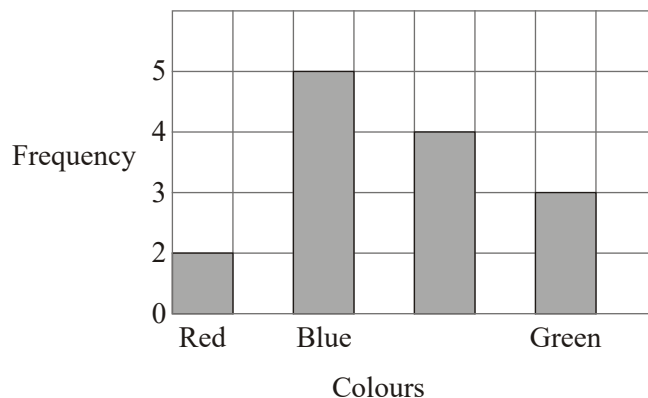


1. Ray and Clare are pupils at different schools.  
They each did an investigation into their teachers' favourite colours.

Here is Ray's bar chart of his teachers' favourite colours.



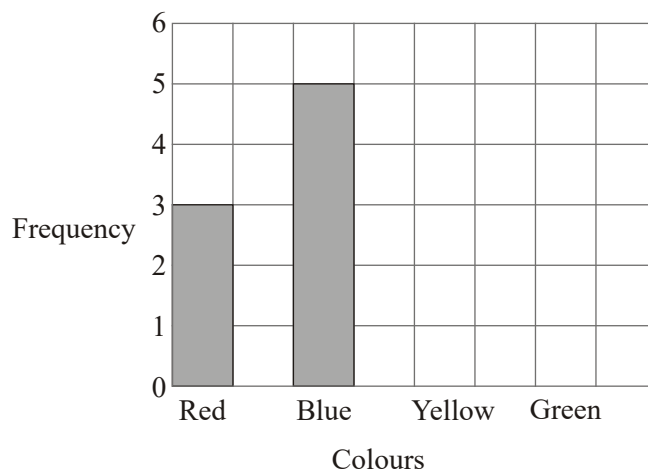
- (a) Write down two things that are wrong with Ray's bar chart.

.....  
 .....

(2)

Clare drew a bar chart of her teachers' favourite colours.

Part of her bar chart is shown below.



4 teachers said that Yellow was their favourite colour.

2 teachers said that Green was their favourite colour.

(b) Complete Clare's bar chart.

(2)

(c) Which colour was the mode for the teachers that Clare asked?

.....

(1)

(d) Work out the number of teachers Clare asked.

.....

(1)

(e) Write down the fraction of the number of teachers that Clare asked who said Red was their favourite colour.

.....

(1)

(Total 7 marks)

2. Andy did a survey of the number of cups of coffee some pupils in his school had drunk yesterday.

The frequency table shows his results.

Number of cups of coffee	Frequency
2	1
3	3
4	5
5	8
6	5

(a) Work out the number of pupils that Andy asked.

.....

(2)

Andy thinks that the average number of drinks pupils in his survey had drunk is 7.

(b) Explain why Andy cannot be correct.

.....

.....

(1)

(Total 3 marks)

3. Chloe made a list of her homework marks.

4 5 5 5 4 3 2 1 4 5

(a) Write down the mode of her homework marks.

.....

(1)

(b) Work out her mean homework mark.

.....

(2)

(Total 3 marks)

4. Amanda collected 20 leaves and wrote down their lengths, in cm.

Here are her results.

5 6 5 2 4 5 8 7 5 4

7 6 4 3 5 7 6 4 8 5

- (a) Complete the frequency table to show Amanda's results.

Length in cm	Tally	Frequency
2		
3		
4		
5		
6		
7		
8		

(2)

- (b) Write down the modal length.

.....cm

(1)

- (c) Work out the range.

.....cm

(1)

(Total 4 marks)

5. Joshua rolls an ordinary dice once.  
It has faces marked 1, 2, 3, 4, 5 and 6.

(a) Write down the probability that he gets

(i) a 6,

.....

(ii) an odd number,

.....

(iii) a number less than 3,

.....

(iv) an 8.

.....

(4)

Ken rolls a different dice 60 times. This dice also has six faces.

