

# Lab Notebooks

No matter what size project you are working on, you want to make a habit of keeping good records. If treated properly and used diligently, a lab notebook can make a big difference in the process of putting together a final project, a report, or a presentation on results.

When you sit down to write up your project, it will be ***much easier and less time-consuming*** if you have thorough and detailed notes of every stage of the process rather than relying on your "memory" of what happened at various points along the way.

Every project differs, so how you approach setting up your book will have a lot to do with your specific project, what kinds of lab-testing you are doing, how many trials you are running, how frequently you measure and collect your data, and even what kinds of background research you are conducting.

There are, however, ***tried and true practices*** that can make a difference in how useful your lab notebook is when you get ready to write up your project.

The team of scientists at Science Buddies put together the following set of tips and tricks for using and keeping a lab notebook.

## Picking a notebook:

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- **No sticky notes!** A pile of loose paper or sticky notes won't work for a lab notebook. Use a good quality "**bound**" notebook, so that pages can't be lost, shuffled out of order, or pulled loose.
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- **Page numbers help.** Use a notebook with pre-numbered pages or number the pages yourself. This allows you to easily reference data on other pages via page number. *Tip:* Before you start writing in a new lab notebook, go through and number all pages in a consistent location (the top right-hand corner, for example).
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## Organizing your notebook:

- **Claim your book.** Put your name, address, phone, email, or other contact information on the first page. It does happen that notebooks and journals get dropped, accidentally left behind, or lost. A lost lab notebook can be frustrating and can really set your project behind. If you've included your contact information, the person who finds your lab notebook can contact you to give it back.
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- **Organize as you go.** Label the second page of your notebook "Table of Contents." As you make entries in your lab notebook, write the page numbers and a description of the experiment or data in the table of contents for easy reference later.
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- **Neatness counts.** All entries should be neat, legible, and complete. Many times you will have to refer back to data that you recorded a while ago. You do not want to be confused by what you wrote because you were in a hurry and made a sloppy entry.
- **Keep it in order.** Be sure and date each entry you make in your notebook. The entries should be sequential, but dating entries is standard practice.
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- **Beware the smear!** Use a smudge-proof pen when making entries. If you make a mistake in your notebook, simply cross it out and initial below the crossed out section.
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## **When and what to write in your notebook:**

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- **It all counts!** Your lab notebook is like a science diary. Write down *all* of your hypotheses, questions to look up later, and background research. As you are working, write down all your experimental observations or thoughts, no matter how small or insignificant they may seem to you at the time. The little detail you don't record might be exactly what you need to know later -- or what will help you answer a teacher or science fair judge's question!
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- **Who said that?** Write down the names, phone numbers, or email addresses of people you have contacted for your experiment.
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- **Never leave home without it.** Always have your notebook with you when doing your experiments.
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- **Start fresh.** Open your notebook to a blank page before you start experimenting during each new lab session. You do not want to start an experiment and then have to stop because you have nowhere to record data.
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- **A picture can be worth a 1000 words.** Draw pictures of your experimental set-up, experimental results, and so on in your notebook. You can also take photographs and paste them in your notebook.

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- **Include the extras.** You can add printouts and other documentation. Just remember to tape or glue in the material in the proper chronological location.  
*Tip:* Add notes describing the attached data so it is clear later "why" you've included the material.
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- **Don't wait.** Record data right away in your lab notebook. Don't rely on your memory because you can forget what happened when you performed the experiment.
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- **Only in the notebook!** Don't be tempted to record data anywhere else but in your lab notebook. Scraps of paper can be lost along with important data.
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- **Be thorough.** Include enough information about what you are doing so that you, or someone else, could reproduce your procedure.
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- **Add it up.** Whether you are figuring out how much of a reagent to add or analyzing your data, make sure to do all your math calculations in your lab notebook. This way if something goes wrong later, you can go back and double check to see if you made a simple arithmetic error.
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- **Don't jump around.** If you need to skip pages between entries for a project, add notes saying where the next entry can be found and where the previous entry occurs.
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- **Track edits.** If you need to go back to a page to change or correct something, use a different colored ink and initial and date the changes.
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*Special thanks to Sandra, Michelle, Kristin, and Dave for helping pull together their best tips and tricks for using a lab notebook!*

## **Advanced Recordkeeping**

Want one more tip that professional researchers and scientists use? Do not leave large parts of pages blank. If part of a page is blank, you might be tempted to scrawl an unrelated note in the blank space later (or someone else might pick up your notebook and make a note in a blank space). When you finish taking notes during a lab session or after recording data on a given day, draw a diagonal line through the unused portion of the page. This clearly marks any "unused" sections. You'll know later that no data or notes should appear in those spaces as you review your work.