Write your name here

Surname	Other names

Pearson Edexcel Award

Centre Number	Candidate Number

Statistical Methods

Level 1
Calculator allowed

Monday 16 January 2017 – Morning
Time: 1 hour 30 minutes

Paper Reference
AST10/01

You must have:
Pen, HB pencil, eraser, calculator, ruler, protractor.

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.*
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

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.*

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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P 4 8 3 3 7 A 0 1 2 0

Pearson

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 (a) There are 9 white counters and 1 black counter in a bag.
There are no other counters in the bag.

Ravi is going to take at random a counter from the bag.

(i) Write down **the word** that best describes the likelihood that the counter will be black.

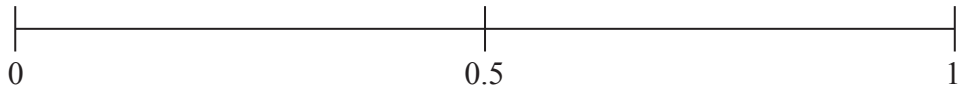
.....

(ii) Write down **the word** that best describes the likelihood that the counter will be green.

.....

(2)

(b) On the probability scale, mark with a cross (×) the probability of an event that is certain to happen.



(1)

(c) Write down the probability that when a fair coin is spun it will land Heads.

.....

(1)

(Total for Question 1 is 4 marks)

2 The table shows information about nine hotels.

Name of hotel	Room cost per night	Number of rooms	Pets allowed	Breakfast included	Dinner included
Astoria	£105	14	yes	no	no
Bedford	£89	26	no	yes	yes
Charles	£95	8	no	yes	no
Imperial	£119	35	yes	yes	no
Gala	£62	48	no	yes	no
Kimberly	£79	32	yes	no	yes
Mountbatten	£88	19	yes	no	yes
Newbury	£59	12	yes	yes	no
Pimlico	£76	23	no	yes	yes

One of these hotels has 48 rooms.

(a) Which hotel?

.....

(1)

Some of these hotels do **not** allow pets.

(b) How many hotels?

.....

(1)

Breakfast and dinner are included in two of the nine hotels.

(c) Which hotels?

..... and .....

(1)

One of these hotels has more than 25 rooms, a room cost per night of less than £85 and dinner included.

(d) What is the room cost per night for this hotel?

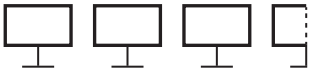
£.....

(1)

(Total for Question 2 is 4 marks)

3 Jamie sells televisions.

The pictogram shows information about the number of televisions he sold in each of five months last year.

	Number of televisions sold
August	
September	
October	
November	
December	

Key:  represents 10 televisions

Jamie sold exactly 30 televisions in one of these months.

(a) Which month?

.....

(1)

Jamie sold more televisions in October than in November.

(b) How many more?

.....

(2)

(c) Work out the total number of televisions Jamie sold in these five months.

.....

(2)

(Total for Question 3 is 5 marks)

4 There is a red crayon (R), a blue crayon (B), a green crayon (G) and a purple crayon (P) in a box.

Yuri is going to take at random two of these crayons from the box.

(a) Write down all the possible combinations of colour he can get.
One has been done for you.

(R, B) .....

.....

(2)

(b) Write down the probability that he will take a red crayon and a blue crayon.

.....

(1)

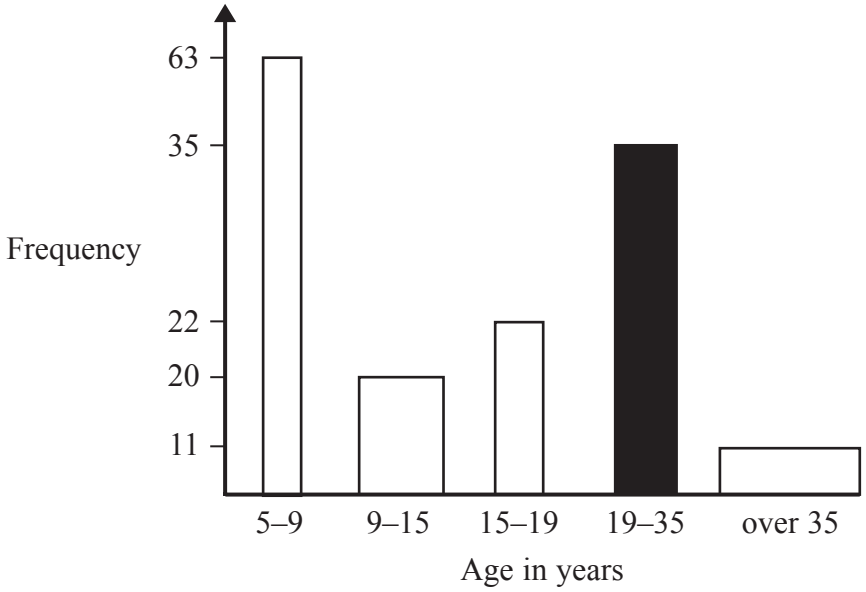
(Total for Question 4 is 3 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

