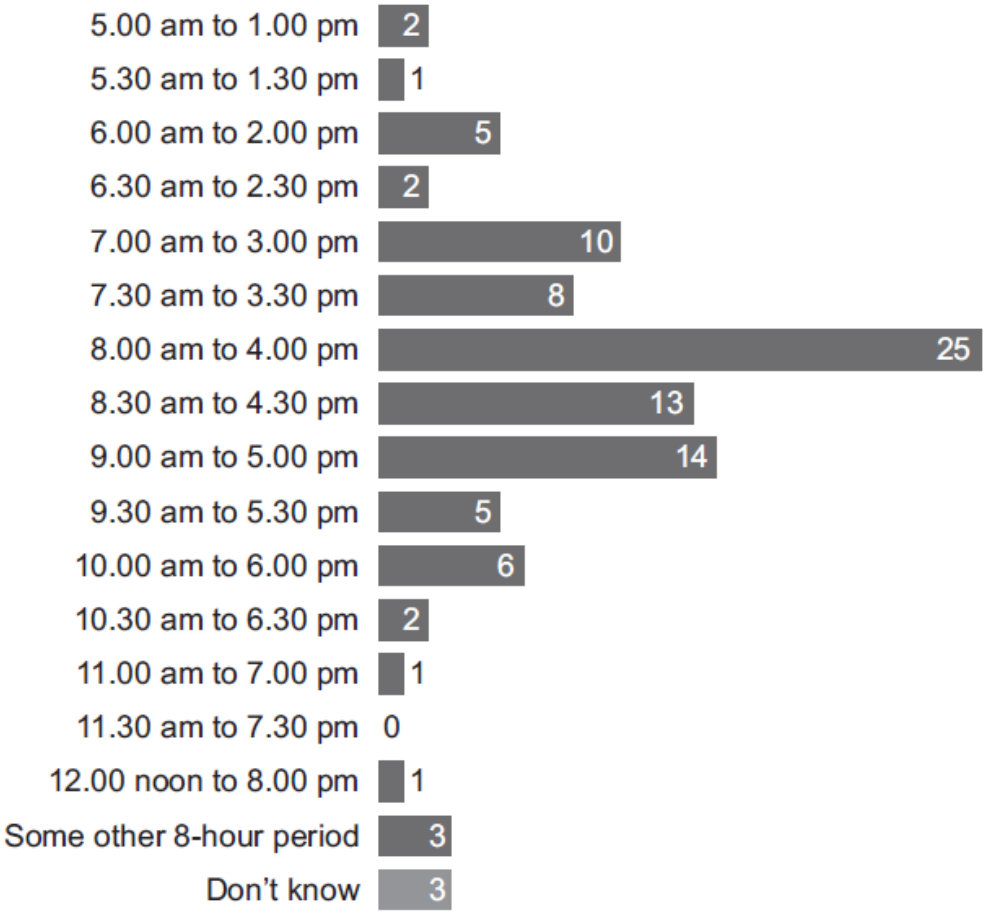
Interpretation of Data – GCSE Statistics

1. No.12

A YouGov survey was carried out with nearly 2000 British working adults who have an 8-hour working day.

They were asked which period of 8 hours they would prefer to work.

YouGov produced this summary graph showing the **percentage** of each response, rounded to the nearest whole number.



Source: yougov.com

(a) Show that about two-thirds of adults questioned wanted to work **earlier** than the traditional 9 am to 5 pm working hours.

[2 marks]

(b) Amber says,

"**None** of the adults questioned wanted to start work at 11.30 am."

Is Amber correct?

Tick (✓) a box.

Yes ☐ No ☐ Cannot tell ☐

Give a reason for your answer.

[1 mark]

_____

_____

(c) Give **one** reason why these results will **not** apply to all British working adults.

[1 mark]

