Write your name here

Surname		Other names

**Pearson
Edexcel GCSE**

Centre Number

Candidate Number

Statistics
Paper 1F

Foundation Tier

Thursday 21 June 2018 – 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 ▶

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.

P 5 6 8 2 4 A 0 2 2 4

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 the life expectancy for males and for females in 5 different regions of the world.

Region	Life expectancy in years	
	Male	**Female**
Africa	58	61
Americas	74	79
Asia	70	74
Europe	74	81
Oceania	75	80

Source: Population Reference Bureau

(a) Write down the region with the highest male life expectancy.

....

(1)

(b) Write down the region with the greatest difference in life expectancy between females and males.

....

(1)

(c) Work out the difference in the male life expectancy between Asia and Africa.

.... years

(1)

(d) Compare life expectancy for females with life expectancy for males.

....

....

(1)

(Total for Question 1 is 4 marks)

Turn over ▶

2 Howard recorded the type of drink ordered by the first 20 customers in his cafe one Monday morning.

Here are his results.

coffee   tea   coffee   tea   water   tea   tea   water   tea   coffee

water   tea   coffee   coffee   coffee   coffee   tea   tea   tea   water

The tally chart shows some of this information.

Type of drink	Tally	Frequency
coffee	卌 ‖	7
tea		
water	‖‖	4

(a) Complete the tally chart.

(1)

(b) Complete the bar chart.
Include a scale on the vertical axis.
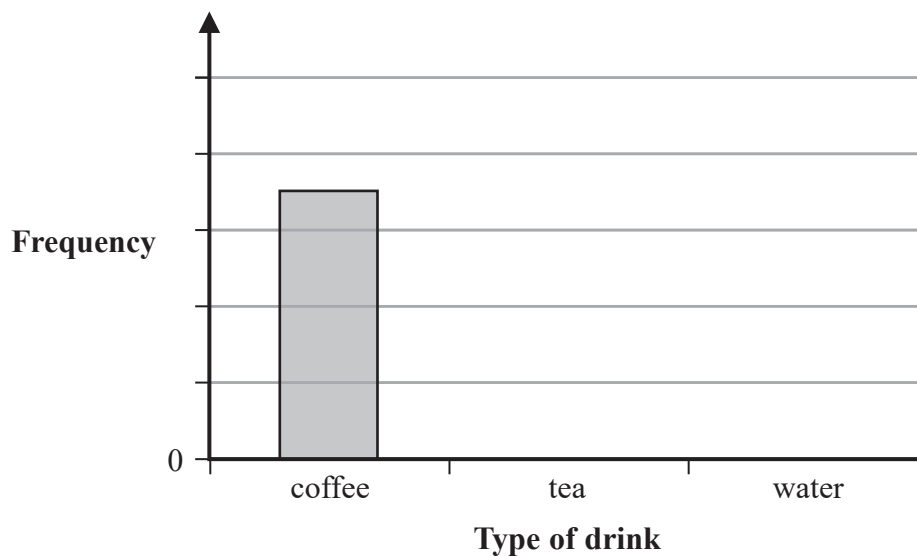
(2)

Howard thinks tea is the most popular drink ordered at his cafe by all customers.

(c) Explain why Howard might **not** be correct.

....

....

(1)

(Total for Question 2 is 4 marks)

3 Meryl thinks that a person's favourite sport depends on the person's age.

She plans to use quantitative and qualitative variables to investigate this.

(a) (i) Write down a quantitative variable that she needs to use in her investigation.

....

(ii) Write down a qualitative variable that she needs to use in her investigation.

....

(2)

(b) Complete the following sentence with the correct statistical term.

Collecting information from every member of the population

is known as a ....

(1)

(c) Give one advantage of collecting information from every member of the population.

....

....

(1)

(d) Describe one problem Meryl might have when collecting her data.

....

....

(1)

(Total for Question 3 is 5 marks)

4 A clothing shop sells shirts in 3 different colours and in 3 different sizes.

The two-way table shows information about the number of shirts sold in each size and in each colour.

	Black	White	Grey	Total
Small	10	23	31	64
Medium	13	6	0	19
Large	7	2	8	17
Total	30	31	39	100

One of these shirts is to be selected at random.

