**Do Now**

Draw a column graph to represent each of these boys' heights at their birthdays.

**a** Mitchell

| Age (years) | Height (cm) |
|---|---|
| 8 | 120 |
| 9 | 125 |
| 10 | 135 |
| 11 | 140 |
| 12 | 145 |

**b** Fatu

| Age (years) | Height (cm) |
|---|---|
| 8 | 125 |
| 9 | 132 |
| 10 | 140 |
| 11 | 147 |
| 12 | 150 |

The scale on your vertical axis could go 0, 10, 20, … 150.

Practicing reading graphs

**8** The ages (in years) of children at a party were: 7, 10, 8, 11, 8, 7, 9, 10, 12, 8.

**a** Represent this as a dot plot.

**b** What is the range of the ages?

Range = largest – smallest

The results of a Year 4 spelling quiz are shown as a dot plot.

**a** How many students got a score of 6?

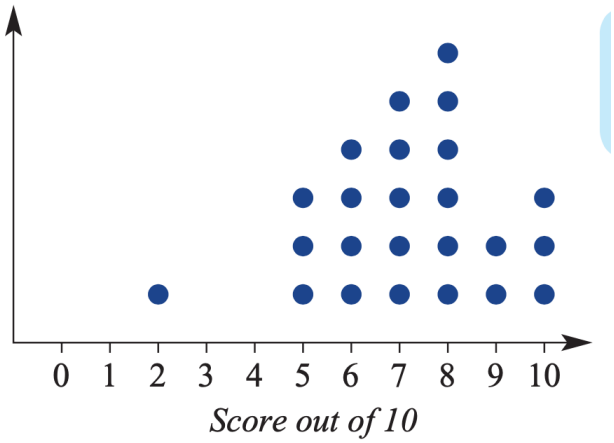
**b** What is the most common score in the class?

**c** How many students participated in the quiz?

**d** What is the range of scores achieved?

**e** What is the median score?

**f** Identify the outlier.



## Misleading graphs

A survey is conducted of students' favourite subjects. Someone has tried to show the results in a column graph.

**a** What is wrong with the scale on the vertical axis?

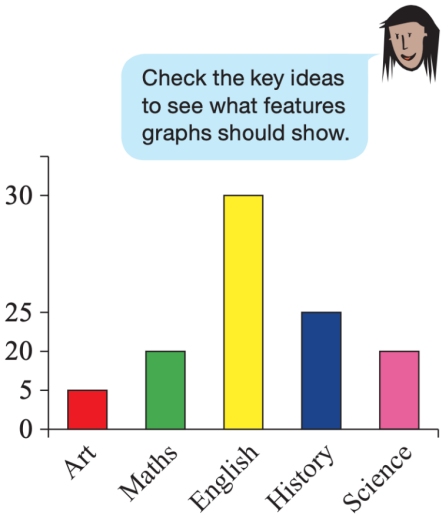
**b** Give at least two other problems with this graph.

**c** Redraw the graph with an even scale and appropriate labels.

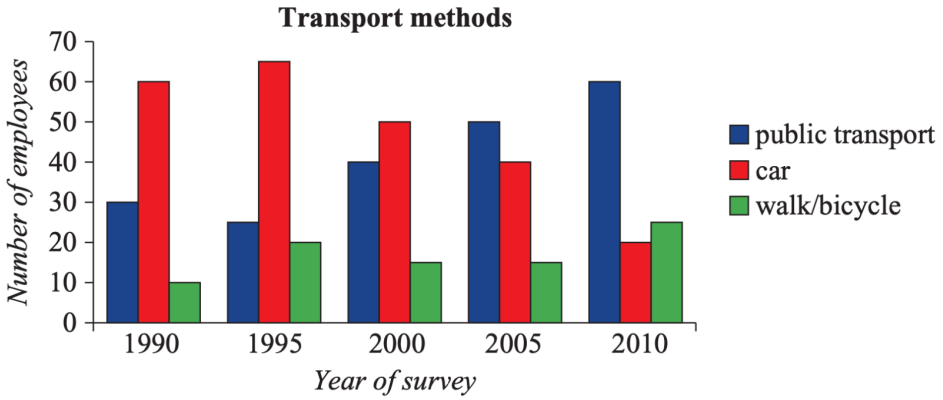
**d** The original graph makes Maths look twice as popular as Art, based on the column size. According to the survey, how many times more popular is Maths?

