

Write your name here

Surname

Other names

Centre Number

Candidate Number

Edexcel GCSE

Statistics

Paper 1F

Foundation Tier

Monday 27 June 2011 – 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 ►

P39093A

©2011 Edexcel Limited.

6/6/6/6/6



edexcel 
advancing learning, changing lives

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.

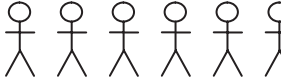





Answer ALL the questions.

You must write down all stages in your working.

- 1 The incomplete pictogram shows the number of councillors from four political parties on the Edinburgh City Council in 2009

Key:  = 2 councillors

Conservative	
Green	
Labour	
Liberal Democrat	
SNP (Scottish National Party)	

(Source: www.edinburgh.gov.uk)

The SNP had 12 councillors in 2009

- (a) Complete the pictogram for the SNP.

(1)

- (b) Write down the party with the most councillors.

.....
(1)

- (c) Write down the number of Green party councillors.

.....
(1)

The Conservative party had more councillors than the Green party.

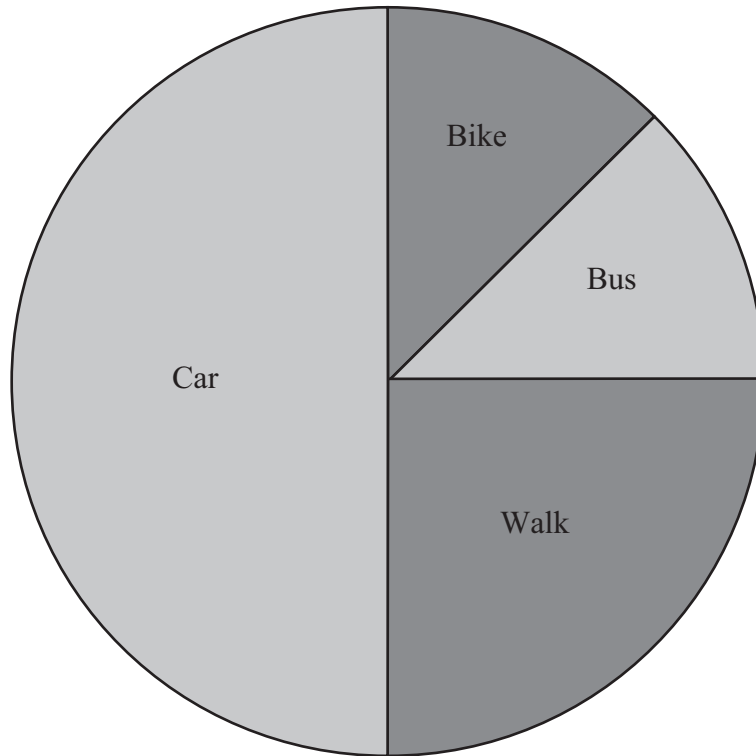
- (d) Work out how many more.

.....
(2)

(Total for Question 1 is 5 marks)



2 The pie chart shows how employees in a small company travelled to work one morning.



(a) Write down the way most employees travelled to work.

.....
(1)

Some employees travelled to work by bus.

Exactly twice as many employees travelled a different way.

(b) Write down this way of travelling.

.....
(1)

Three of the employees travelled to work by bike.

(c) Work out how many employees walked to work.

.....
(1)

