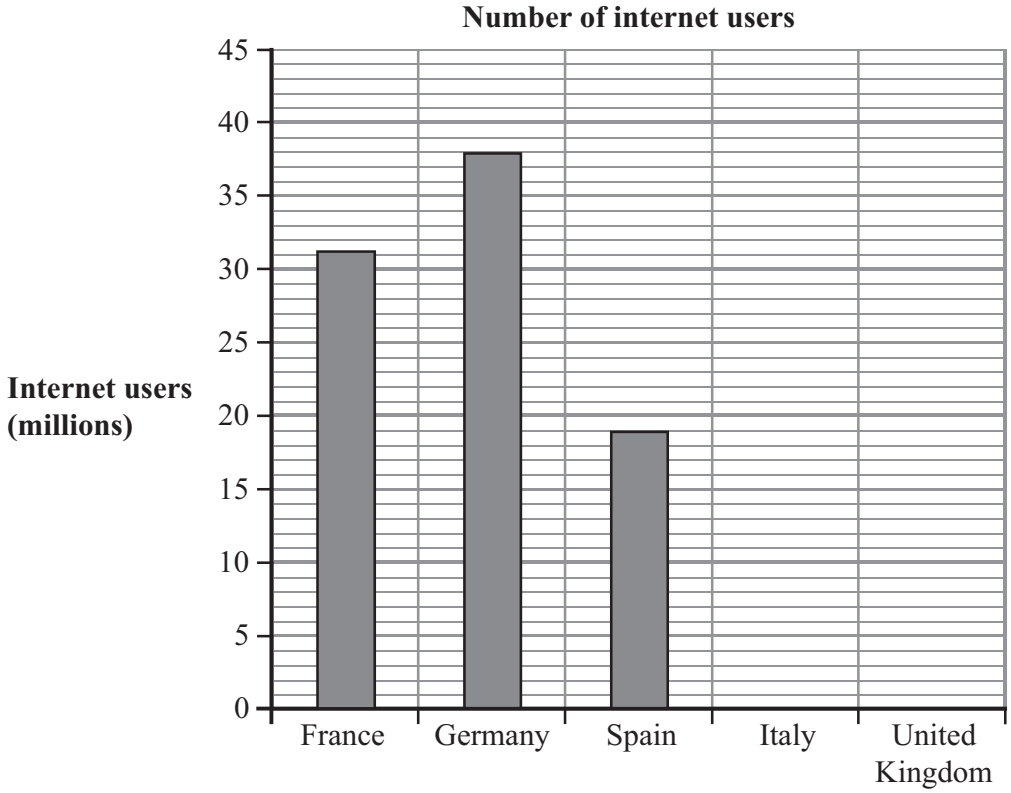
Answer ALL the questions. Write your answers in the spaces provided.
You must write down all stages in your working.

1 The table shows the numbers of internet users in some countries in 2006

Country	Internet users (millions)
France	31.3
Germany	38.0
Spain	19.0
Italy	29.0
United Kingdom	33.5

(Data source: CIA World Factbook)

The bar chart shows some of this information.



(a) Complete the bar chart for Italy and the United Kingdom.

(2)

(b) Write down the name of the country which had the **second highest** number of internet users.

.....

(1)

(c) Write down the name of the country with half as many internet users as Germany.

.....

(1)

(Total for Question 1 is 4 marks)

2 When two people get married, there are three marriage types possible.
The marriage may be
the first marriage for both people,
or the first marriage for only one of the people,
or the first marriage for neither of the people.

