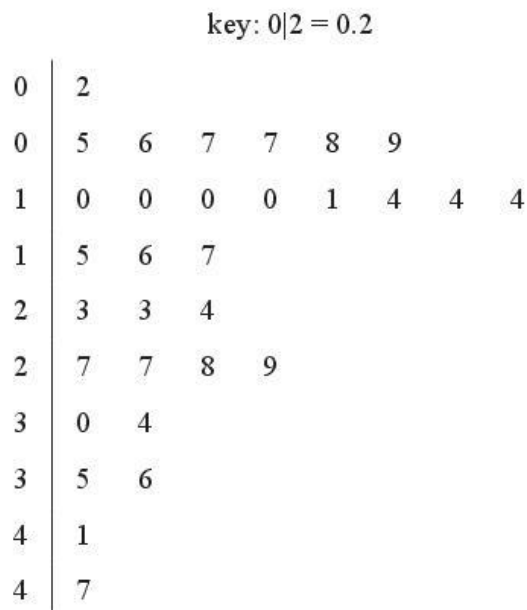


Question 1

The stem plot below displays the average number of decayed teeth in 12-year-old children from 31 countries.



Data: Gapminder

Based on this stem plot, the distribution of the average number of decayed teeth for these countries is best described as

- A. negatively skewed with a median of 15 decayed teeth and a range of 45
- B. positively skewed with a median of 15 decayed teeth and a range of 45
- C. approximately symmetric with a median of 1.5 decayed teeth and a range of 4.5
- D. negatively skewed with a median of 1.5 decayed teeth and a range of 4.5
- E. positively skewed with a median of 1.5 decayed teeth and a range of 4.5

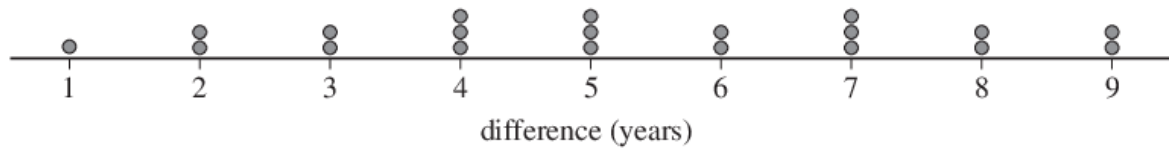
Question 2

For an ordered set of data containing an odd number of values, the middle value is always

- A. the mean.
- B. the median.
- C. the mode.
- D. the mean and the median.
- E. the mean, the median and the mode.

Question 3

The dot plot below displays the difference between female and male life expectancy, in years, for a sample of 20 countries.



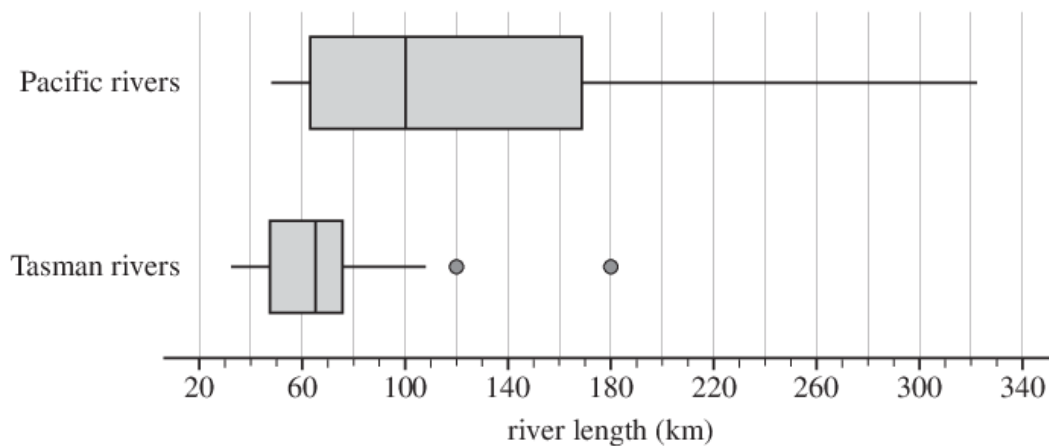
The mean (\bar{x}) and standard deviation (s) for this data are

- A. mean = 2.32 standard deviation = 5.25
- B. mean = 2.38 standard deviation = 5.25
- C. mean = 5.0 standard deviation = 2.0
- D. mean = 5.25 standard deviation = 2.32
- E. mean = 5.25 standard deviation = 2.38

Question 4

In New Zealand, rivers flow into either the Pacific Ocean (the Pacific rivers) or the Tasman Sea (the Tasman rivers).

The boxplots below can be used to compare the distribution of the lengths of the Pacific rivers and the Tasman rivers.



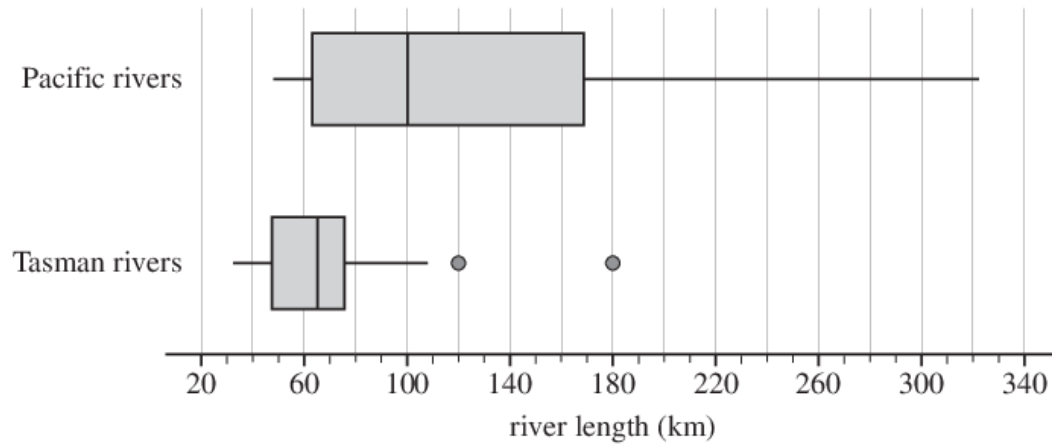
The five-number summary for the lengths of the Tasman rivers is closest to