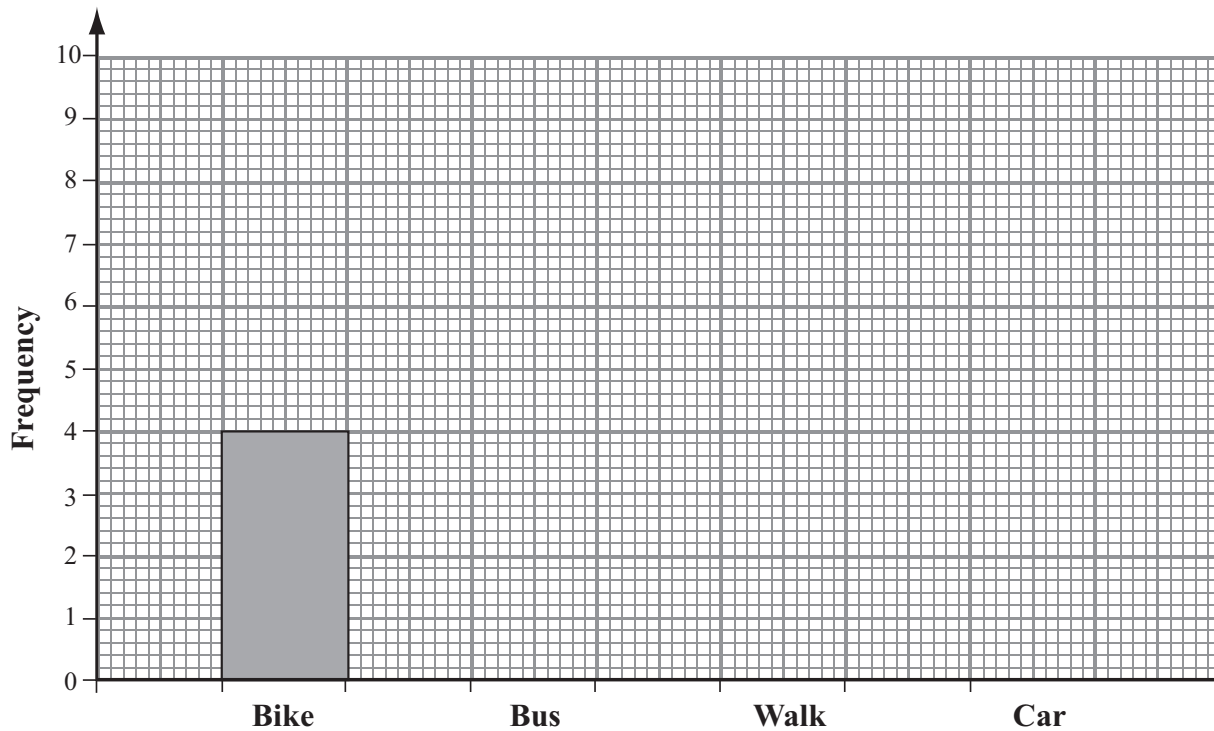


The company had a 'Leave your car at home' week.

The table shows how the employees travelled to work that week.

Way of Travelling	Bike	Bus	Walk	Car
Number of Employees	4	9	6	5

The incomplete bar chart shows some of this information.



(d) Complete the bar chart.

(2)

The manager of the company says, "A quarter of the employees walk to work."

(e) Write down the **best** diagram to show this: a pie chart or a bar chart.

You must give a reason for your answer.

.....

.....

.....

(1)

(Total for Question 2 is 6 marks)



3 Some cars are advertised for sale in a local newspaper.

The table gives information about these cars.

		Make			Total
		Ford	Vauxhall	Renault	
Fuel	Petrol	9	13	8	
	Diesel	11	7	2	
	Total			10	50

(a) Complete the table.

(2)

One of these cars is to be chosen at random.

(b) (i) Write down the fuel this car is most likely to use.

.....
(1)

(ii) Write down the probability that a Renault will be chosen.

.....
(1)

(iii) Write down the probability that a Vauxhall using diesel is chosen.

.....
(1)

(Total for Question 3 is 5 marks)



4 The owner of a small publishing company wants to find out which type of book is most popular.

She is going to carry out a survey with a sample of people using a town library.

She decides to ask the opinion of the first 20 adults who visit a town library on a Monday morning.

(a) This would **not** give a good sample. Give **two** different reasons why.

Reason 1

.....

.....

.....

Reason 2

.....

.....

.....

(2)

(b) Write down **one** way in which the sample could be improved.

.....

.....