(a) Write down the colour that is most likely to be selected.

....

(1)

(b) Write down the size that is least likely to be selected.

....

(1)

(c) Describe the likelihood of selecting a shirt that is Medium and Grey.

....

(1)

(d) Write down the probability that the shirt selected is Large.

....

(1)

(e) Use the information in the first two-way table to complete this two-way table.

	Black	**Not Black**	**Total**
Small	10		64
Not Small			
Total			100

(2)

(Total for Question 4 is 6 marks)

5 The table shows the number of hours of sunshine in Eastbourne for each of the first 11 months of 2015

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Hours of sunshine	70	98	142	243	206	230	213	181	196	117	34

Source: www.metoffice.gov.uk

(a) Explain why there is no mode for this information.

....

....

(1)

The total number of hours of sunshine for these 11 months is 1730

(b) Find the mean number of hours of sunshine per month.
Give your answer to the nearest whole number.

.... hours

(1)

(c) Show that the range is 209

(1)

In December 2015 there were 27 hours of sunshine in Eastbourne.

(d) What effect will including this information have on

(i) the mean number of hours of sunshine per month?

....

(ii) the range?

....

(2)

(Total for Question 5 is 5 marks)

6 Adults in Northern Ireland and in Wales were asked how many hours per week they spent on the internet at home, at work and anywhere else.

The composite bar chart shows information about the results.
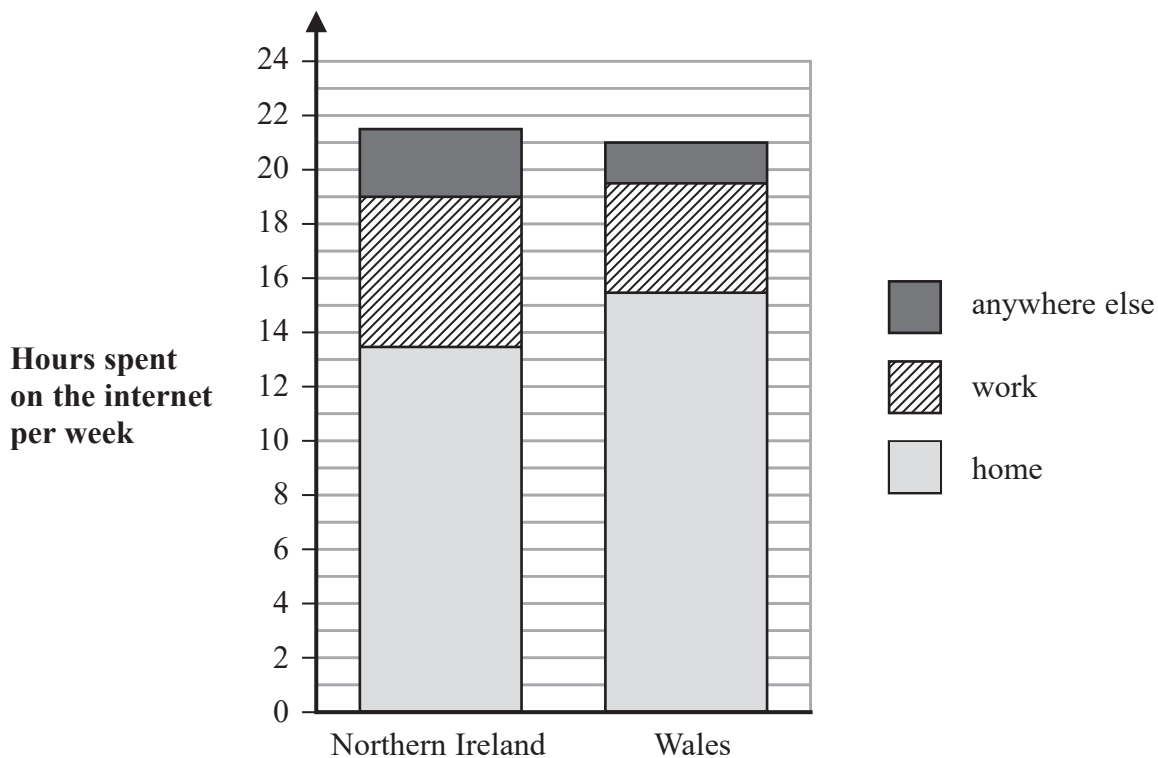
Source: Ofcom.org

(a) Find the number of hours spent on the internet per week at home for adults in Northern Ireland.

