



Topic Test: OxfordAQA
International GCSE Mathematics
Core

Statistics

Name: _____

Class: _____

Date: _____

Time: **79 minutes**

Marks: **72 marks**

Comments:

1

Each of these items of data is qualitative, discrete or continuous.

Tick the correct box for each item.

	Qualitative	Discrete	Continuous
Height of a tree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Colour of a flower	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Number of sweets in a bag	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Favourite sport	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(Total 3 marks)

2

The favourite computer games for 60 students are shown in the table.

(a) Complete the table.

Game	Tally	Frequency
A		18
B		
C		13
D		15
E		
Total		60

(2)

(b) Which game did exactly one quarter of the students choose?

Answer _____

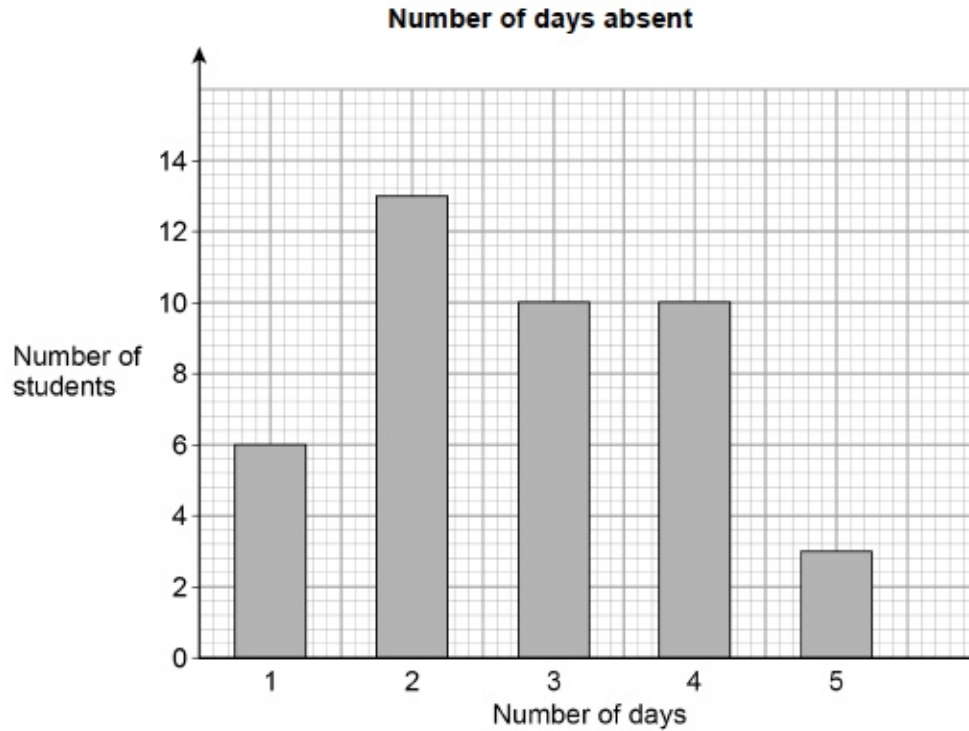
(2)

(Total 4 marks)

3

42 students were absent from school during one term.

The bar chart shows the numbers of days they were absent.



(a) Circle the mode.

2

5

10

13

(1)

(b) Work out the range.

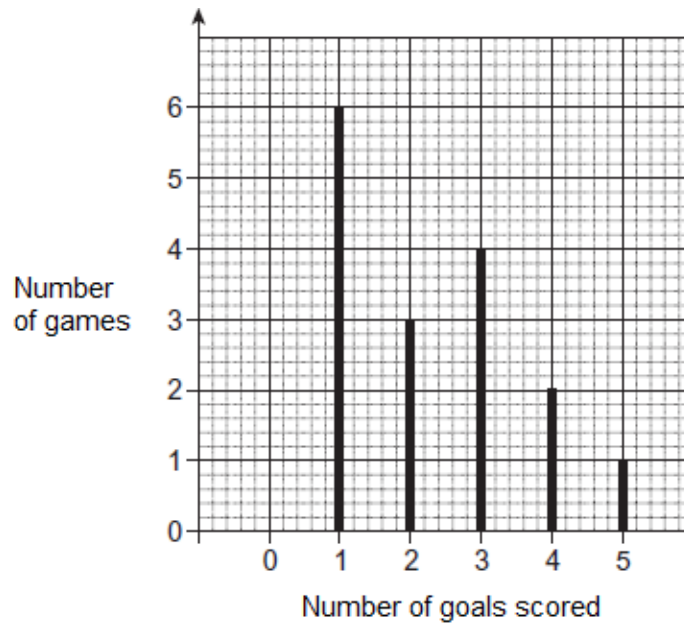
Answer _____

(1)

(Total 2 marks)

4

The diagram shows the number of goals scored by a team in 16 games.