The table gives information about Ken's scores.

Score on dice	Frequency
1	9
2	11
3	20
4	2
5	8
6	10

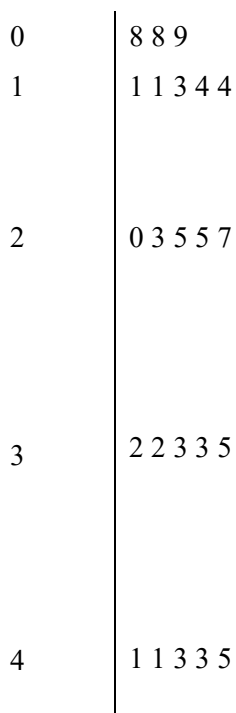
(b) Explain what you think is different about Ken's dice.

.....

(1)

(Total 5 marks)

6. The stem and leaf diagram shows information about the areas of 32 photographs.



Key: 4 | represents 41 cm<sup>2</sup>

(a) Write down the number of photographs that have an area of 38 cm<sup>2</sup>.

.....

(1)

(b) Work out the median.

.....cm<sup>2</sup>

(2)

(Total 3 marks)

7. Peter rolled a 6-sided dice ten times.  
Here are his scores.

3    2    4    6    3    3    4    2    5    4

(a) Work out the median of his scores.

.....

(2)

(b) Work out the mean of his scores.

..... (2)

(c) Work out the range of his scores.

..... (1)  
**(Total 5 marks)**

8. Mr Smith kept a record of the number of absences for each student in his class for one term.

Here are his results.

0 0 0 8 4 5 5 3 2 1

(a) Write down the mode.

..... (1)

(b) Work out the mean.

..... (2)  
**(Total 3 marks)**



9. Here are ten numbers.

7      6      8      4      5      9      7      3      6      7

(a) Work out the range.

..... (2)

(b) Work out the mean.

..... (2)  
(Total 4 marks)

10. Sarah works in a post office.  
She recorded the number of parcels posted on each of 16 days.

Here are her results.

2      2      5      3      2      4      2      2  
3      6      4      6      2      2      3      3

(a) Complete the frequency table to show Sarah's results.

Number of parcels	Tally	Frequency
2		
3		
4		
5		
6		

(2)

(b) Write down the mode.

..... (1)

(c) Work out the range.

..... (2)  
(Total 5 marks)

11. Here are the test marks of 6 girls and 4 boys.

Girls: 5 3 10 2 7 3

Boys: 2 5 9 3

(a) Write down the mode of the 10 marks.

..... (1)

(b) Work out the median mark of the **boys**.

..... (2)

(c) Work out the range of the **girls'** marks.

..... (1)

(d) Work out the mean mark of all 10 students.

.....

(2)  
(Total 6 marks)

12. Here are 10 numbers.

3 2 5 4 2 4 6 2 1 2

Find the mode of these numbers.

.....

(Total 1 mark)

13. Sarah watched a water ride at a theme park.  
She counted the number of people in each of 20 boats.  
These numbers are shown below.

2 3 1 2 2 3 4 5 4 1  
1 2 2 3 2 4 5 4 2 4

- (a) Complete the frequency table.

Number of people in a boat	Tally	Frequency
1		
2		
3		
4		
5		

(2)

- (b) Write down the mode of the number of people in a boat.

.....

(1)

Emily asked 5 people the number of rides each of them had been on.  
The numbers are shown below.

6 8 7 6 10

(c) Work out the mean number of rides per person.

.....  
(3)  
(Total 6 marks)

14. Jalin wrote down the ages, in years, of seven of his relatives.

45, 38, 43, 43, 39, 40, 39

(a) Find the median age.

.....  
(1)

(b) Work out the range of the ages.

.....  
(1)

(c) Work out the mean age.

.....

(2)  
(Total 4 marks)

15. Here are the shoe sizes of 6 students.

2    10    7    6    10    9

Work out the median shoe size.

.....

(Total 2 marks)

16. Tom recorded the shoe size of five of his friends.  
Here are his results.

8 9 3 4 7

- (a) Work out the median shoe size.

.....

(2)

Another friend has a shoe size of 8

- (b) Work out the median shoe size of all **six** friends of Tom.