- A. 32, 48, 64, 76, 108
- B. 32, 48, 64, 76, 180
- C. 32, 48, 64, 76, 322
- D. 48, 64, 97, 169, 180
- E. 48, 64, 97, 169, 322

Question 5

In New Zealand, rivers flow into either the Pacific Ocean (the Pacific rivers) or the Tasman Sea (the Tasman rivers).

The boxplots below can be used to compare the distribution of the lengths of the Pacific rivers and the Tasman rivers.

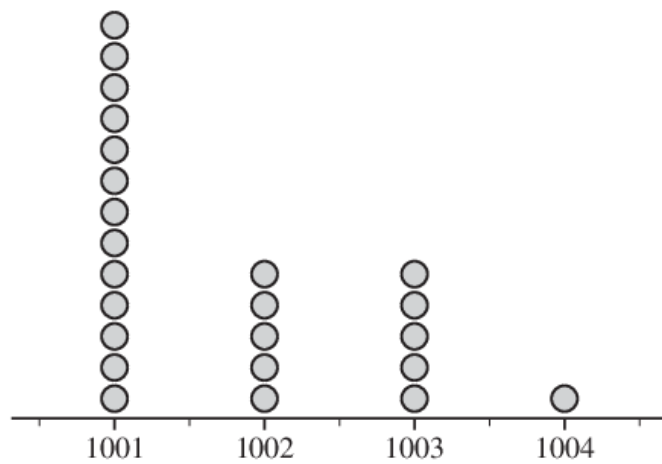


Which one of the following statements is **not** true?

- A. The lengths of two of the Tasman rivers are outliers.
- B. The median length of the Pacific rivers is greater than the length of more than 75% of the Tasman rivers.
- C. The Pacific rivers are more variable in length than the Tasman rivers.
- D. More than half of the Pacific rivers are less than 100 km in length.
- E. More than half of the Tasman rivers are greater than 60 km in length.

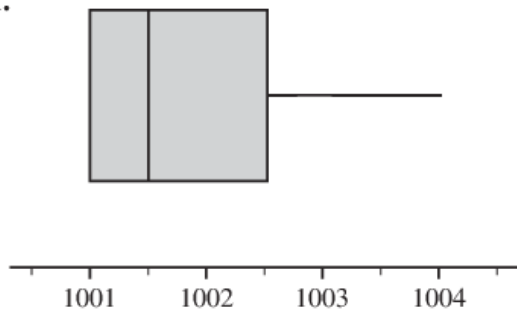
Question 6

A dot plot for a set of data is shown below.

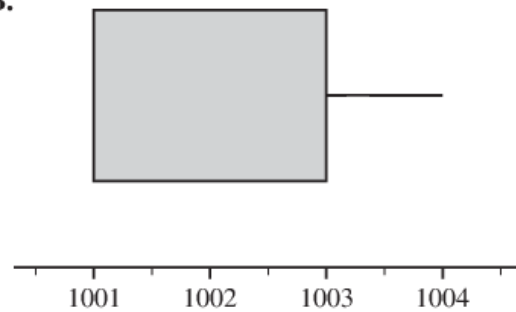


Which one of the following boxplots would best represent the dot plot above?

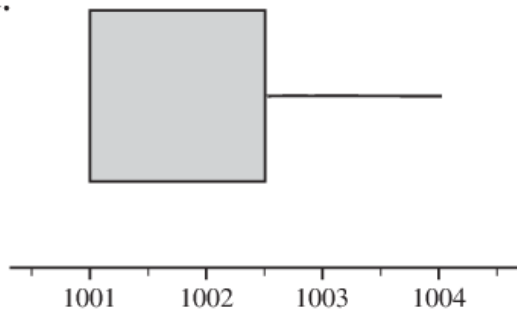
A.



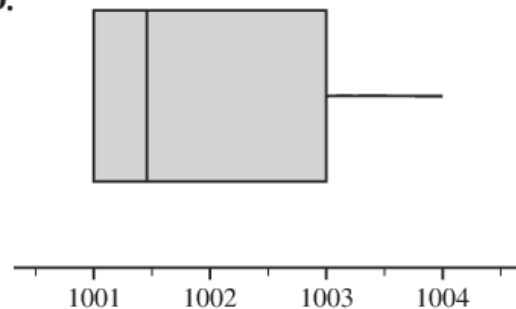
B.



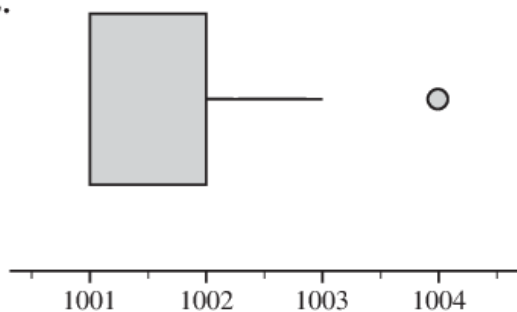
C.



D.

