

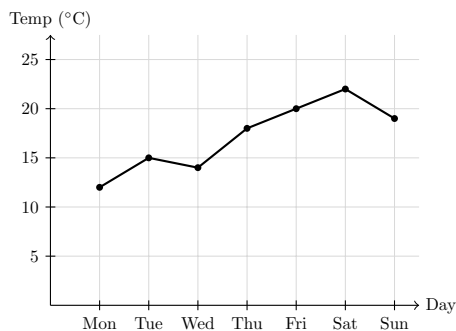
Foundation GCSE: Time Series

Name: _____

Class: _____

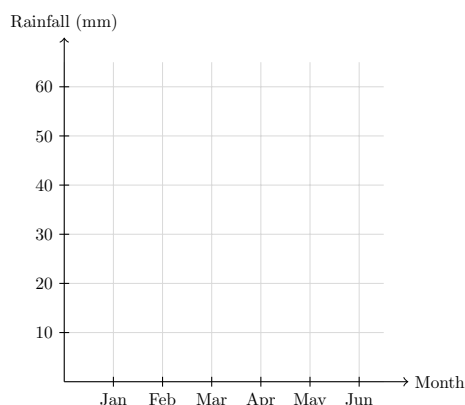
Instructions: Answer all questions. Questions are ordered from easiest (1) to hardest (10). Working out should be shown where appropriate.

1. The time series graph below shows the temperature measured at midday over a period of 7 days. State the temperature recorded on Wednesday.



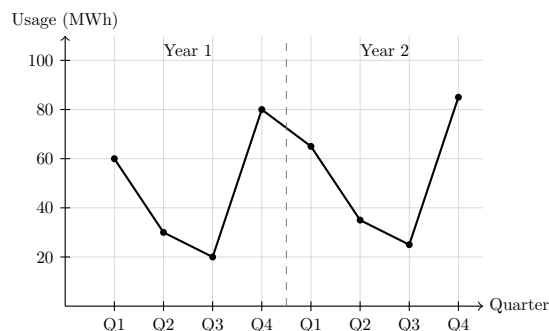
2. Describe the overall trend in temperature over the 7 days shown in the graph for Question 1.
3. A gardener records the monthly rainfall. Plot the following data on the grid below and join the points with straight lines to create a time series graph:

Jan: 40 mm, Feb: 30 mm, Mar: 50 mm,
Apr: 60 mm, May: 40 mm, Jun: 20 mm.

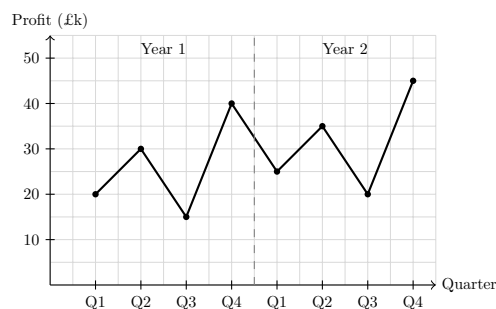


4. Using the graph from Question 1, calculate the difference in temperature between Monday and Friday.
5. Using the rainfall data from Question 3, calculate the mean monthly rainfall over this 6-month period.

6. The time series graph below shows a town's electricity usage over 8 quarters (2 years). State the quarter in Year 1 that had the lowest electricity usage.



7. Explain why the electricity usage might consistently spike during Quarter 4 (Q4) of each year.
8. Based on the trend shown in the electricity graph (Question 6), estimate the expected usage for Q4 in Year 3.
9. The time series graph below tracks a company's quarterly profits (in thousands of pounds) over two years. Calculate the percentage change in profit between Q2 of Year 1 and Q2 of Year 2.



10. Using the graph from Q9, identify which year had a greater range between max and min profit, and find the difference.

Answers & Worked Solutions

1. 14°C (Aligns with 14 on vertical axis).
2. Overall trend is increasing (upward) over the 7 days.
3. *Visual check:* Points plotted at (1,4), (2,3), (3,5), (4,6), (5,4), (6,2) and joined with straight lines.

4. 8°C

$$20^{\circ}\text{C} - 12^{\circ}\text{C} = 8^{\circ}\text{C}$$

5. 40 mm

$$\frac{240}{6} = 40$$

6. Quarter 3 (Q3), value is 20 MWh.

7. Winter months require more heating and lighting due to cold weather and short days.
8. Accept 88–95 MWh (following the +5 MWh yearly trend).
9. 16.7% increase

$$\text{Y1Q2} = 30\text{k}, \text{Y2Q2} = 35\text{k}$$

$$\frac{5}{30} \times 100 = 16.7\%$$

10. Year 1; difference is £5 000.

$$\text{Y1: } 40\text{k} - 15\text{k} = 25\text{k}$$

$$\text{Y2: } 45\text{k} - 25\text{k} = 20\text{k}$$

$$\text{Diff: } 25\text{k} - 20\text{k} = 5\text{k}$$