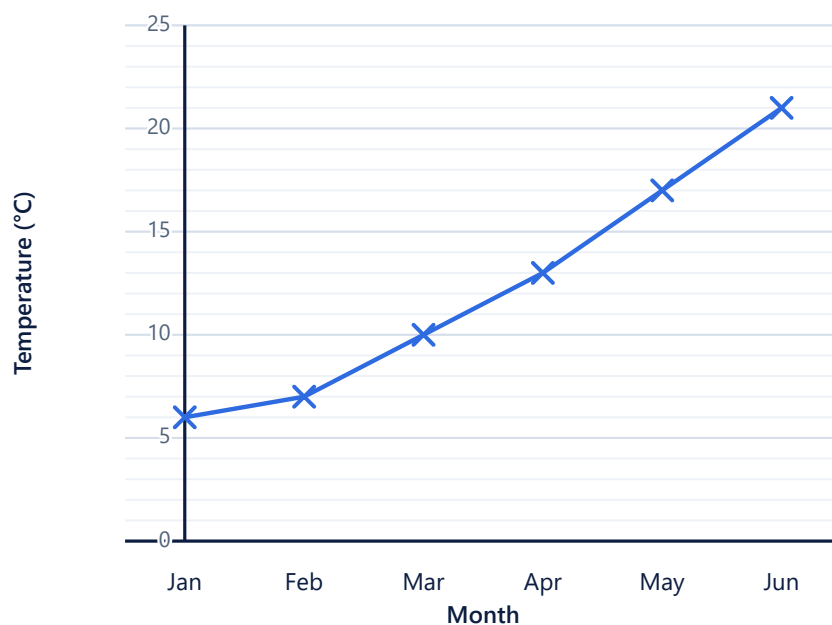




- 1** A line graph shows the midday temperature in a town on the first day of each month. The table gives the plotted values.

Month	Temperature ($^{\circ}\text{C}$)
January	6
February	7
March	10
April	13
May	17
June	21

- Write down the month in which the temperature was 13°C .
- Work out the difference between the temperature in June and the temperature in January.



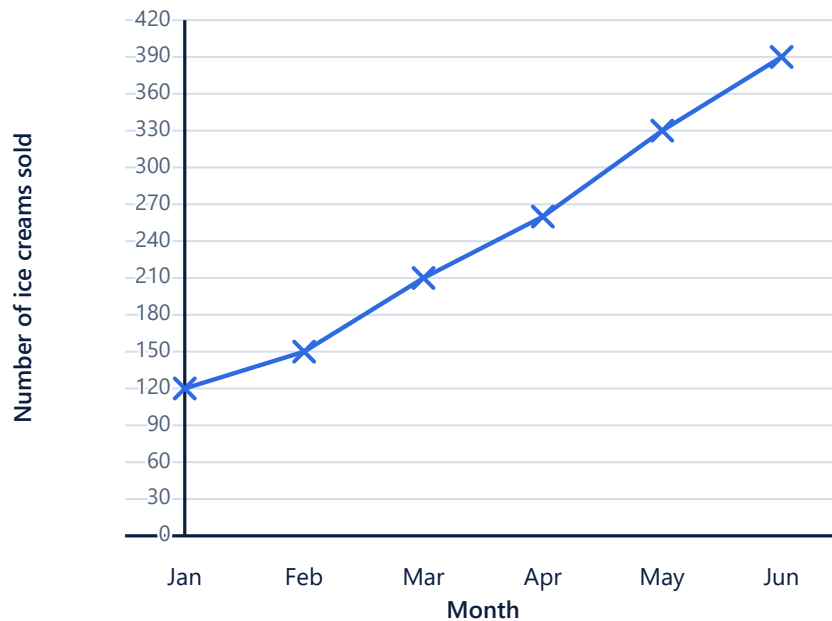
(2 marks)

- a) The value 13°C is plotted for April
 b) $21 - 6 = 15^{\circ}\text{C}$

2

The time series graph shows the number of ice creams a kiosk sold each month from January to June.

- Write down the number of ice creams sold in April.
- Between which two consecutive months was the biggest increase in sales?



(2 marks)

a) The point for April is at 260 ice creams

b) The increases are: Jan to Feb 30, Feb to Mar 60, Mar to Apr 50, Apr to May 70, May to Jun 60

The biggest increase, 70, is between April and May - the steepest line segment on the graph

3

A shop sells woolly hats. The table shows the number of hats sold in each quarter of 2024 and 2025.

Quarter	2024	2025
Q1 (Jan to Mar)	62	58
Q2 (Apr to Jun)	30	26
Q3 (Jul to Sep)	18	15
Q4 (Oct to Dec)	55	51

- Describe the pattern in sales within each year.
- Describe the trend in sales from 2024 to 2025.