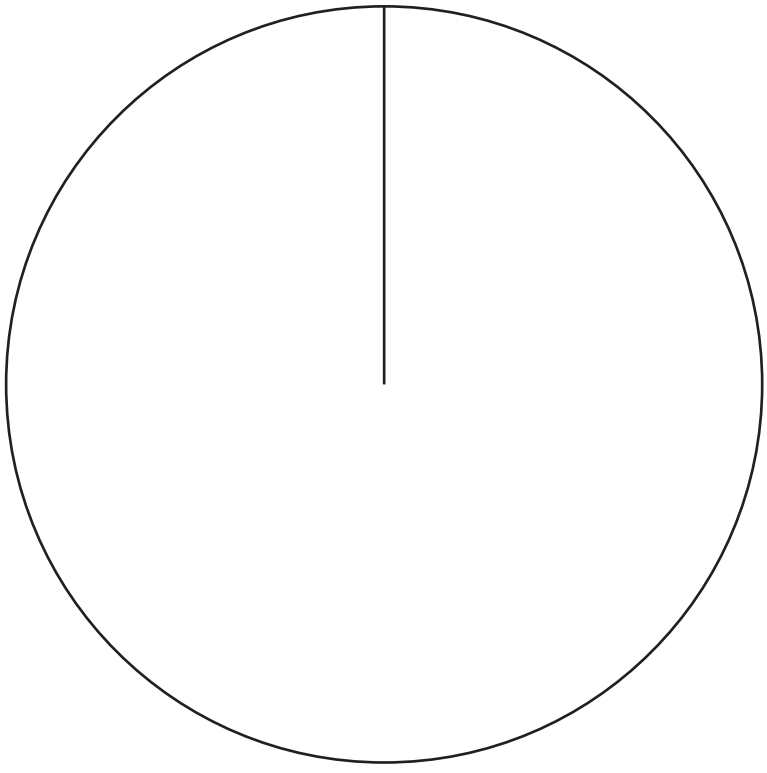
In 1955 there was a total of 720 000 marriages.

The table shows this information.

Marriage type	Number of marriages (thousands)
First for both	600
First for one	80
First for neither	40

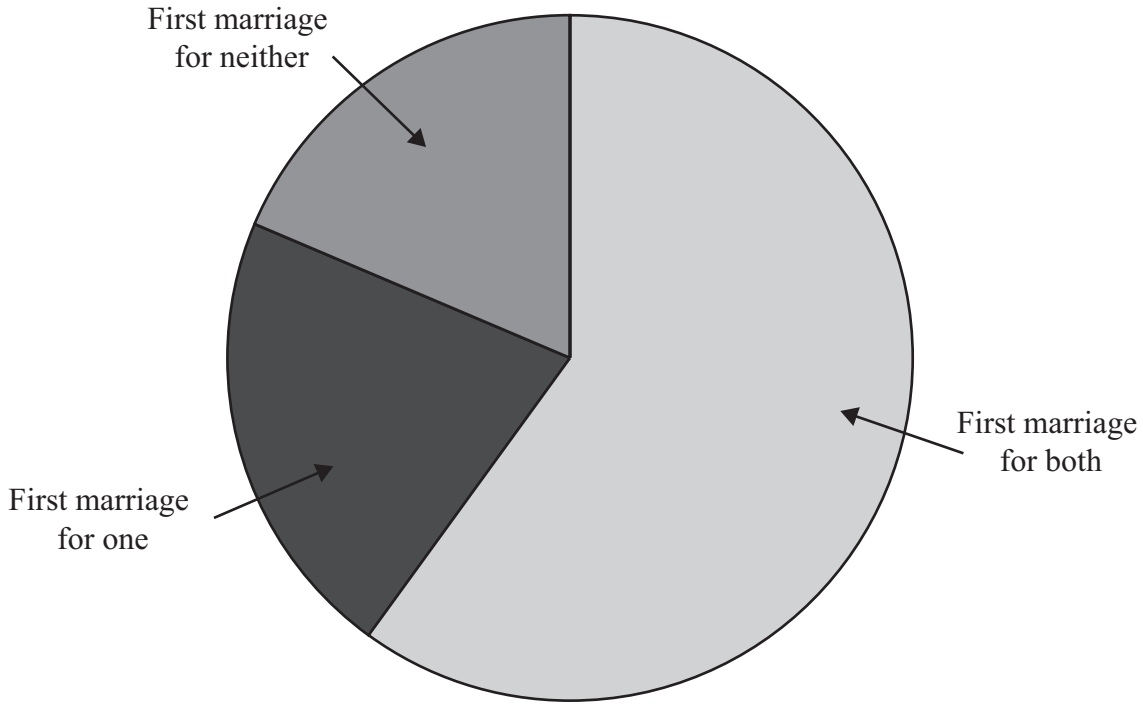
(Data source: Office for National Statistics)

(a) Draw a pie chart for this information.