(a) In the next 4 games the team did **not** score.

Complete the diagram for all 20 games.

(1)

(b) Altogether, how many goals did the team score in the 20 games?

Answer _____

(2)

(c) The team then played one extra game.

In the 21 games, they scored a mean of 2 goals per game.

How many goals did they score in the extra game?

Answer _____

(2)

(Total 5 marks)

5

Class A had a spelling test of ten words.
The table shows their marks.

Class A

Mark	Frequency	
5	4	
6	2	
7	8	
8	10	
9	6	

- (a) How many students are in Class A?

Answer _____

(1)

- (b) Write down the range of the marks.

Answer _____

(1)

- (c) Show that the mean mark is 7.4

(3)

(d) Class B had the same test.

The range of marks for Class B is 6

The mean mark for Class B is 4.3

Compare the marks of Class A and Class B.

Comparison 1 _____

Comparison 2 _____

(2)
(Total 7 marks)

6

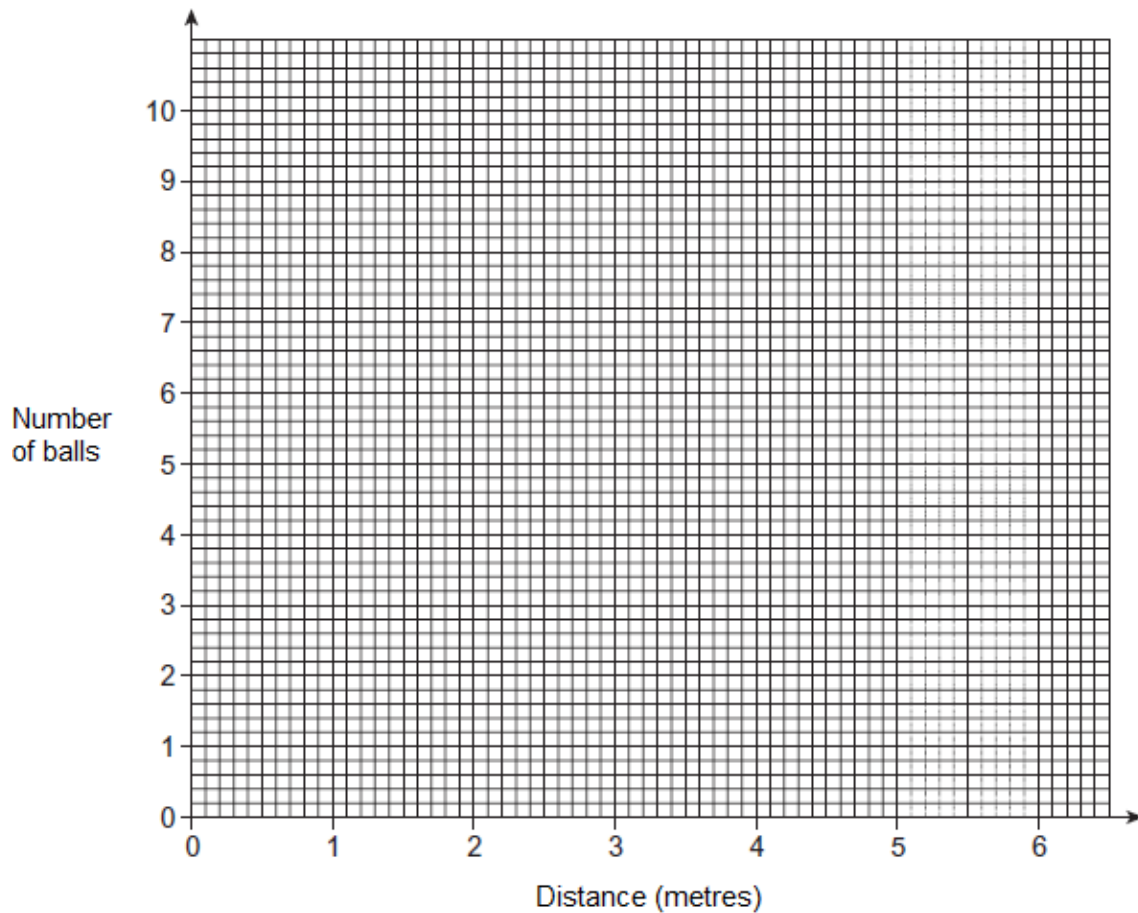
Matthew tried to throw balls into a bucket from different distances. He threw 10 balls from each distance.