(2 marks)

a) In both years sales are high in Q1 and Q4 (winter) and low in Q2 and Q3 (summer). This is a seasonal pattern - woolly hats sell more in cold months

b) Comparing like quarters: 62 to 58, 30 to 26, 18 to 15, 55 to 51. Every quarter fell, so the overall trend is downward

4

A shop records its ice cream sales (number of tubs) each quarter for three years.

	Q1	Q2	Q3	Q4
Year 1	120	340	410	150
Year 2	135	360	430	165
Year 3	150	380	455	180

- In which quarter are sales highest each year? Give a reason for this.
- Describe the overall trend in sales.
- Estimate the sales in Quarter 3 of Year 4.

(4 marks)

a) highest each year: Q3

summer = warmest = most ice cream

b) each Q3 is higher than last year

410, 430, 455 - rising; same up-and-down pattern each year

c) rises: +20, +25

next rise about +25 to +30

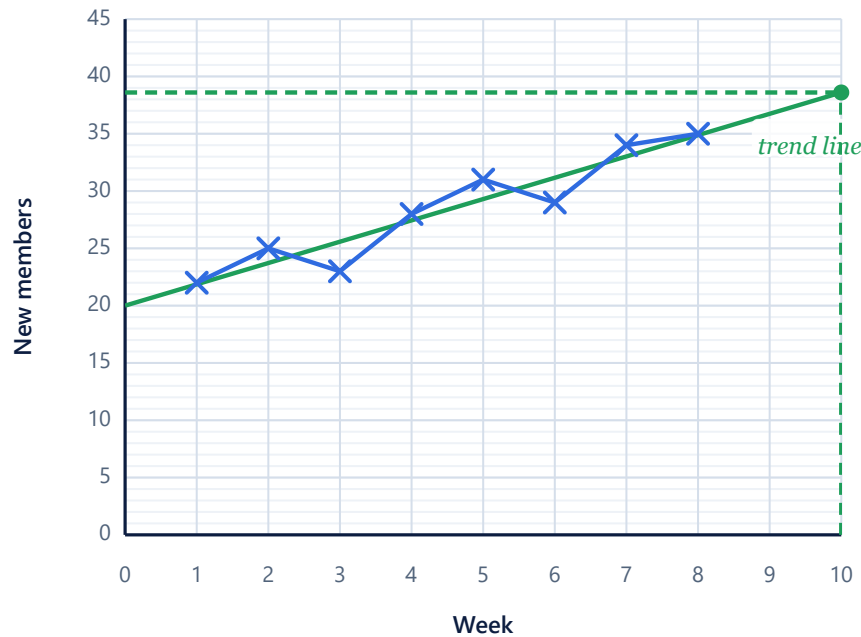
$$455 + 25 = 480$$

about 480

5

A gym records the number of new members who join each week. The time series graph shows the numbers for the first 8 weeks.

- Draw a trend line on the graph, by eye.
- Use your trend line to estimate the number of new members in Week 10.
- Give a reason why an estimate for Week 52 would not be reliable.



(4 marks)

a) ruler line through the middle of the points

about as many points above as below

b) up from Week 10 to the line, across to the axis

about 38 new members

c)

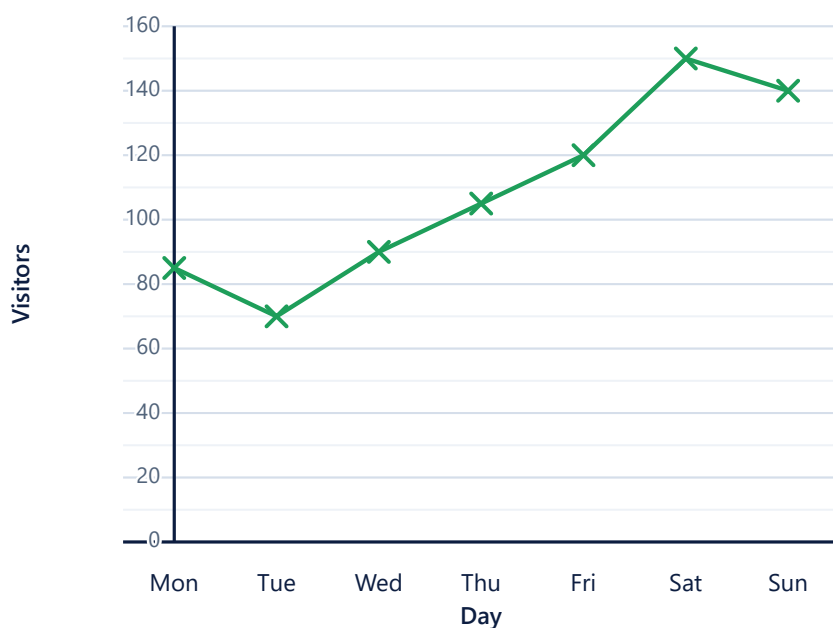
Week 52 is far outside the data

6

The table shows the number of visitors to a website each day for one week.

