

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 22 June 2017 – Morning
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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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.

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Answer ALL the questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 The table shows information about the number of children adopted in England and Wales in 2012

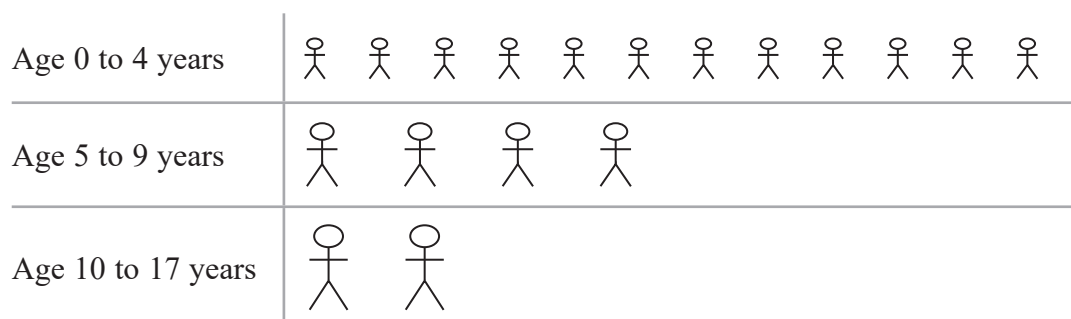
Age (years)	Number of children adopted
0 to 4	3000
5 to 9	1000
10 to 17	500

Source: adapted from ONS

- (a) Find the total number of children adopted in England and Wales in 2012

.....
(1)

A pictogram has been drawn using the information in the table.



This is **not** a good pictogram.

- (b) Give two reasons why.

Reason 1

.....

Reason 2

.....

(2)

(Total for Question 1 is 3 marks)



2 Ron wants to investigate the average summer temperature in European cities. He thinks this will be affected by the height of the city above sea level.

He writes down two statements.

Statement A: Do cities which are higher above sea level have a lower summer temperature?

Statement B: The higher the city is above sea level the lower the summer temperature is.

(a) Statement A is **not** a hypothesis.
Explain why.

(1)

Ron uses Statement B as his hypothesis.

(b) Write down two variables Ron needs to use in his investigation.

Variable 1

Variable 2

(2)

(c) Suggest a suitable diagram Ron could draw to help him decide if his hypothesis is correct.

(1)

(Total for Question 2 is 4 marks)



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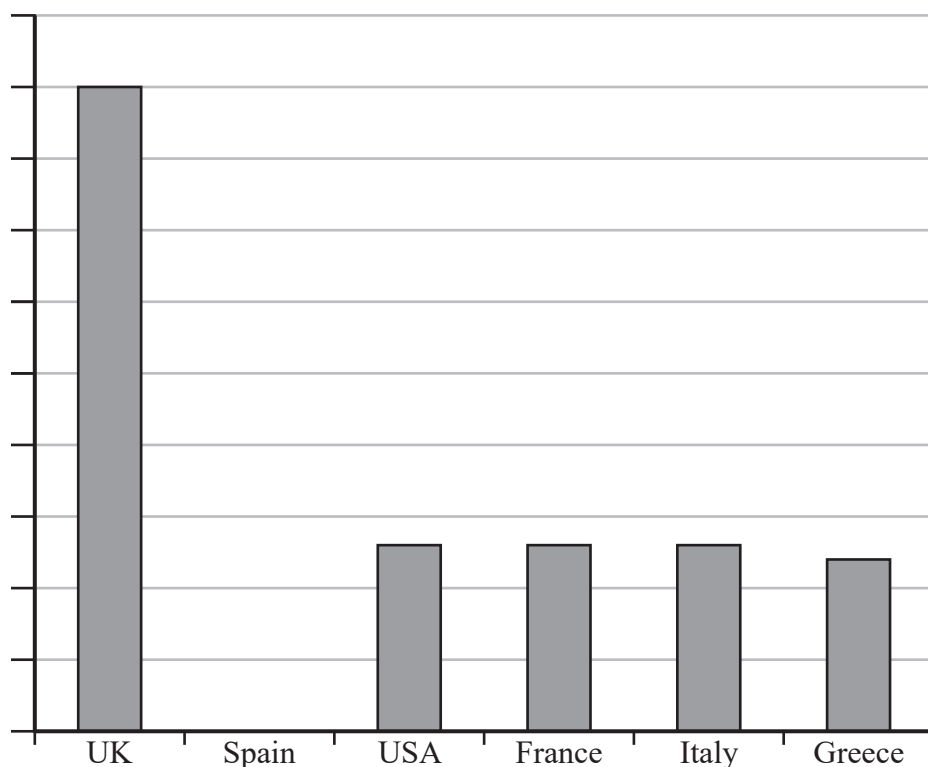
3 In a survey people were asked to say which countries they had thought about visiting next year.