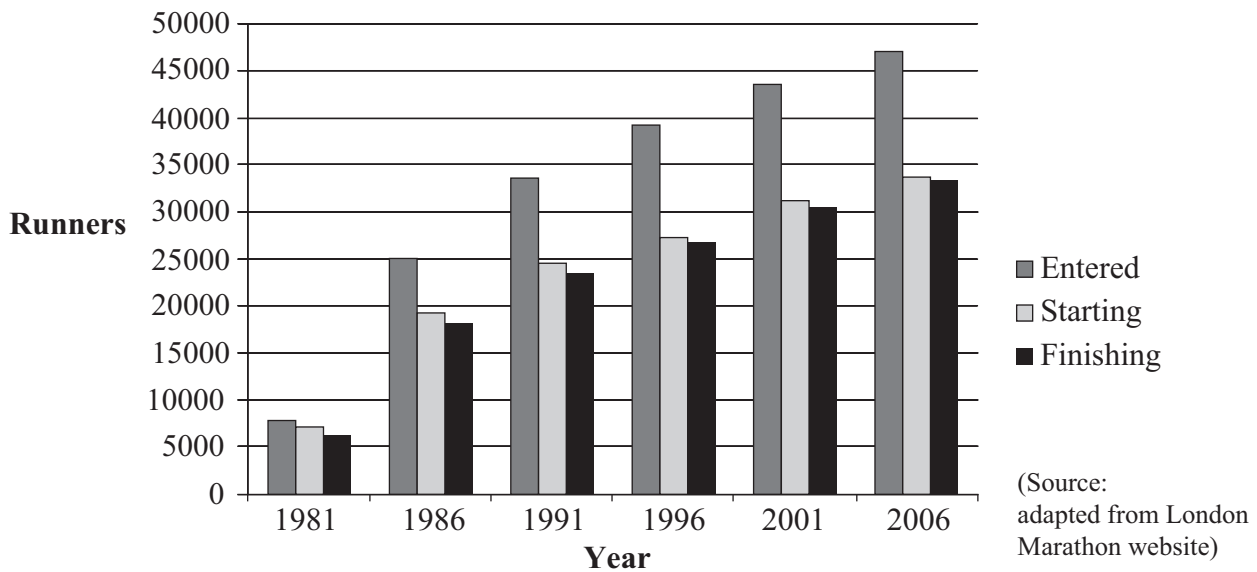
.....

(1)

(Total for Question 4 is 3 marks)



- 5 The graph shows the numbers of people entered for the London Marathon for some years. It also shows the numbers of people starting the marathon, and the numbers of people finishing it.



- (a) Write down how many people entered for the marathon in 1986

.....
(1)

- (b) Describe what the bar chart shows about the change in the number of people entered for the marathon between 1981 and 2006

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

- (c) Compare the number of people starting the marathon with the number finishing, for the years between 1981 and 2006

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

Some people entered for the marathon but did not start it.

- (d) Comment on the numbers of these people, for the years 1981 to 2006

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

(Total for Question 5 is 5 marks)



6 Some people think that drinking cocoa before bedtime may help to reduce blood pressure.

A university student is going to research this.

(a) Suggest a hypothesis the student could use.

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

The student decides to collect information from students at his university.

The student decides to use a **sample**, not a census.

(b) Write down **two** reasons why.

Reason 1

.....
.....
Reason 2

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

(c) Describe a sampling frame that the student could use.

.....
(1)

There are more females than males at the university.

The student wants his sample to show this.

(d) Write down the name of the sampling method he should use.

.....
(1)

(e) Explain why the student might use a control group.

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

(Total for Question 6 is 6 marks)