His results are shown in the table.

Distance (metres)	2.0	2.5	3.2	4.1	4.5	5.3	6.0
Number of balls in the bucket	9	7	8	6	2	4	1

(a) Plot these results as a scatter graph.

Balls in the bucket



(2)

(b) Draw a line of best fit on your scatter graph.

(1)

(c) What type of correlation is shown?

Answer _____

(1)

(d) Matthew is organising a game at the school fayre.

Each player will be given 10 attempts to throw a ball into a bucket.
He wants the average number in the bucket to be 5.

Use your line of best fit to decide how far the bucket should be from each player.

Answer _____ metres





(2)
(Total 6 marks)


7

34 people were asked to choose their favourite ice cream flavour.

The pictogram shows the results.

The key is incomplete.

Strawberry	
Vanilla	
Chocolate	
Pistachio	

Key:  = _____ people

How many **more** people chose strawberry than chose vanilla?

Answer _____

(Total 3 marks)

8

Put the numbers 1, 2 or 3 on each card so that when a card is picked at random

- the probability of picking a 2 is greater than $\frac{1}{2}$
- the probability of picking a 1 is twice the probability of picking a 3.

--	--	--	--	--	--	--	--

(Total 2 marks)

9

Here are six number cards.

One number is missing.

9	21	34	29	12
---	----	----	----	----	-------

The mean of the six numbers is 24

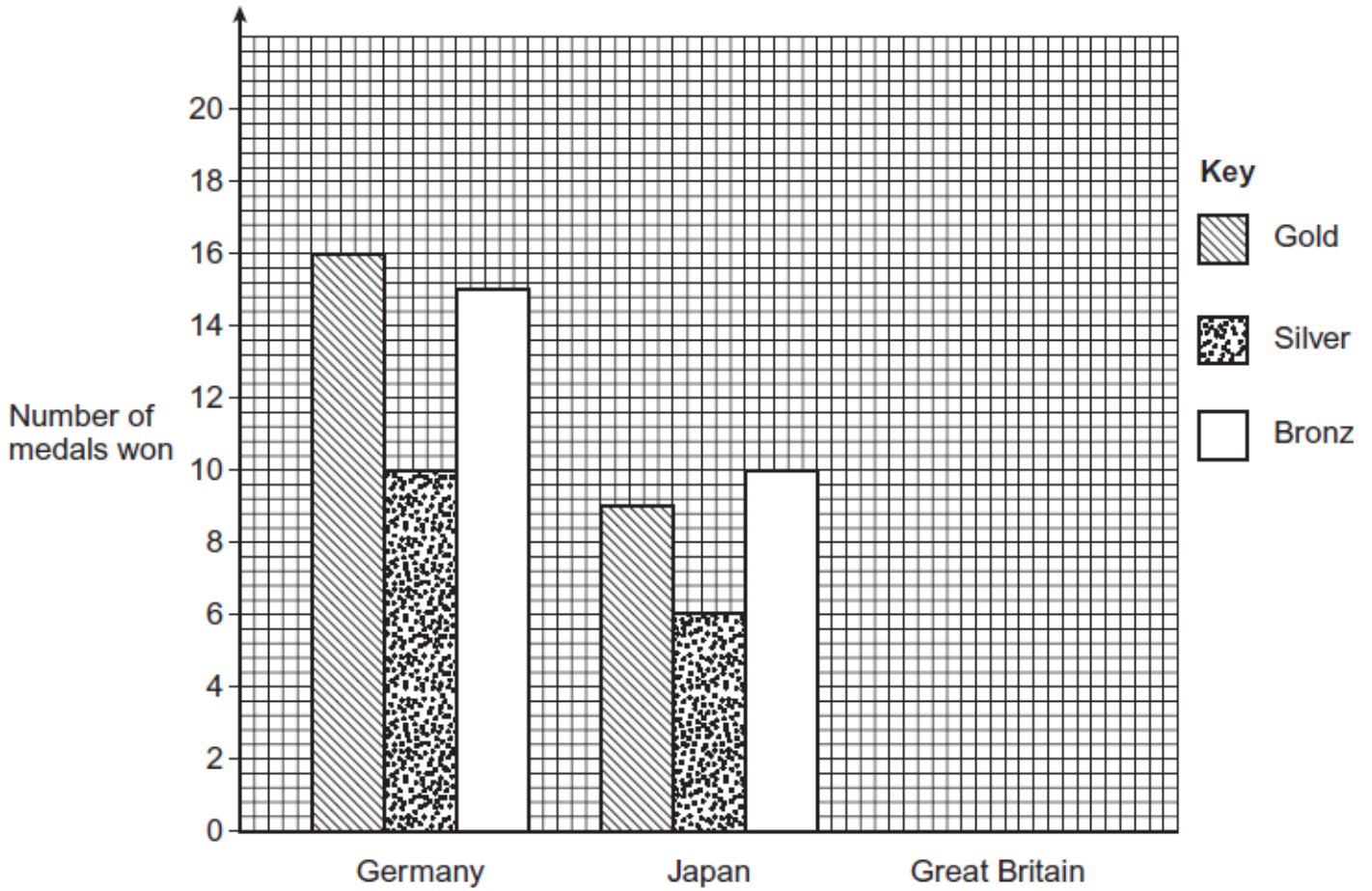
Work out the missing number.