The table shows the top six countries and the percentage of the people surveyed who said that country.

Country	UK	Spain	USA	France	Italy	Greece
Percentage	45	25	13	13	13	12

Source: BDRC Continental

The incomplete bar chart shows some of this information.



- (a) On the bar chart, number the vertical scale. (1)
- (b) On the bar chart, label both axes. (1)
- (c) Complete the bar chart by drawing a bar for Spain. (1)
- (d) Compare the percentage for the UK with the percentage for the USA.

(1)

(Total for Question 3 is 4 marks)



4 At 7 pm one evening the manager of a sports centre carried out a survey to find out which of three activities people were doing.

Some of the results are shown in the two-way table.

	Swimming	Spin class	Multi-gym	Total
Male	9	7	7	
Female		11	4	22
Total		18		

(a) Complete the two-way table.

(2)

(b) How many people were in the survey?

.....
(1)

(Total for Question 4 is 3 marks)



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5 Danni and Edrik want to estimate the probability that a pupil in their school is left-handed.

Danni takes a random sample of 20 pupils in the school.
She finds that 4 of the pupils are left-handed.

(a) Using Danni's results, write down an estimate for the probability that a pupil in the school is left-handed.

.....
(1)

Edrik takes a random sample of 50 pupils in the school.
Using his results his estimate of the probability that a pupil in the school is left-handed is $\frac{3}{25}$

(b) How many of the 50 pupils in Edrik's survey were left-handed?

.....
(1)

(c) Discuss which of Danni or Edrik is likely to have a better estimate for the probability that a pupil in the school is left-handed.
Give a reason for your answer.

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

(Total for Question 5 is 4 marks)



- 6 The table shows information about the percentages of males and females in different age groups in England who held a full driving licence each year from 2010 to 2013

It also gives the total number of licence holders.

Age group (years)	Males (%)				Females (%)			
	2010	2011	2012	2013	2010	2011	2012	2013
17–20	34	31	40	30	32	30	31	31
21–29	66	68	67	67	60	59	62	64
30–39	86	81	81	83	77	74	75	77
40–49	90	89	88	90	80	79	81	80
50–59	89	90	89	90	77	76	75	77
60–69	90	90	90	91	70	71	71	73
70+	78	79	80	82	41	44	43	47
Total number of licence holders (millions)	16.4	16.4	16.6	16.9	14.2	14.3	14.5	14.9

Source: Department for Transport

- (a) Write down the percentage of females aged 21–29 who held a full driving licence in 2012

.....%

(1)

- (b) Work out the percentage of males aged 30–39 who did **not** hold a full driving licence in 2010

.....%

(2)

In 2013 the percentage of females who held a full driving licence was greater than the percentage of males in one age group.

- (c) Write down this age group.

.....

(1)

- (d) Comment on the trend in the total number of licence holders between 2010 and 2013

.....

.....

(1)

(Total for Question 6 is 5 marks)



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7 There are 40 scouts in a scout group.

The scout group leader needs to find out the activities the scouts want to do at their summer camp.

He is going to give a questionnaire to all 40 scouts.

(a) State the population.

(1)

(b) Write down the statistical name for an investigation that gets information from every member of the population.

(1)

(c) Give one reason why using a **sample** of the scouts in the group is not necessary.

(1)

(d) Give one possible problem with using a questionnaire with all 40 scouts.

(1)

The scout leader also wants to find out how long the scouts would like the summer camp to be.

