

# Rules of Ten

## rules of thumb for data collection and processing



- 1 Collect at least 10 data points.** A data point is one pairing of independent and dependent variable measurements. Without enough data points, we cannot reliably find trends in the data.
- 2 The largest independent variable measurement should be at least 10 times the smallest independent variable measurement.** Nature sometimes surprises us at larger or smaller scales than we think to look.
- 3 We like the uncertainty in our measurements to be less than 10% of the range of the measurements.** There is no point in trying to understand our results mathematically if the variation we see is around the same size as the uncertainty in the measurements.
- 4 We like the root mean square error (RMSE) for a fit to be less than 10% of the range of dependent variable measurements.** A large RMSE means that our mathematical model does not fit the data very well.
- 5 We will consider the vertical intercept negligible if it is less than 5% of the range of the dependent variable measurements.** A vertical intercept is likely to be meaningful if it has a decent magnitude compared with our dependent variable measurements.