Answer _____

(Total 2 marks)

10

Germany, Japan and Great Britain took part in the 2008 Olympics.



Great Britain won 19 gold medals and two more bronze medals than silver.

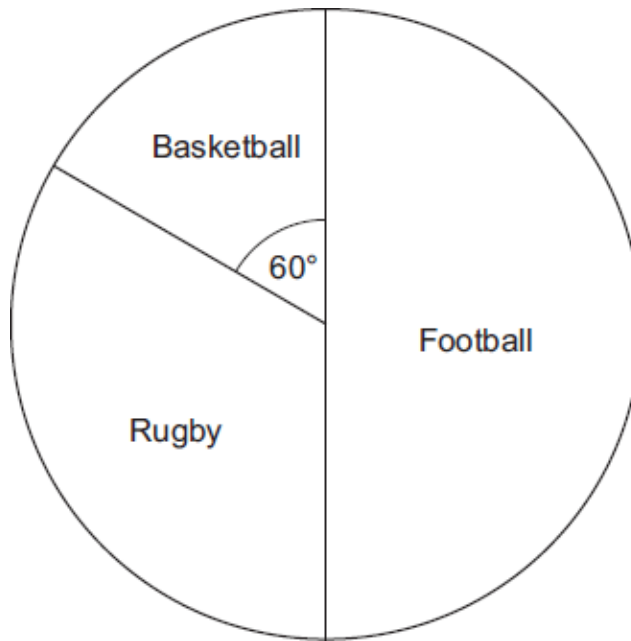
The total number of medals won by the three countries was 113.

Complete the bar chart to show the data for Great Britain.

(Total 5 marks)

11

The pie chart shows the sports played by 30 boys.



(a) How many boys play Football?

Answer _____

(1)

(b) How many boys play Rugby?

Answer _____

(2)

(Total 3 marks)

12

(a) A bag contains 20 counters.
8 of the counters are yellow.

A counter is picked at random.

What is the probability that it is yellow?
Give your answer as a fraction in its simplest form.

Answer _____

(2)

- (b) A different bag contains only black and white counters.
The probability that a counter is black is 0.14

A counter is picked at random.

What is the probability that it is white?

Answer _____

(2)

(Total 4 marks)

13

Zak puts these letter tiles in a bag.



He takes one tile at random.

- (a) Circle the chance that he takes a letter A.