(3)

This pie chart shows marriage types in 2005



(b) Use the two pie charts to compare the proportions of marriage types in 2005 with the proportions of marriage types in 1955

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(2)

(Total for Question 2 is 5 marks)

3 A large orchestra has a String section and a Wind section.

The two-way table shows the numbers of male musicians and female musicians in each section.

	String section	**Wind section**	**Total**
Male	23	17	
Female	34	8	42
Total			82

(Data source: BBCSO)

(a) Complete the two-way table.

(2)

A musician is going to be selected at random from these musicians.

(b) Write down the probability that the musician is

(i) female

.....

(1)

(ii) a male from the String section.

.....

(1)

A newspaper article claimed that female musicians are not well represented in large orchestras.

(c) Explain whether or not the two-way table supports this claim.

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(2)

(Total for Question 3 is 6 marks)

4 Natasha wants to investigate the hypothesis

The older a person is, the slower their reaction time.

Natasha records the ages of a random sample of people.
She measures the reaction time of each person.
She will draw a diagram to test her hypothesis.

(a) Write down the type of diagram Natasha should draw.

.....

(1)

Here is a list of statistical words.

explanatory **response** **quantitative** **discrete** **rank**

(b) Use one of these words to complete the statement below.

The reaction time is the ..... variable.

(1)

Here are the ages, in years, of the first 8 people in Natasha's sample.

14 14 15 17 21 35 37 55

(c) Work out the mean age.

.....

(2)

(Total for Question 4 is 4 marks)

5 Collis Town Council wants to produce a magazine for adults living in Collis.

The council wants to find out the topics the adults are interested in.
They decide to ask a sample of the adults.

(a) Write down **two** advantages of using a sample rather than a census.

Advantage 1

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.....

.....

Advantage 2

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.....

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(2)

(b) Describe a suitable sampling frame that could be used.

.....

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(1)

The council sends a questionnaire to all the adults living in North Street.

(c) Discuss whether or not this would be a good sample.

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(2)

(d) Here are two questions on the questionnaire.

Explain what is wrong with each question.

(i) It is a good idea to have an article on recycling isn't it?

Yes ☐ **No** ☐ **Don't know** ☐

.....

.....

.....

.....

(ii) How much would you be willing to pay for a Collis magazine?

£0 ☐ **Up to £1** ☐ **£1 to £2** ☐ **£2 or more** ☐

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(2)

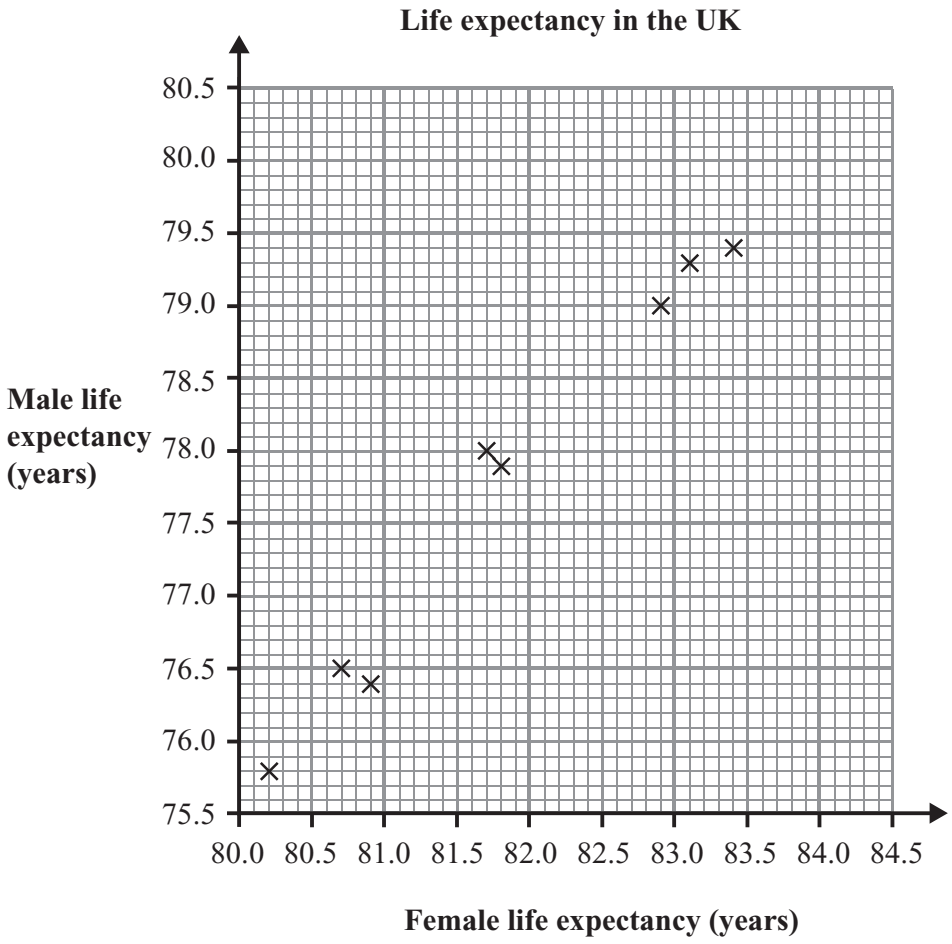
(Total for Question 5 is 7 marks)