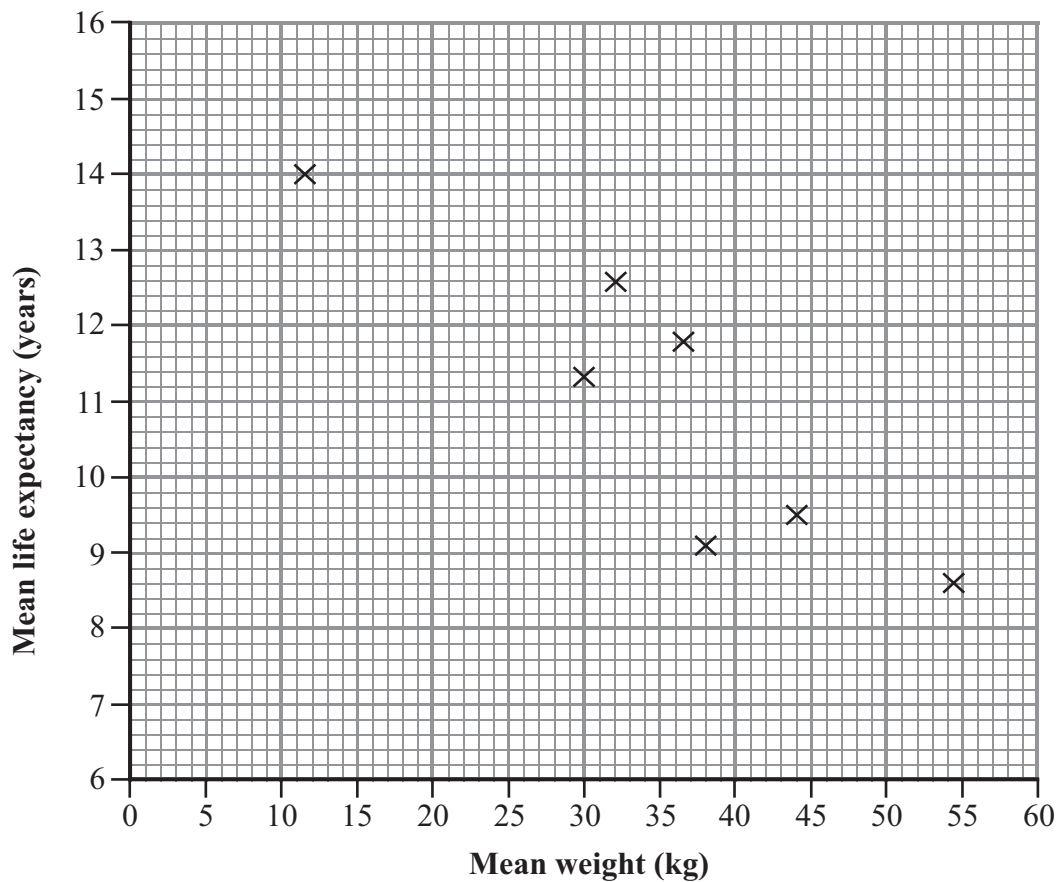
7 Eight breeds of dog are chosen at random.

The table shows the mean weight and the mean life expectancy for each breed.

Breed	Mean weight (x kg)	Mean life expectancy (y years)
Bullmastiff	54.5	8.6
Gordon Setter	30.0	11.3
Labrador Retriever	32.0	12.6
Old English Sheepdog	36.5	11.8
Rhodesian Ridgeback	38.0	9.1
Scottish Deerhound	44.0	9.5
Tibetan Terrier	11.5	14.0
Viszla	26.0	12.5

(Source: RSPCA)

Some of this information is shown on the scatter diagram.



(a) Plot the information for the Vizsla dogs to complete the scatter diagram.

(1)



(b) Describe and interpret the correlation shown by the scatter diagram.

.....

.....

.....

.....

.....

.....

(2)

These eight breeds of dog have
a mean weight, \bar{x} , of 34.1 kg,
a mean life expectancy, \bar{y} , of 11.2 years.

- (c) (i) Plot the mean point (\bar{x}, \bar{y}) .
- (ii) Draw a line of best fit through the mean point.

(2)

A dog owner wants to predict the life expectancy of his Border Terrier.
The Border Terrier has a mean weight of 6.5 kg.
Using the line of best fit **may not** be reliable for this prediction.

(d) Explain why.

.....

.....

.....

.....

.....

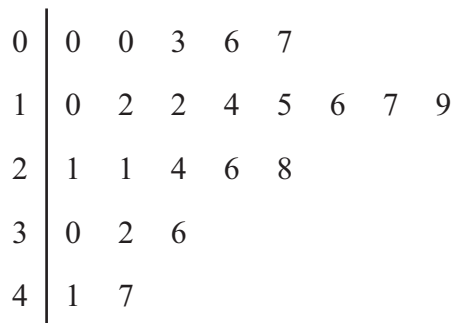
(1)

(Total for Question 7 is 6 marks)



8 Niki asked 23 people how many CDs they have.

The stem and leaf diagram shows her results.