**e** The original graph makes English look three times more popular than Maths. From the survey, how many times more popular is English?

**f** Look in a newspaper or magazine for a graph with an uneven scale that makes the graph misleading.




Every five years, a company in the city conducts a transport survey of the way people get to work in the mornings. The results are graphed below.




**a** Copy and complete this table to show the data in the graph.

| | 1990 | 1995 | 2000 | 2005 | 2010 |
|---|---|---|---|---|---|
| Use public transport | 30 | | | | |
| Drive a car | 60 | | | | |
| Walk or cycle | 10 | | | | |

**b** In which year(s) was public transport the most popular option?

**c** In which year(s) were more people walking or cycling to work than driving?

**d** Suggest one reason why the number of people driving to work has decreased.

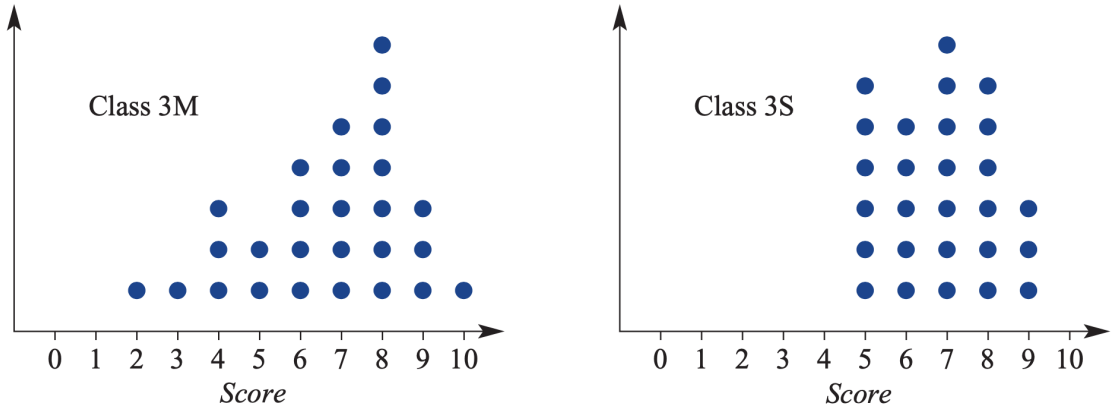
**e** What is one other trend that you can see from looking at this graph?

**a** Draw a column graph to show the results of the following survey of the number of boys and girls born at a certain hospital. Put the years on the horizontal axis.

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|
| Number of boys born | 40 | 42 | 58 | 45 | 30 | 42 |
| Number of girls born | 50 | 40 | 53 | 41 | 26 | 35 |

**b** During which year(s) were more girls born than boys?
**c** Which year had the smallest number of births?
**d** Which year had the greatest number of births?
**e** During the time of the survey, were more boys or girls born?

Mr Martin and Mrs Stevensson are the two Year 3 teachers at a school. For the latest arithmetic test, they plotted their students' scores on dot plots.




**a** What is the median score for class 3M?
**b** What is the median score for class 3S?
**c** State the range of scores for each class.
**d** Based on this test, which class has a greater spread of arithmetic abilities?
**e** If the two classes competed in an arithmetic competition, where each class is allowed only one representative, which class is more likely to win? Why?

## Misleading graphs

A survey is conducted of students' favourite subjects. Someone has tried to show the results in a column graph.