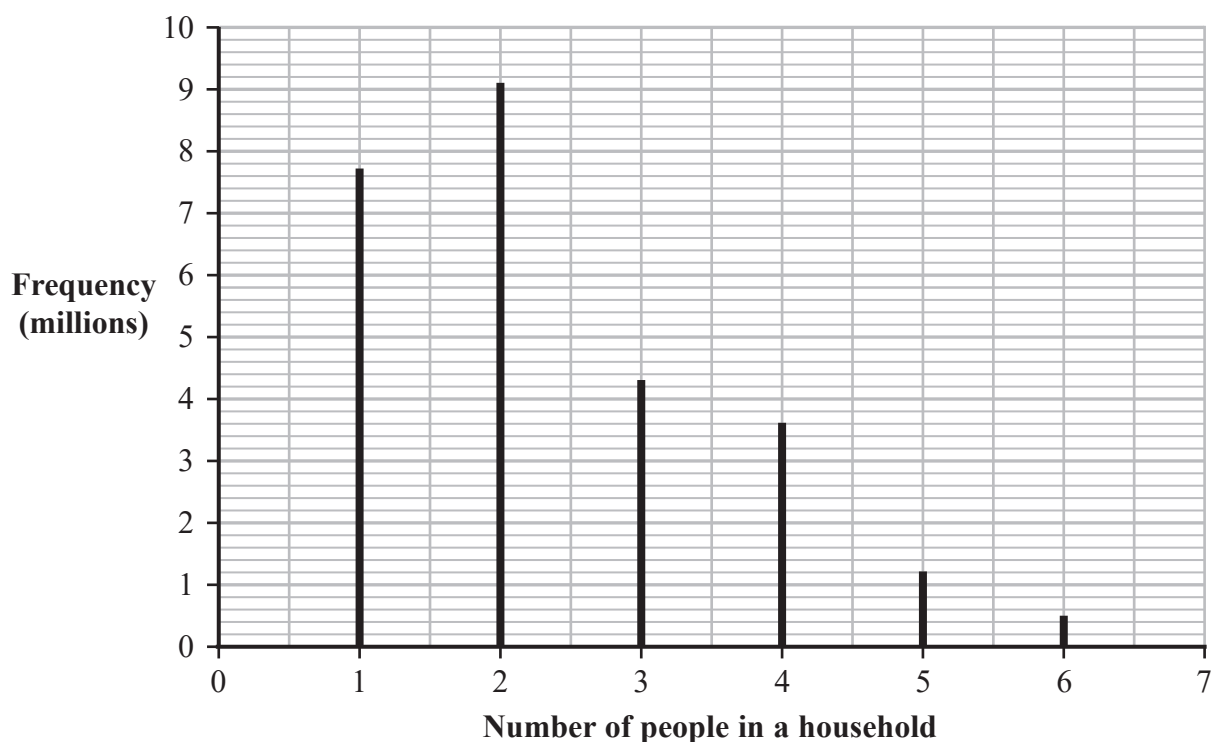
(e) Design a suitable question for the questionnaire.

(2)

(Total for Question 7 is 6 marks)



- 8 The vertical line graph shows the frequency distribution of the number of people in a household in the UK in 2013



Source: ONS

- (a) Write down the mode.

.....
(1)

- (b) How many households had exactly 4 people in them?

..... million
(1)

- (c) Describe the shape of the distribution.

.....
(1)

Nabil wants to draw a diagram that shows the **proportion** of all households for each number of people in a household.

- (d) Suggest a suitable diagram Nabil could draw.

.....
(1)

(Total for Question 8 is 4 marks)



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9 The manager of a company wants to investigate how quickly her 800 customers pay their bills.

She chooses a sample of 40 of these customers so that each of the 800 customers has the same chance of being chosen.

(a) Write down the statistical name for this type of sample.

.....
(1)

*(b) Describe how to choose this sample of customers.