Key:
4 | 1 = 41 CDs

(a) Write down the number of these people who have no CDs.

.....
(1)

(b) Write down the median number of CDs.

.....
(1)

(c) Work out the lower and upper quartiles.

Lower Quartile

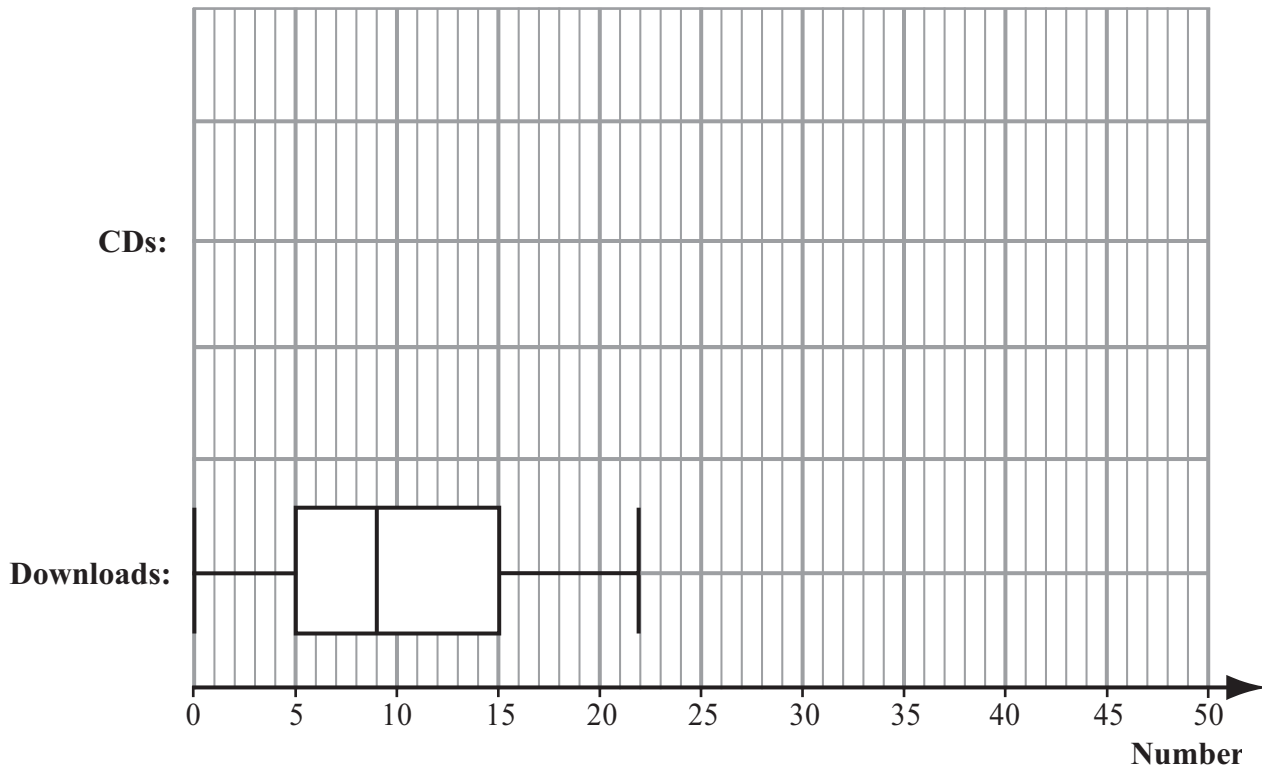
Upper Quartile

(2)



Niki asked the same people about music downloaded from the internet.

She drew the box plot below using this data.



(d) On the same grid draw the box plot for the CD data.