Impossible Unlikely Evens Likely Certain

(1)

- (b) Write down the probability that he takes a letter T **or** a letter C.

Give your answer as a fraction.

Answer _____

(1)

- (c) Zak adds some more letter tiles to the bag.

He takes one tile at random.

The probability that he takes a letter M is $\frac{2}{15}$

Work out the probability that he does **not** take a letter M.

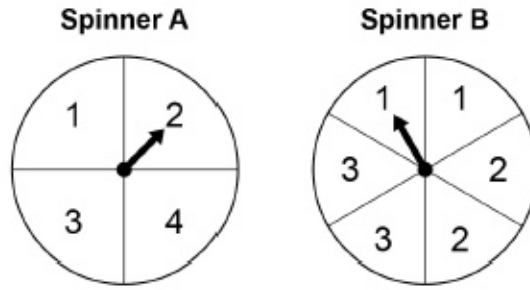
Answer _____

(1)

(Total 3 marks)

14

A game has two spinners, A and B.



A player spins both spinners.

The score is

number on Spinner A – number on Spinner B

(a) Complete the table to show the possible scores.

		Spinner B					
		1	1	2	2	3	3
Spinner A	1			-1			
	2						
	3					0	
	4	3					

(2)

(b) Work out the fraction of the scores that are **less than 0**

Answer _____

(1)

(Total 3 marks)

15

Chen records his journey times to college.

Time, t (minutes)	Frequency
$25 < t \leq 30$	12
$30 < t \leq 35$	18
$35 < t \leq 40$	24
$40 < t \leq 45$	6
	Total = 60

(a) Calculate an estimate of his mean journey time.

Answer _____ minutes

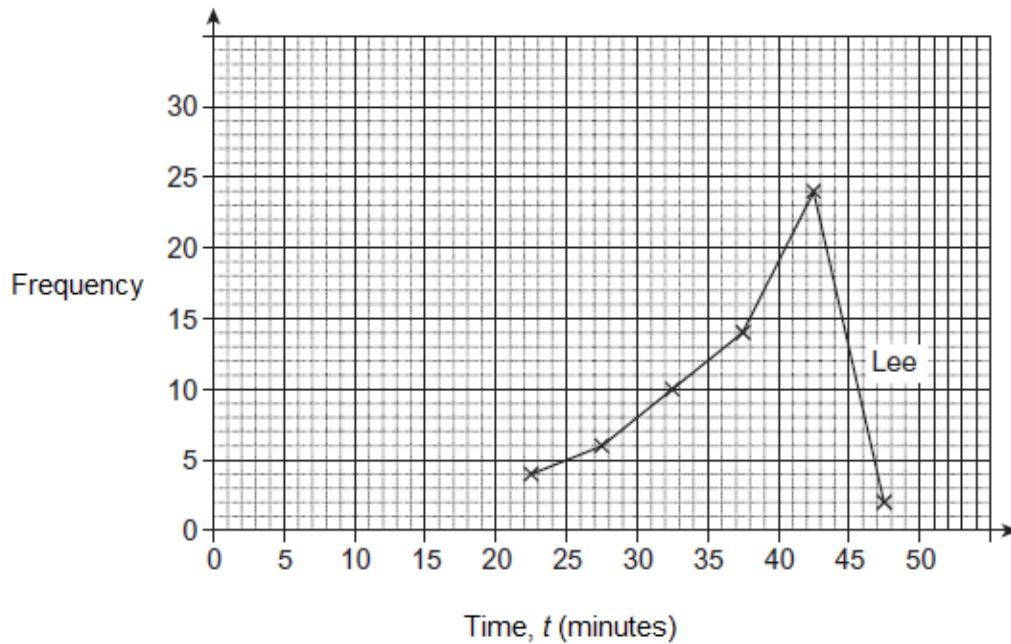
(4)

(b) Explain why your answer to part (a) is an estimate.

(1)

- (c) The frequency polygon shows Lee's journey times to college.

Journey times to college



On the same grid, draw a frequency polygon for Chen's journey times.

(2)

- (d) An estimate of Lee's mean journey time is 37 minutes.

Compare the journey times for Lee and Chen.

Comparison 1 _____

Comparison 2 _____

(2)

(Total 9 marks)

16

150 boys and 160 girls sit an examination.