.....

(2)

(Total 4 marks)

17. The stem and leaf diagram shows information about the pulse rate of each of 15 students.

Pulse rate	
5	6 8
6	0 2 3 8
7	1 4 6 6 8
8	7 8 9
9	7

Key:

5 | 6 means 56

(a) Work out the range of the pulse rates.

.....

**(1)**

(b) Find the median pulse rate.

.....

**(1)**

**(Total 2 marks)**



18. Amanda collected 20 leaves and wrote down their lengths, in cm.

Here are her results.

5 6 5 2 4 5 8 7 5 4  
7 6 4 3 5 7 6 4 8 5

(a) Complete the frequency table to show Amanda's results.

Length in cm	Tally	Frequency
2		
3		
4		
5		
6		
7		
8		

(2)

(b) Write down the modal length.

.....cm

(1)

(Total 3 marks)

19. Here are the ages of 6 people.

5 18 10 14 22 12

(a) Work out the range of these ages.

.....

(1)

(b) Find the median age.

..... (2)

(c) Work out the mean age.

..... (2)  
(Total 5 marks)

**20.** Mary threw a dice 24 times.

Here are the 24 scores.

3	5	3	4	1	2	4	5
6	2	3	4	3	1	4	3
2	3	5	5	3	4	2	1

(a) Complete the frequency table.

Score	Tally	Frequency
1		
2		
3		
4		
5		
6		

(3)

(b) Write down the mode.

.....

(1)

(Total 4 marks)

21. Here are the weights, in kg, of 8 people.

63    65    65    70    72    86    90    97

(a) Write down the mode of the 8 weights.

..... kg

(1)

(b) Work out the range of the weights.

..... kg

(2)

(Total 3 marks)

22. 30 adults took part in a survey.  
They were each asked how much money they spent on lottery tickets last week.  
The table shows the results of the survey.

Money (£)	Frequency	
0	5	
2	16	
4	6	
20	2	
30	1	

Work out the mean amount of money the 30 adults spent on lottery tickets.

£ .....

(Total 3 marks)

23. Leanne asked each of her friends which one country they would most like to visit.

Here are her results.

USA	France	Italy	USA	France
Australia	USA	Spain	France	Italy
Italy	USA	France	Italy	USA
USA	Spain	USA	Spain	Italy

- (a) Complete the frequency table.

Country	Tally	Frequency
Australia		
France		
Italy		
Spain		
USA		

(2)

- (b) How many friends did Leanne ask?

.....

(1)

- (c) Write down the mode.

.....

(1)

**(Total 4 marks)**

24. Here are fifteen numbers.

10   12   13   15   15  
 17   19   20   20   20  
 21   25   25   25   25

(a) Find the mode.

..... (1)

(b) Find the median.

..... (1)

(c) Work out the range.

..... (2)  
(Total 4 marks)

25. A rugby team played 7 games.

Here is the number of points they scored in each game.

3      5      8      9      12      12      16

(a) Work out the range.

..... (2)

(b) Find the median.

..... (1)

The rugby team played another game.  
They scored 11 points.

(c) Find the median number of points scored in these 8 games.

..... (1)  
(Total 4 marks)

- 01.** (a) Missing horiz label 1 (and 6) missing on vertical scale 2  
*Bl*  
*Bl*
- (b) Correct graph 2  
*Bl for bar up to 4 for yellow*  
*Bl for bar up to 2 for green*
- (c) Blue 1  
*Bl cao*
- (d) 14 1  
 $3 + 5 + 4 + 2$   
*Bl ft from (b)*
- (e)  $\frac{3}{14}$  1  
*Bl ft on '14'*

[7]