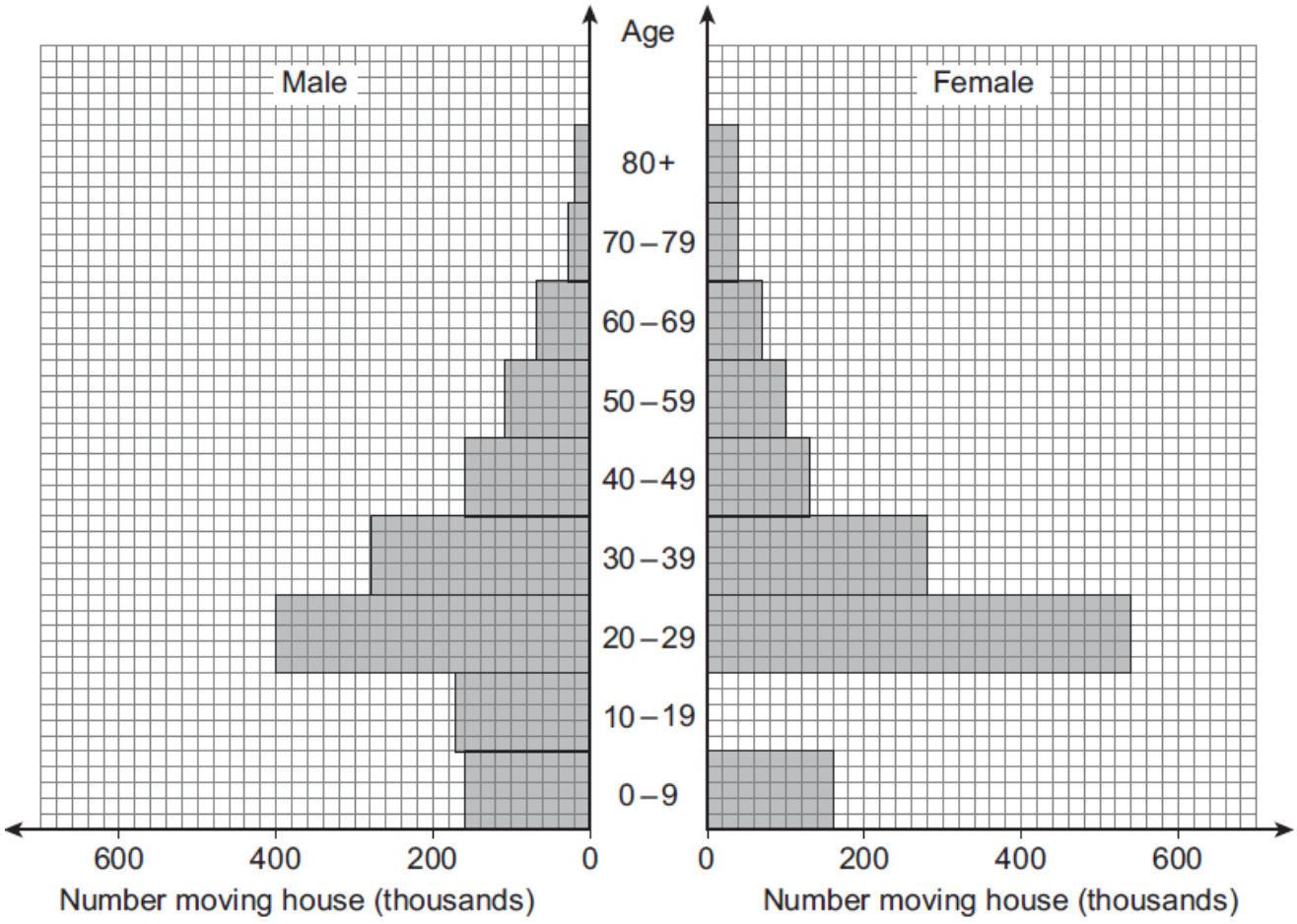
_____

_____

2. No.11

The population pyramid shows the ages of people who moved house in England and Wales in 2016.

One bar has not been drawn.



Total number of males moving house is 1400 thousand	Total number of females moving house is 1550 thousand

Source: ONS

(a) 350 000 females aged **under 20 years** moved house in 2016.

Complete the population pyramid by drawing the bar for females aged 10–19 years.

[2 marks]

(b) (i) Calculate the percentage of all people who moved who were aged 20–29 years.

[3 marks]

Answer _____ %

(b) (ii) Suggest **one** reason why such a large proportion of people moving are aged 20–29 years.

[1 mark]

3. No.16(a-c)

In a golf tournament, players take part in several rounds of golf.

Players try to complete the course taking as few golf strokes as possible.

Justin wants to compare the number of strokes taken by the players in the first two rounds of a tournament.

He collects data for the top 50 players.