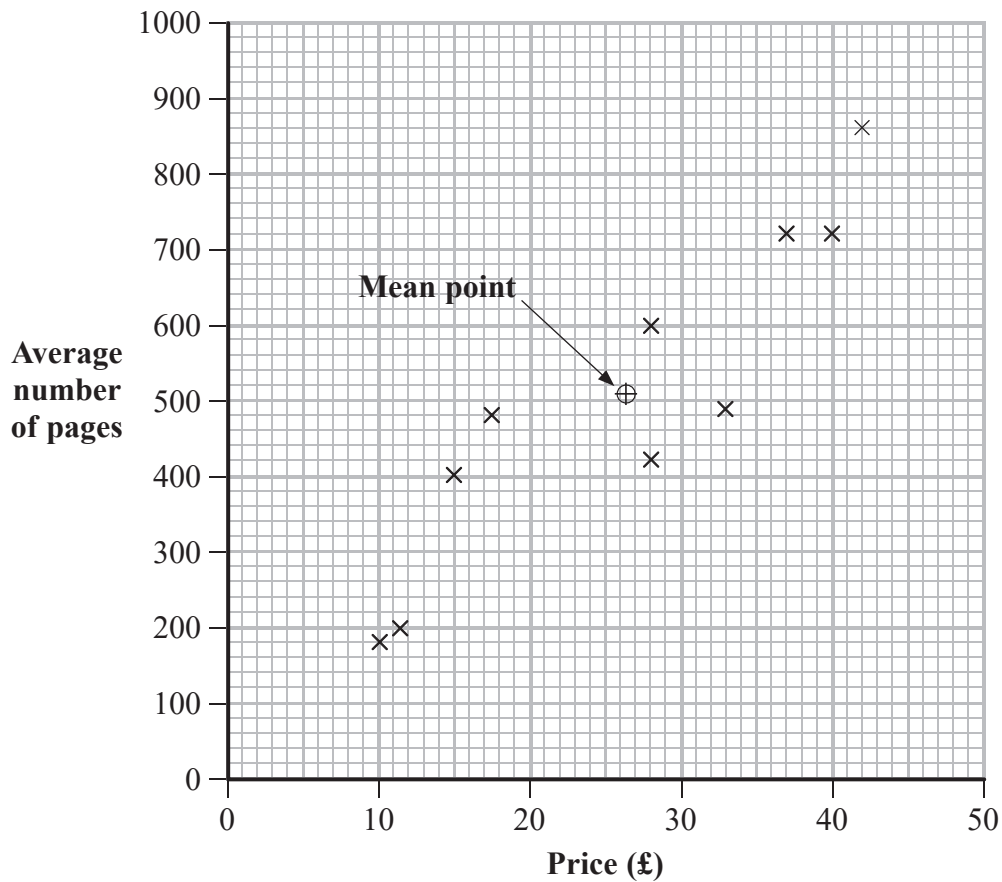
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(3)

(Total for Question 9 is 4 marks)



- 10 The scatter diagram shows the price of ten printer cartridges and the average number of pages each cartridge prints.



- *(a) Describe and interpret the relationship between the price of a cartridge and the average number of pages it prints.

(2)

- (b) Draw a line of best fit through the mean point on the scatter diagram.

(1)



The table shows information about two more cartridges.

	Price	Average number of pages
Cartridge A	£18	200
Cartridge B	£25	680

- (c) (i) Plot this information on the scatter diagram and label the points A and B.
- *(ii) Using your line of best fit, explain which of the cartridges in the table is the better value for money.

(4)

(Total for Question 10 is 7 marks)



11 Here are the times, to the nearest 0.1 second, taken by each of 20 people to solve a puzzle.

51.6 34.9 42.5 62.4 35.5 45.6 57.4 35.2 66.9 46.2
 52.1 55.9 47.5 47.6 76.4 48.4 43.2 55.1 43.4 50.2

(a) Find the range of these times.

..... seconds
 (2)

(b) Complete the frequency table.

Time (t seconds)	Tally	Frequency
$30 < t \leq 40$		
$40 < t \leq 50$		
$50 < t \leq 60$		
$60 < t \leq 70$		
$70 < t \leq 80$		

(2)

(c) Write down the modal class interval.

.....
 (1)

The sum of the times taken by the 20 people is 998 seconds.

(d) Use this information to work out the mean time.

..... seconds
 (2)

(e) Write down one advantage of using the mean.

.....

(1)

(Total for Question 11 is 8 marks)



12 A research company wants to find out how likely people in Great Britain are to vote in the next General Election.

The population is defined as all the voters in Great Britain.

(a) Suggest a suitable sampling frame.

(1)

The company is going to carry out its research by telephone.

(b) Give an advantage of collecting this information by telephone rather than using a postal questionnaire.

(1)

(c) Give one possible source of bias with a telephone survey.

(1)

The company asked 1000 people the following question.

On a scale from 1 to 10, with 1 being certain not to vote and 10 being certain to vote, how likely are you to vote in the next General Election?

1	2	3	4	5	6	7	8	9	10
Certain not to vote									Certain to vote

The table shows the percentage of people giving each response.

Response	1	2	3	4	5	6	7	8	9	10
Percentage	6	2	3	1	8	3	4	7	5	61

Source: Ipsos MORI

(d) Work out the number of people giving a response of 6 or higher.