5 The bar chart shows information about the ages of some people watching a film.



Write down three things that are wrong or could be misleading in the bar chart.

1 .....

.....

2 .....

.....

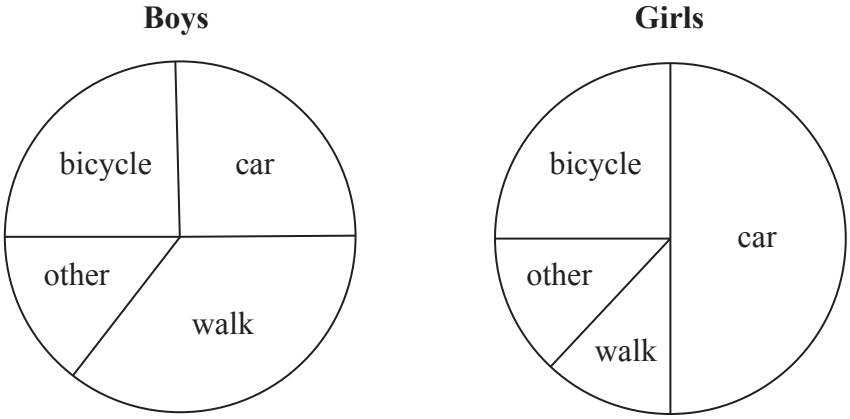
3 .....

.....

(Total for Question 5 is 3 marks)

6 Mary carries out a survey to find out how some students travel to school.

The pie charts give information about her results.



There are the same number of boys and girls in the survey.

Mary compares the results for boys with the results for girls.

She writes down three comparisons.

(a) Mark with a cross (×) which of her comparisons are true and which are false.

(i) The same number of boys and girls travel to school by bicycle. ☐ true ☐ false

(ii) More girls than boys walk to school. ☐ true ☐ false

(iii) Twice as many girls as boys travel to school by car. ☐ true ☐ false

(2)

Mary also wants to find out how far these students live from school.

She uses this question on a questionnaire.

Where do you live?

☐ very near ☐ near ☐ far ☐ very far

(b) Write down two things that are wrong with this question.

1 .....

.....

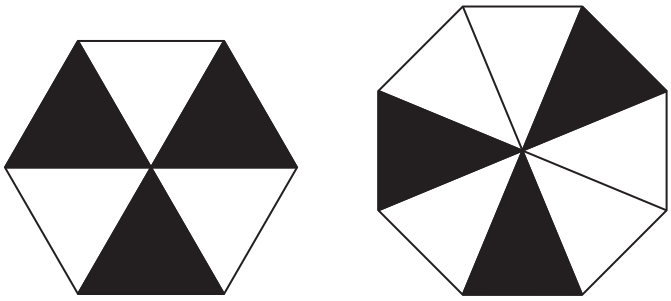
2 .....

.....

(2)

(Total for Question 6 is 4 marks)

7 Kumar has a fair 6-sided spinner (A) and a fair 8-sided spinner (B).



A **B**

Kumar is going to spin each spinner once.

(a) Which spinner has the greater probability of landing on black, spinner A or spinner B? Give a reason for your answer.

.....

.....

(2)

Kim is going to roll a fair ordinary 6-sided dice.

She says that the probability she will get a 3 is $\frac{1}{3}$ and that the probability she will get a 4 is $\frac{1}{4}$

She is **wrong**.

(b) Explain why.

.....

.....

.....