**a** What is wrong with the scale on the vertical axis?
**b** Give at least two other problems with this graph.
**c** Redraw the graph with an even scale and appropriate labels.
**d** The original graph makes Maths look twice as popular as Art, based on the column size. According to the survey, how many times more popular is Maths?
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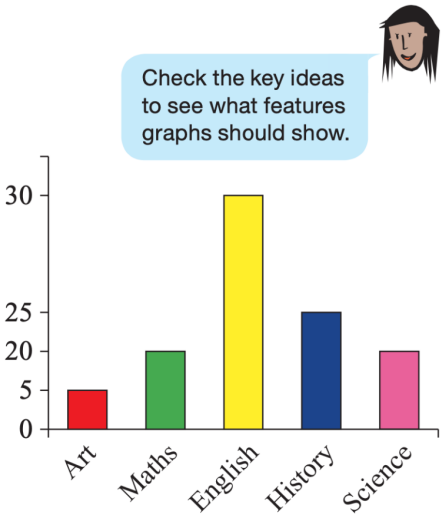
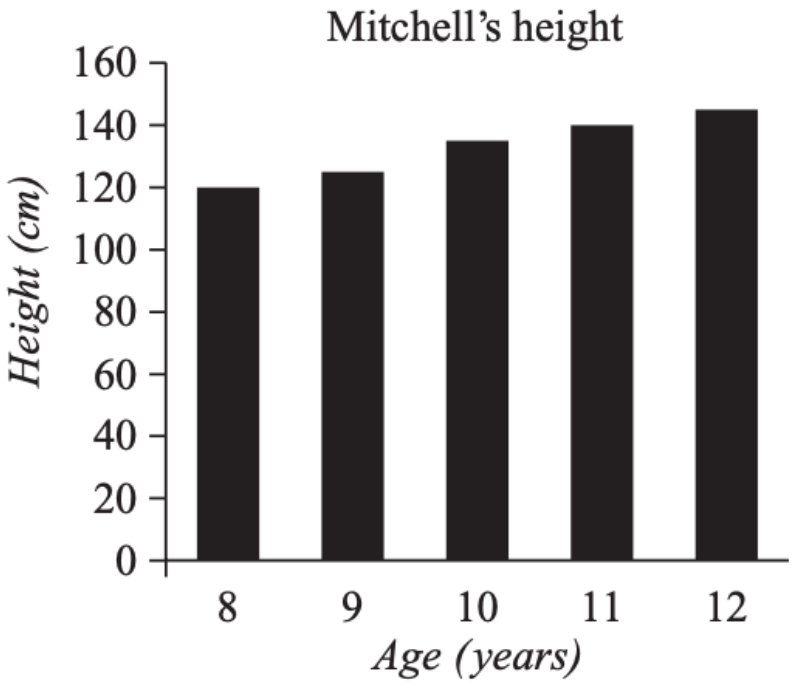
**f** Look in a newspaper or magazine for a graph with an uneven scale that makes the graph misleading.

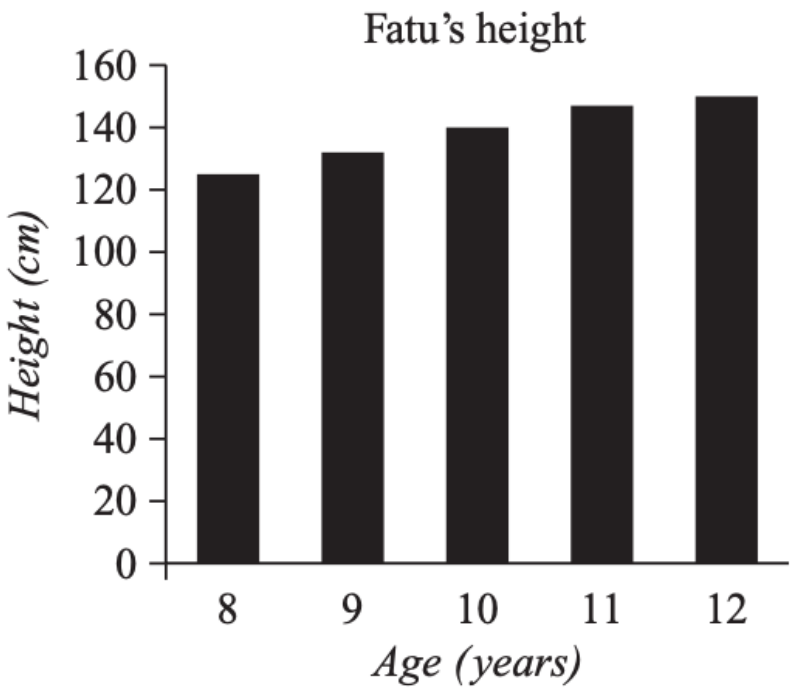


Check your Answers

**7 a**

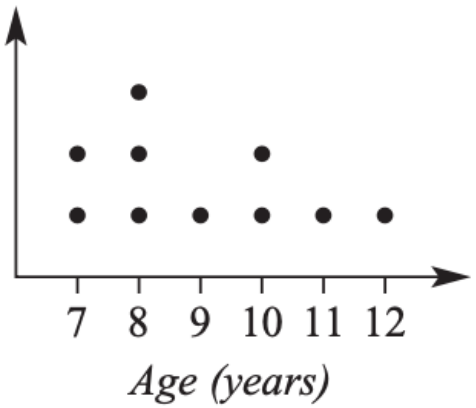



**b**




**8 a**

**8 a**




**b** 5

**9 a** 4 **b** 8 **c** 24

**d** 8 **e** 7 **f** 2

**10 a**

| | 1990 | 1995 | 2000 | 2005 | 2010 |
|---|---|---|---|---|---|
| **Using public transport** | 30 | 25 | 40 | 50 | 60 |
| **Driving a car** | 60 | 65 | 50 | 40 | 20 |
| **Walking or cycling** | 10 | 20 | 15 | 15 | 25 |

