**Pearson
Edexcel Award**

Statistical Methods
**Level 1
Calculator allowed**

Thursday 12 May 2016 – 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 ▶

PEARSON

Answer ALL the questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1   John records each animal sold in his pet shop.

Here are his results.

cat	dog	hamster	cat	cat	hamster
dog	dog	dog	cat	hamster	fish
hamster	cat	dog	cat	cat	dog
fish	dog	cat	fish	cat	dog

(a) Complete the table for this information.

Pet	**cat**	**dog**	**fish**	**hamster**
Frequency	9		3	

(2)

Here are some words that can be used to describe types of data.

continuous   discrete   categorical   quantitative

(b) Complete the sentence below with a word from the list.

Type of pet is an example of .... data.

(1)

(Total for Question 1 is 3 marks)

2 A group of people were asked to name their favourite colour.

The incomplete pictogram shows how many people said red, how many people said green and how many people said blue.

	Number of people
Red	♡ ♡ ♡ ♡
Green	♡ ◗
Blue	♡ ♡ ◗
Yellow	

Key:

♡ represents 6 people

12 people said yellow.

(a) Complete the pictogram.

(1)

More people said red than blue.

(b) How many more?

....

(1)

(c) Work out how many people were asked to name their favourite colour.

....

(2)

(Total for Question 2 is 4 marks)

3 Here is a fair spinner and three cards.
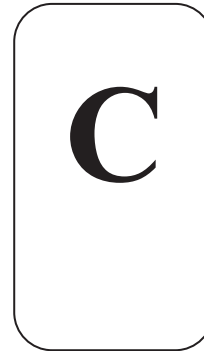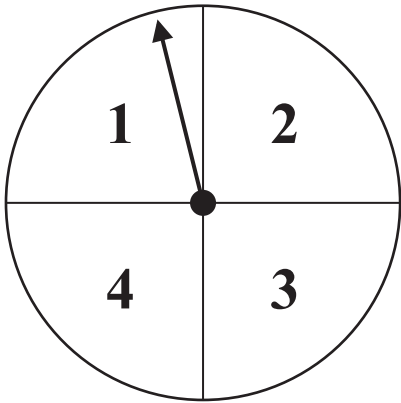
George is going to spin the spinner once and take at random one of the cards.

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

(1, A) ....

....

....

(2)

(b) Write down the probability that the spinner lands on an even number and the card shows the letter A.

....

(1)

(Total for Question 3 is 3 marks)

4 The manager of a sports centre wants to find out how many times people use the swimming pool.

He uses this question on a questionnaire.

> How many times do you use the swimming pool?
>
> ☐   ☐   ☐
>
> Often   Sometimes   Rarely

Write down two things that are wrong with this question.

1 ....

....

2 ....

....
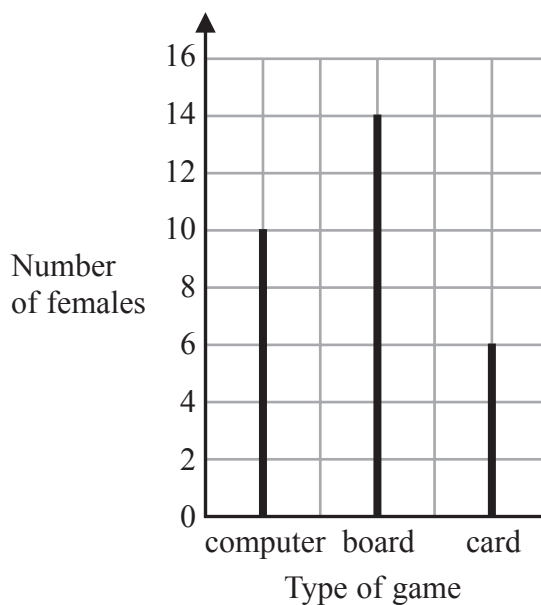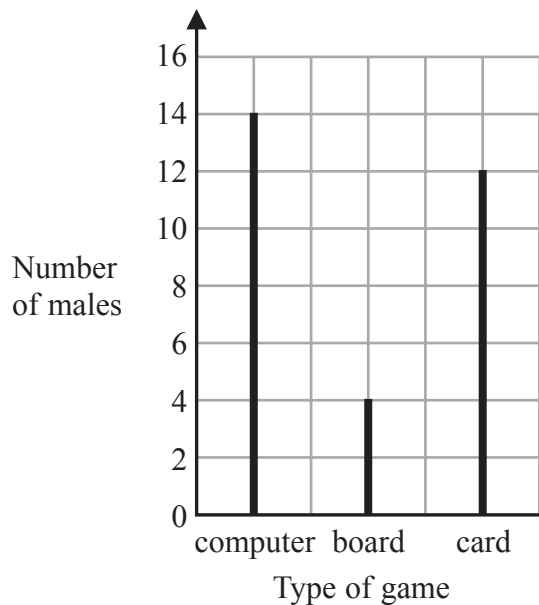
(Total for Question 4 is 2 marks)