(1)

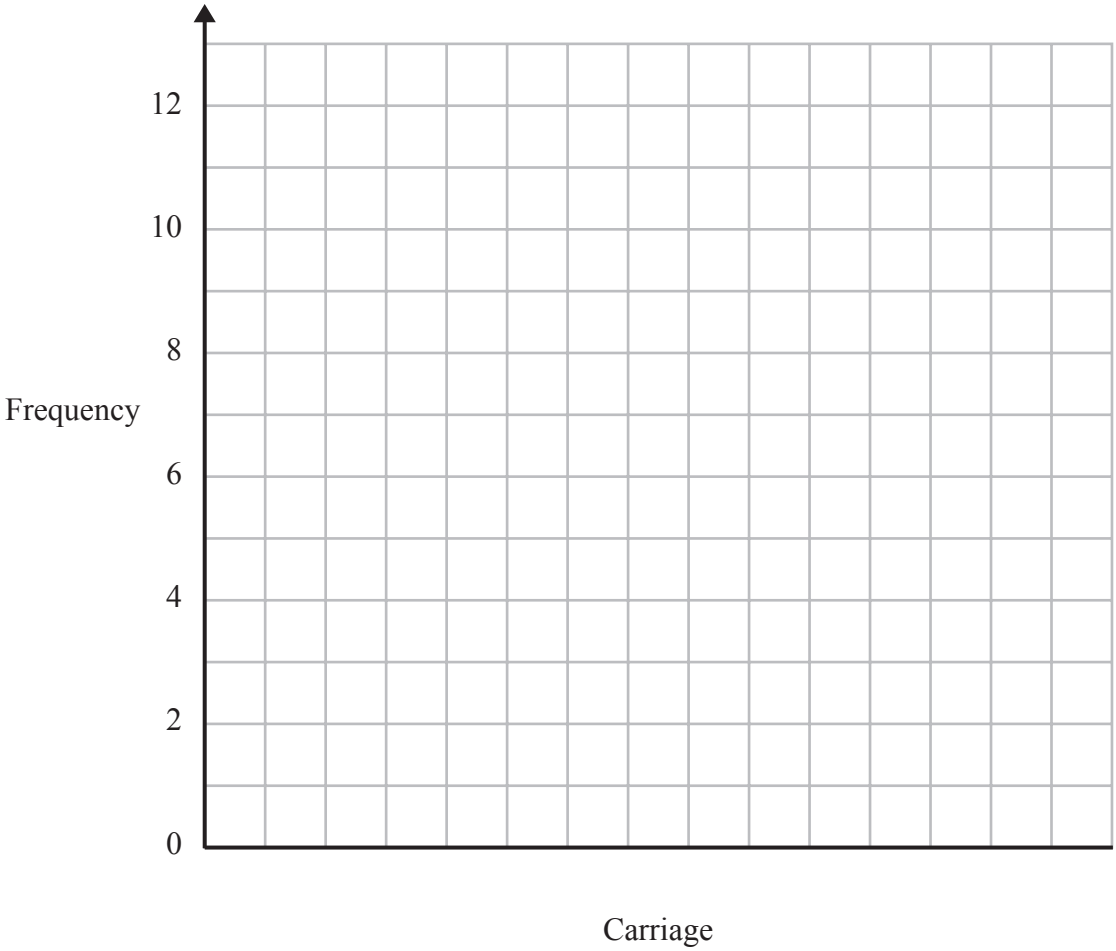
(Total for Question 7 is 3 marks)

8 Peter recorded the number of males and the number of females in each of five railway carriages.

Here are his results.

Carriage	A	B	C	D	E
Male	4	8	12	9	4
Female	7	8	10	4	6

Draw a dual bar chart for the information in the table.



Key:

(Total for Question 8 is 4 marks)

9 Jai spins a biased coin.

Here are his results.

Heads	Tails	Tails	Tails	Tails
Tails	Tails	Heads	Tails	Heads
Heads	Tails	Tails	Tails	Tails

(a) Complete the table for Jai's results.

	Heads	**Tails**
Frequency		

(2)

Jai is going to spin the coin once more.

(b) (i) Write down an estimate for the probability that the coin will land Heads.

.....

(ii) This is **not** a reliable estimate of the probability.
Explain why.

.....

.....

(2)

(Total for Question 9 is 4 marks)

10 Balham Dodgers and Peckham Dribblers are two basketball teams.

The table gives information about the number of points scored by each team in each of 10 games.

Balham Dodgers	17	25	27	27	33	35	39	40	42	45
Peckham Dribblers	19	24	24	26	34	36	37	37	38	40

(a) Use this information to complete the following table.