(3)

*(e) Use the box plots to compare the two distributions.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(4)

(Total for Question 8 is 11 marks)



- 9 The table gives information about what full time first degree graduates did after completing their courses in 2002

Destinations of full-time first degree graduates 2002

Area of Study	UK Employment		Overseas Employment	Continuing Education	Unemployed
	Permanent	Temporary			
UK	42.8 %	20.1 %	2.1 %	19.8 %	6.8 %
North East	44.9 %	17.2 %	2.4 %	21.6 %	6.0 %
North West	44.5 %	21.3 %	1.7 %	18.9 %	6.5 %
Yorkshire and the Humber	47.5 %	18.5 %	2.6 %	17.7 %	6.1 %
East Midlands	47.1 %	18.9 %	1.9 %	17.7 %	6.1 %
West Midlands	42.2 %	21.1 %	2.1 %	20.6 %	7.1 %
East	38.9 %	19.1 %	1.9 %	26.5 %	5.6 %
London	40.2 %	19.5 %	1.2 %	19.6 %	9.1 %
South East	42.0 %	21.0 %	2.1 %	19.6 %	6.5 %
South West	45.7 %	19.0 %	2.4 %	16.0 %	6.9 %

(Source: www.gov.uk)

- (a) For the graduates who studied in the West Midlands, write down the percentage who are unemployed.

..... %
(1)

For the graduates who studied in the South East area, the percentage who went into permanent UK employment is twice the percentage that went into temporary UK employment.

One other area of study had this ratio of permanent to temporary UK employment.

- (b) Write down the name of this other area of study.

.....
(1)



(c) For graduates who studied in London, work out the total percentage who went into some type of employment.

..... %
(2)

(d) For graduates who studied in the UK, work out the total percentage represented in this table.

..... %
(2)

The information in the table was gathered by means of a questionnaire given to all full time first degree students graduating in 2002

(e) The answer to part (d) is not 100%.

Suggest a reason why.

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

(1)

(Total for Question 9 is 7 marks)



10 Sophie has a biased coin.

She tosses the coin 40 times and records the number of heads and tails.

Her results are:

Heads	Tails
25	15

Sophie uses these results to estimate the probability of getting a head when she tosses this coin again.

(a) Write down Sophie's estimate.

.....
(1)

(b) How can Sophie improve her estimate?

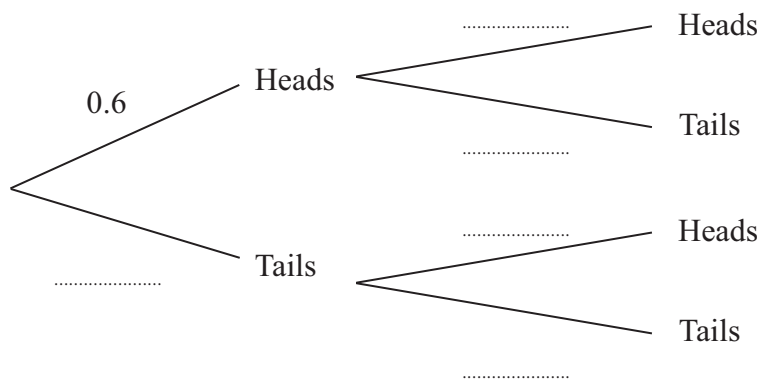
.....
.....
(1)

The true probability of getting a head on this coin is actually 0.6

(c) Write down the true probability of getting a tail on this coin.

.....
(1)

Sophie then tosses the biased coin twice.



(d) Complete the tree diagram.

(1)



(e) Work out the probability that Sophie will get

(i) two Heads,

.....
(2)

(ii) at least one Tail.

.....
(2)

(Total for Question 10 is 8 marks)



11 A town council wants information about local people's use of recycling facilities.

Two methods of collecting information have been suggested.

Method 1: To ask people using the recycling facilities at a local supermarket.

Method 2: To send a questionnaire to all council tax payers.

(a) Which method is likely to give the most reliable results?

Give a reason for your answer.

.....

.....

.....

.....

.....

(2)

One question on the questionnaire is:

'In what ways do you use the council's recycling facilities?'

This is **not** a good question.

(b) Write down **one** reason why.

.....

.....

.....

.....