.... hours

(1)

(b) Find the number of hours spent on the internet per week at work for adults in Wales.

.... hours

(1)

(c) Use the information in the composite bar chart to compare internet use by adults in Northern Ireland with adults in Wales.

....

....

....

....

(2)

(Total for Question 6 is 4 marks)

Turn over ▶

7   The size, in m², and the price, in £ thousands, of 8 houses sold on a particular street in Leeds are shown in the table.

House	A	B	C	D	E	F	G	H
Size (m²)	67	70	85	91	73	77	103	62
Price (£ thousands)	102	113	175	155	127	140	193	118

The scatter diagram shows this information for houses **A** to **G**.
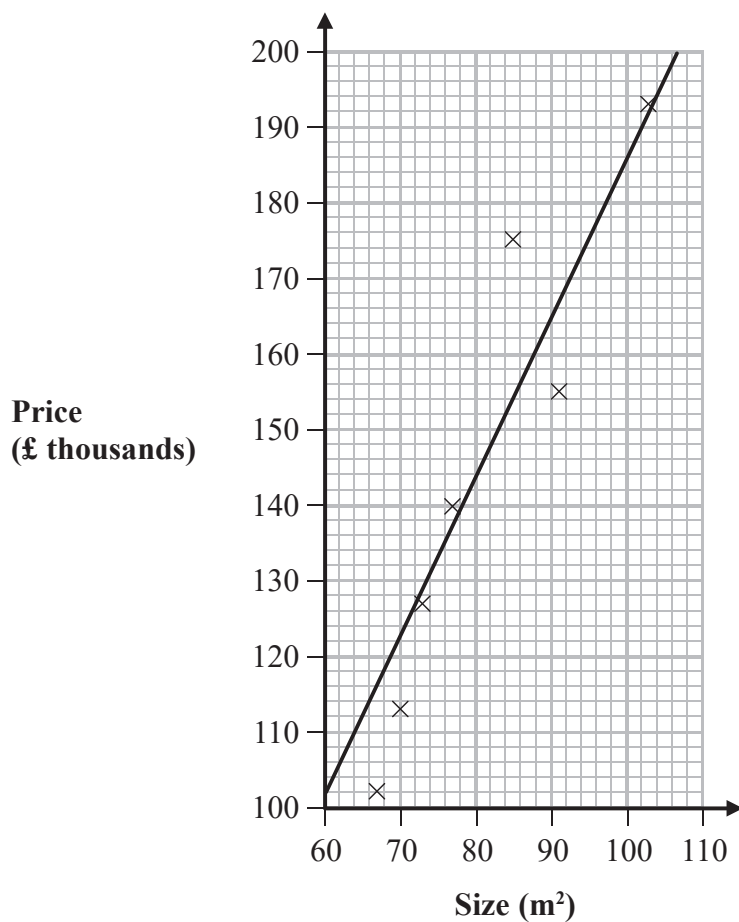
Source: rightmove.co.uk

(a) Plot the information for house **H** on the scatter diagram.

(1)

(b) Explain why size is the explanatory variable.

....

....

(1)

(c) Describe and interpret the correlation.

....

....

....
(2)

The line of best fit has been drawn on the scatter diagram.

(d) (i) Use the line of best fit to estimate the price of a house on the same street in Leeds with a size of $80\,m^2$.

£.. thousands

(ii) Give a reason why the estimate should be reliable.

....

....
(2)

(e) Give an example where it may **not** be reliable to use the line of best fit to estimate the price of a house.

....

....