Turn over ▶

5 Andy surveyed 30 males and 30 females about their favourite type of game.

The vertical line graphs show information about his results.

Compare Andy's results for males with his results for females.

Write down two comparisons.

1 ....

....

2 ....

....

(Total for Question 5 is 2 marks)

6 Here are 4 statements.

| A person will grow to be 10 metres tall. |

| The outcome is a blue pencil when a pencil is taken at random from a pencil case that contains only 9 blue pencils and 2 red pencils. |

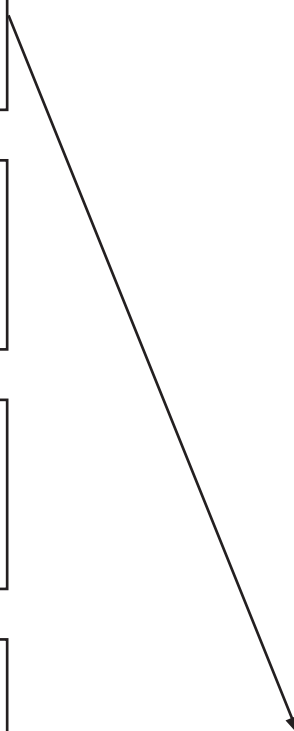| April 10th 2017 will be the day after April 9th 2017. |

| The outcome is an odd number when a fair 6-sided dice is rolled. |

certain

likely

evens

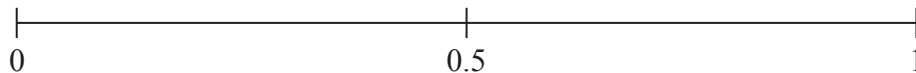unlikely

impossible

(a) Draw an arrow from each statement to the word that best describes its likelihood.
One has been done for you.

(3)