(2)

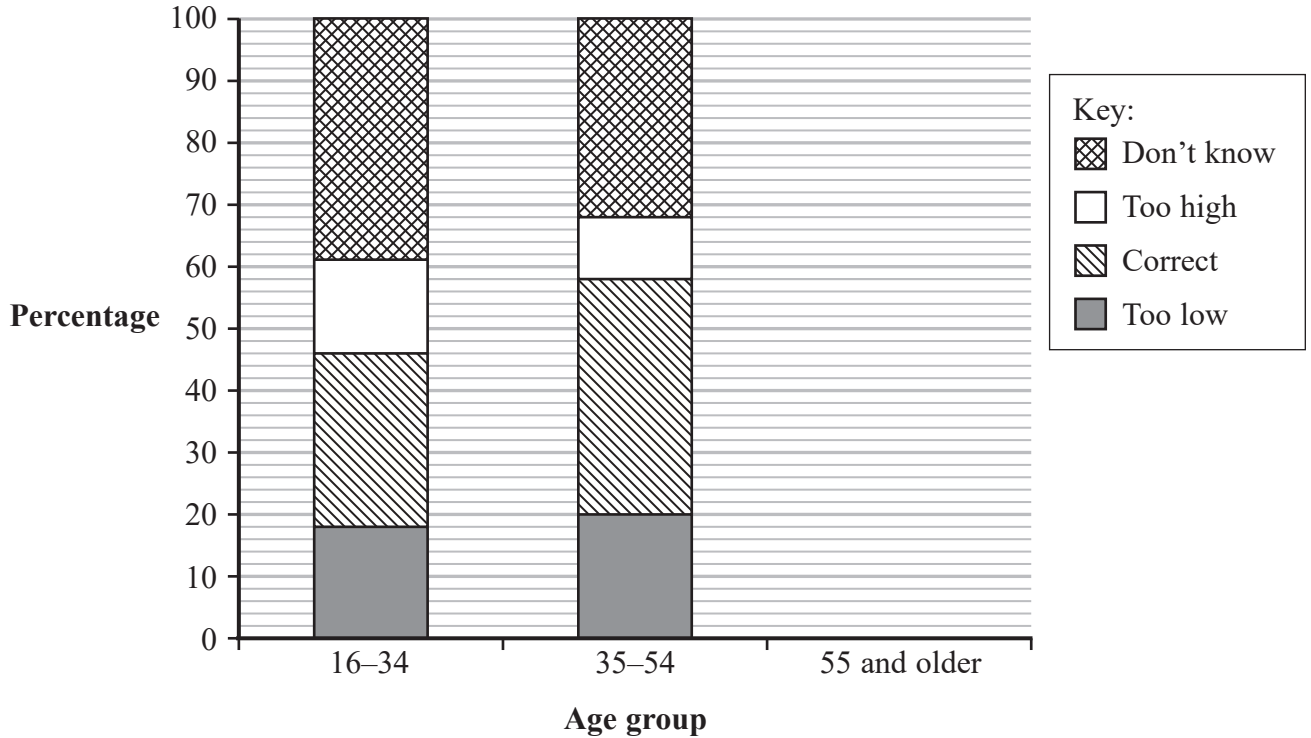
(Total for Question 12 is 5 marks)



13 In a survey people were asked this question.

“How much does a first class stamp cost for a standard letter?”

The composite bar chart shows information about the answers given by people in two different age groups.



Source: Ofcom Residential Postal Tracker

(a) Use the composite bar chart to find the percentage of the 35–54 age group that gave an answer that is

(i) too low,

.....%

(ii) correct.

.....%

(3)



Here is information about the answers given by people in the 55 and older age group.

	Age group
Cost of first class stamp	55 and older
Too low	16%
Correct	38%
Too high	14%
Don't know	32%
Total	100%

- (b) Use the information in the table to complete the composite bar chart for people in the 55 and older age group.

(3)

- (c) Compare the answers given by people in the 16–34 age group with the answers given by people in the 35–54 age group.

(2)