....
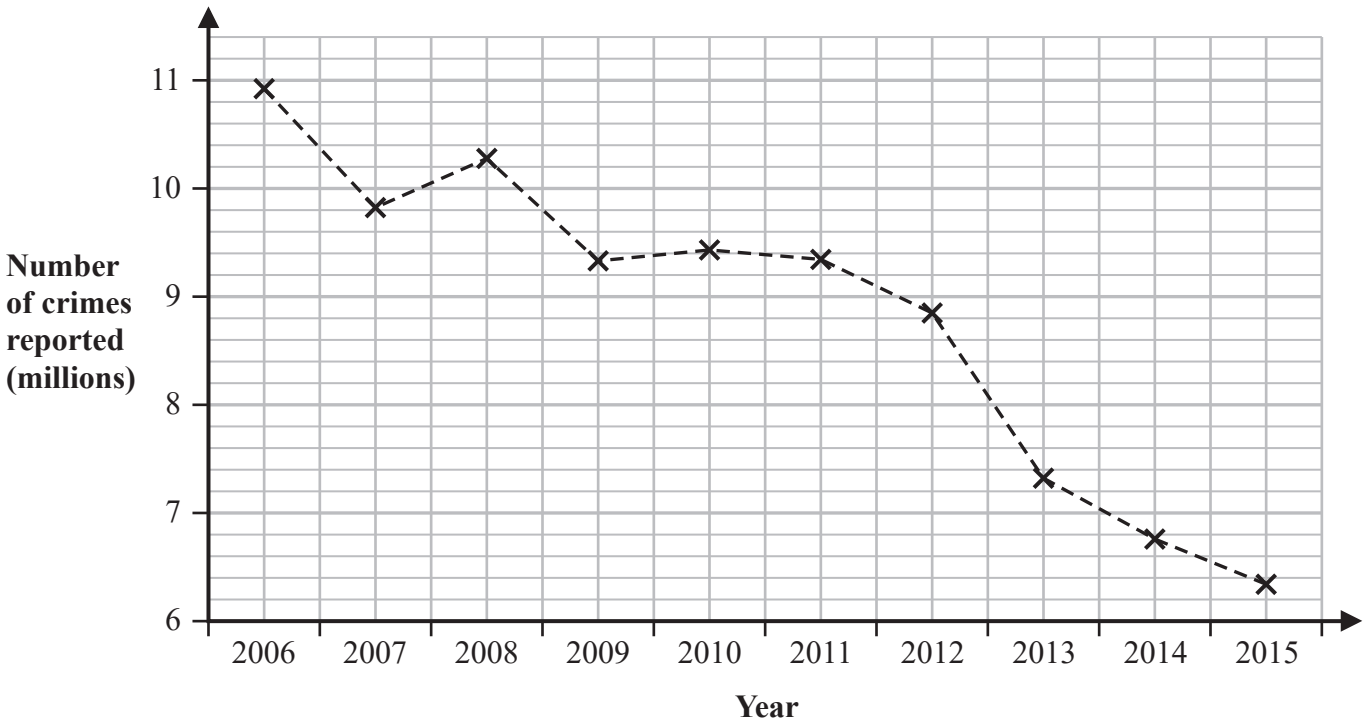**(1)**

(Total for Question 7 is 7 marks)

8 The graph shows the number of crimes reported in England and Wales for the years 2006 to 2015

Source: Crime Survey for England and Wales

(a) Write down the years that had between 9 million and 10 million crimes reported.

....
(1)

(b) Write down one reason why this graph may be misleading.

....

....
(1)

(c) Describe the trend in the number of crimes reported in England and Wales between 2006 and 2015

....
(1)

(d) Between which two consecutive years did the biggest drop in the number of crimes reported take place?

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

The table shows the number of crimes reported and the index numbers for the years 2006 and 2015, using 2006 as the base year.

Year	2006	2015
Number of crimes reported (millions)	10.94	6.33
Index number	100	58

(e) Show that the index number for 2015 is 58, to the nearest whole number.

(1)

(f) Give an interpretation of the index number 58

....

....

(1)

(Total for Question 8 is 6 marks)

9 Supul is investigating how long pupils in Year 10 in his school spent on homework.

He asked each pupil to record the time taken, to the nearest minute, to do their homework one night.

*(a) Describe the type of data the pupils recorded.

....

....

(2)

Supul collected each pupil's recorded time.

*(b) Discuss how reliable the data might be.

....

....

....

....

(2)

Supul selected a sample of 20 of the pupils.
Here are their recorded times.