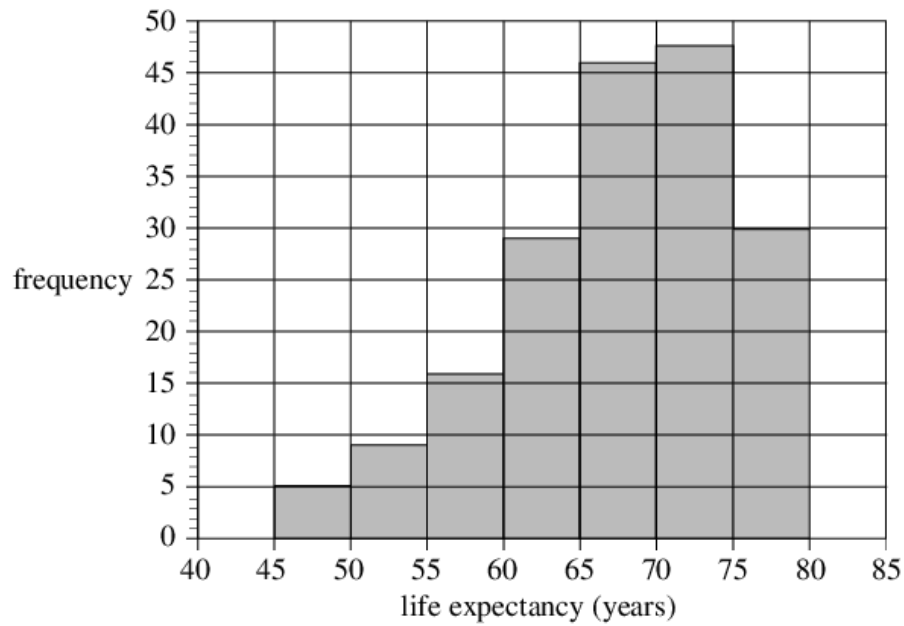


E.



Question 7

The histogram below shows the distribution of life expectancy of people for 183 countries.



- a. For this distribution, the modal interval is

1 mark

- b. In how many of these countries is life expectancy less than 55 years?

1 mark

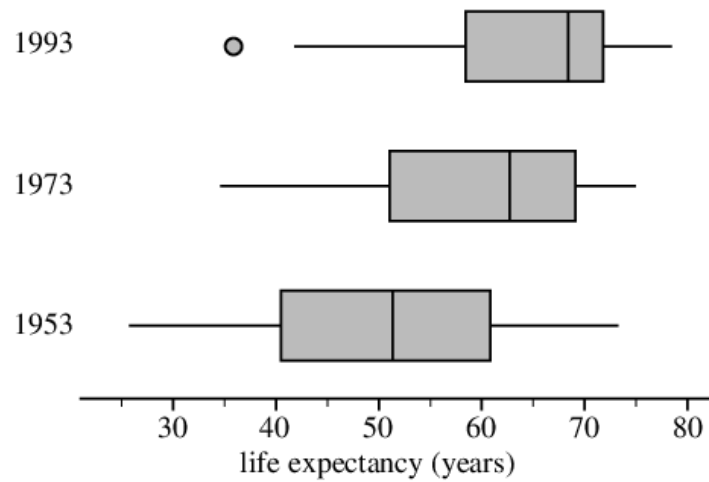
- c. In what percentage of these 183 countries is life expectancy between 75 and 80 years?

Write your answer correct to one decimal place.

1 mark

Question 8

The parallel boxplots below compare the distribution of life expectancy for 183 countries for the years 1953, 1973 and 1993.



- a. Describe the shape of the distribution of life expectancy for 1973.

1 mark

- b. Explain why life expectancy for these countries is associated with the year. Refer to specific statistical values in your answer.

2 marks

Question 9

The following ordered stem plot shows the areas, in square kilometres, of 27 suburbs of a large city.

key: 1|6 = 1.6 km²

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

The median area of these suburbs, in square kilometres, is

- A. 3.0
- B. 3.1
- C. 3.5
- D. 30.0
- E. 30.5

Question 10

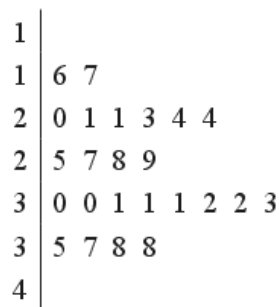
A single back-to-back stem plot would be an appropriate graphical tool to investigate the association between a car's speed, in kilometres per hour, and the

- A. driver's age, in years.
- B. car's colour (white, red, grey, other).
- C. car's fuel consumption, in kilometres per litre.
- D. average distance travelled, in kilometres.
- E. driver's sex (female, male).

Question 11

The following ordered stem plot shows the percentage of homes connected to broadband internet for 24 countries in 2007.

key 1|6 = 16%



Question 1

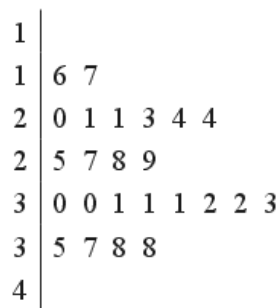
The number of these countries with more than 22% of homes connected to broadband internet in 2007 is

- A. 4
- B. 5
- C. 19
- D. 20
- E. 22

Question 12

The following ordered stem plot shows the percentage of homes connected to broadband internet for 24 countries in 2007.