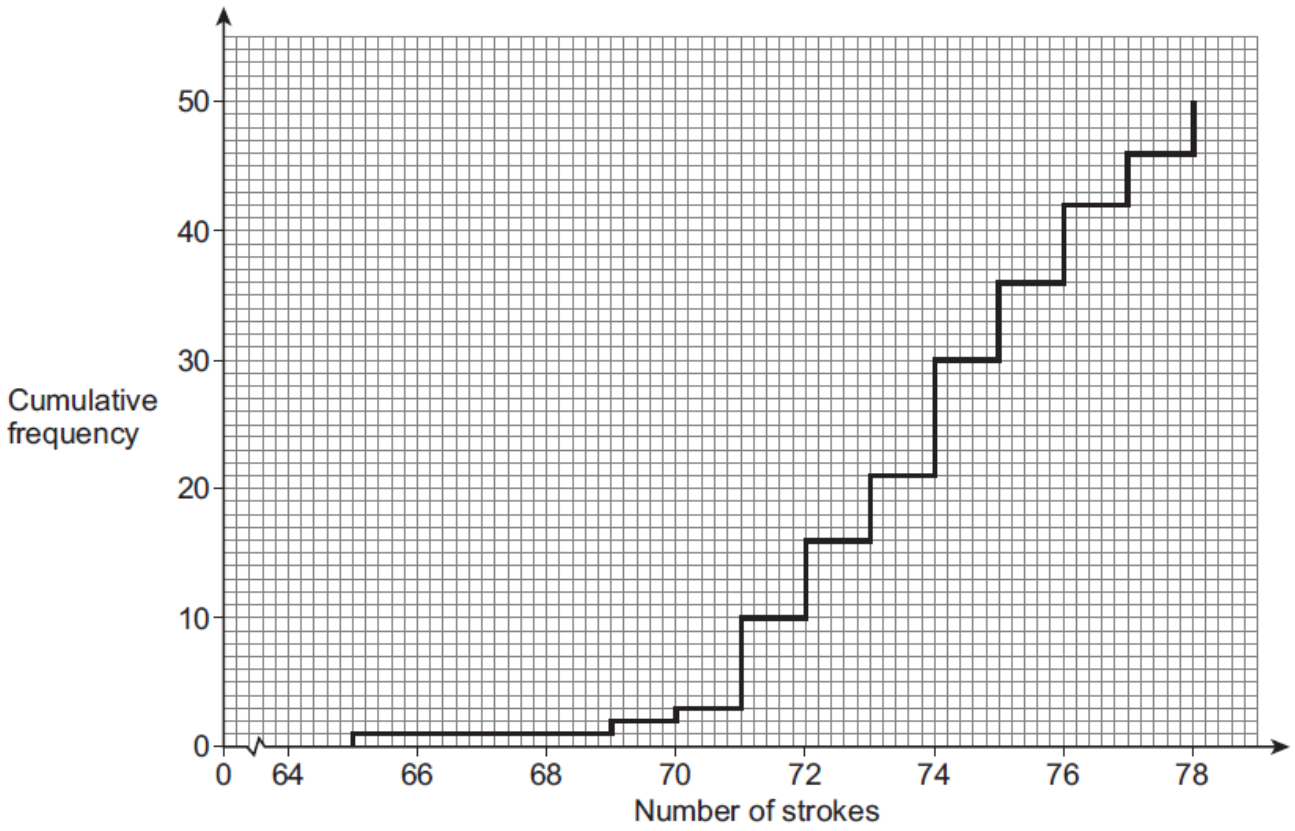
Justin's hypothesis is,

In which of the first two rounds will players take the fewer strokes on average?

(a) What mistake has Justin made when writing his hypothesis?

[1 mark]

Justin draws a cumulative frequency step polygon to show the results for players in **Round 1**



(b) Explain why a cumulative frequency step polygon is an appropriate graph for the data.

[1 mark]

_____

_____

(c) Work out the percentage of players who took 72 strokes or fewer for **Round 1**