**b** 2005 and 2010

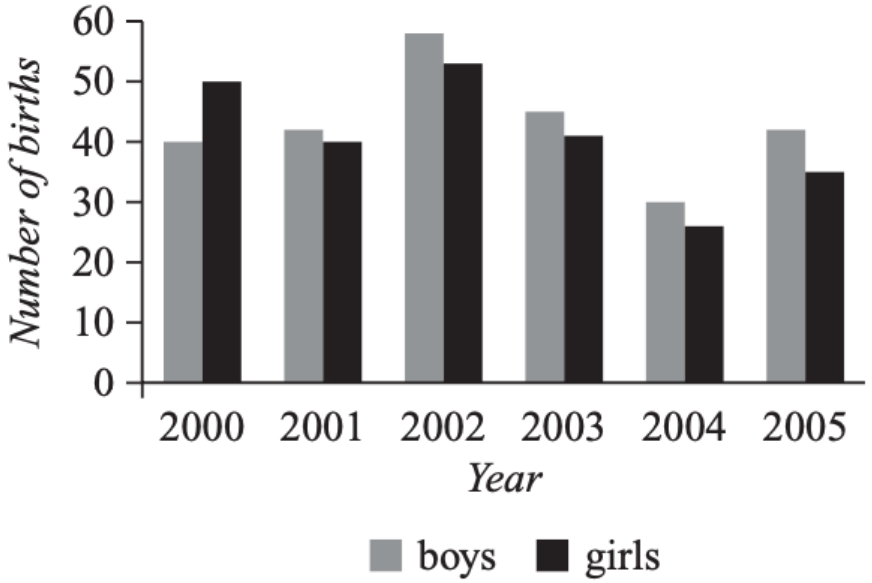
**c** 2010

**d** Environmental concerns; others answers possible.

**e** Public transport usage is increasing; other answers possible.

**Exercise 8B cont.**

**11 a**




**b** 2000 **c** 2004 **d** 2002 **e** boys

**12 a** 7 **b** 7

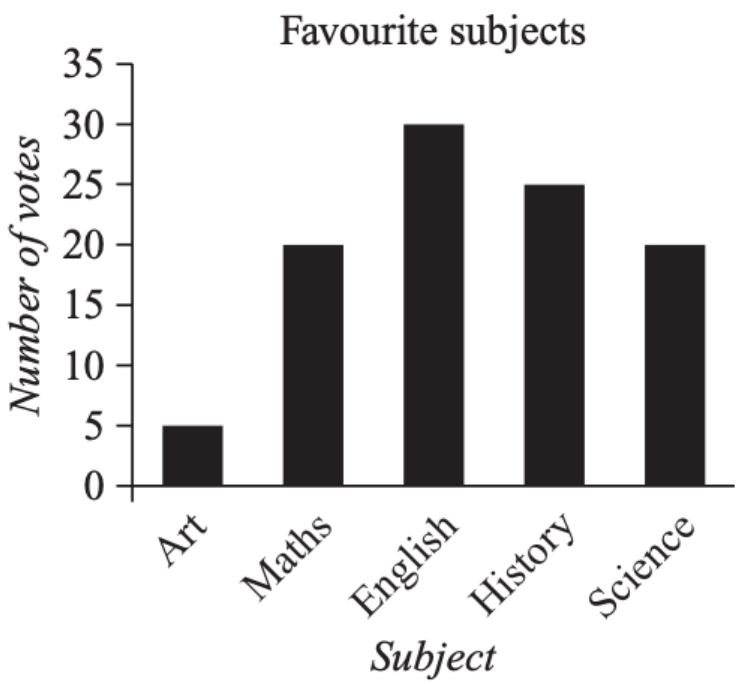
**c** 3M: 8, 3S: 4 **d** 3M

**e** 3M because the student who got 10 is in that class.

**13 a** It is unequal.

**b** The axes have no labels and it does not have a title.

**c**




**d** four times as popular

**e** one and a half times as popular