55	53	35	31	21	47	64	53	23	37
50	32	58	51	40	45	63	33	41	60

(c) Complete an ordered stem and leaf diagram for these times.
You must include a key.
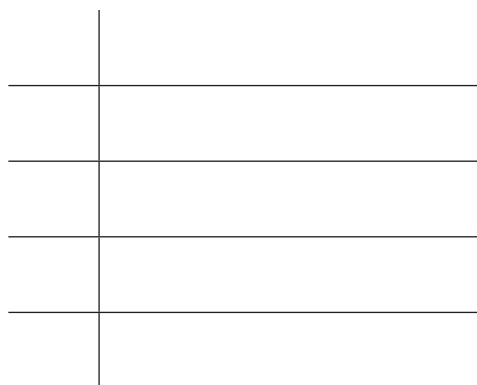
(3)

(d) Find the median time.

.... minutes

(1)

The mean time is 44.6 minutes.

(e) How many of the 20 pupils took more than the mean time to do their homework?

....

(1)

The times were recorded to the nearest minute.

(f) Find the **maximum** possible range for the times.

.... minutes
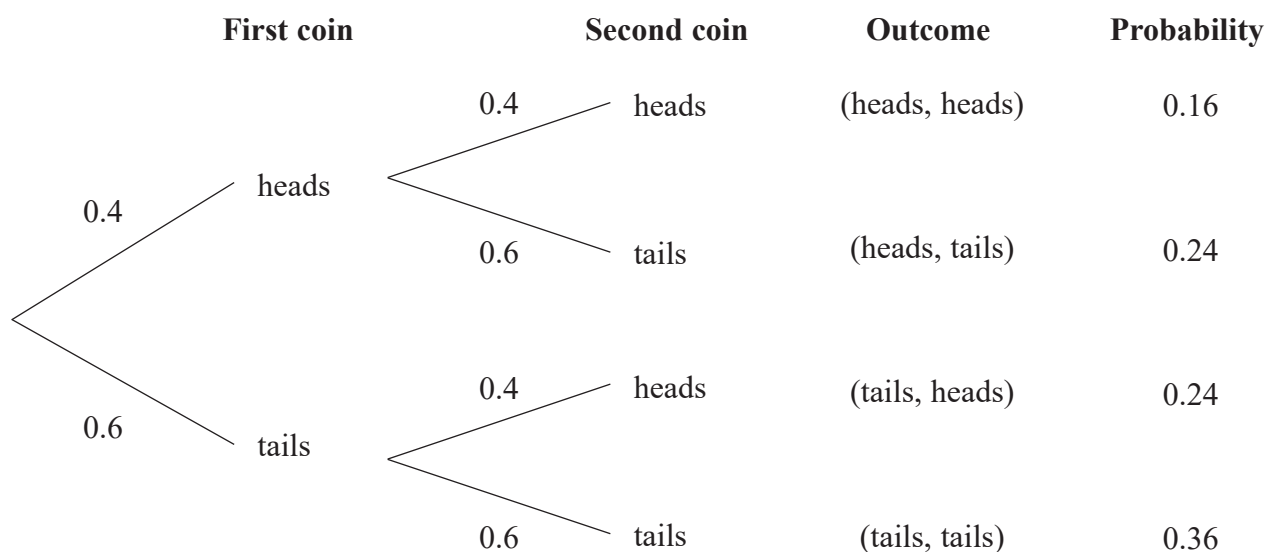
(2)

(Total for Question 9 is 11 marks)

10 Simon spins two identical biased coins.

He drew a tree diagram to help identify the possible outcomes.

	First coin			**Second coin**	**Outcome**	**Probability**
			0.4	heads	(heads, heads)	0.16
	heads					
0.4			0.6	tails	(heads, tails)	0.24
			0.4	heads	(tails, heads)	0.24
0.6	tails					
			0.6	tails	(tails, tails)	0.36

(a) Show why the probability of the outcome (heads, heads) is 0.16

(1)

Simon says that the likelihood of getting one head and one tail is nearly evens.

(b) Show why Simon is correct.

(2)

Simon spins the two coins 100 times.

The outcome (tails, tails) happened 25 times.

(c) How does this compare with the expected outcome?

....

....