02. (a) 22 2  
 $1 + 3 + 5 + 8 + 5$   
*M1 add frequencies*  
*A1 cao*
- (b) No, is > no of cups of coffee in the table 1  
*B1 'average cannot be bigger than 6' oe OR*  
*'Average must be less than 6 oe'*
- [3]**
03. (a) 5 1  
*B1*
- (b) 3.8 2  
 $4 + 5 + 5 + 5 + 4 + 3 + 2 + 1 + 4 + 5 = 38$   
 $\text{mean} = 38 \div 10 = 3.8$   
*M1 for attempt to add and  $\div 10$  or 3.7 or 3.9 seen*  
*A1 for 3.8*  
*SC B1 for 33.5 seen*
- [3]**
04. (a) 1, 1, 4, 6, 3, 3, 2 2  
*B2 for all frequencies correct*  
*(B1 for 5 or 6 frequencies correct or all tallies correct)*
- (b) 5 1  
*B1 ft from (a)*
- (c) 6 1  
*B1*
- [4]**
05. (a) (i)  $\frac{1}{6}$  4  
*B1 accept equivalent fractions, decimals, or percentages*  
*Accept 0.16 or better, 16 % or better*



(ii)  $\frac{1}{2}$

*B1 accept equivalent fractions, decimals or percentages*

(iii)  $\frac{1}{3}$

*B1 accept equivalent fractions, decimals or percentages  
Accept 0.33 or better, 33% or better*

(iv) 0

*B1 accept 0/6, zero, nought*

(b) Ken's dice is biased

1

*B1 for dice is biased, unfair, weighted oe***[5]**

06. (a) 2

1

*B1 cao*

(b) 28

2

*M1 for identifying the 16<sup>th</sup> and 17<sup>th</sup> values or sight of  
(32 + 1) ÷ 2 oe  
A1 cao***[3]**

07. (a) 2, 2, 3, 3, 3, 4, 4, 4, 5, 6 = 3.5

2

*M1 ordering the numbers (condone 1 error or omission)  
A1 cao*

(b) 36 ÷ 10 = 3.6

2

*M1 sum of numbers ÷ 10  
A1 cao  
SC B1 for 3r 6*

- (c)  $6 - 2 = 4$  1  
*Bl cao* **[5]**
- 08.** (a) 0 1  
*Bl cao*
- (b)  $(8 + 4 + 5 + 5 + 3 + 2 + 1) \div 10$  2  
 2.8  
*MI*  $(8 + 4 + 5 + 5 + 3 + 2 + 1) \div 10$   
*Al cao* **[3]**
- 09.** (a) 6 2  
*MI for 9 - 3 or 3 - 9*  
*Al cao*
- (b)  $(7 + 6 + 8 + 4 + 5 + 9 + 7 + 3 + 6 + 7) \div 10$  2  
 6.2  
*MI for*  $(7 + 6 + 8 + 4 + 5 + 9 + 7 + 3 + 6 + 7) \div 10$   
*Al cao* **[4]**
- 10.** (a) 7, 4, 2, 1, 2 2  
*MI for at least one correct frequency or tally*  
*Al for 7, 4, 2, 1, 2 cao*  
*(B2 for correct frequencies without the use of tallies)*
- (b) 2 1  
*Bl for 2 or ft values in table*  
*NB: B0 if the 7 is given with the 2*
- (c)  $6 - 2 = 4$  2  
*MI for identifying 6 and 2, eg 6-2, as long as 6 and 2 are not identified with any incorrect operation*  
*Al cao* **[5]**

11. (a) 3 1  
*B1*
- (b) 4 2  
 2 3 5 9  
*M1 order*  
*A1*
- (c) 8 1  
*B1*
- (d) 4.9 2  
 $49 \div 10$   
*M1 add and divide by 10*  
*A1 for 4.9 oe*
- [6]**
12. 2 1  
*B1*
- [1]**
13. (a) 3, 7, 3, 5, 2 2  
 Complete tally and frequency  
*B2 for all 5 frequencies correct*  
*(B1 for any 3 correct)*  
*SC B1 B0 for tallies only, all tallies correct*
- (b) 2 1  
*B1 f.t. (dep on B1)*
- (c) 7.4 3  
 $6 + 8 + 7 + 6 + 10$   
 $"37" \div 5$   
*M1 for  $6 + 8 + 7 + 6 + 10$  or 37 seen*  
*M1 dep for  $"37" \div 5$*   
*A1 cao*
- [6]**

