

Exercise walk-through

6.2.1

Statistical Displays

AQA · GCSE · Mathematics

27. Choosing displays, pie charts and time series · Foundation

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Use separate bars for categories, vertical line charts for discrete numerical values and time-ordered lines for a time series. Pie-chart sector angle is $\text{frequency}/\text{total} \times 360^\circ$. A pictogram needs a stated key and honest fractional symbols. Label axes/units and choose a scale that does not conceal the relevant variation. Continuous grouped distributions need histograms rather than categorical bars.

29. Choosing displays, pie charts and time series · Foundation

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Of 40 students, 10 walk, 15 take the bus and 15 cycle. Pie angles are $90^\circ, 135^\circ, 135^\circ$, summing to 360° . With one pictogram symbol representing five students, the groups use 2,3,3 symbols. If one symbol instead means four students, ten walkers need 2.5 symbols. A daily attendance time series 32,35,33,36,34 can be joined in weekday order; the largest count is 36 and its range is 4. A frequency table for number of siblings 0,1,2,3 uses those numbers as positions on a vertical line chart, rather than treating widths as probabilities.

35. Frequency summaries and grouped estimates · Foundation

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Values 1,2,3 with frequencies 2,5,3 give total 10 and weighted sum $2+10+9=21$, so mean is 2.1. The fifth and sixth observations are both 2, giving median 2 and mode 2. For continuous classes $0 \leq x < 10, 10 \leq x < 20, 20 \leq x < 30$ with frequencies 2,5,3, midpoints 5,15,25 give estimated sum $10+75+75=160$ and estimated mean 16. The modal class is $10 \leq x < 20$. The range of individual observations cannot be recovered exactly from these intervals. For values 2,4,4,6,24, mean is 8 and median 4; the unusually large value raises the mean.

Exercises 2.1·2.3

2.1 (Foundation) Find pie angle for 10 of 40 students.

2.2 (Foundation) Find pie angle for 15 of 40.

2.3 (Foundation) Find pictogram symbols for 10 students if each represents 4.

3 Exam-style questions

Exercises 2.1·2.3

2.1 (Foundation) Find pie angle for 10 of 40 students.

$$\mathbf{2.1} \quad 10/40 \times 360 = 90^\circ.$$

2.2 (Foundation) Find pie angle for 15 of 40.

$$\mathbf{2.2} \quad 15/40 \times 360 = 135^\circ.$$

2.3 (Foundation) Find pictogram symbols for 10 students if each represents 4.

3 Exam-style questions

$$\mathbf{2.3} \quad 10/4 = 2.5 \text{ symbols.}$$

Exercise 3.1

3.1 Decide whether this claim is true. Justify with a concrete calculation or counterexample: A line graph is always the best display for unrelated categories.

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3.1 False. Counts for red, blue and green cars are unrelated categories. A bar chart compares their frequencies without implying a continuous path or ordered trend.

Local review guidance: show the chosen method; give the checked result; explain the condition or failed shortcut. This is authored classroom guidance.