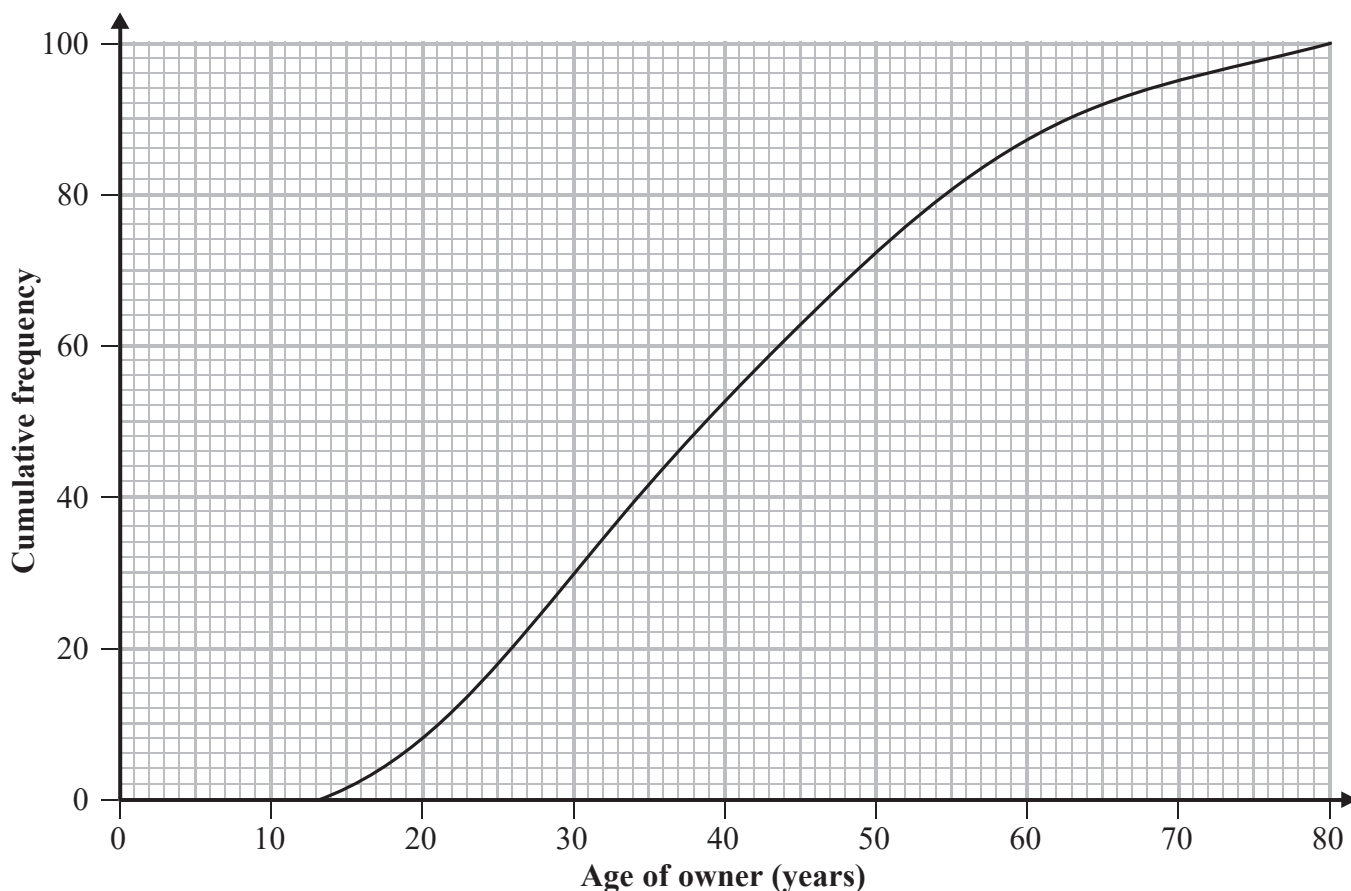
(Total for Question 13 is 8 marks)



14 Kunal was investigating the ages of owners of electronic tablets.

He used information from a survey carried out in the USA in 2012 to find the age distribution for a representative 100 people.

Kunal then drew this cumulative frequency graph for his information.



Source: adapted from comScore

(a) Find the number of these electronic tablet owners that are

(i) under 30 years old,

.....

(ii) between 60 and 70 years old.

.....

(3)

Kunal wants to use this survey to predict the percentage of electronic tablet owners in the **United Kingdom** that are under 30 years old.

(b) Explain whether or not it is sensible to use the results of this survey for his prediction.

.....
.....
.....
.....
.....

(2)



This table gives information, from the same 2012 USA survey, about the ages of owners of smartphones.

Median	36 years
Interquartile range	23 years

*(c) Use the information from the table and from the graph to compare the ages of owners of electronic tablets with the ages of owners of smartphones in the USA.

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(4)

(Total for Question 14 is 9 marks)

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15 When a biased coin is flipped the probability that it shows Heads is twice the probability that it shows Tails.

(a) Write down the probability that the coin shows Tails.

.....
(1)

The biased coin is flipped twice.

(b) Draw a probability tree diagram to show the possible outcomes.
Label your tree diagram to show the outcomes and write the probability on each branch.

(3)

The biased coin is flipped twice.

(c) Find the probability of getting two Tails.

.....
(2)

(Total for Question 15 is 6 marks)

TOTAL FOR PAPER IS 80 MARKS