key 1|6 = 16%



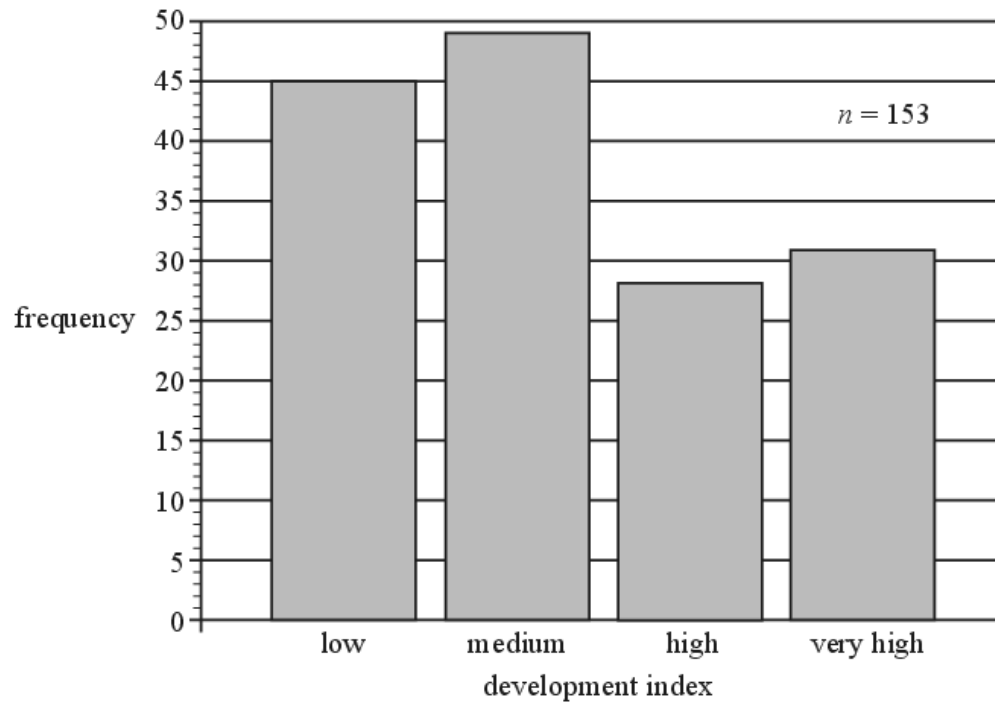
Which one of the following statements relating to the data in the ordered stem plot is **not** true?

- A. The minimum is 16%.
- B. The median is 30%.
- C. The first quartile is 23.5%.
- D. The third quartile is 32%.
- E. The maximum is 38%.

Question 13

A development index is used as a measure of the standard of living in a country.

The bar chart below displays the development index for 153 countries in four categories: low, medium, high and very high.



- b. What percentage of the 153 countries has either a low or medium development index?

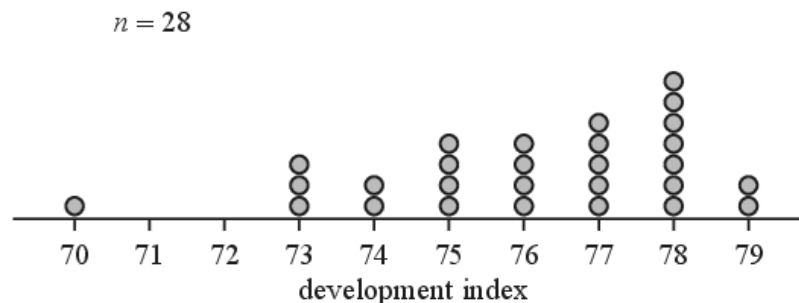
Write your answer, correct to the nearest percentage.

1 mark

Question 14

The development index for each country is a whole number between 0 and 100.

The dot plot below displays the values of the development index for each of the 28 countries that has a high development index.



- a. Using the information in the dot plot, determine each of the following.

1 mark

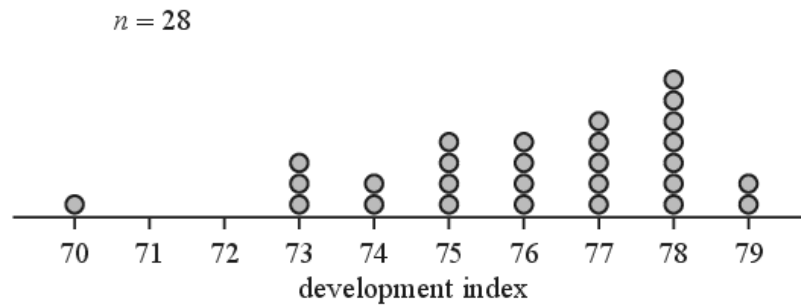
the mode

the range

Question 15

The development index for each country is a whole number between 0 and 100.

The dot plot below displays the values of the development index for each of the 28 countries that has a high development index.



- b. Write down an appropriate calculation and use it to explain why the country with a development index of 70 is an outlier for this group of countries.

2 marks

Question 16

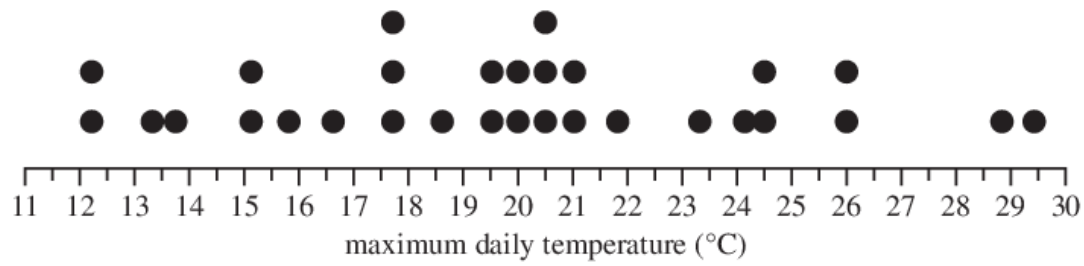
The total weight of nine oranges is 1.53 kg.

Using this information, the mean weight of an orange would be calculated to be closest to

- A. 115 g
- B. 138 g
- C. 153 g
- D. 162 g
- E. 170 g

Question 17

The dot plot below displays the maximum daily temperature (in °C) recorded at a weather station on each of the 30 days in November 2011.