14. (a) 40 1  
*BI*
- (b) 7 1  
 $(45 + 38 + \dots + 39) \div 7$   
 $= 287 \div 7$   
*BI*
- (c) 41 2  
*MI for adding, and  $\div$  by 7*  
*AI cao*
- [4]**
15. 8 2  
 2 6 7 9 10 10  
*MI for ordering numbers  $\pm$  1 number*  
*(or identifying 7 **and** 9 as median)*  
*AI cao*
- [2]**
16. (a) 3 4 7 8 9 2  
 7  
*MI for ordered list*  
*AI cao*  
*(SC: BI for answer of 3 only)*
- (b) 3 4 7 8 8 9 2  
 7.5  
*MI for ordered list **and** attempt to find middle value*  
*AI for 7.5 or 7½*
- [4]**
17. (a) 41 1  
*BI*
- (b) 74 1  
*BI*
- [2]**

18. (a) 1, 1, 4, 6, 3, 3, 2 2  
*B2 for all frequencies correct*  
*(B1 for 5 or 6 frequencies correct or all tallies correct)*

- (b) 5 1  
*B1 f.t. from (a)*

[3]

19. (a)  $22 - 5$  1  
 17  
*B1 cao*

- (b) 5 10 12 14 18 22 2  
 13  
*M1 for correct ordering or for 12 alone as answer, or 12-14 on answer line (without working).*  
*A1 for 13*

- (c)  $(5 + 10 + 12 + 14 + 18 + 22) \div 6$  2  
 $= 81 \div 6$   
 $= 13.5$   
*M1 for  $(5+10+12+14+18+22) \div 6$*   
*A1 cao*

[5]

20. (a) 3

Score	Tally	Freq.
1	Complete	3
2	with	4
3	tally	7
4	marks	5
5		4
6		1

*M1 for an attempt at tallying or for finding one correct frequency value.*

*A1 for at least 3 correct frequencies or all tallies correct.*

*A1 for all frequencies correct.*

*NB: Accept every day, every month as an alternate to once a day, once a month etc. Ignore tallies and mark frequencies if this maximises mark; accept tallies & frequencies reversed.*

(b) 3 1  
*B1 ft* **[4]**

21. (a) 65 1  
*B1*

(b) 34 2  
*M1 for 97 – 63 or 63 – 97 or 63, 97 identified or – 34 seen*  
*A1 cao* **[3]**

s ø

22.  $0 \times 5 + 2 \times 16 + 4 \times 6 + 20 \times 2 + 30 \times 1$  3  
 $= 0 + 32 + 24 + 40 + 30$   
 $= 126$   
 $126 \div 30$   
 $= 4.2(0)$   
*M1 for  $0 \times 5 + 2 \times 16 + 4 \times 6 + 20 \times 2 + 30 \times 1$*   
*or at least 3 correct entries of 0, 32, 24, 40, 30 in the table*  
*or 126 seen*  
*M1 (dep) for “126”  $\div$  30*  
*A1 cao*  
*SC: Award M2 for  $131 \div 30$  with or without working* **[3]**

23. (a) I  
 IIII  
 IIII  
 III  
~~IIII~~ II  
 Tallies and frequencies 1, 4, 5, 3, 7 2  
*M1 for at least 3 correct tallies or at least 3 correct frequencies*  
*A1 for all frequencies correct.*

(b) 20 1  
*B1 for 20 or ft from frequencies in (a) or tallies if no frequencies*

	(c)	USA		1	
			<i>B1 for USA or ft from (a)</i>		
					<b>[4]</b>
24.	(a)	25		1	
			<i>B1 cao</i>		
	(b)	20		1	
			<i>B1 cao</i>		
	(c)	25-10 15		2	
			<i>M1 for sight of 10 and 25 together</i>		
			<i>A1 cao</i>		
					<b>[4]</b>
25.	(a)	16 – 3 13		2	
			<i>M1 for 16 – 3</i>		
			<i>A1 cao</i>		
			<i>[3 to 16, 3 – 16 oe gets B1 if M0 scored]</i>		
	(b)	9		1	
			<i>B1 cao (take care that this is not the result of an attempt to find the mean)</i>		
	(c)	10		1	
			<i>B1 cao (take care that this is not the result of an attempt to find the mean)</i>		
					<b>[4]</b>

### 01. Mathematics A Paper 2

For their answers to (a), most candidates could correctly and clearly explain that there was a label missing on the horizontal axis but fewer were able to give a lucid explanation of what was wrong with the frequency axis. Many candidates gave the reason that there was ‘no title’. This answer was not accepted.

