

Reading and Drawing Charts and Graphs

Maths

Level 2

Exam-style practice · 7 questions · 33 marks · Calculator allowed

Remember

Reading a chart: check the scale on the axis first (does each square mean 1, 2, 5 or 10?), and read from the top of the bar or the point with a ruler.

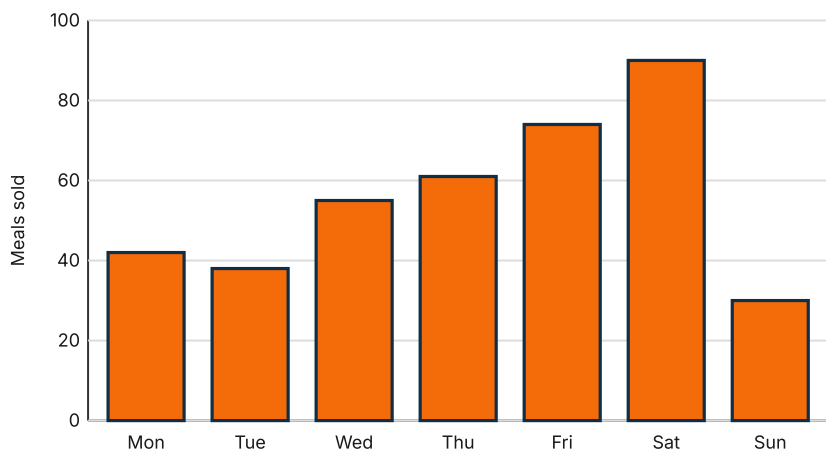
Pie chart: the whole circle is $360^\circ = 100\%$ = the total. Angle for a category = $(\text{frequency} \div \text{total}) \times 360$. To read a pie chart you need the total, or the size of one known sector.

Drawing: title, labelled axes with units, even scale, bars the same width with gaps (bar chart), key if more than one data series.

Which chart? Bar chart: comparing categories. Line graph: change over time. Pie chart: proportions of a whole. Scatter graph: relationship between two variables.

Section A – Bar charts and line graphs

1. The bar chart shows the number of meals sold by a café each day last week.

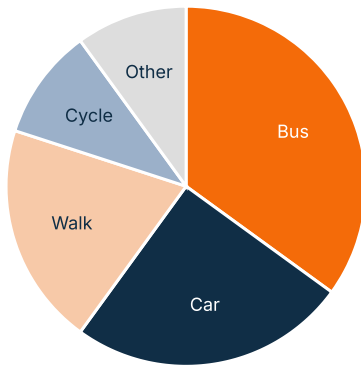


(a) How many meals were sold on Thursday? (b) On which day were sales lowest? (c) How many meals were sold in total? (d) What was the mean number of meals per day, to 1 decimal place? (e) The café makes £4.20 profit per meal. What was the week's profit? (7 marks)

2. A line graph shows a shop's monthly sales: Jan £12k, Feb £11k, Mar £14k, Apr £15k, May £13k, Jun £18k. (a) Between which two consecutive months was the biggest increase? (b) Describe the overall trend. (c) Why is a line graph a good choice for this data? (4 marks)
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Section B – Pie charts

3. The pie chart shows how 240 employees travel to work.



- (a) How many employees come by bus? (b) How many more come by car than cycle? (c) What angle represents 'Walk'? (5 marks)
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4. A survey of 90 students asked their favourite lunch: Pizza 36, Pasta 18, Salad 27, Other 9. Work out the angle for each and draw the pie chart (use a protractor). Label every sector. (6 marks)
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5. In a pie chart of a council's spending, the 'Roads' sector has an angle of 54° . Total spending was £42 million. How much was spent on roads? (2 marks)
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Section C – Choosing and drawing

6. For each set of data, say which chart you would use and why: (a) the temperature in a greenhouse every hour for a day (b) the proportion of a budget spent on rent, food, travel and other (c) the number of complaints received by five branches (d) students' heights against their arm spans. (4 marks)
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7. A tutor recorded mock scores for two groups: Group A – Reading 62, Writing 55, SLC 70; Group B – Reading 58, Writing 64, SLC 66. Draw a dual bar chart to compare the groups. Include everything the mark scheme looks for. (5 marks)

Reading and Drawing Charts and Graphs – Answers

Level 2 · Working shown so you can check your method, not just the final number.

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Section A

- (a) **61**. (b) **Sunday** (30). (c) $42 + 38 + 55 + 61 + 74 + 90 + 30 = \mathbf{390}$. (d) $390 \div 7 = \mathbf{55.7}$. (e) $390 \times 4.20 = \mathbf{£1,638}$.
- (a) **May to June** (+£5k). (b) Generally rising, with dips in February and May. (c) It shows how sales change over time and makes the trend easy to see.

Section B

- (a) 35% of 240 = **84**. (b) Car 60, cycle 24 → **36 more**. (c) 20% of 360 = **72°**.
- Pizza $36 \div 90 \times 360 = \mathbf{144^\circ}$; Pasta **72°**; Salad **108°**; Other **36°**. (Check: they add to 360°.) Marks for angles, accurate drawing ($\pm 2^\circ$), labels, title.
- $54 \div 360 \times 42 = \mathbf{£6.3 \text{ million}}$.

Section C

- (a) Line graph – change over time. (b) Pie chart – parts of a whole. (c) Bar chart – comparing categories. (d) Scatter graph – relationship between two variables.
- A dual bar chart with: a title; three pairs of bars (Reading, Writing, SLC) with Group A and Group B in different colours; a key; a labelled vertical axis 'Score (%)' with an even scale (e.g. 0–80 in 10s); bars of equal width with gaps between pairs.

Where Level 2 students lose marks on this topic

- Misreading the scale – assuming each gridline is 1 when it is 10.
- Finding a pie-chart angle as frequency $\div$ total $\times 100$ (a percentage) instead of $\times 360$.
- Drawing a chart with no title, no axis labels, no units or no key. Each of those is usually a separate mark.