# Year 8 Statistics – Revision Notes

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Year 8 · Maths · Statistics · Key ideas and worked examples

**For grown-ups and learners:** read each part and try the worked example. Then work through the sheets: Foundation, Developing, Challenge, then Mixed Practice to revise everything. Show your working: it earns marks in tests and helps you spot mistakes.

## 1. Sampling

A **sample** should represent the whole population. In a **random** sample everyone has the same chance of being chosen. A **systematic** sample takes every 10th name (or similar) from a list. A **convenience** sample (whoever is nearest) is quick but likely to be biased. Decide what data you need first: categorical, discrete or continuous.

## 2. Stem-and-leaf diagrams

A **stem-and-leaf diagram** keeps every value in order. With the key 2 | 3 = 23, the row 2 | 0 3 3 8 shows 20, 23, 23 and 28. The median is the middle value, the mode is the most common leaf in its row, and the range is largest – smallest.

**Example:** The stem-and-leaf diagram shows the masses, in kg, of some dogs (key: 2 | 3 means 23). 1 | 3 9; 2 | 5 6; 3 | 1 4 5 8 9; 4 | 3 3 5 8; 5 | 1 8. Find the range and the mode.
→ There are 15 values, already in order
→ range: 45; mode: 43
**Answer: range 45, mode 43**

## 3. Pie charts and time series

In a **pie chart** the whole circle is 360°, so each person in a survey of 40 is worth 360 ÷ 40 = 9°. A **time series** graph shows data over time: look for the **trend** (overall rise or fall) and for seasonal patterns.

**Example:** In a survey of 20 students, 9 chose football. What angle should football have in a pie chart?
→ Each student is 360 ÷ 20 = 18°
→ 9 × 18 = 162°
**Answer: 162°**

## 4. Comparing distributions and correlation

To compare two sets of data, use an **average** (mean, median or mode) and the **range**, then say what they mean in context. A higher mean shows better average results; a smaller range shows more consistent results. On a **scatter graph**, **positive correlation** means one variable tends to increase as the other increases.

**Think like a mathematician:** test a few cases (**specialising**), look for the rule that always works (**generalising**), and explain why you are sure (**convincing**). When you check someone's working, say what is wrong and how to **improve** it.

**Common mistakes:** using 100 instead of 360 for pie chart angles. Ignoring frequencies when finding a mean. Finding the range of a stem-and-leaf diagram from the stems only. Comparing only the averages and not the spread.