Nearly all candidates successfully completed the bar chart in part (b) and went on to give the correct answers of ‘blue’ for the mode in (c) and ‘14’ for the number of teachers in (d). There were very few successful attempts to part (e). The incorrect answer of one third was frequently seen.

**Mathematics B Paper 15**

Many were able to recognise that there were two obvious things wrong with the bar chart. Others were critical about a lack of title and the fact that the teachers' names had not been written down; neither of which were awarded marks. Clare's bar chart was nearly always correctly completed. The word 'mode' was correctly interpreted by most as was the number of teachers represented on the bar chart. In the final part the fraction was not always correctly given in spite of the follow through allowed from previous working.

02. Part (a) was well answered by about 75% of candidates. Correct answers for part (b) appeared in only about 25% of cases. Candidates had relative difficulty relating their answers to central tendency with the highest frequency often mistaken for the mode. There was also clear confusion between 'frequency' and 'the number of cups.'

**03. Specification A**

Only 65% of candidates were able to write down the mode of the list of marks. The most common errors were to write the median or the mean, In part (b) only 22% were able to calculate the mean with the sum of the numbers being a common wrong answer.

**Specification B**

Recognising the mode from a list of homework marks was well handled with many correct answers. Some, however, added the marks together to give "38" on the answer line whilst others wrote down "4", this being the number of mode values.

Calculation of the mean in part (b) proved to be more taxing. The distinction between mean and median was not always understood. Where the working was set out this produced "38 divided by 10" to give the correct answer of "3.8".

04. Though the context of this question was understood by candidates only 66% were able to obtain all the correct frequencies in part (a). The mode in part (b) was only correctly answered by 49% of candidates. Many wrote down the highest frequency of 6, whilst in part (c) only 12% of candidates could work out the range.
05. Candidates clearly understood the concept of dice rolling and the probability of scoring different combinations of numbers. 57% of candidates could cope with  $\frac{1}{6}$ , 60% could cope with an odd number, but only 49% could cope with less than 3, whilst a probability of 0 was coped with by 65% of candidates. When it came to explaining a skewed set of data caused by a biased dice only 8% scored the mark for weighted or biased. There were still many candidates who fail to write probability correctly as a decimal, fraction or a percentage. These candidates still use '3 out of 6', '3 in 6', 3:6 etc.



**06. Specification A****Foundation Tier**

Foundation tier candidates do not seem to understand stem and leaf diagrams. 27% of candidates could interpret a score of 38 from the diagram but only 4% could find the median. A common mistake was to put all the leaves from the diagram in order and find the middle one.

**Intermediate Tier**

Almost three quarters of candidates answered part (a) correctly but part (b) was answered less well. Many of those who identified the median as 28 also ringed or marked one or both of the 28s on the diagram and some undoubtedly benefited from the 16th and 17th values being the same. It was not uncommon to see an ordered list of all 32 areas written out. Unfortunately some who used this approach ignored the key and only wrote down the leaves from the stem and leaf diagram.

**Specification B****Foundation Tier**

The stem and leaf diagram has become a regular feature of the modular mathematics papers in past years. This question required the gathering of information from the diagram and almost all candidates were prepared to have a go at obtaining the answers. Over 40% of the candidates provided correct values in part (a) from using the key and writing down the number of photographs with an area of 38 cm<sup>2</sup>. The finding of the median in part (b) was perhaps more demanding although it should only have needed counting values in the table to locate the central value. Around 88% of the candidates failed to identify the two central values or did not know how to use the stem. An incorrect answer of 8 was frequently seen. Other attempts included separate listings of the values in the table.

- 07.** Answers to this question revealed a great deal of confusion in candidates' minds between the statistical measures of median, mode, mean and range. Only about 20% of the marks available were awarded. In part (a) a significant number of candidates gave "3, 4" as their answer with no working. This could not be given any credit without a clear indication that ordering of the numbers had been attempted.

Similarly in part (b) an answer of 4 which could have arisen from rounding 3.6 could not be awarded any credit without the candidate showing they had carried out the correct operations to find the mean.