	Balham Dodgers	**Peckham Dribblers**
Range of points scored	.....	21
Total number of points scored	330	.....
Number of games played	.....	10

(4)

(b) Compare the mean scores of these two basketball teams for their 10 games.

.....

.....

(2)

(Total for Question 10 is 6 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

11 The two-way table gives some information about the numbers and types of medals won by three countries in the London Olympics 2012.

	Type of medal			
	gold	**silver**	**bronze**	**Total**
United States	46		29	104
China				88
Great Britain and Northern Ireland	29	17		65
Total	113	73		

(a) Write down the number of gold medals won by Great Britain and Northern Ireland.

.....

(1)

(b) Complete the two-way table.

(3)

Here is a list of words used to describe data.

categorical **grouped** **discrete** **continuous** **binary**

(c) Use a word from the list to complete correctly the following sentences.

(i) Type of medal is an example of ..... data.

(ii) Number of medals is an example of ..... data.

(2)

(Total for Question 11 is 6 marks)

12 The stem and leaf diagram gives information about the heights of the boys in a running club.

Heights of boys

13	7	9				
14	0	3	5	7	8	
15	1	1	1	6	6	7
16	3	5				

Key:

14 | 0 means 140 cm

(a) How many boys are there in the running club?

.....

(1)

(b) Write down the mode of the heights of the boys.

..... cm

(1)

The range of the heights of the girls in the running club is 28 cm.

(c) Compare the range of the heights of the boys and the range of the heights of the girls.
You must show your working.

.....

.....

.....

(3)

(Total for Question 12 is 5 marks)

13 Jeff sells 8 cars.

The table gives information about the ages and the selling prices of these 8 cars.

Age (in months)	25	50	28	22	45	43	35	57
Selling price (£)	11 000	8000	11 000	12 000	8000	9000	10 000	6000

(a) Work out the median age of the cars.

..... months

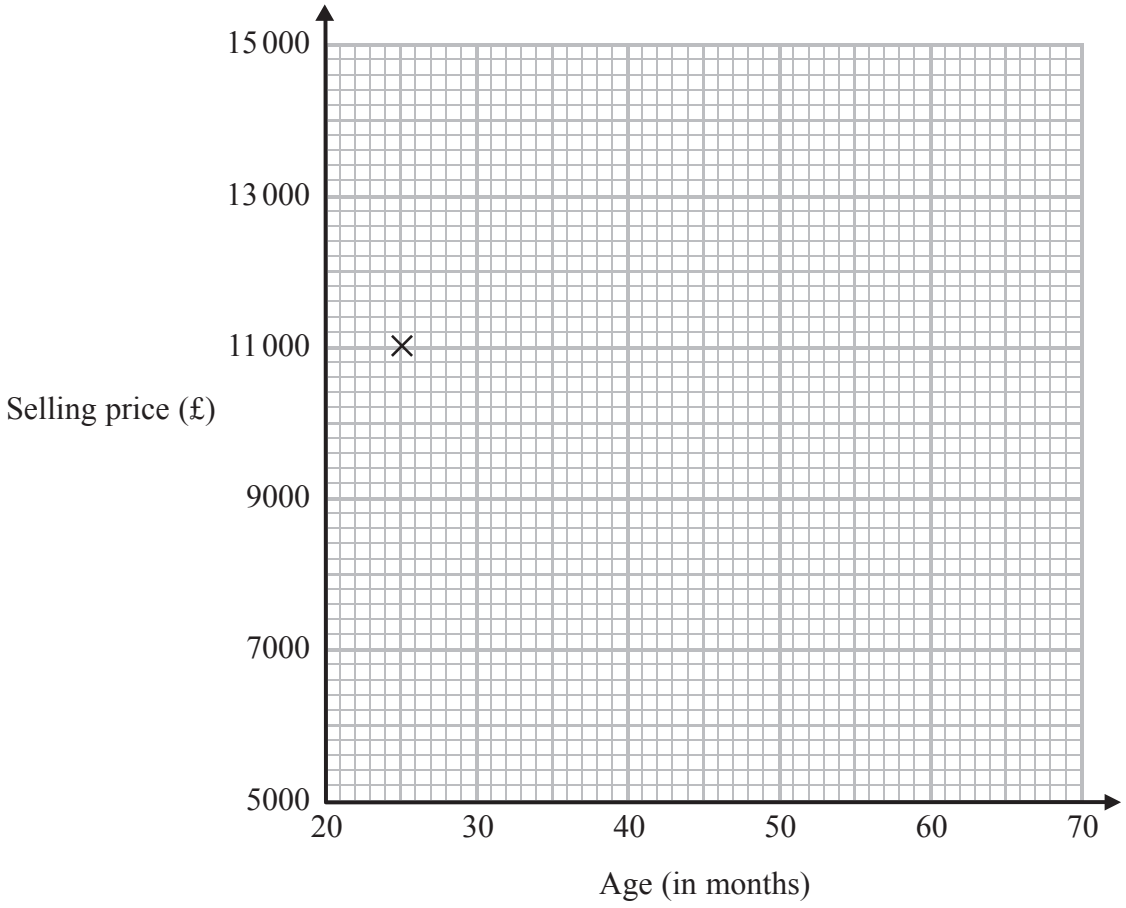
(2)