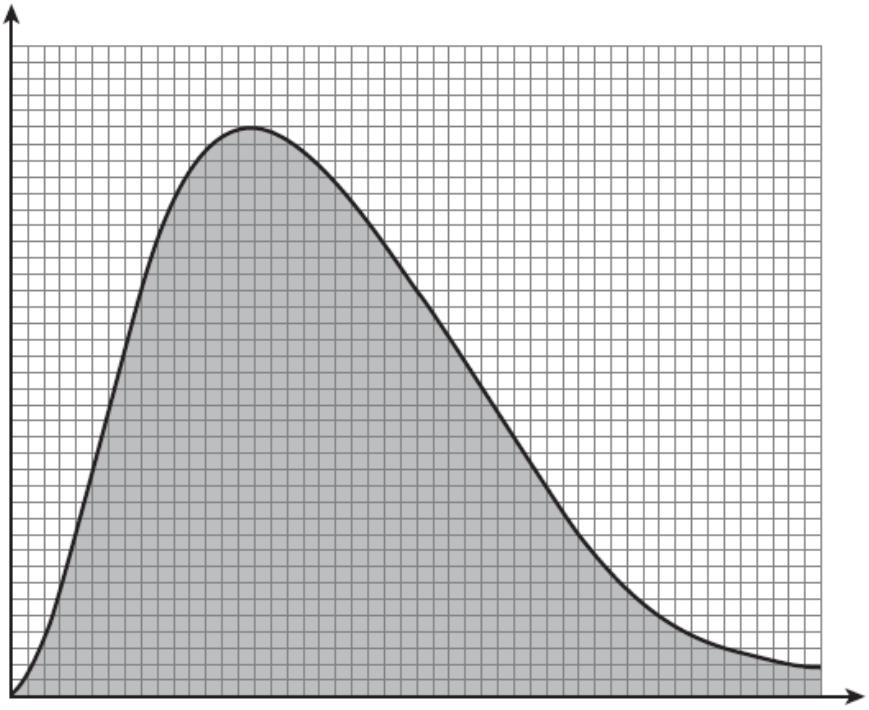
[2 marks]

_____

_____ %

4. No.2

The diagram shows the distribution of some data.



What word describes the skewness of the data shown?

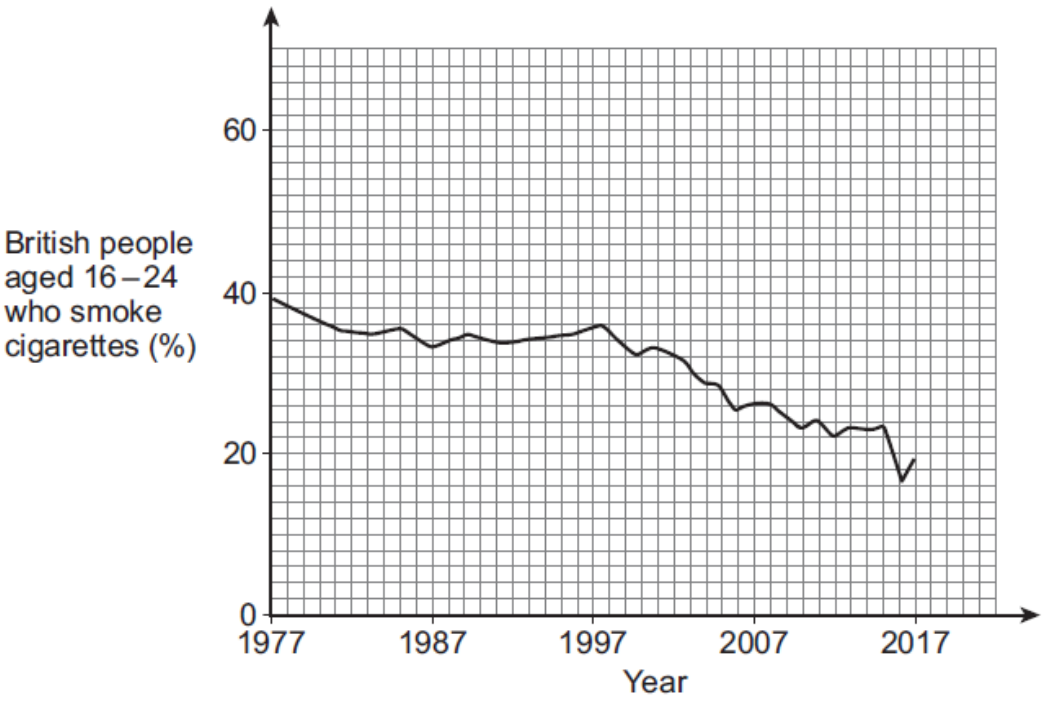
Circle your answer.

[1 mark]

positive zero stretched negative

5. No.6

This graph was seen on a news app.



Source: adapted from ONS

(a) Approximately what percentage of British people aged 16 to 24 smoked cigarettes in **1997**?

[1 mark]

Answer _____ %

(b) Write down a possible headline for the story which was based on this graph.

[1 mark]

_____

_____

_____

6. No.9

In a national survey, held regularly, people are asked,

"Overall, how happy did you feel yesterday?
Score 0 for 'not at all happy' to 10 for 'completely happy'."

Some results are given in the table.