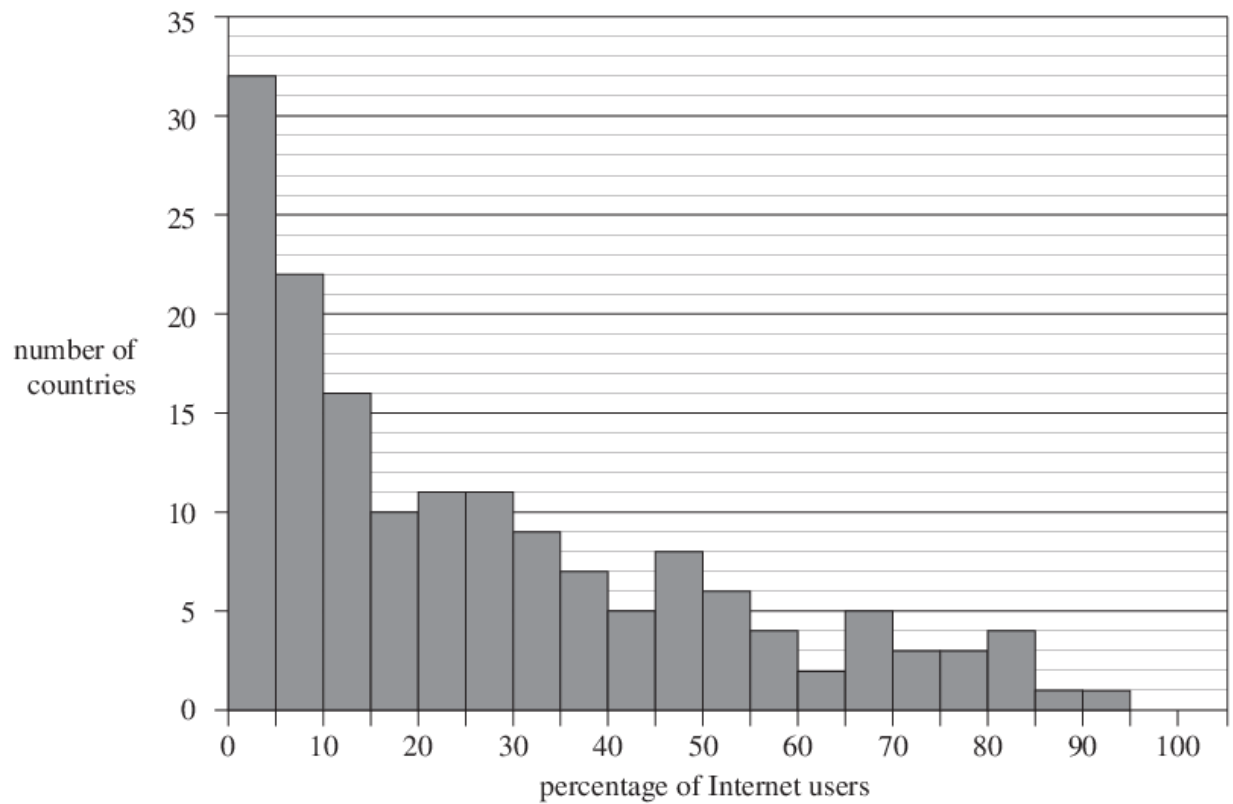


- a. From this dot plot, determine
- the median maximum daily temperature, correct to the nearest degree
 - the percentage of days on which the maximum temperature was less than 16 °C.
Write your answer, correct to one decimal place.

1 + 1 = 2 marks

Question 18

The histogram below displays the distribution of the percentage of Internet users in 160 countries in 2007.