The table shows some of the probabilities that they came with or without a calculator.

	With calculator	Without calculator
Boy	0.92	0.08
Girl	0.95	

- (a) What is the probability that a girl came **without** a calculator?
Write your answer in the table.

(1)

- (b) How many of the 150 boys came **with** a calculator?

Answer _____

(2)

(Total 3 marks)

17

The stem-and-leaf diagram shows the ages of people at a show.

Key: 2 | 3 represents 23 years



- (a) What is the range of the ages?

Answer _____ years

(1)

- (b) How many people are represented in the stem-and-leaf diagram?

Answer _____

(1)

- (c) How can you tell from the stem-and-leaf diagram that the median is 43 years?

(1)

- (d) The age of another person is added to the stem-and-leaf diagram.
The median increases by 2 years.

What is the age of this person?

Answer _____ years

(1)

(Total 4 marks)

18

A play area has thousands of coloured balls.
They are white, pink or yellow.

Sam picks 10 balls at random.
The table shows some of her results.

	white	pink	yellow
Frequency	4		
Relative frequency		0.1	

- (a) Complete the table.

(3)

- (b) Sam uses her results to estimate the proportion of white balls in the play area.

How could she make her estimate more reliable?

(1)

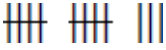
(Total 4 marks)

Mark schemes

- 1** Continuous
Qualitative
Discrete
Qualitative

*B2 3 correct rows
B1 2 correct rows*

B3
[3]

- 2** (a) $B = 4$ **and** $E = 10$ **and** $C =$ 
B1 for one or two correct

B2

- (b) $60 \div 4 (= 15)$
oe eg $15 \times 4 (= 60)$ or $\frac{15}{60}$

M1

D

A1

[4]

- 3** (a) 2
(b) 4

B1

B1

[2]

- 4** (a) Line of height 4 above 0 goals
(b) $(0 \times 4) + 1 \times 6 + 2 \times 3 + 3 \times 4 + 4 \times 2 + 5 \times 1$
(0) + 6 + 6 + 12 + 8 + 5
Allow one error or omission

B1

37

SC1 41

A1

- (c) 2×21 (– their 37)
 2×20 (– their 37) + 2

M1

5

ft their part (b)

A1 ft

[5]

5

(a) 30

B1

(b) 4

B1(c) $5 \times 4 (= 20)$ or $6 \times 2 (= 12)$ or $7 \times 8 (= 56)$ or $8 \times 10 (= 80)$ or $9 \times 6 (= 54)$ oe**M1** $5 \times 4 + 6 \times 2 + 7 \times 8 + 8 \times 10 + 9 \times 6 (= 222)$ oe*Allow one error or omission***M1dep** $222 \div 30$ oe*222 must be evaluated and correct***A1**

(d) Marks for Class B are more spread out

*Accept B range > A range (ft their part b)***B1 ft**

On average Class A marks higher than Class B

*Accept A mean > B mean***B1****[7]****6**

(a) Any four correct plots

 $\pm \frac{1}{2}$ square**M1**

All seven correct plots

 $\pm \frac{1}{2}$ square**A1**

(b) Continuous line within limits

*Straight line, negative gradient, at least 3 large squares wide that passes / would pass through gate at (2, 8) and (2, 11) and gate at (5, 1) and (5, 5)***B1**

(c) Negative (correlation)

*Strand (i) Correct vocabulary**Must use the word 'negative'**Ignore extra words eg strong, weak, ...***Q1**

- (d) Reads across from 5 on the vertical axis
Must have a straight line of best fit

M1

Answer appropriate to their straight line of best fit with negative gradient

ft their line of best fit $\pm \frac{1}{2}$ square

SC1 Answer [3.9, 4.3]

A1 ft

[6]

7

2 in key

or $17 = 34$ people

implied by correct values

B1

their $2 \times (6 - 4.5)$

or their $2 \times 6 -$ their 2×4.5

or $12 - 9$

M1

3

ft B0 M1

A1ft

[3]

8

1 1 2 2 2 2 2 3

Any order

B1 for two conditions met

ie

Used 8 cards and at least five 2s

eg 1 2 2 2 2 2 3 3

Used 8 cards and twice as many 1s as 3s

eg 1 1 1 1 2 2 3 3

B2

[2]