6 The table shows the life expectancy (in years) for males and females living in ten areas of the UK in 2008

Area	Life expectancy (years)	
	Female	Male
Cambridgeshire	83.1	79.3
Derbyshire	81.8	77.9
Essex	82.9	79.0
Grampian	80.7	76.5
Greater Manchester	80.2	75.8
Lincolnshire	81.7	78.0
Lothian	80.9	76.4
Suffolk	83.4	79.4
West Yorkshire	81.0	76.7
Worcestershire	82.5	78.6

(Data source: statistics.gov.uk)

Some of these data are shown on the scatter diagram.



(a) Complete the scatter diagram by plotting the points for West Yorkshire and for Worcestershire.

(2)

(b) Describe and interpret the correlation between the life expectancies of males and of females.

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(2)

(c) Draw a line of best fit on the scatter diagram.

(1)

(d) Use your line of best fit to estimate the missing life expectancies in this table. Write your answers in the table.

Area	Female	Male
Lancashire	81.4	.....
Buckinghamshire	84.0	.....

(2)

(e) Discuss which of your estimates in (d) is likely to be the more reliable.

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(2)

(Total for Question 6 is 9 marks)

7 Julie's school has been given *Healthy School* status.

Julie wants to investigate if students at her school now eat healthy meals.

(a) Suggest a hypothesis Julie could use.

.....

.....

(1)

(b) State the population for her survey.

.....

.....

(1)

Here is a list of types of data.

Discrete **Continuous** **Qualitative**

The table shows some of the variables Julie wants to investigate.

(c) Complete the **Type of data** column in the table.
Use words from the list above.

Variable	Type of data
Favourite vegetable	
Age	
Number of times per week a student eats in the school canteen	

(2)

Julie is going to use a questionnaire.

(d) She might do a pilot study.
Write down one reason why.

.....

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.....

(1)

Julie wants to know which vegetable the students like the most.
One question on her questionnaire is

What vegetables do you like?

(e) (i) Explain why this is **not** a good question.

.....

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.....

(ii) Write a better question for Julie to use.

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(2)

Julie decides to use a sample of 40 pupils, stratified by Key Stage.

The table shows the number of pupils in the school in each Key Stage.

Key Stage	3	4	5	Total
Number of pupils	550	395	315	1260

(f) Work out how many Key Stage 5 pupils should be in Julie's sample.

.....

(2)

(Total for Question 7 is 9 marks)

8 The table gives information about the reasons given for authorised and unauthorised absences from school, of boys and girls, in the UK.