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

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├──────────────────────┼──────────────────────┤
0                      0.5                      1
```

(1)

(Total for Question 6 is 4 marks)

7 The table shows information about five washing machines.

	Wash capacity (kg)	Spin speed (rpm)	Number of programs	Estimated energy consumption (kWh/cycle)	Estimated water consumption (litres/cycle)	Price (£)
Whirlpool	6	1200	18	0.78	49	335
Candy	8	1400	10	1.43	44	400
Hoover	6	1200	16	1.05	45	416
Hotpoint	6	1200	14	1.23	64	450
Indesit	7	1400	16	1.26	60	350

(a) Write down the spin speed of the Candy washing machine.

............................rpm

(1)

Two of the washing machines have the same number of programs.

(b) Which two?

.... and ....

(1)

(c) What is the make of the washing machine with the lowest estimated water consumption?

....

(1)

(d) What is the mode of the wash capacity of the washing machines?

............................kg

(1)

(e) Work out the range of the estimated energy consumptions of the washing machines.

............................kWh/cycle

(2)

(f) Find the median price of the washing machines.

£.........................

(2)

(Total for Question 7 is 8 marks)

8 Here are three scatter graphs.
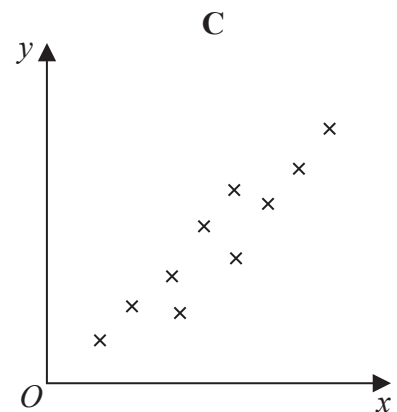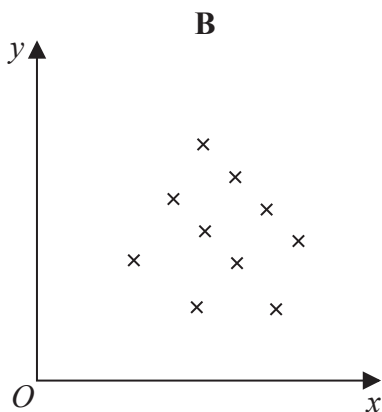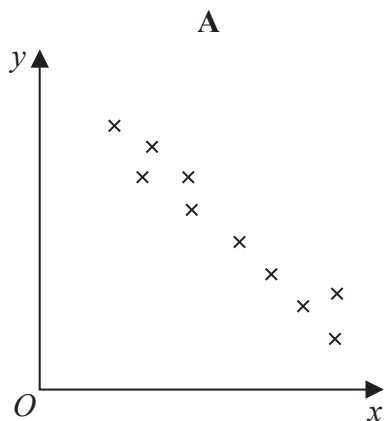
What type of correlation does each of the three scatter graphs show?

A ....

B ....

C ....

(Total for Question 8 is 2 marks)

9 Asha uses some letter cards to spell the word "STATISTICS".

S	T	A	T	I	S	T	I	C	S

Asha takes at random one of these cards.

(a) Write down the probability that Asha takes a card with a letter S.

....
(1)

(b) Write down the probability that Asha takes a card with a letter that is **not** I.

....
(1)

(c) Write down the probability that Asha takes a card with a letter E.

....
(1)

(Total for Question 9 is 3 marks)

10 Yuen measured the heart rates, in beats per minute (bpm), of 15 athletes as they rested.

The stem and leaf diagram gives information about the heart rate of each of these athletes.

4	8 9 9
5	1 3 3 3 6 8 9
6	0 1 1 2 2
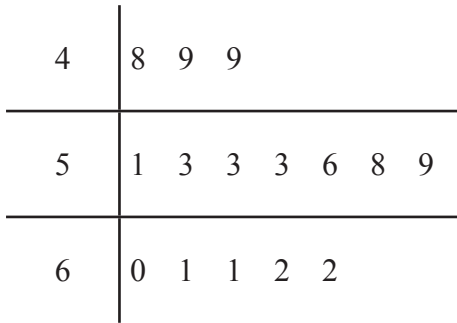
Key: 4 | 8 represents 48 beats per minute (bpm)

(a) Write down the mode of the heart rates.

..........................bpm

(1)

(b) Work out the range of the heart rates.

..........................bpm

(2)

(Total for Question 10 is 3 marks)

