Experimental technique: top ten tips

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1. PLAN your experiment. How can you reduce its errors?
2. Carry out a preliminary experiment to find out the working range. How should you space your readings?
3. Draw up your results tables and your graph axes from your working ranges.
4. Write down your readings, and maybe even plot points on your graph, *as you take them*. Record precisions and zero errors.
5. Repeat readings: 5–7 is about right for many experiments.
6. Calculate the best value (=the mean value).
7. Calculate the error in each set of measurements.
8. Calculate the most probable fractional of % error in the final answer (i.e. square the fractional or % errors, add them, and then take the square root).
9. Convert this error to an actual value.
10. Record your final answer in the form:
$c = (2.9 \pm 0.1) \times 10^8$ m s^{-1}.