.....

(1)



The council wants to find out how many times per month people use the recycling facilities at the supermarket.

(c) Suggest a suitable question they could use on the questionnaire.

.....

.....

.....

.....

.....

.....

.....

(2)

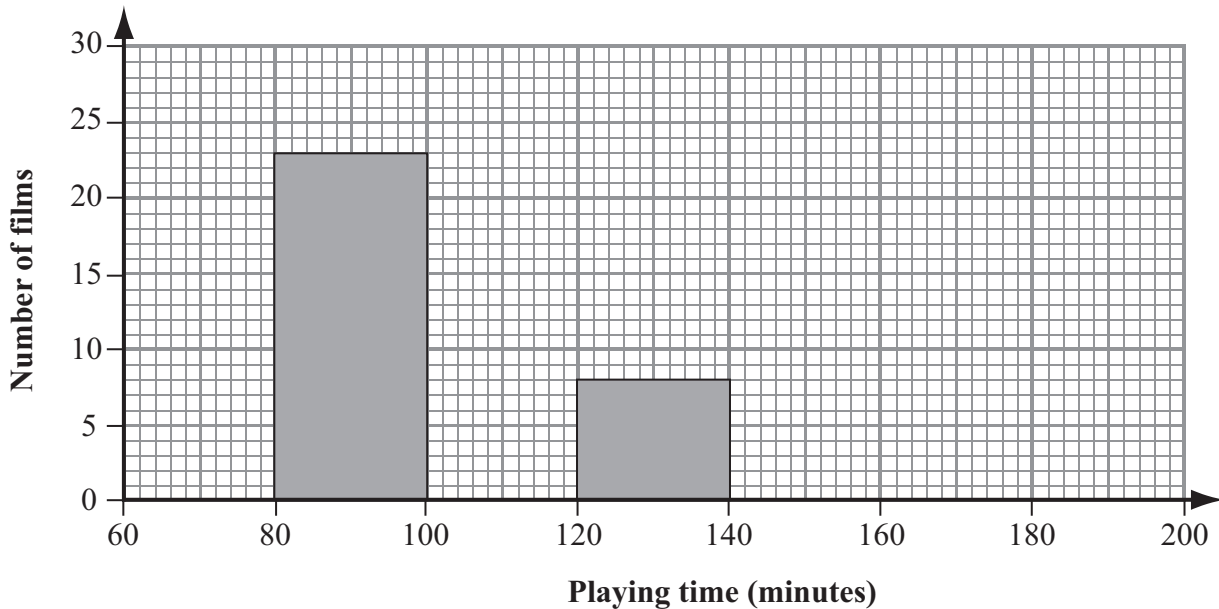
(Total for Question 11 is 5 marks)



12 The table shows some information about 50 films in a DVD library.

Playing time (t minutes)	Number of films
$80 \leq t < 100$	23
$100 \leq t < 120$	12
$120 \leq t < 140$	8
$140 \leq t < 160$	3
$160 \leq t < 180$	4

The incomplete histogram shows some of this information.



(a) Use the table to complete the histogram.

(2)

(b) Write down the modal class of playing times.

..... minutes

(1)

(c) Describe the skewness of the data.

.....

(1)

(Total for Question 12 is 4 marks)



13 The table shows the total amount of money spent on chocolate bars in the UK (£ millions) in 2005 and 2006

Year	2005	2006
Amount (£ millions)	501	627

(Source: Office for National Statistics)

(a) Using 2005 as the base year, calculate the index number for the amount of money spent on chocolate bars in 2006

.....
(2)

The table gives the index numbers for the amount spent on chocolate bars and on fruit and vegetables in the UK in 2007

The index numbers have base year 2005

	Index number
Chocolate bars	117
Fruit and vegetables	106.5

(Source: Defra)

(b) Compare the changes in spending on chocolate bars and on fruit and vegetables between 2005 and 2007

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

(Total for Question 13 is 4 marks)