11 The bar chart shows information about the eye colour of some people.
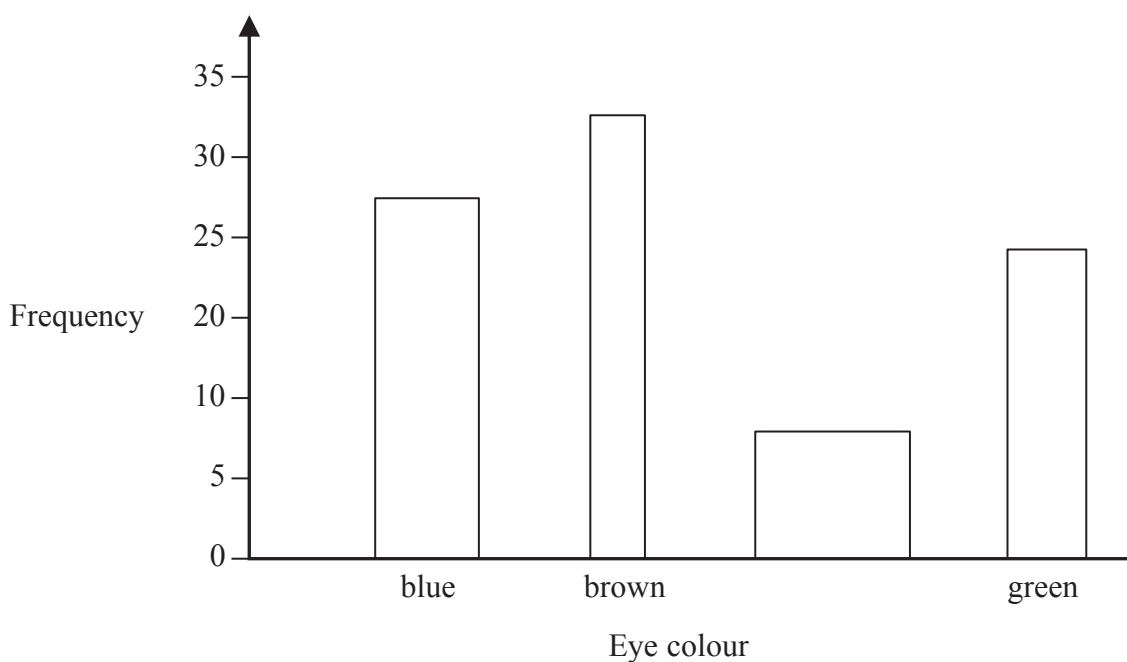
Write down two things that are wrong or could be misleading in the diagram.

1 ....

....

2 ....

....

(Total for Question 11 is 2 marks)

12 Abram is going to do a survey.

He wants to find out the type of vegetable people like the best.

Design a suitable data collection sheet for Abram to use.

(Total for Question 12 is 2 marks)

13 Here are the number of goals scored by a football team in each match last season.

1	1	4	3	2	1
3	1	3	2	2	2
2	3	3	4	3	1
2	1	2	3	4	2
3	1	2	3	2	1

Number of goals scored	Tally	Frequency
1		
2		
3		
4		

(a) Complete the frequency table for this information.

(2)

(b) Write down the mode of the number of goals scored.

....

(1)

(c) Work out the total number of goals scored in the season.

....

(2)

(Total for Question 13 is 5 marks)

14 In a bag there are only red sweets, blue sweets, yellow sweets and orange sweets.

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

The table shows the probabilities that the sweet will be red or will be blue.

Colour	red	blue	yellow	orange
Probability	0.5	0.3		

(a) Work out the probability that Suji will **not** take a blue sweet.

....

(2)