Part (c) was the best answered part of this question. Many candidates scored their only mark for this question here.

- 08.** About half of the candidates correctly identified the mode in part (a) of this question. A much smaller proportion - about 10% - were able to work out the mean correctly. There was, as usual, much confusion between mode, median and mean shown in answers to both parts of this question.

09. Both parts were done quite well on the whole. Quite a few candidates reversed the answers for the two parts scoring no marks. Others tried to find the median or the mode in one of the parts. In part (a) quite a few candidates realised that you needed to pick the end points for the range but then wrote  $8 - 3$ . In part (b) it was not uncommon to find an answer of 62, where the candidate found the total of all the numbers but then failed to divide by 10. Around 40% of the candidates got both parts fully correct with around a third not scoring any marks at all.
10. Parts (a) & (b) were well answered. There were a few minor slips in tallying, and the frequency column was sometimes misplaced, but rarely inaccurate. Part (c) was poorly answered. Many misunderstood the term “range”, whilst a significant minority calculated this from the frequency (7-1).
11. Most candidates either confused which type of average was required for each part or just wrote down random numbers in the answer spaces. Part (a) achieved most success. Many did not show their working in (b) which meant that could not get any part marks. Many wrote 3, 5 in the answer space but did not show how they ordered their numbers. Candidates are to be encouraged to show some working particularly where a question is worth 2 or more marks. The most common incorrect response to (c) was either to write  $10 - 2$  or  $2 - 10$ . In (d) many added the 10 numbers reaching an answer of 49 but then failed to divide by 10, scoring no marks.
12. There was some confusion between the mean, mode and median. Many ordered the numbers first before providing the correct answer of 2. However 3.1 and 3.5 were common incorrect responses. Just over half the candidates scored the mark for this question.
13. Providing the frequencies was straightforward for most candidates. Tallies were not always evident and some confused candidates gave the tallies and frequencies the same as the number of people in the boat. There was some confusion as to what was meant by the mode and the mean. The most common response to both parts was 7... the highest number in the frequency column in response to part (b) and the middle number of the 5 given numbers (whether unordered or ordered) in part (c). A common incorrect response to (b) was 20 as candidates provided the total number of boats. A few candidates added the five given numbers to reach 37 in (c) but then failed to divide by 5 to reach the mean of 7.4.

14. It was encouraging to note that most candidates realised that the mean was the middle value. Unfortunately many did not order the numbers first and 43 was a very common incorrect response to part (a). Just over a third of the candidates managed to score the mark for providing 40 as the answer.  
In part (b) fewer than 20% scored the available mark. Some candidates had an idea of finding the range but then failed to carry out the subtraction of 38 from 45 to reach the required answer of 7.  
In Part (c) most candidates showed little or no working and clearly had no idea how to calculate the mean from some given raw data. Over 78% of the candidates scored no marks on this question. Many wrote 287 but then neglected to divide this by 7. Many wrote down an answer of either 40 or 43 suggesting they had confused the mean with the median mark.
15. Finding the median value requires firstly that the values are put in order and secondly that the central value is located or calculated. Whilst some realised that the ordering was important (25%), others ignored this and attempted to find the middle value directly from the given listing. For those who did list the values in order there was some doubt regarding the location of the median especially as it lay between two values and either needed deducing or calculating. 13% of the candidates scored both available marks with the most common error being to give the mode rather than the median.
16. Around a quarter of the candidates were able to score 1 mark in part (a) by either ordering the five numbers or selecting 3 as their median from an unordered list. Half the candidates provided the correct answer of 7. The most common incorrect response was to add the five numbers and then sometimes follow this by providing the mean. For those that went for the mean in part (a) generally followed this with 6.5 in (b). Others tried to use the 6 from 'six friends' instead of, or as well as the 8. Of those trying to find the middle value only a few actually knew what to do with the middle two values with  $\frac{7}{8}$  being a popular incorrect answer. 14% of the candidates scored both marks in (b).
17. In previous years the candidate has been asked to construct a stem and leaf diagram but this one required an interpretation of the diagram. Finding the range called for the evaluation of '97 – 56' but locating these values to subtract was not always forthcoming. In part (b) finding the median was seen as being in the 'stem 7' row but homing in on the specific leaf caused some difficulty. Only around 15% of the candidates got either part (or both) correct.
18. Although not all candidates completed both columns correctly, around 70% of the candidates were able to score both available marks in part (a) by filling in the correct frequencies in one of the two columns. However only just over half the candidates were then able to identify their mode. The most common incorrect response was 6, this being the highest number in the frequency column!

