

Teaching the Large Data Set

Key facts for teachers · Print double-sided · Questions on the reverse

When and where

May to October only, in 1987 and 2015. June and September have 30 days, so each year has 184 days. There is no winter, and no full year.

Stations

UK coastal: Camborne, Hurn, Leuchars.
UK inland: Heathrow, Leeming.

Overseas: Beijing (inland, China), Jacksonville (coastal, USA), Perth (coastal, Australia). Perth is in the Southern Hemisphere.

What is recorded

Temperature	Daily mean, °C to 1 d.p., 24 hours from 0900. n/a means not available.
Rainfall	Daily total, mm to 1 d.p. tr means a trace: less than 0.05 mm.
Sunshine	Daily total, hours to 1 d.p. Not recorded at the overseas stations.
Humidity	Daily maximum relative humidity: water vapour as a % of the maximum the air could hold.
Wind	Mean and gust speed and direction, in knots (1 knot = 1.15 mph). Direction to the nearest 10° from true North. Beaufort scale.
Visibility	Greatest horizontal distance an object can be seen in daylight, in decametres (1 Dm = 10 m).
Pressure	Hectopascals (hPa). The range is small, typically about 989 to 1036 hPa.
Cloud cover	Eighths of the sky covered, in oktas from 0 to 8.

Patterns worth knowing

- UK: Heathrow is the warmest station, Leuchars the coldest. Worldwide, Jacksonville is the hottest overall; Beijing can have the highest single-day temperatures.
- UK: Camborne is the wettest, Heathrow the driest. Worldwide, Jacksonville is the wettest.
- Perth's seasons are reversed: coldest in June, warmest in October. Coastal stations are windier than inland ones.
- Do not model rainfall, Beaufort force or windspeed with a normal distribution: rainfall is skewed, Beaufort is not numeric, and windspeed is not symmetric.

Cleaning the data

- Replace tr with 0 (0.025 is also accepted). Do not delete those days: they are real, very low rainfall.
- Exclude n/a or a dash. They are missing values, not zeros.

The questions on the reverse

Q1 Systematic sampling and tr

Interval from 184 days, not 365.
Then evaluate deleting the trace readings.

Q2 Which weather station?

January is not on the sheet. Perth is summer; Camborne is a wet UK winter.

Q3 Quota sampling

Four named adult groups, then census proportions for the quotas.
Not random.

Question 1

Ravi is investigating Daily Total Rainfall in Heathrow in 2015.

a Explain how he can take a systematic sample of size 15 from the data.

He finds that on several days, the reading is recorded as 'tr'. Rather than dealing with these individually, he removes them completely from the data set, reducing his overall sample size.

b State the meaning of 'tr', and evaluate Ravi's method.

c Suggest how Ravi should deal with 'tr' readings in his investigation.



Mr Mathematics
Maths Lessons to Engage and Inspire

Question 2

A researcher is investigating average weather conditions in January 2015 in Camborne, Jacksonville and Perth. The researcher records the following data:

Location	X	Y	Z
Average temperature (°C)	21.2	8.4	12.5
Average rainfall (mm)	9.6	116.4	71.8

© Crown Copyright Met Office

Using your knowledge of the large data set, suggest the name of the weather station that is recorded as:

a location X

b location Y

c location Z.



Mr Mathematics
Maths Lessons to Engage and Inspire

Question 3

Priya is researching leisure habits of people in her local town. She is going to carry out her research using quota sampling and decides to stand outside the train station at 8 am on a weekday.

a) Suggest two reasons why her chosen time and location are suitable.

Priya can legally only ask adults.

b) Suggest suitable groups for Priya's sample. Specify at least four groups.

c) Suggest a method by which Priya could determine a suitable quota for each group.



Mr Mathematics
Maths Lessons to Engage and Inspire

Scan for worked solutions

mr-mathematics.com/past-exam-questions-a-level-mathematics-large-dataset

Mr Mathematics · Maths lessons to engage and inspire · 2 of 2



Schemes of Work

Ready-to-teach

For Maths
Departments

11 – 18 Mathematics

Number • Algebra • Geometry • Statistics • Proportion



Transform Your Department's Mathematics Curriculum

Key Stage 3

[2 Year Plan](#) | [3 Year Plan](#)

Key Stage 4

[3 Year GCSE](#) | [2 Year IGCSE](#)

A-Level

[A-Level Maths](#) | [Further Maths](#)

Mr-Mathematics.com provides colourful, scaffolded, and deeply connected problem-solving questions designed to create resilient problem solvers.

The Mr-Mathematics Advantage

-  **Engaging & Connected Questions** — Vibrant, tasks that connect topics together and naturally guide students through complex problem-solving.
-  **Expert 11–18 Sequencing** — A fully cohesive, interconnected curriculum system designed and refined over 20 years by a successful Head of Mathematics.
-  **The Ultimate Time-Saver** — Hundreds of ready-to-teach PowerPoints and interactive tools that inspire your students and give your teachers their evenings back.

School Membership (Most Popular) - £395 per year

For schools and colleges with more than one teacher.

- Access for **all maths teachers** at the purchasing school or college
- Shared planning across the department from one subscription
- Full KS3–A-Level / Further coverage for consistent delivery
- *Easy setup via school invoice, credit card, or [purchase order](#).*

Licensing: one school / college site. After purchase, staff log in with their school username.

Purchase order? [Download the form.](#)

Ready to equip your maths team?

👉 **Scan the QR Code** or visit [Mr-Mathematics.com/Memberships](https://www.mr-mathematics.com/Memberships) to view pricing, request a school invoice, and unlock the entire curriculum hub instantly.



Mr Mathematics
Maths Lessons to Engage and Inspire