The probability that Suji will take a yellow sweet is the same as the probability that she will take an orange sweet.

(b) Work out the probability that she will take an orange sweet.

....

(3)

(Total for Question 14 is 5 marks)

Turn over ▶

15 There are 3 types of house on a new housing estate.

These are detached, semi-detached and terraced.

The two-way table shows some information about these 3 types of house.

	Type of house			
	detached	semi-detached	terraced	Total
2 bedrooms	4	4		16
3 bedrooms	1		6	
4 bedrooms		1	1	
Total	8			30

(a) Complete the two-way table.

(3)

(b) Which type of house is there most of on the estate?

....

(1)

(c) A housing inspector is going to choose at random a house from the housing estate.

 (i) Write down the probability that the house will be detached and have 3 bedrooms.

....

 (ii) Find the probability that the house will be detached or semi-detached.

....

(3)

(Total for Question 15 is 7 marks)

16 The table gives information about the profits made, in the summer (**S**) and in the winter (**W**), by a company for three years.

	Year 1		Year 2		Year 3	
	S	**W**	**S**	**W**	**S**	**W**
Profit (£)	11 000	23 000	17 000	32 000	22 000	38 000

(a) On the grid below, draw a time-series graph for this information.

Profit (£)

40 000

30 000

20 000

10 000

0

S   W   S   W   S   W

Year 1   Year 2   Year 3

Period and year
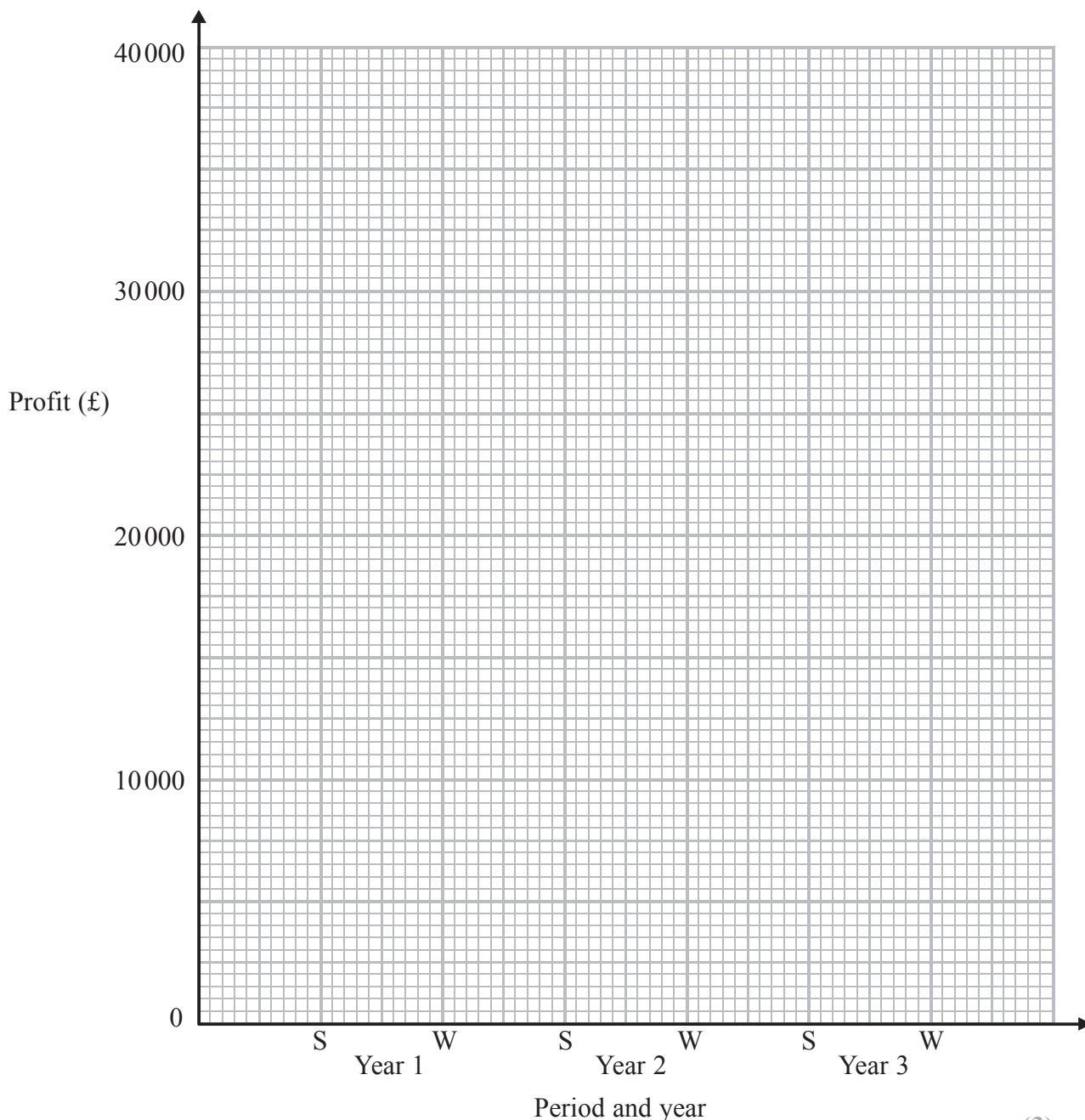
(3)

(b) Describe the trend in the profits made for these three years.

....

(1)

(Total for Question 16 is 4 marks)

17 Irfan recorded the number of trees of different types in a park.

The table shows information about these trees.

Type of tree	Number of trees	Angle in pie chart
oak	12	
elm	5	
willow	17	
pine	11	
	Total 45	

(a) Draw a pie chart for this information.
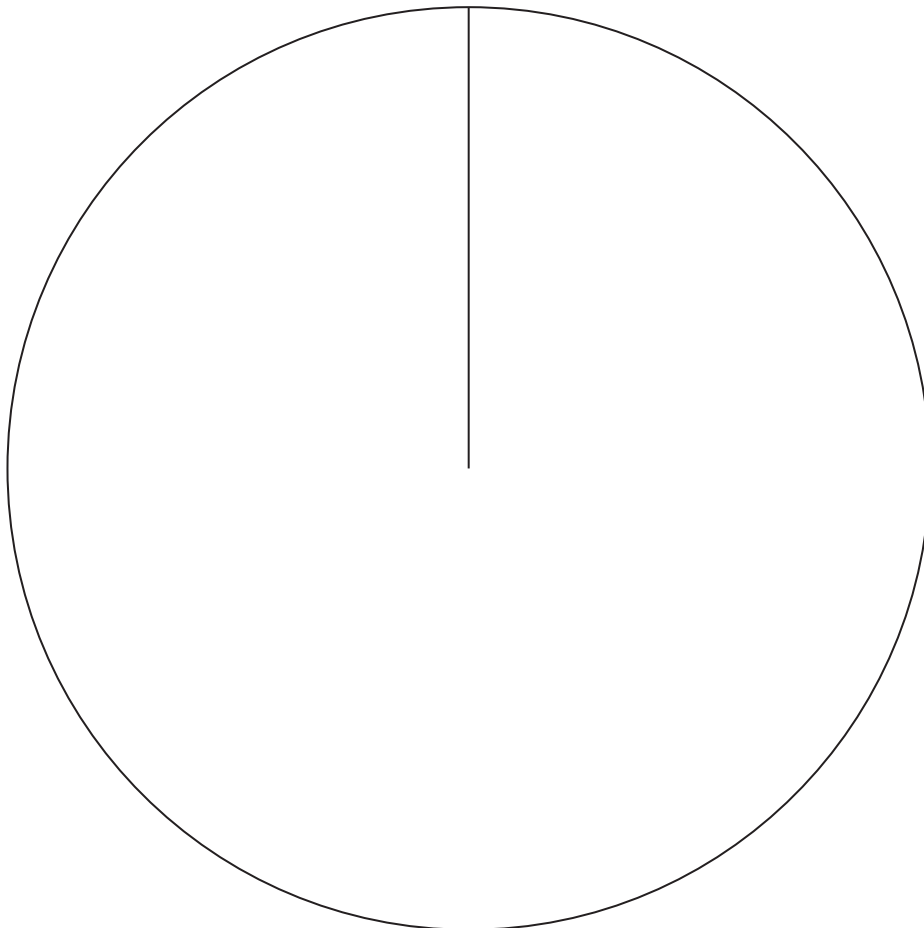
(3)

The pie chart below gives information about the numbers of flowers in the same park.
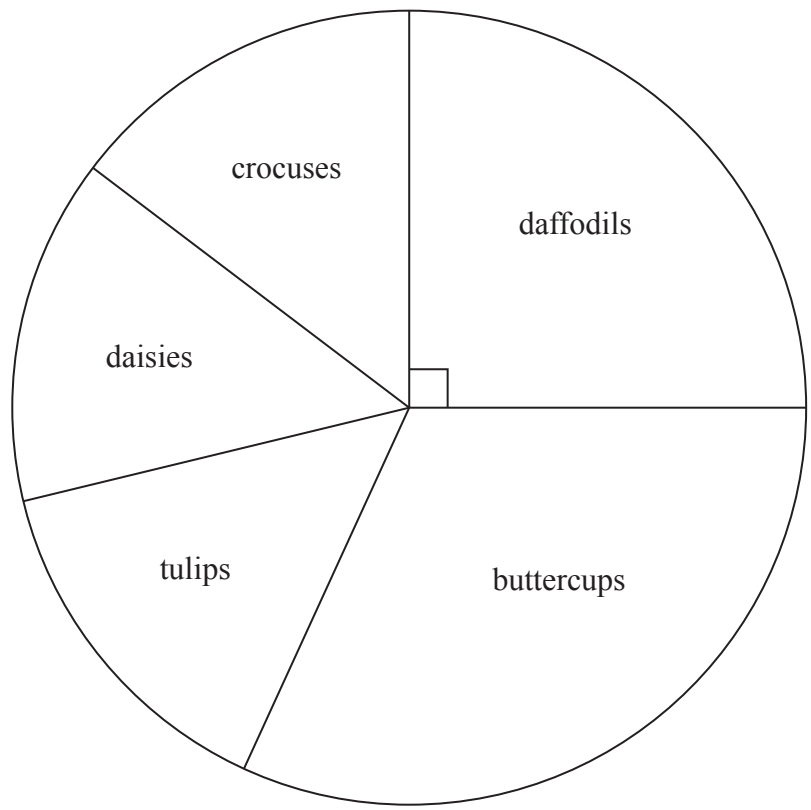
In total, there are 3200 flowers in this park.

(b) Work out the number of daffodils in the park.

....

(2)

(Total for Question 17 is 5 marks)

18 A group of children and a group of adults were asked to rate a music magazine on a scale of 1 to 6

A rating of 1 is the lowest rating and a rating of 6 is the highest rating.

The incomplete dual bar chart gives some information about the results.
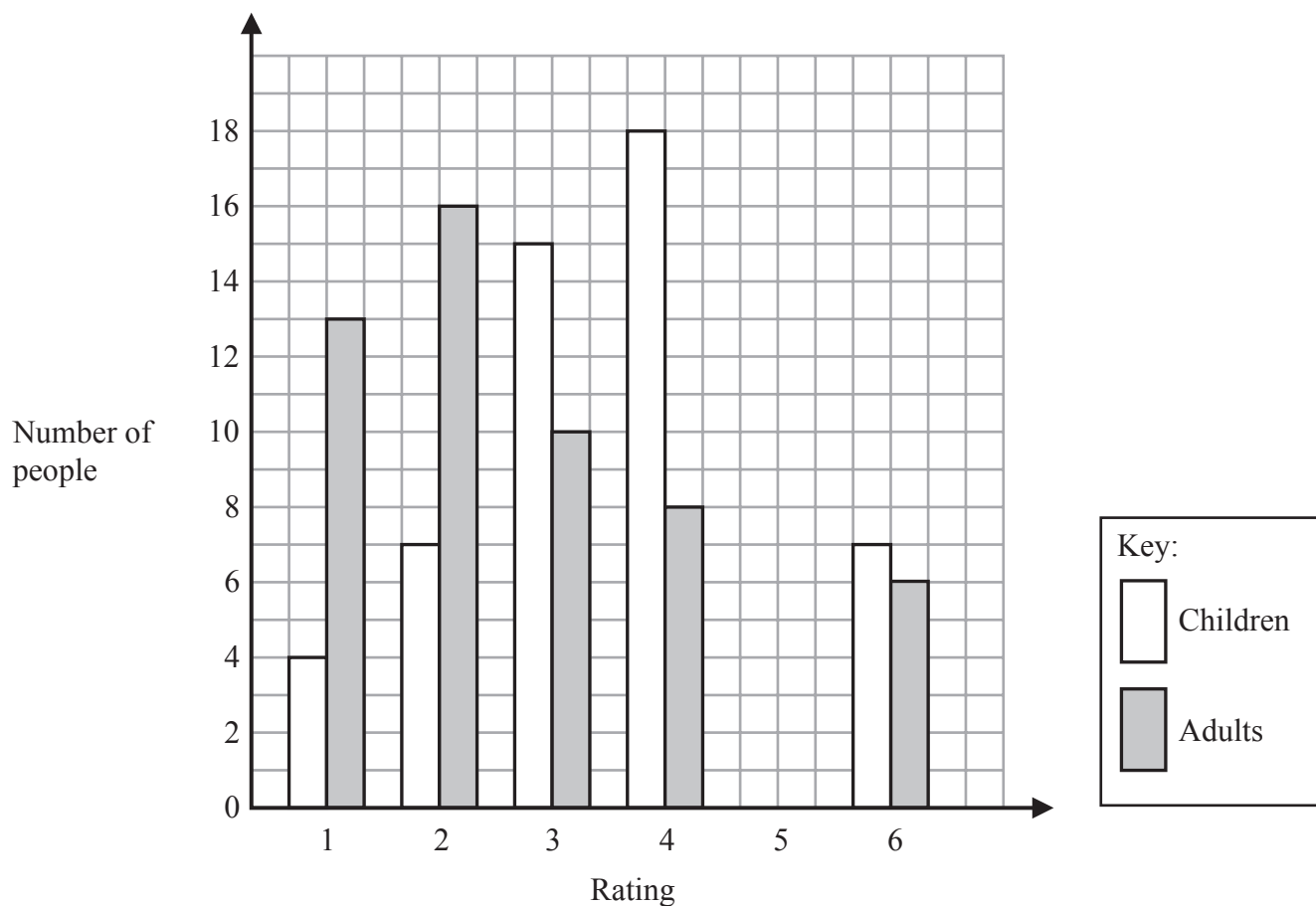
9 children gave a rating of 5

7 adults gave a rating of 5

(a) Complete the dual bar chart for this information.

(2)

(b) What was the total number of adults asked?

....

(2)

(c) Write down **two** comparisons between the children's results and the adults' results.

....

....

....

....

(2)

(Total for Question 18 is 6 marks)

19 Jane has a biased coin.

She spins the coin 20 times and it lands Heads 3 times.

Jane spins the coin again.

(a) Write down an estimate for the probability that the coin lands Tails.

....

(2)

Jane thinks that each time she spins her coin, the probability the coin lands Heads is $\frac{1}{4}$

(b) What can Jane do to see if she is correct?
Give a reason why Jane should do this.

....

....

....

(2)

(Total for Question 19 is 4 marks)

20 Jasmine recorded the time, in minutes, it took her to travel to work from home each day.

Here are her results.

20	25	28	33	31	33
28	31	22	28	26	22

(a) Work out the mean time.

...................................minutes

(3)

Jasmine also recorded the time, in minutes, it took her to travel home from work for each of the same days.

The times taken by Jasmine to travel home from work have

mean	range
26	15

(b) (i) Compare the mean times.

....

....

(ii) Compare the ranges.

....

....

(3)

(Total for Question 20 is 6 marks)

TOTAL FOR PAPER IS 80 MARKS

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