14 The table gives some information about the numbers of visitors to Yukon Territory, Canada.

Year	Quarter	Visitors (1000s)	4-point moving average
2006	1 (Jan–Mar)	13	
	2 (Apr–Jun)	101	
	3 (Jul–Sep)	184	78.75
	4 (Oct–Dec)	17	78.5
2007	1 (Jan–Mar)	12	78.75
	2 (Apr–Jun)	102	82.5
	3 (Jul–Sep)	199	82.25
	4 (Oct–Dec)	16	82.25
2008	1 (Jan–Mar)	12	81.75
	2 (Apr–Jun)	100	75.75
	3 (Jul–Sep)	175	75
	4 (Oct–Dec)	13	

(Source: Yukon Dept of Tourism & Culture)

(a) The last 4-point moving average is 75

(i) Write down the calculation to show this.

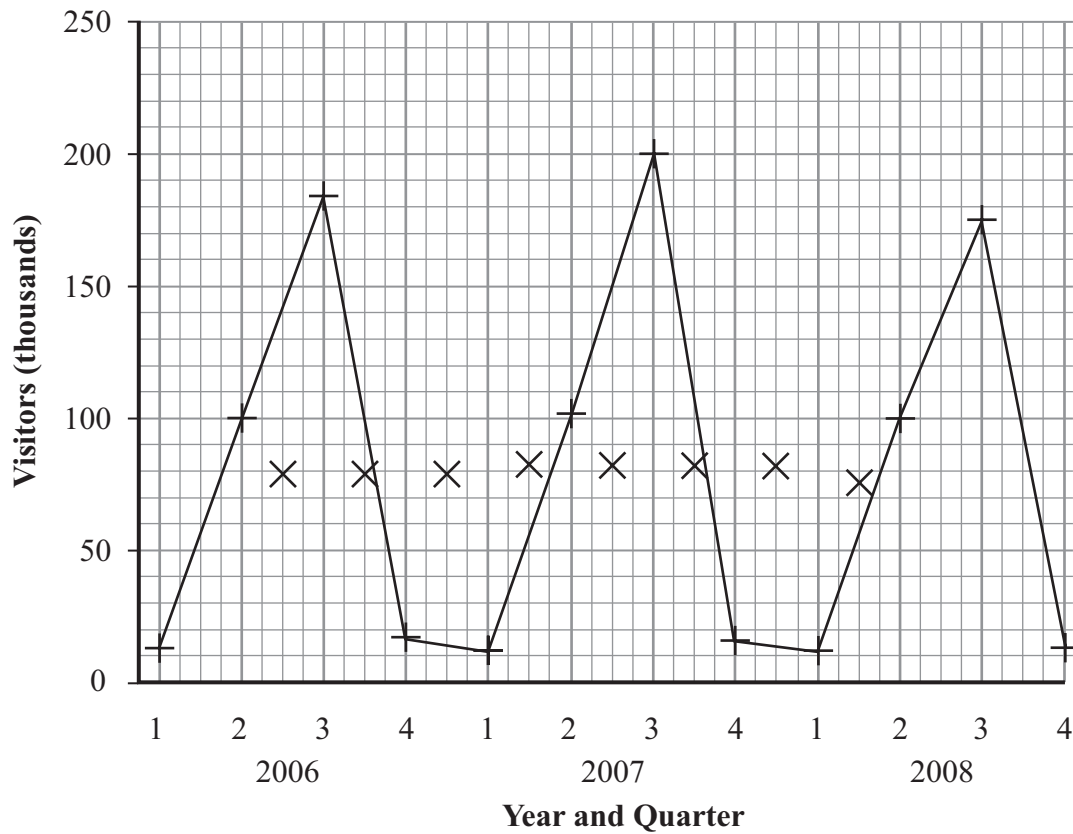
(1)

(ii) Plot this last moving average on the time series graph.

(1)



Visitors to Yukon Territory



(b) Describe the trend in visitor numbers over the three years.

(1)

(c) Write down the time of year when the greatest number of people visit Yukon Territory.

(1)

(d) When is the seasonal variation the least in each year?

(1)

(Total for Question 14 is 5 marks)

TOTAL FOR PAPER IS 80 MARKS



BLANK PAGE

