Functions, control flow, and threshold statistics — review sheet

Use this after attempting the worked examples and practice. Explain each claim in words before calculating.

Key ideas

- State the scientific rule before choosing a comparison operator.
- A function returns a result that another calculation can use.
- Check missingness before numerical comparison.
- A loop invariant links counters to the observations processed.
- Zero is a valid time; None means no time has been recorded.
- Report the denominator and distinguish a recorded time from a modeled crossing.

Common errors and repairs

Treating None as a zero temperature. Keep a missing category; a replacement would introduce an assumption.

Overwriting a first time of zero. Use an explicit is None sentinel test.

Calling 5/9 the fraction among known readings. There are eight known readings, so that fraction is 5/8.

Changing <= to < without changing the stated question. The equality boundary must match the scientific rule.

Retrieve without your notes

- Why must paired list lengths be checked before zip?
- What should an all-missing known fraction be?
- What remains fixed when the target changes?

Readiness check

- Write a small function with an explicit input, return value and scientific meaning.
- Implement an at-or-below rule with the equality case stated.
- Use a loop to count categories and preserve the first matching recorded time.
- Treat a missing reading separately from a measured zero.
- Check boundary cases before interpreting a summary.