Date range	Mean Score	Category of 'happiness' (%)			
		Low	Medium	High	Very High
		0–4	5–6	7–8	9–10
April 2014–March 2015	7.46	8.87	16.59	40.44	34.10
July 2014–June 2015	7.48	8.69	16.51	40.59	34.22
October 2014–September 2015	7.48	8.72	16.57	40.49	34.21
January 2015–December 2015	7.48	8.69	16.49	40.59	34.23
April 2015–March 2016	7.48	8.81	16.46	40.49	34.24
July 2015–June 2016	7.46	8.90	16.63	40.41	34.06
October 2015–September 2016	7.48	8.79	16.47	40.39	34.35
January 2016–December 2016	7.49	8.69	16.31	40.43	34.58
April 2016–March 2017	7.51	8.58	16.30	40.26	34.85
July 2016–June 2017	7.52	8.48	16.13	40.31	35.08
October 2016–September 2017	7.52	8.44	16.19	40.45	34.92
January 2017–December 2017	7.53	8.26	16.26	40.36	35.12
April 2017–March 2018	7.52	8.25	16.34	40.53	34.88
July 2017–June 2018	7.54	8.08	16.28	40.44	35.20

Source: ONS

(a) For the period January 2016–December 2016, what percentage of people were categorised with a **high** happiness score?

[1 mark]

Answer _____ %

(b) Identify the trend in mean score over the period shown.

[1 mark]

_____

_____

(c) Look at the percentages in the first and last rows of Category of 'happiness'.

(c) (i) Which happiness score category has seen the biggest **numerical** change in the percentages over the period shown?

Circle your answer.

[1 mark]

Low Medium High Very High

(c) (ii) Which happiness score category has seen the biggest **percentage** change in the percentages over the period shown?

Circle your answer.

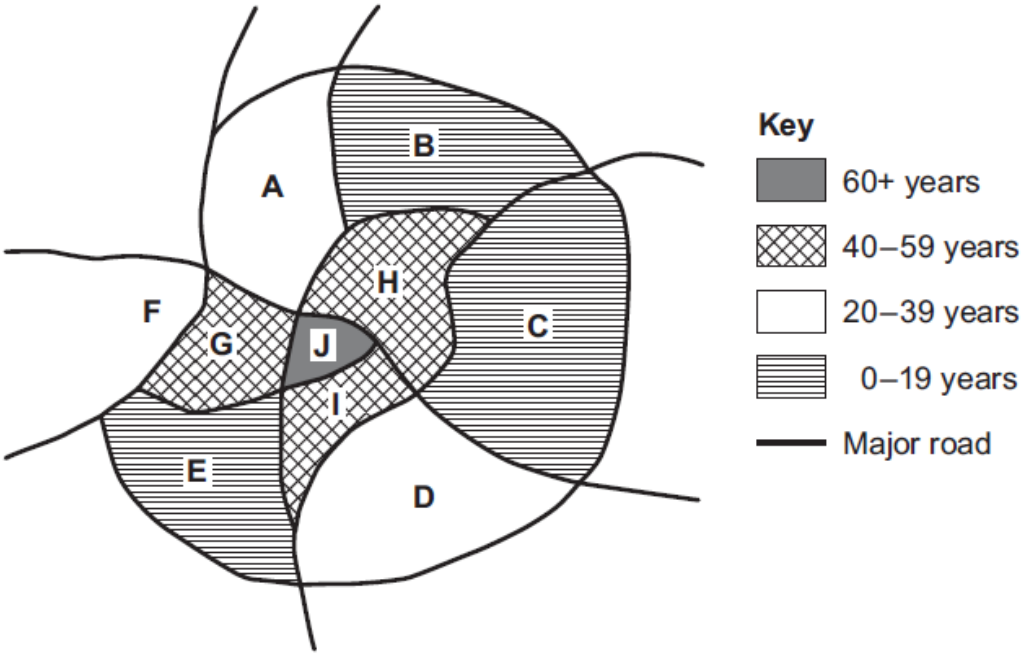
[1 mark]

Low Medium High Very High

7. No.13

The diagram shows the map of a town.

The **modal** age of buildings in each region of the town is shown.



(a) Circle the modal age of the buildings in **region F** of this town.

[1 mark]

0–19 years 20–39 years 40–59 years 60+ years

(b) The oldest building in the town was built in 1847.

Ahmed says that this building is in region J.

Is Ahmed correct?

Tick (✓) a box.

Yes ☐ No ☐ Cannot tell ☐

Give a reason for your answer.