9

24×6 or 144

or

$$24 - \frac{9 + 21 + 34 + 29 + 12}{6}$$

$$\text{or } 24 - \frac{105}{6} \text{ or } 6.5$$

$$\text{or } \frac{9 + 21 + 34 + 29 + 12 + x}{6} = 24$$

M1

10

Bar showing 19 for GB

$$16 + 10 + 15 + 9 + 6 + 10$$

$$= 66$$

$$\text{or } 16 + 10 + 15 + 9 + 6 + 10 + 19$$

$$= 85$$

Allow one error

$$113 - \text{their } 66 - 19$$

$$\text{or } 113 - \text{their } 85$$

28

13 and 15 seen

13 and 15 bars drawn correctly

ft from two whole numbers that add up to their 28 and two more bronze than silver

B1

M1

M1dep

A1

B1ft

11

(a) 15

(b) $30 \div 6 (= 5)$ or $30 \div 3$

or

$$(15 -) \frac{15}{3}$$

or

$$15 \div 3 (\times 2)$$

oe

eg $360 \div 30 (= 12)$ and $(180 - 60) \div \text{their } 12$ *eg $180 - 60 (= 120)$ and $\frac{\text{their } 120}{360} \times 30$* *may be using their (a) for 15 (but not an angle)*

10

ft their (a) - 5 or their (a) $\div 3 \times 2$ but must be integer answer for A1

M1

A1ft

12

(a) $\frac{2}{5}$

*B1 for $\frac{8}{20}$ or $\frac{4}{10}$ or 2 out of 5 or 40% or 0.4**SC1 for $\frac{3}{5}$* **B2**

(b) $1 - 0.14$

*oe***M1**

0.86

*oe***A1****[4]****13**

(a) Unlikely

B1

(b) $\frac{3}{11}$

*oe fraction***B1**

(c) $\frac{13}{15}$ or 0.86(66...) or 0.87

or 86.(66...)% or 87%

B1**[3]****14**

(a)

0	0	-1	-1	-2	-2
1	1	0	0	-1	-1
2	2	1	1	0	0
3	3	2	2	1	1

*B1 one correct row or column***B2**

(b) $\frac{6}{24}$ or $\frac{1}{4}$

*oe fraction**ft their completed table***B1ft****Additional Guidance**

Ignore incorrect cancelling once correct fraction seen

[3]

15

- (a) One correct midpoint
27.5, 32.5, 37.5, 42.5

B1

fx attempted for at least 3 frequencies
Condone any midpoints [25, 30] etc
 $12 \times 27.5 (= 330)$
 $18 \times 32.5 (= 585)$
 $24 \times 37.5 (= 900)$
 $6 \times 42.5 (= 255)$

M1

their total $fx \div 60$
dep on M1 and 4 values of fx
 $2070 \div 60$

M1 dep

34.5
 SC3 1819.25

A1

- (b) Data is grouped *oe*

B1

- (c) Plotted at midpoints ($\pm \frac{1}{2}$ sq)
27.5, 32.5, 37.5, 42.5

B1

Heights correct ($\pm \frac{1}{2}$ sq) and points joined with straight lines
 12, 18, 24, 6
 SC1 for three correct points

B1

- (d) Journey time is shorter on average for Chen
ft mean from part (a)
oe comment on modal class or mean

B1 ft

More consistent times for Chen
oe comment on spread

B1

[9]

16

- (a) 0.05

B1

- (b) 150×0.92

M1

138
 SC1 for 12

A1

[3]

17

(a) 33

B1

(b) 17

B1(c) 9th value seen or implied*Accept e.g. 9th is middle number**Do not accept e.g. It is the middle number***B1**

(d) 47

B1**[4]****18**

(a) 0.4 (relative frequency of white) or

1 (pink) oe

B1their $5 \div 10 (= 0.5)$

or

1 - their 0.4 - 0.1 = (0.5) oe

M1

Fully correct table ie

(4)	1	5
0.4	(0.1)	0.5

*oe accept equivalent fractions or percentages for relative frequencies throughout***A1**

(b) Comment about increasing the sample size

*eg she should repeat it more times or sample more balls oe***B1****[4]**