Based on data obtained from: www.data.un.org

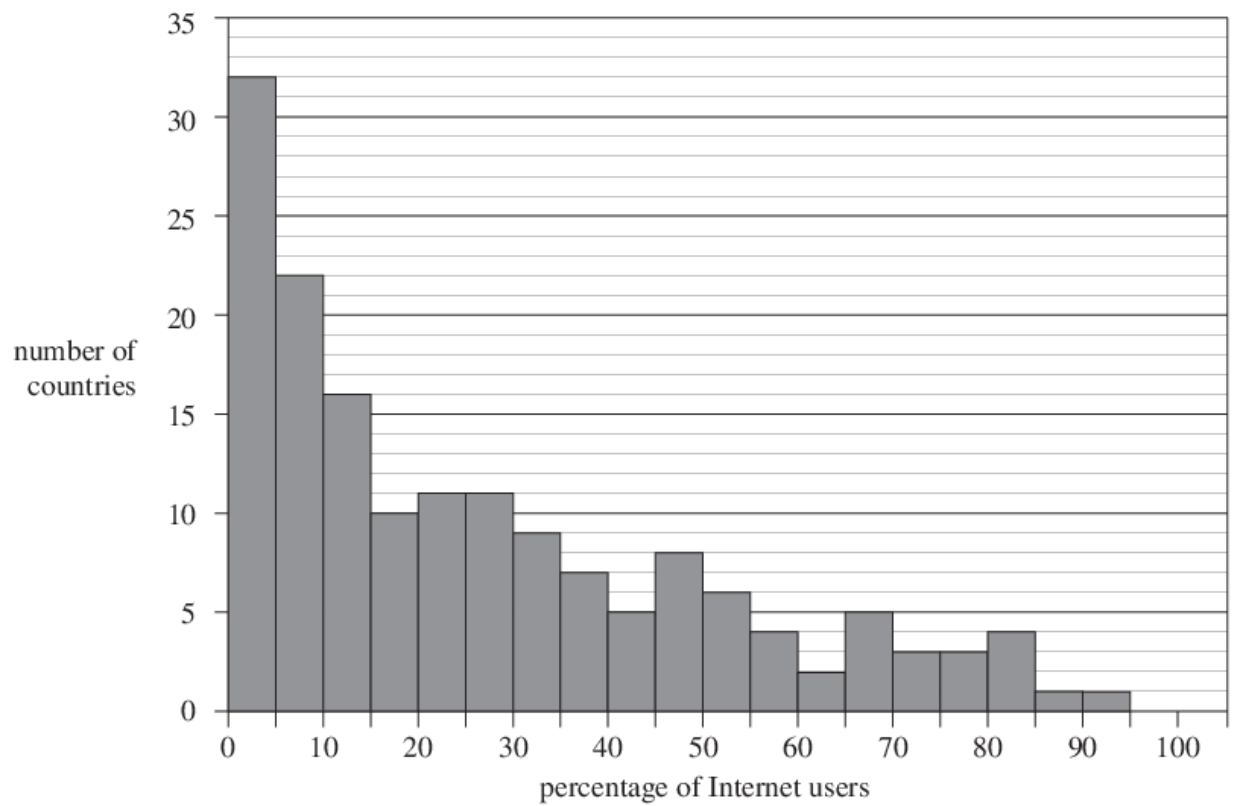
Question 1

The shape of the histogram is best described as

- A. approximately symmetric.
- B. bell shaped.
- C. positively skewed.
- D. negatively skewed.
- E. bi-modal.

Question 19

The histogram below displays the distribution of the percentage of Internet users in 160 countries in 2007.



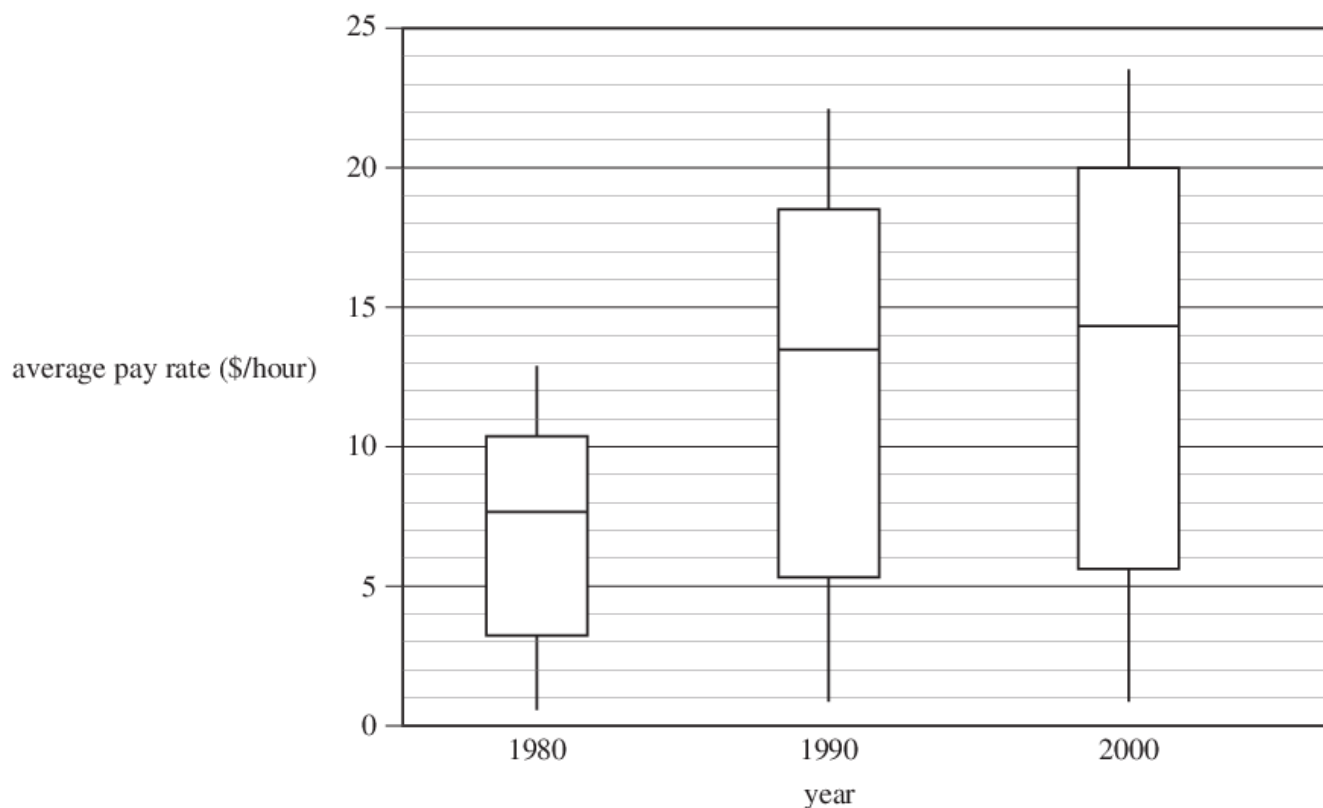
Based on data obtained from: www.data.un.org

The number of countries in which less than 10% of people are Internet users is closest to

- A. 10
- B. 16
- C. 22
- D. 32
- E. 54

Question 20

The boxplots below display the distribution of average pay rates, in dollars per hour, earned by workers in 35 countries for the years 1980, 1990 and 2000.



Based on data obtained from: www.data.un.org

Based on the information contained in the boxplots, which one of the following statements is **not** true?