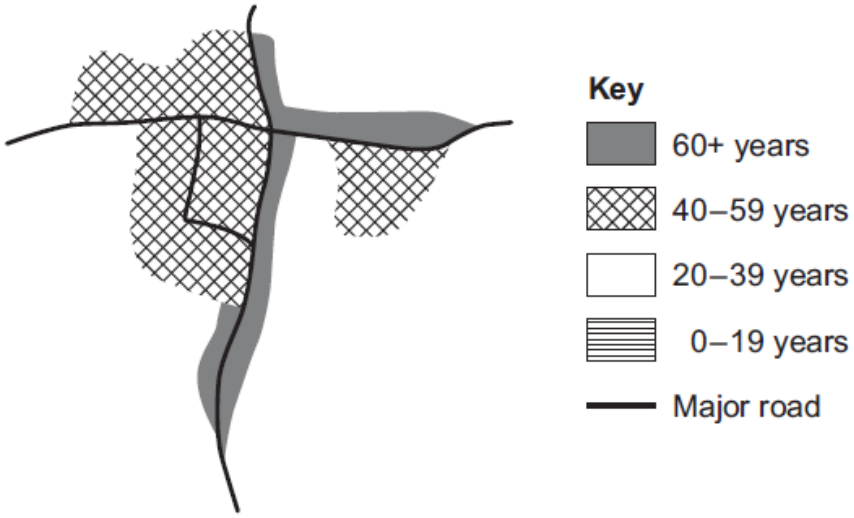
[1 mark]

_____

_____

_____

(c) The diagram below shows the **modal** age of buildings in a neighbouring village.



Compare the age of buildings in the village with the age of buildings in the town.

[1 mark]

8. No.6

The tables show the **mean** number of portions of fruit and vegetables eaten per day by children and adults of different ages and gender in England.

Children

	Age (years)				
	5–7	**8–10**	**11–13**	**14–15**	**All ages**
Females	3.3	3.2	3.5	3.2	**3.3**
Males	3.3	3.5	3.1	2.9	**3.2**
All children	3.3	3.4	3.3	3.0	**3.2**

Adults

	Age (years)							
	16–24	**25–34**	**35–44**	**45–54**	**55–64**	**65–74**	**75+**	**All ages**
Females	3.2	3.8	3.7	3.7	3.8	3.9	3.4	**3.7**
Males	2.6	3.4	3.6	3.4	3.5	3.9	3.6	**3.4**
All adults	2.9	3.6	3.7	3.6	3.7	3.9	3.5	**3.5**

Source: Adapted from *Health Survey for England*, 2015

(a) (i) Compare the amount of fruit and vegetables eaten by males **aged 14–15** with the amount eaten by females of the same age.

[1 mark]

_____

_____

(a) (ii) Write **two** comparisons of the amount of fruit and vegetables eaten by different ages of **adults**.

[2 marks]

Comparison 1 _____

_____

Comparison 2 _____

_____

Natalie wants to investigate how many portions of fruit and vegetables students in her year group at school eat.

The table shows the number of students of each gender in her year group.

Gender	Number
Males	99
Females	121

Natalie decides to interview a sample of 40 students.

She decides to **stratify** by gender.

(b) Explain why it is sensible for Natalie to stratify by gender.

[1 mark]

(c) Show that Natalie should select 18 male students from her year group.

[2 marks]

(d) Natalie's friend suggests she should interview students in her year group eating school dinners.

Explain why this could give biased results.