(b) Work out the mean selling price of the cars.

£.....

(2)

(c) On the grid, draw a scatter graph for the information in the table.
One point has been plotted for you.



(2)

(d) What type of correlation does the scatter graph show?

.....

(1)

Jeff is going to sell another car.

The age of the car is 40 months.

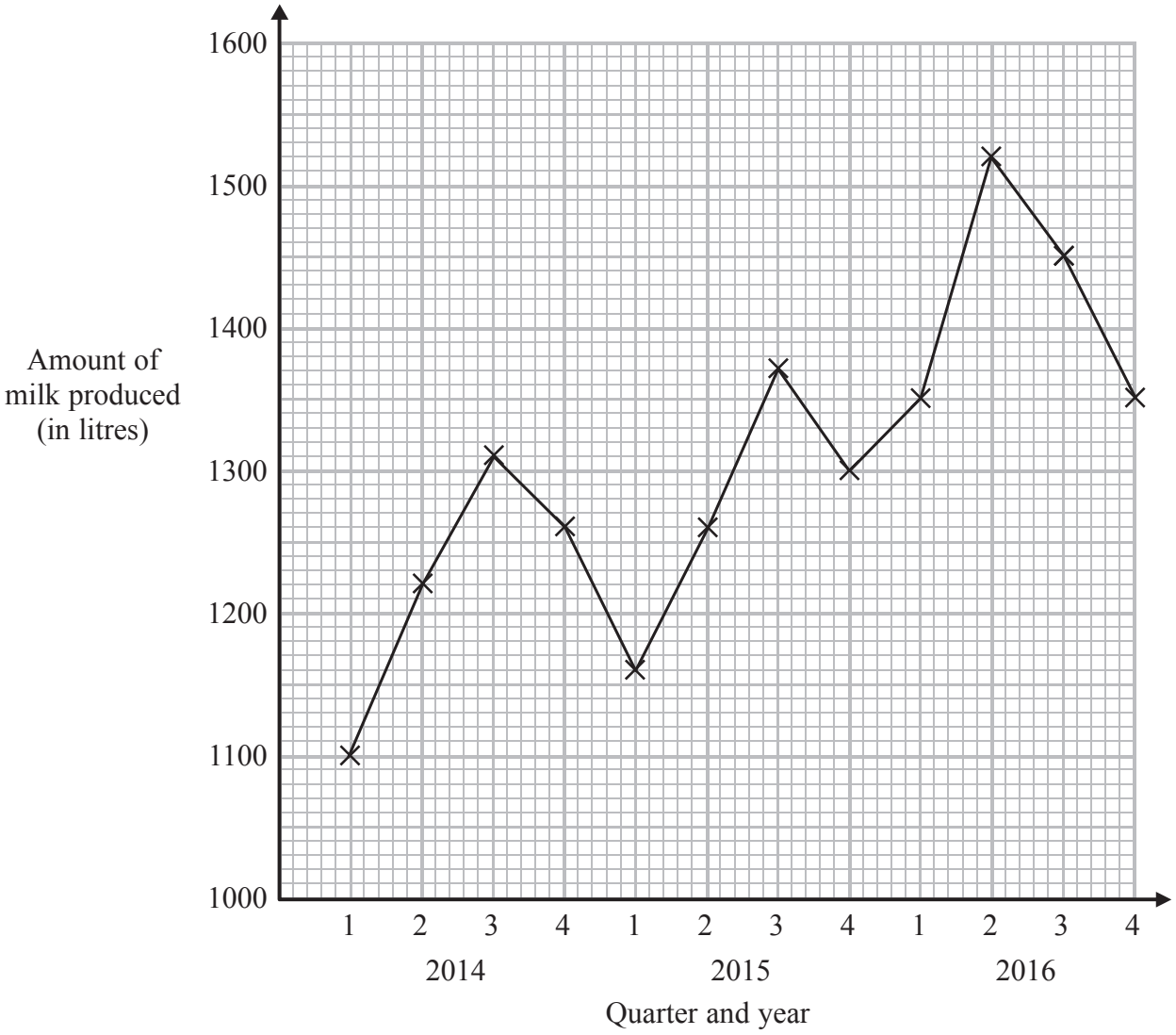
(e) Predict the selling price of the car.

