PEARSON EDEXCEL · INTERNATIONAL GCSE · MATHEMATICS A • EXERCISE SHEET

6.1 Presenting data and histograms

Name: _____ Class: _____ Date: _____ **Total: 14 marks**

KEY WORDS histogram • frequency density

Presenting data and histograms

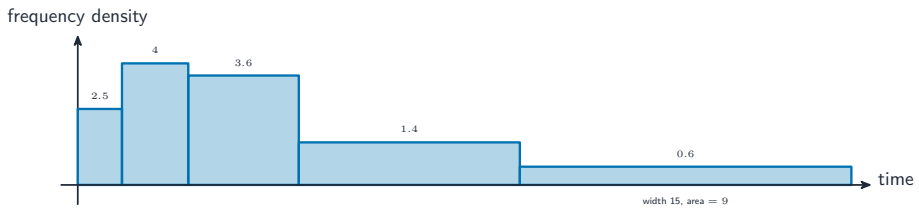
Objective

Tabulate data, construct and interpret statistical diagrams, and draw histograms with unequal class widths using frequency density (objectives Foundation 6.1 A–C and Higher 6.1 A).

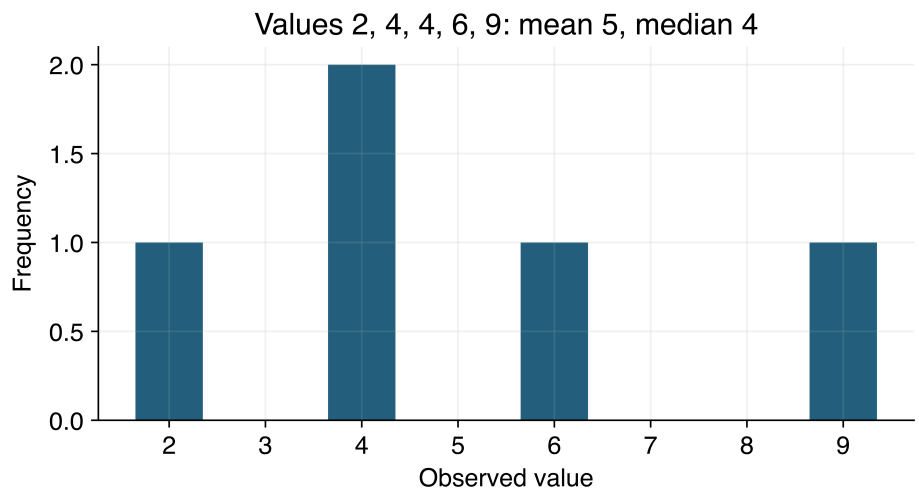
1 Key knowledge and worked examples

Diagrams. Bar charts for discrete categories, pie charts for proportions, frequency polygons for grouped data. Interpretation is two-way: read values off, and compare distributions (two groups on the same axes).

Histograms. With unequal class widths the height is the frequency density = frequency over width, and the AREA is the frequency. June 2024 1HR Q16: widths 2, 3, 5, 10, 15 with frequencies 5, 12, 18, 14, 9 give densities $\frac{5}{2}, \frac{12}{3}, \frac{18}{5}, \frac{14}{10}, \frac{9}{15} = 2.5, 4, 3.6, 1.4, 0.6$.



area = frequency: height is
density = frequency over width



Original native-lesson illustration; labels belong to its worked example.

2 Practice

2.1 A class of widths 4 and 8 holds frequencies 12 and 10. Find both frequency densities. [2]

2.2 A histogram bar of width 5 has density 6. Find its frequency. [2]

2.3 Which diagram suits comparing the favourite fruit of 30 students: a bar chart or a histogram? Why? [2]

3 Exam-style questions

3.1 *(Edexcel 4MA1 1HR June 2024 Q16, adapted.)* The times taken by 58 students fall in classes of widths 2, 3, 5, 10, 15 with frequencies 5, 12, 18, 14, 9. (a) Calculate the five frequency densities. (b) State which class contains the most students and justify using areas. [3]

3.2 *(Original.)* A histogram has classes 0–10, 10–20, 20–40, 40–60 with frequencies 30, 20, 30, 10. (a) Compute the densities. (b) A student says "the 20–40 class is the largest because its bar is tallest". Correct the error. [5]