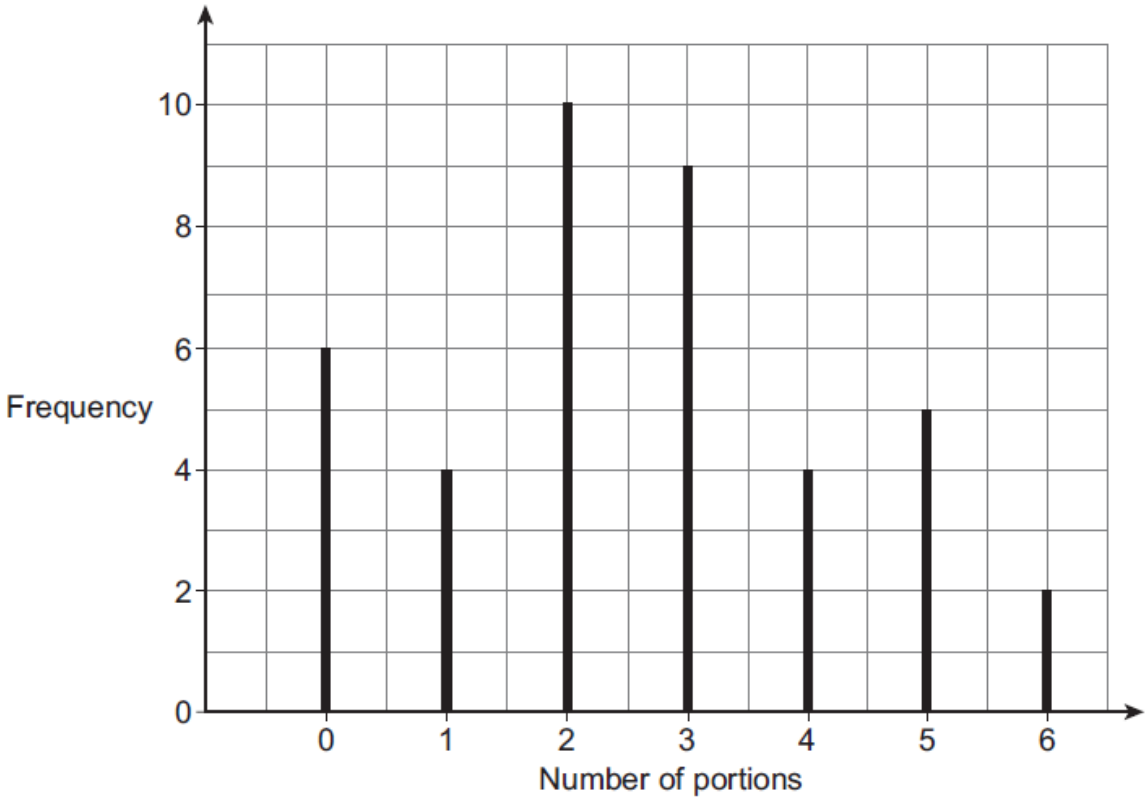
[1 mark]

Natalie decides to select 18 male students and 22 female students at random from her year group.

She asks each student,

"How many portions of fruit and vegetables did you eat yesterday?"

The bar line graph shows the number of portions of fruit and vegetables eaten by the 40 students in her sample.



It is recommended that everyone should eat at least 5 portions of fruit and vegetables every day.

(e) Calculate an estimate of the percentage of students in Natalie's year group that ate at least 5 portions.

[2 marks]

Answer _____ %

Students in Natalie's year are aged **14–15 years**.

(f) Compare the number of portions of fruit and vegetables eaten by students in Natalie's year with the corresponding figure for England.

You should,

- use the information from the bar line graph on page 10 and the information from the table on page 8
- calculate an appropriate average.

[5 marks]

(g) Suggest **two** things that Natalie could have done to make her comparison more reliable.

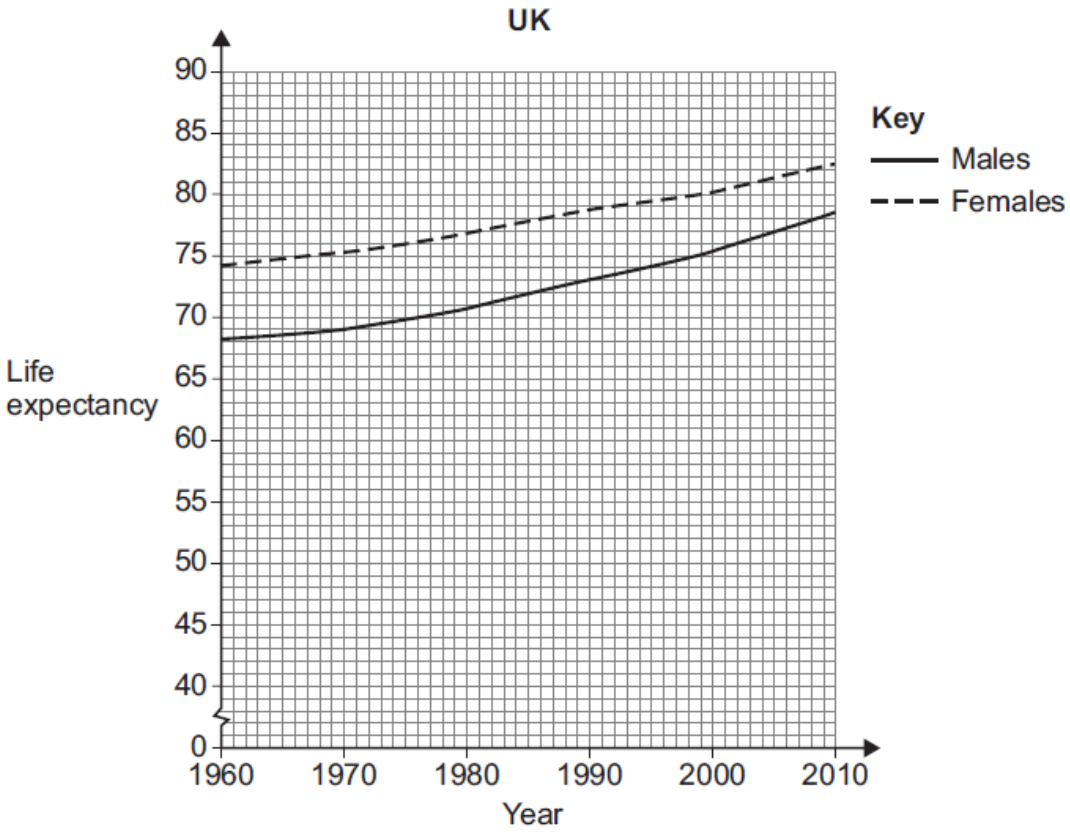
[2 marks]