	State funded Secondary Schools		
	Boys %	Girls %	Total %
Percentage of absent sessions due to:			
Authorised Absence			
Illness (NOT medical or dental appointments)	54.05	56.52	55.30
Medical/dental appointments	5.61	6.32	5.97
Religious observance	1.25	1.14	1.19
Study leave	2.01	1.97	1.99
Traveller absence	0.12	0.10	0.11
Agreed family holiday	4.66	4.64	4.65
Agreed extended family holiday	0.09	0.08	0.08
Excluded, no alternative provision	3.52	1.29	2.39
Other authorised circumstances	8.03	7.46	7.74
Total Authorised Absence	**79.33**	**79.52**	**79.43**
Percentage of absent sessions due to:			
Unauthorised Absence			
Family holiday not agreed	1.67	1.74	1.70
Arrived late	1.12	1.10	1.11
Other unauthorised circumstances	13.65	13.63	13.64
No reason yet	4.22	4.02	4.12
Total Unauthorised Absence	**20.67**	**20.48**	**20.57**
Total Overall Absence	**100.00**	**100.00**	**100.00**

(Data source: dcsf.gov.uk)

(a) Write down the main reason given for

(i) authorised absence,

.....

(ii) unauthorised absence.

.....

(2)

The percentage of boys' absences was more than twice the percentage of girls' absences for one of the reasons listed in the table.

(b) Which reason?

.....

(1)

(Total for Question 8 is 3 marks)

9 Archaeologists divided a field into 36 squares of equal size.
The number of Roman roof tiles found in each square is shown below.

Numbers of Roman roof tiles.

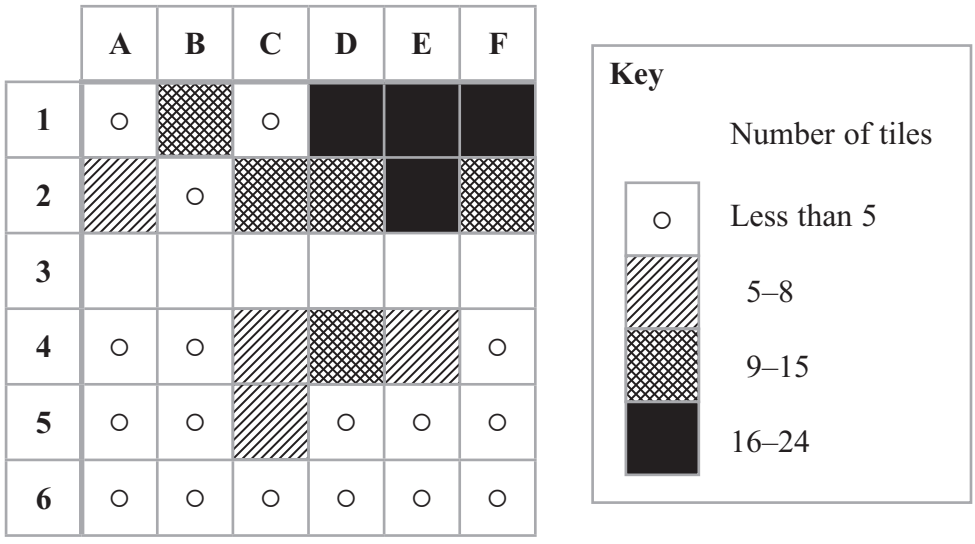
	A	B	C	D	E	F
1	3	9	4	18	16	24
2	5	3	11	14	20	12
3	1	0	8	16	18	4
4	2	2	5	10	5	3
5	1	4	6	4	3	2
6	2	3	4	1	2	2

Key

3 Means 3 roof tiles in square **A1**

(a) Use the information above to complete the choropleth map.

(2)



(b) Use the choropleth map to describe the area in which they found the greatest number of roof tiles. Give a reason for your answer.