19. Part (a) was well answered, though a minority of candidates gave the range as 22-5, rather than giving it as a single number.

Many candidates confused parts (b) and (c), giving the mean in (b), and the median in (c). When finding the median, a common error was to not write the numbers in order first, hence arriving at 12 as the (incorrect) answer. A significant number of candidates arrived at two numbers for the answer (usually either 10, 14 or 12, 14) which indicated that they did not know what to do when finding the median of an even set of numbers.

When finding the mean, many candidates still ordered their numbers, though this did not act as a distracter. Candidates without a calculator usually stopped after showing the addition of the numbers. Errors made by candidates included miscopying the numbers before adding them, and miscounting, usually dividing by 5 instead of 6. Many candidates gave the correct answer of 13.5 A few then wrote this as 13.

20. Candidates need to be encouraged to check their work. A significant number of candidates lost marks through quite basic errors, such as miscounting a number. Most candidates knew to write tallies and then show the frequencies, but a small number only showed the tallies. In part (b) common errors included writing the 6 (since it was the maximum score shown) and 7 (since this was the maximum frequency). Overall a well answered question.

21. Over two thirds of candidates correctly identified the modal weight in part (a). Common incorrect answers seen included 71 (the median) and 76 (the mean).

Part (b) was usually answered correctly. However, some candidates identified the ends of the range but failed to subtract one from the other. They gained only partial credit.

22. The third blank column in the table of values was not always used and, where working was shown, the values were repeated in the working space which used up valuable examination time. Totals from the two given columns of values were often obtained and sometimes used to obtain a final answer. For those realising that the values in the two columns were to be multiplied together the first entry of ' $5 \times 0$ ' appeared as '5' rather than '0' in many instances. Some candidates saw a connection between a pie chart and the table of values and went on to produce a calculation which seemed to be connected to the number of degrees in each sector totally ignoring the fact that they had been asked to 'find the mean'. In spite of the fact that the question was topical there were some very unrealistic answers with the average person buying thousands of pounds of lottery tickets each week. Many responses indicated that the candidates had little idea what to do, with many writing  $126 \text{ (or } 131) \div 5$  or  $126 \div 56$  or even  $56 \div 5$ . Others attempted to write the cumulative frequency values and then tried to use these values to calculate the mean. Over half the candidates failed to score any marks on this question with only around 20% scoring 2 or 3 marks.

23. Over 97% of candidates scored at least half marks in this question. In part (a) completion of the frequency table was done well though a further check might have saved some candidates from losing a mark through inaccuracy. Nearly all candidates were able to either give the correct answer to part (b) or obtain the mark from a follow through from their frequency table. It is encouraging to note that most candidates appeared to realise that the highest frequency was the key to identifying the mode in part (c). However, unfortunately a large proportion gave “7” as their answer and not “USA” as required.

24. Parts (a) and (b) of this question were done well by the majority of the candidates. A common error in part (a) was 20, and a common error in part (b) was 19.5.

In part (c), many candidates were able to score both marks for 15, but those candidates who just wrote, for example, 35 or 5 (presumably from  $25 - 10 = “5”$ ) on the answer line without working, were unable to access the mark for the sight of 10 and 25 together. Candidates should be encouraged to show all their working- even to relatively simple calculations.

25. This question was well understood by most of the candidature though inevitably some candidates mixed up the concepts of range and median with many candidates also trying to calculate the mean instead of the range and the median.

In part (a) 63 % gained full marks for writing 13 whilst partial success of one mark was gained by 1.7% who wrote the highest and lowest number of points with some idea it was between them.

In part (b) the mark for the median was gained by 80% of candidates with many candidates writing 9.2, which was the mean.

The mark for part(c) was only gained by 41% of candidates and it was quite normal to see responses such as 9 – 11 or 9 – 12 with an answer of 10.5 for those candidates who forgot to put the 11 in the correct place in the ranking.