(2)

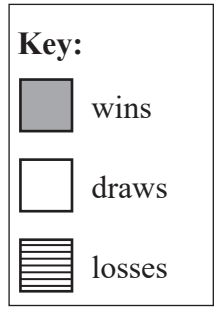**(Total for Question 10 is 5 marks)**

11 The pie charts show information about the proportion of wins, draws and losses in the matches played by the England football team and by the Switzerland football team for the years 2012 to 2015
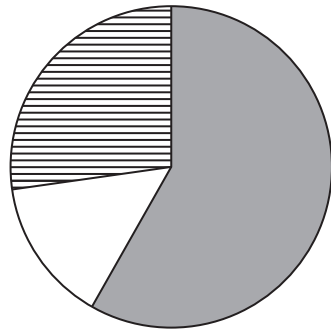
England   Switzerland

Key:
wins
draws
losses
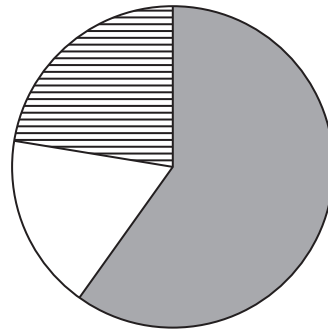
Source: www.worldfootball.net

(a) Compare the proportion of losses for the two football teams.

....

....

(1)

England played a total of 48 matches.

The angle representing wins in the England pie chart is 210°

(b) Work out how many of these matches were wins.

....

(2)

Both teams had the same **number** of draws.

(c) Which team played the greater total number of matches?
Give a reason for your answer.

....

....

....
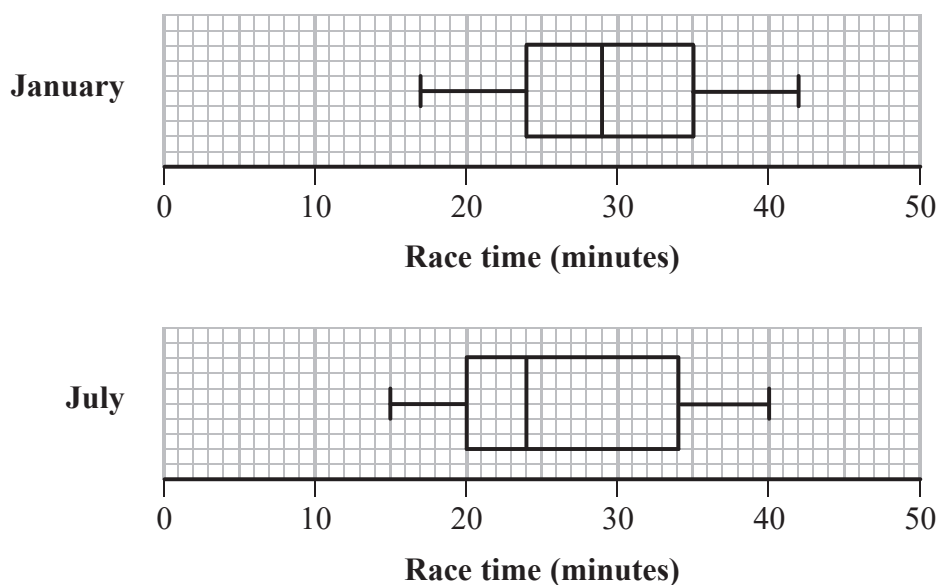
(2)

(Total for Question 11 is 5 marks)

12 Some athletes ran a 5 km race in January and in July.

The box plots give information about the times taken, in minutes, for the same athletes to complete these races.

January

Race time (minutes)

July

Race time (minutes)

*(a) Compare the distributions of the race times in January and in July.

....

....

....

....

(2)

(b) Compare the proportion of athletes completing the race in less than 24 minutes in January and in July.

....

....

....

....

(2)

(Total for Question 12 is 4 marks)

13 Sandra owns a delivery company.

She wants to investigate how satisfied customers are with the company.

(a) State the population for her investigation.

....

(1)

When customers buy something, they are asked to agree to their names being added to the company database.

(b) Identify one possible problem with using the company database as a sampling frame.

....

....

(1)

Sandra designs a questionnaire to give to customers.

She is going to do a pilot study.

(c) (i) Explain what is meant by a pilot study.

....

....

(ii) Give a reason why a pilot study is used.

....

....