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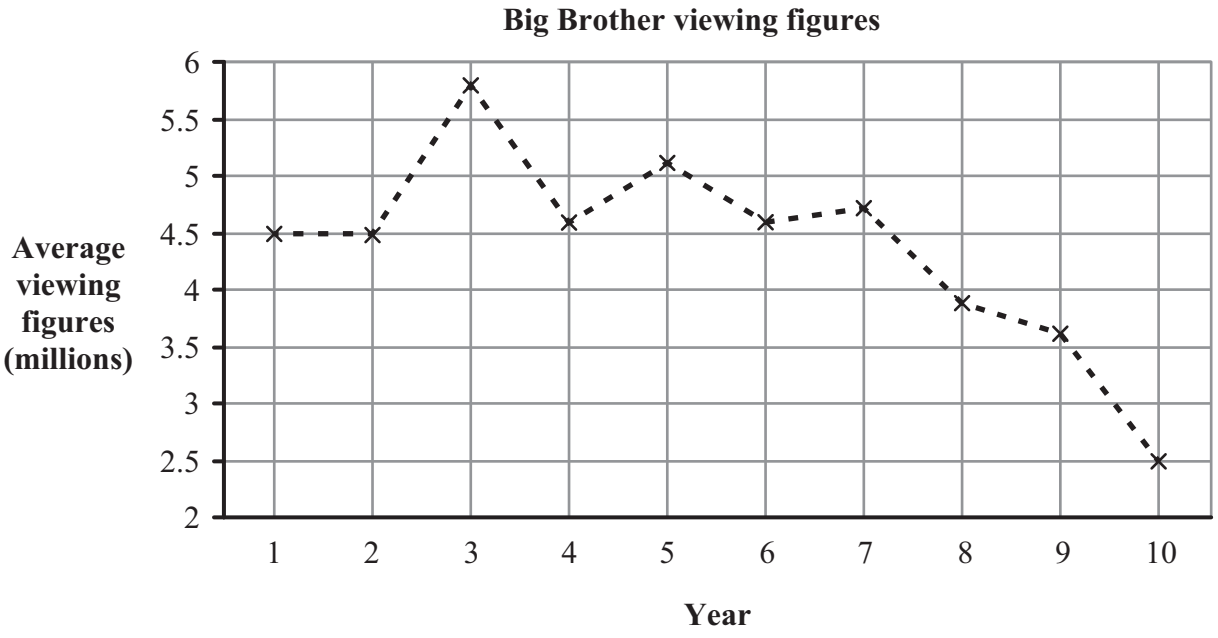
(2)

(Total for Question 9 is 4 marks)

10 Here is a graph showing the average viewing figures for Big Brother over ten years.



(Data source: insidebigbrother.net)

(a) Describe the trend in average viewing figures **after** Year 5

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(1)

(b) Write down a reason why the graph might be misleading.

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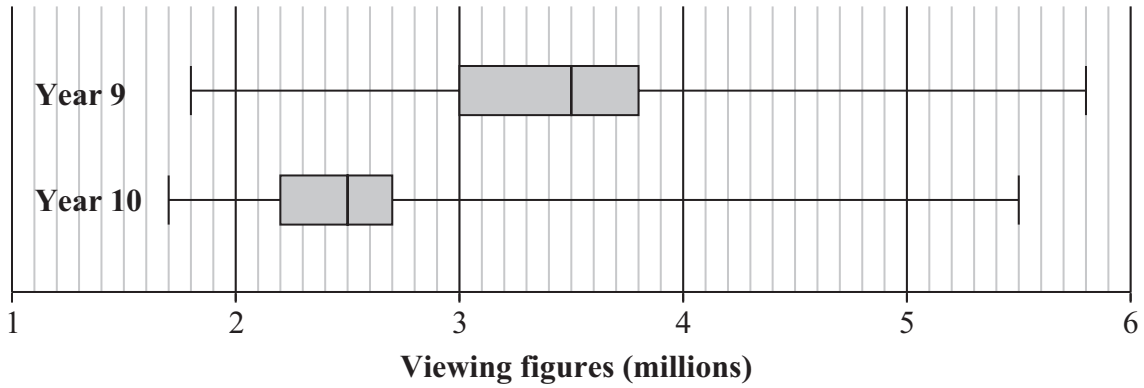
(1)

The box plots show information about the viewing figures for programmes in Year 9 and in Year 10

Big Brother viewing figures



(Data source: insidebigbrother.net)

(c) Work out the interquartile range for the viewing figures in Year 9

..... million

(2)

***(d)** Use the box plots to compare the distributions of viewing figures for Year 9 and Year 10

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(4)

(Total for Question 10 is 8 marks)

11 The table shows information from a 2008 survey about the ages of women having their first child.

Age (a) years	Frequency
$16 \leqslant a < 20$	7
$20 \leqslant a < 25$	19
$25 \leqslant a < 30$	27
$30 \leqslant a < 35$	27
$35 \leqslant a < 40$	17
$40 \leqslant a < 45$	3