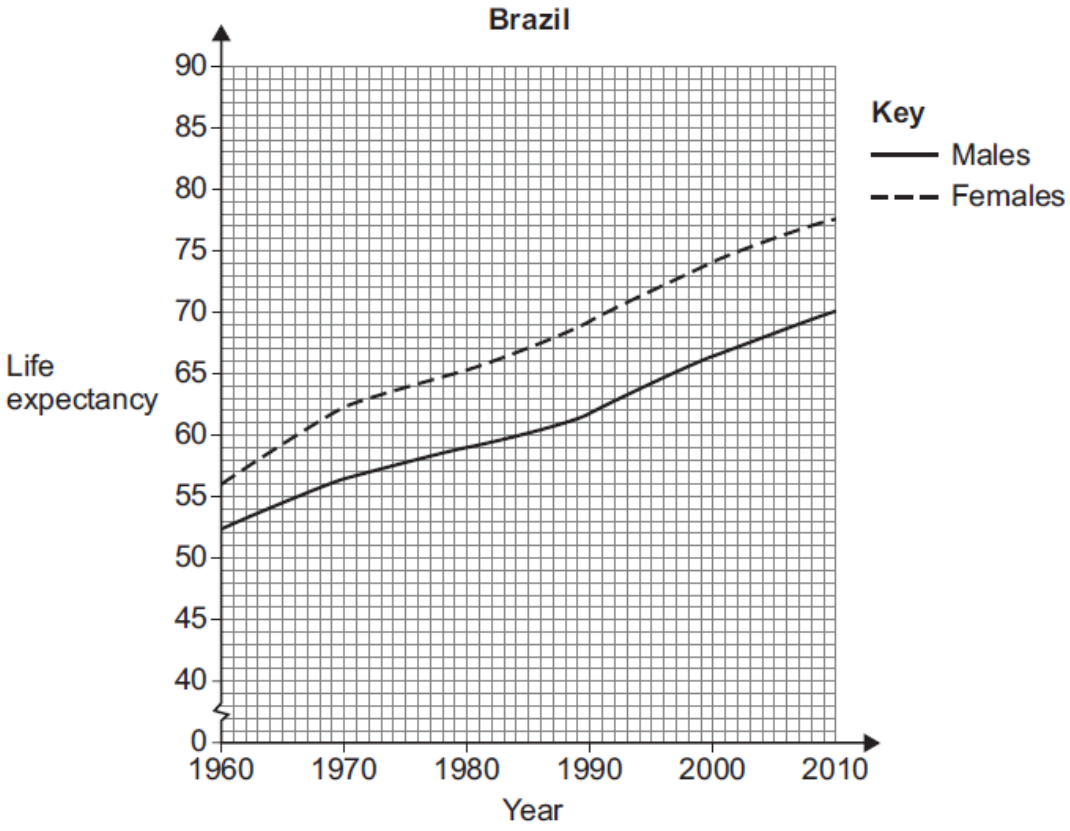
Suggestion 1 _____

Suggestion 2 _____

9. No.8

The line graphs show the life expectancy at birth of males and females in the UK and in Brazil.





Source: data.worldbank.org

Compare life expectancy in the UK and Brazil.

Your answer should include,

- a comparison of life expectancy in the UK and Brazil
- differences between life expectancy of males and females
- a comparison of the trends in life expectancy over time.

[5 marks]