(2)

Sandra will use closed questions on the questionnaire.

(d) Give one advantage of using closed questions rather than open questions.

....

....

(1)

One of the questions on the questionnaire is designed to collect bivariate data.

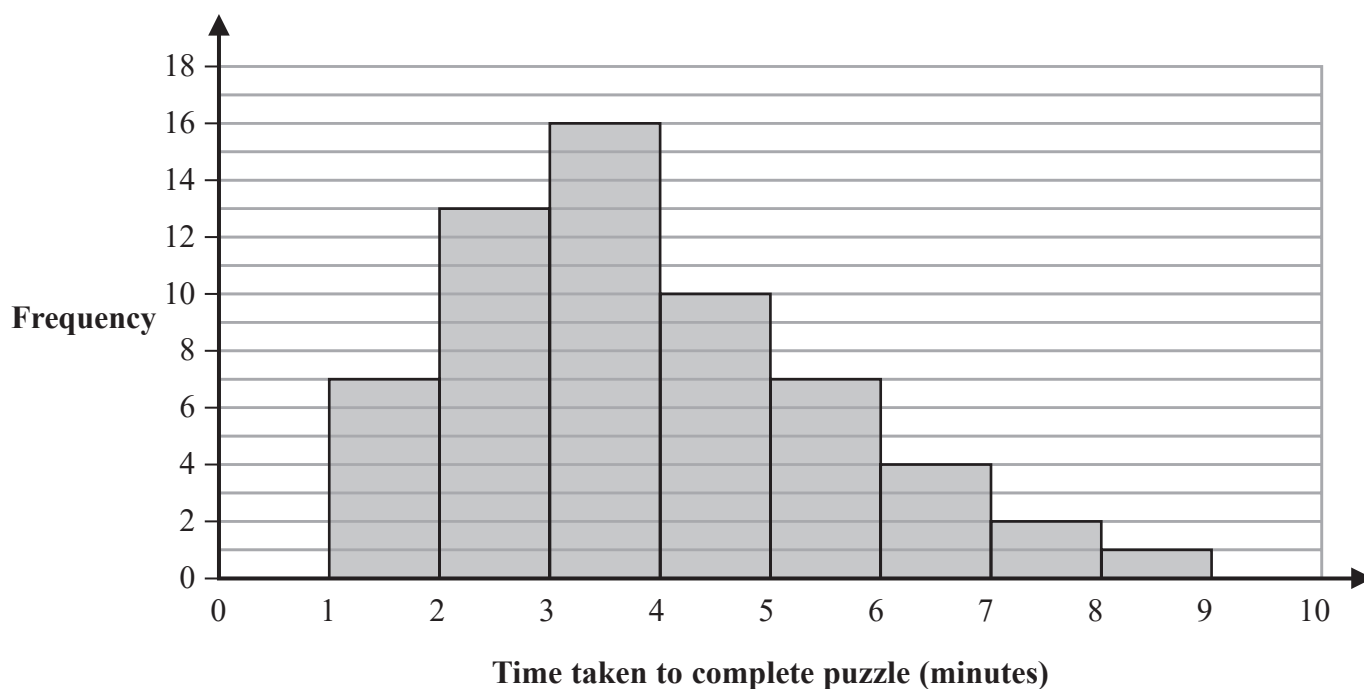(e) Suggest a suitable diagram that Sandra could use to represent the information from this question.

....

(1)

(Total for Question 13 is 6 marks)

14 A maths teacher asked 60 students to complete a puzzle.

The time taken, in minutes, for each student to complete the puzzle was recorded.

The histogram shows information about the results.

Time taken to complete puzzle (minutes)

(a) Work out how many students completed the puzzle in 4 minutes or less.

....

(1)

(b) Write down the class interval that contains the median.

.... minutes

(1)

*(c) Describe the shape of the distribution.

....

....

(2)

P 5 6 8 2 4 A 0 2 0 2 4

For the results $\Sigma fx = 232$

(d) Calculate the mean.
Give your answer to 1 decimal place.

.... minutes

(2)

(e) Use the histogram to calculate an estimate for the 95th percentile.

.... minutes

(2)

(Total for Question 14 is 8 marks)

TOTAL FOR PAPER IS 80 MARKS

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