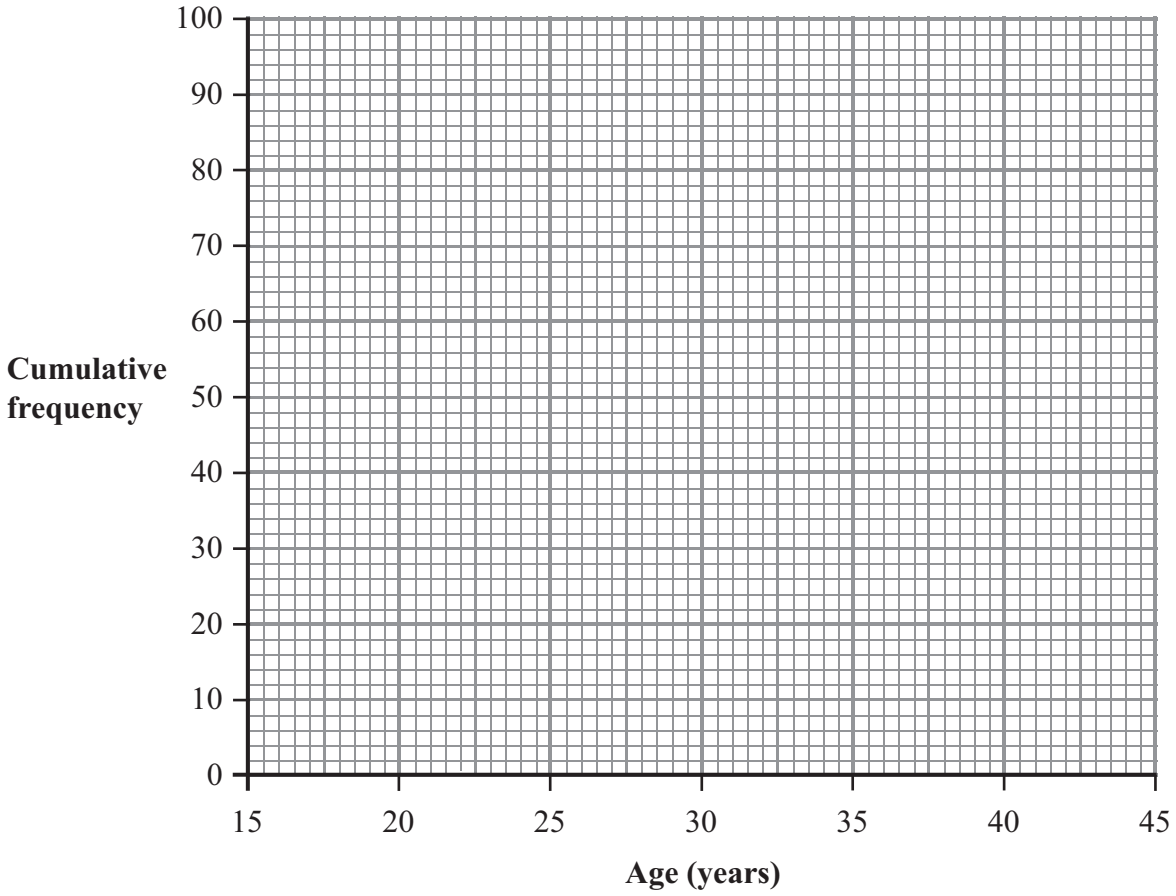
(Data source: Office for National Statistics)

(a) Complete the cumulative frequency table below for these data.

Age (a) years	Cumulative frequency
$16 \leqslant a < 20$	7
$16 \leqslant a < 25$	
$16 \leqslant a < 30$	
$16 \leqslant a < 35$	
$16 \leqslant a < 40$	
$16 \leqslant a < 45$	

(1)

(b) Draw a cumulative frequency diagram for this information.



(3)

(c) Use your cumulative frequency diagram to find an estimate for the median age.

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(2)

In 1990, the median age for women having their first child was 25

(d) Using this information and your answer to (c) what can you say about the age for women having their first child?

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(1)

(Total for Question 11 is 7 marks)

12 Here are five events.

A The next person to enter a dentist's surgery is male.