£.....

(1)

(Total for Question 13 is 8 marks)

14 The time-series graph gives information about the amount of milk produced by cows in a farm each quarter from 2014 to 2016.



(a) Describe the trend in the amount of milk produced from 2014 to 2016.

.....

(1)

The amount of milk produced in quarter 3 of 2015 is less than the amount of milk produced in quarter 3 of 2016.

(b) How much less?

..... litres

(2)

The table shows the total amount of milk produced in 2014 and 2015.

Year	2014	2015	2016
Total amount of milk produced (in litres)	4890	5090	.....

(c) Complete the table.

(2)

(Total for Question 14 is 5 marks)

15 A box contains only yellow counters, orange counters and white counters.

Ayako is going to take at random a counter from the box, record its colour and return it to the box.
She is going to do this many times.

(a) Design a suitable data collection sheet for Ayako to use.

(3)

A bag contains red sweets, green sweets and blue sweets.
There are no other sweets in the bag.

Deniz is going to take at random a sweet from the bag.

The probability that the sweet will be red is 0.27
The probability that the sweet will be green is 0.38

(b) Work out the probability the sweet will **not** be red.

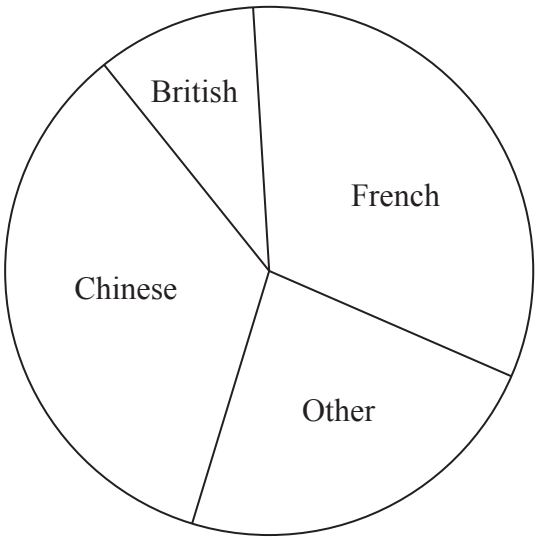
(2)

(c) Work out the probability that the sweet will be either red or green.

(2)

(Total for Question 15 is 7 marks)

16 The pie chart gives some information about the nationalities of the 3249 people attending a concert.



361 British people attended the concert.

(a) Work out the angle for British.
You must show your working.

.....°

(2)

3249 people attended the concert.
To the nearest degree, the angle for French in the pie chart is 117°

(b) Find an estimate for the number of French people who attended the concert.
You must show your working.

.....

(2)

(Total for Question 16 is 4 marks)

17 Here are the weights, in kg, of some turkeys.

4.3	1.5	1.7	3.2	5.5
2.3	2.9	4.4	1.1	4.8
1.2	7.3	2.5	3.3	5.7
2.4	3.1	4.9	6.9	3.7
5.3	3.8	3.9	2.7	6.0

(a) Complete the frequency table for these weights.

Weight (w kg)	**Tally**	**Frequency**
$0 < w \leqslant 2$		
$2 < w \leqslant 4$		
$4 < w \leqslant 6$		
$6 < w \leqslant 8$		
	Total	

(3)

One of these turkeys is chosen at random.

(b) Work out the probability that this turkey will have a weight of 4 kg or less.

(2)

(Total for Question 17 is 5 marks)

TOTAL FOR PAPER IS 80 MARKS