Day	Visitors
Monday	85
Tuesday	70
Wednesday	90
Thursday	105
Friday	120
Saturday	150
Sunday	140

Draw a time series graph for this information.



(2 marks)

Put the days in order along the horizontal axis and Visitors on the vertical axis

Plot each value: 85, 70, 90, 105, 120, 150, 140

Join the points, in day order, with straight lines

7

The number of visitors to a museum (hundreds) on six days is shown.

Day	Mon	Tue	Wed	Thu	Fri	Sat
Visitors (hundreds)	12	15	18	15	18	21

a. Work out the 3-point moving averages.

b. What do the moving averages show about the trend in visitors?

(4 marks)

a) add three in a row, $\div 3$

$$(12 + 15 + 18) \div 3 = 15$$

$$(15 + 18 + 15) \div 3 = 16$$

$$(18 + 15 + 18) \div 3 = 17$$

$$(15 + 18 + 21) \div 3 = 18$$

15, 16, 17, 18

b)

goes up by 1 hundred each time

Upward trend

8

A company's sales rose from £192000 in January to £198000 in June.

The company prints a line graph of its monthly sales. The vertical axis of the graph starts at £190000 and ends at £200000. The headline above the graph says "Sales have rocketed!"

Explain why the graph could be misleading.

(2 marks)

The vertical axis starts at £190000, not zero, so the line uses the whole height of the graph and the rise looks much bigger than it is

The actual increase is $198000 - 192000 = £6000$, which is only about 3% - a small rise, not a rocketing one

9

A company's yearly profit is plotted against the year number (Year 1 is 2019). A trend line is drawn that passes through the points (1, 20) and (5, 36), where profit is in £ thousands.

- Work out the gradient of the trend line and say what it represents.
- Use the trend line to predict the profit in Year 8.
- Give one reason why this prediction may not be reliable.

(4 marks)

a)

$$(36 - 20) \div (5 - 1) = 4$$

£4 thousand more each year

b) Year 5 to Year 8 is 3 years

$$36 + 3 \times 4 = 48$$

about £48 000

c)

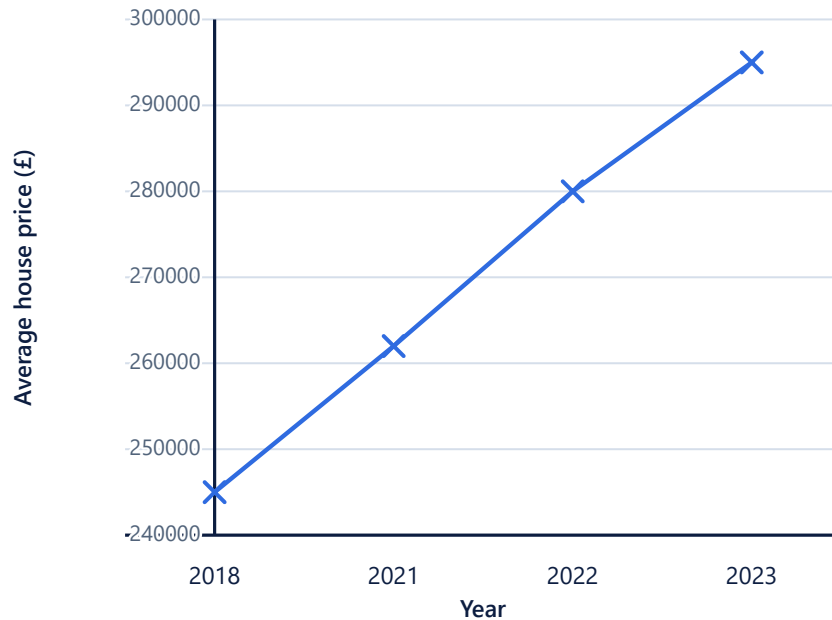
Year 8 is beyond the data, so unreliable

outside the data, trend may not continue

10

An estate agent draws a time series graph to show how average house prices in a town have changed.

Write down two reasons why the graph is misleading.



(2 marks)

Reason 1: the vertical axis starts at £240,000, not zero, so the increase looks much larger than it really is

Reason 2: the years 2018, 2021, 2022 and 2023 are plotted at equal gaps even though the time between them is not equal, so the steepness of the line does not show the true rate of change

11

A bookshop recorded the number of books it sold each month from January to June.