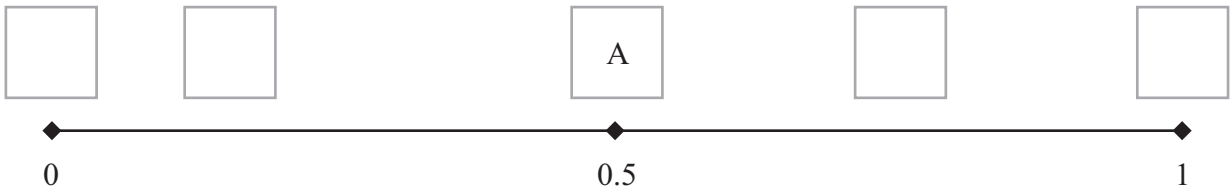
B A person wins the National Lottery jackpot with one ticket.

C A baby chosen at random was born on a Friday.

D It rains in London at least once next February.

E Getting at least one Tail when two fair coins are thrown.

(a) Write the letter for each event in the best position on the probability scale.
Write one letter in each box. One has been done for you.



(2)

Kyle wants to estimate the probability that it will rain on his birthday next year.

(b) Which method should he use to estimate this probability?
Tick one box to show the answer.

Carry out an experiment ☐ **Use past records** ☐ **Use equally likely outcomes** ☐

(1)

A spinner is used in a children's game.
The spinner can stop on any one of four colours.
The table shows the probability of the spinner stopping on each colour.

Colour	**Red**	**Green**	**Blue**	**Yellow**
Probability	0.4	0.2	0.3	p

(c) (i) Work out the value of p.

.....

(ii) Work out the probability that the spinner stops on Red **or** on Green.

.....

(iii) Work out the probability that the spinner stops on Blue for the next two spins.

.....

(5)

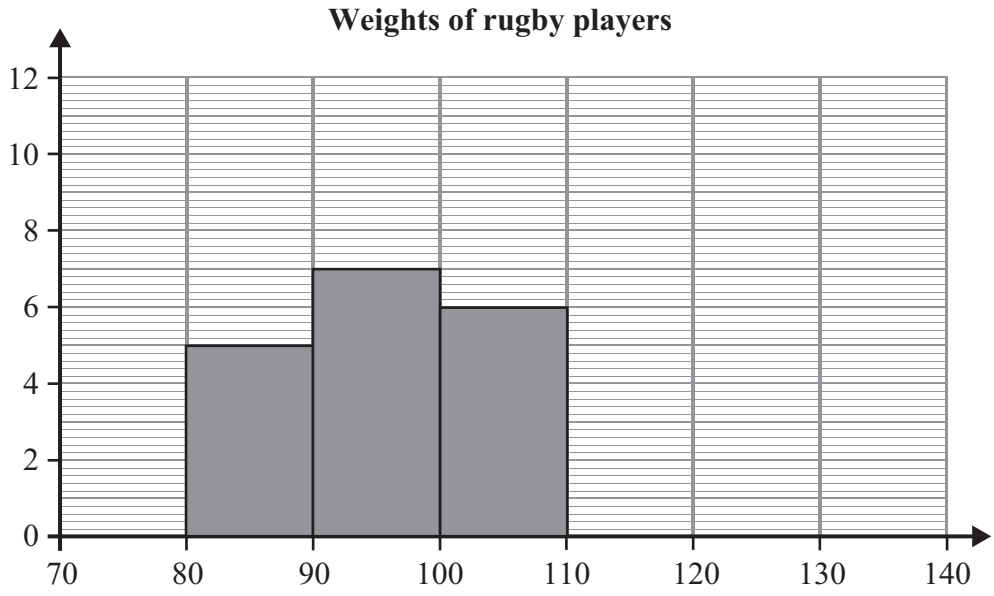
(Total for Question 12 is 8 marks)

13 The table shows some information about the weights of 32 rugby players.

Weight (w kg)	Frequency		
$80 \leqslant w < 90$	5		
$90 \leqslant w < 100$	7		
$100 \leqslant w < 110$	6		
$110 \leqslant w < 120$	10		
$120 \leqslant w < 130$	4		

(Data source: Rugby Football Union)

The incomplete histogram shows some of this data.



(a) Complete the histogram **and** label the axes.

(3)

(b) Work out an estimate of the mean weight of the 32 rugby players.

..... kg

(3)

(Total for Question 13 is 6 marks)

TOTAL FOR PAPER IS 80 MARKS

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