- A. In 1980, over 50% of the countries had an average pay rate less than \$8.00 per hour.
- B. In 1990, over 75% of the countries had an average pay rate greater than \$5.00 per hour.
- C. In 1990, the average pay rate in the top 50% of the countries was higher than the average pay rate for any of the countries in 1980.
- D. In 1990, over 50% of the countries had an average pay rate less than the median average pay rate in 2000.
- E. In 2000, over 75% of the countries had an average pay rate greater than the median average pay rate in 1980.

Question 21

The stemplot in Figure 1 shows the distribution of the average age, in years, at which women first marry in 17 countries.

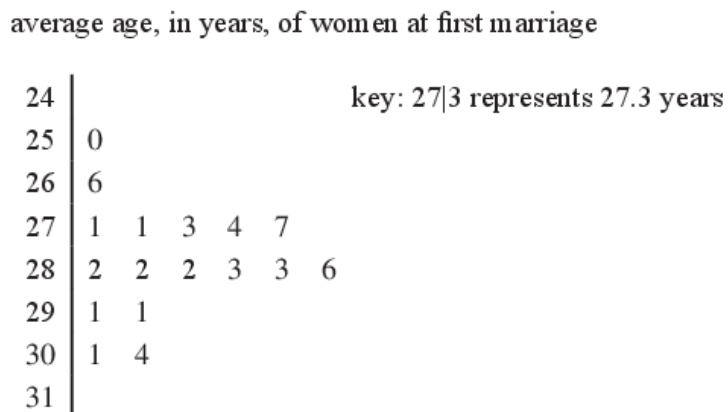


Figure 1

The stemplot in Figure 2 shows the distribution of the average age, in years, at which men first marry in 17 countries.

average age, in years, of men at first marriage

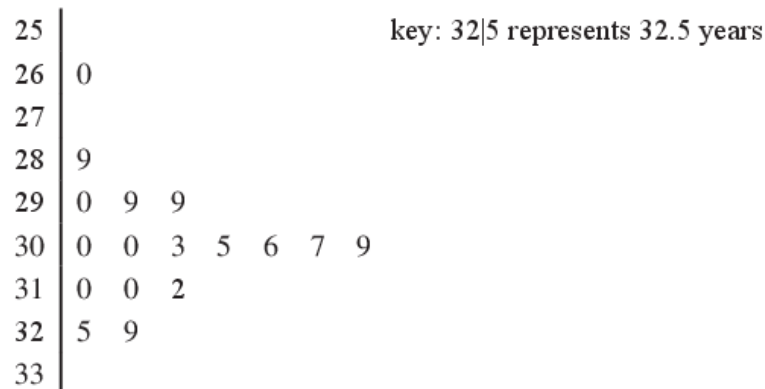


Figure 2

- b. For these countries, determine the interquartile range (IQR) for the average age of men at first marriage.

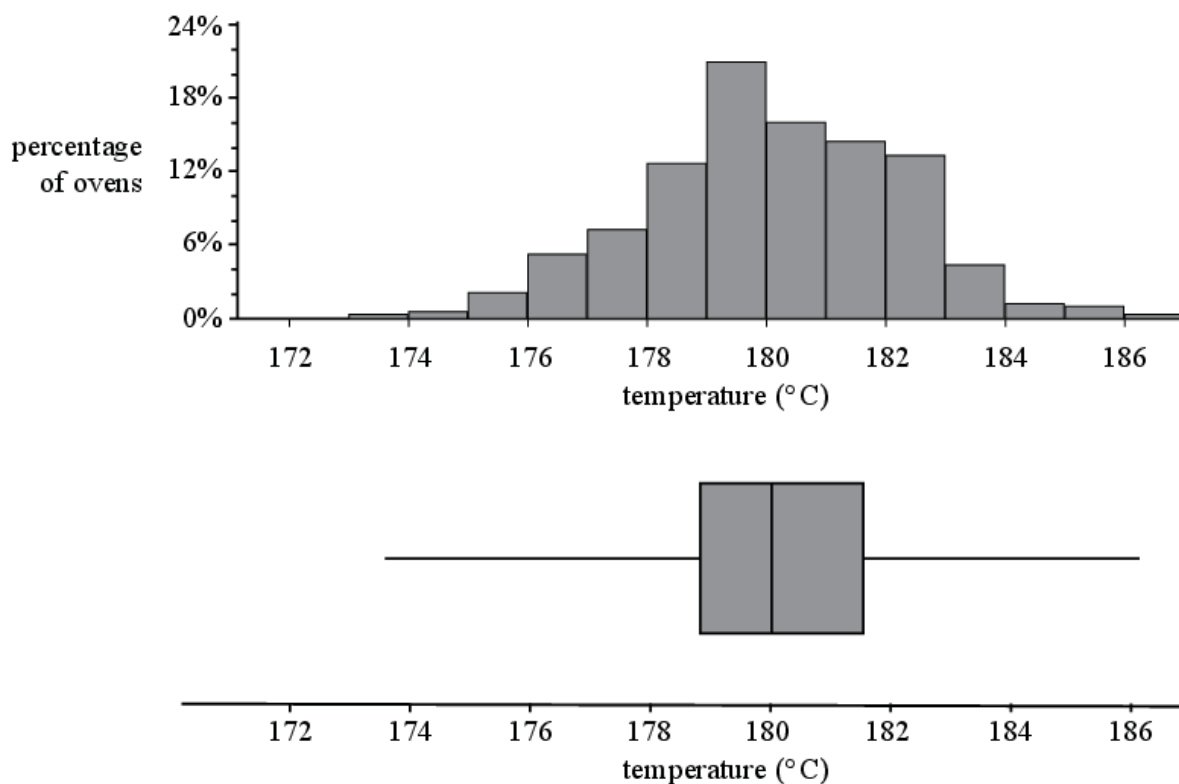
1 mark

- c. If the data values displayed in Figure 2 were used to construct a boxplot with outliers, then the country for which the average age of men at first marriage is 26.0 years would be shown as an outlier. Explain why this is so. Show an appropriate calculation to support your explanation.