Month	Books sold
January	240
February	255
March	230
April	265
May	250
June	248

The shop's target was a mean of 250 books sold per month.

Did the shop meet its target? You must show your working.

(3 marks)

Total

$$240 + 255 + 230 + 265 + 250 + 248 = 1488 \text{ books}$$

Mean

$$1488 \text{ divided by } 6 = 248 \text{ books per month}$$

$248 < 250$, so the shop did not meet its target

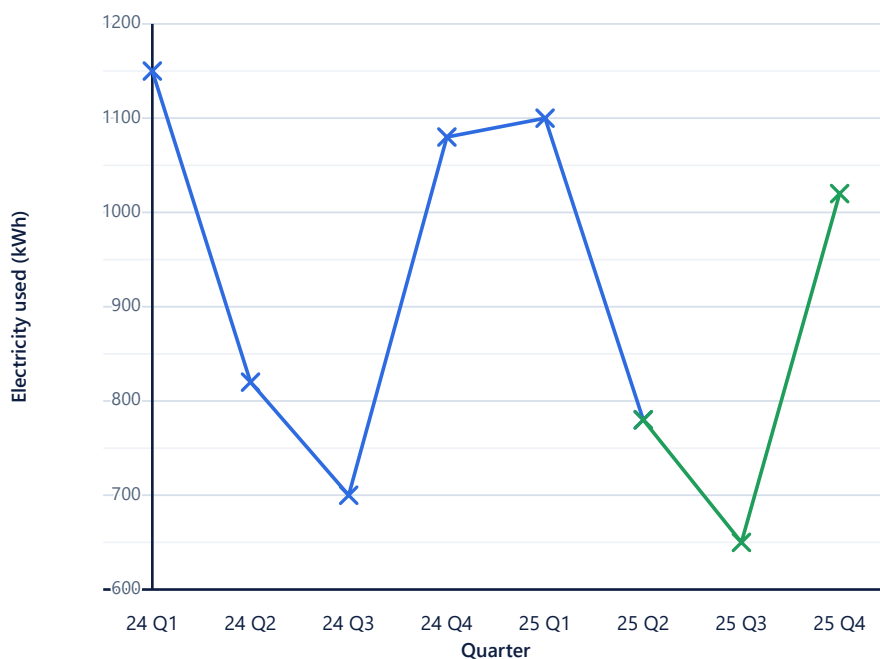
12

The table shows the amount of electricity, in kilowatt hours, a household used in each quarter of two years.

Quarter	kWh
2024 Q1	1150
2024 Q2	820
2024 Q3	700
2024 Q4	1080
2025 Q1	1100
2025 Q2	780
2025 Q3	650
2025 Q4	1020

The first six points have been plotted on the time series graph.

- Complete the time series graph by plotting the last two points and joining them.
- Describe the trend in electricity use over the two years.



(3 marks)

a) Plot 650 for 2025 Q3 and 1020 for 2025 Q4, joining the points with straight lines in order

b) Within each year use is highest in Q1 and Q4 and lowest in Q3 - a seasonal pattern

Comparing the same quarter in each year (1150 to 1100, 820 to 780, 700 to 650, 1080 to 1020), every quarter fell, so the overall trend is slightly downward

13

A factory records the number of bicycles it makes each month.

Month	Bicycles
January	410
February	380
March	395
April	420
May	405
June	402

- a. The factory manager says, "The mean monthly output for these six months is more than 400."
Show that the manager is correct.
- b. Work out how much greater the mean output for April to June is than the mean output for January to March.

(3 marks)

a) Total

$$410 + 380 + 395 + 420 + 405 + 402 = 2412. \text{ Mean: } 2412$$

divided by 6 = 402,
which is more than 400,
so the manager is
correct

b) January to March

$$410 + 380 + 395 = 1185, \text{ mean } 395$$

April to June

$$420 + 405 + 402 = 1227, \text{ mean } 409$$

Difference

$$409 - 395 = 14 \text{ bicycles}$$

14

The table shows the number of members of a gym at the end of each year.

Year	Members
2021	2000
2022	2200
2023	2420

- Show that the number of members increased by the same percentage each year.
- Assuming this trend continues, predict the number of members at the end of 2024.
- Give one reason why your prediction may not be reliable.

(3 marks)

a) 2200 divided by $2000 = 1.1$ and 2420 divided by $2200 = 1.1$, so members grew by 10% in each year

b) $2420 \times 1.1 = 2662$ members

c) The prediction assumes the 10% growth continues, but the trend may not continue
- for example a new competitor could open or prices could change