2 marks

Question 22

To test the temperature control on an oven, the control is set to 180°C and the oven is heated for 15 minutes. The temperature of the oven is then measured. Three hundred ovens were tested in this way. Their temperatures were recorded and are displayed below using both a histogram and a boxplot.



Question 1

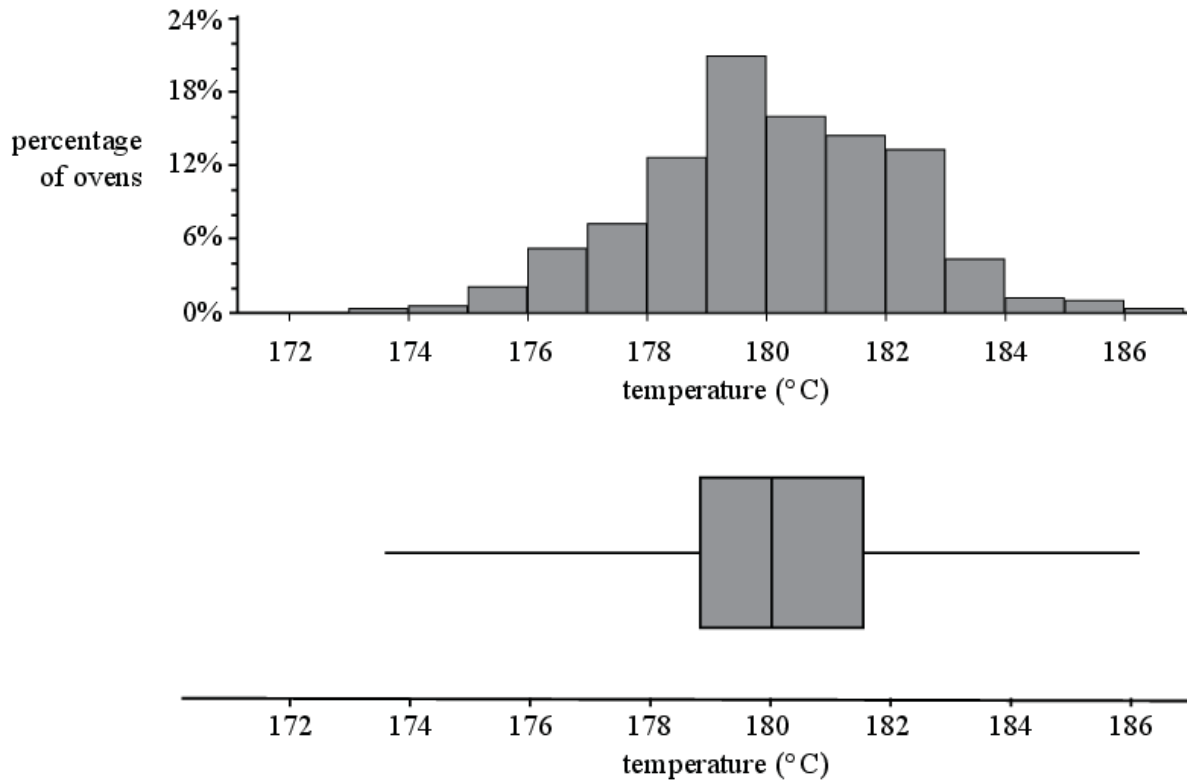
A total of 300 ovens were tested and their temperatures were recorded.

The number of these temperatures that lie between 179°C and 181°C is closest to

- A. 40
- B. 50
- C. 70
- D. 110
- E. 150

Question 23

To test the temperature control on an oven, the control is set to 180°C and the oven is heated for 15 minutes. The temperature of the oven is then measured. Three hundred ovens were tested in this way. Their temperatures were recorded and are displayed below using both a histogram and a boxplot.



The interquartile range for temperature is closest to

- A. 1.3°C
- B. 1.5°C
- C. 2.0°C
- D. 2.7°C
- E. 4.0°C

Question 24

Table 1 shows the percentage of women ministers in the parliaments of 22 countries in 2008.

Table 1

Country	Percentage of women ministers
Norway	56
Sweden	48
France	47
Spain	44
Switzerland	43
Austria	38
Denmark	37
Iceland	36
Germany	33
Netherlands	33
New Zealand	32
Australia	24
Italy	24
United States	24
Belgium	23
United Kingdom	23
Ireland	21
Liechtenstein	20
Canada	16
Luxembourg	14
Japan	12
Singapore	0

The ordered stemplot below displays the distribution of the percentage of women ministers in parliament for 21 of these countries. The value for **Canada** is missing.

stem (10s)	leaf (units)
0	0
1	2 4
2	0 1 3 3 4 4 4
3	2 3 3 6 7 8
4	3 4 7 8
5	6

- c. Complete the stemplot above by adding the value for Canada.

1 mark

- d. Both the median and the mean are appropriate measures of centre for this distribution. Explain why.

1 mark

Question 25

Table 1 shows the percentage of women ministers in the parliaments of 22 countries in 2008.

Table 1

Country	Percentage of women ministers
Norway	56
Sweden	48
France	47
Spain	44
Switzerland	43
Austria	38
Denmark	37
Iceland	36
Germany	33
Netherlands	33
New Zealand	32
Australia	24
Italy	24
United States	24
Belgium	23
United Kingdom	23
Ireland	21
Liechtenstein	20
Canada	16
Luxembourg	14
Japan	12
Singapore	0

- b. Determine the median, range and interquartile range of this data.

median _____

range _____

interquartile range _____

2 marks