

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Period: \_\_\_\_\_

### Research Journal Guidelines

What is the need for a research journal? As a project becomes more complex, the need for a place to record literally everything about the project becomes more essential. In business and industry, the value of quickly retrievable information can not be overstressed. In projects involving numerous people, the organized storage and easy retrieval of shared information is very important to the success of the overall project.

The use of a journal can not be overemphasized. Besides being a requirement for this course (you are being graded on how well you keep your journal), developing the skill of recording information in an organized fashion is a valuable tool that will serve you well for the rest of your life.

What belongs in your Journal? Everything related to your project. A test of the completeness of a journal would be if the project could be repeated by another individual SOLELY on the contents of your journal. The following list is a good place to begin, but is in no way complete. Since every research project is unique, there will undoubtedly be items belonging in your journal which are not listed here:

- Initial concepts, such as minimum design specifications, requirements or performance objectives.
- Sources of information - be sure to include complete references. This will make your research paper much easier to write.
- People's contact information – list those who helped you, including contact data and their areas of specialty.
- Correspondence - retain copies of all correspondence, both sent and received.
- Parts and Materials - what you need, where you can get it, how much it costs.
- Daily Research Diary - a summary of what you did, what you were thinking, and why? BE SPECIFIC!
- Sketches and drawings - a necessary part of any tangible item's development  
These may be kept separately or included in the daily section.
- Any calculations.

You will choose to organize your journal as you see fit. Most commonly, there will be separate sections for at least those categories listed above and probably more. One suggestion is to use a bound "marble" notebook with at least one page per day.

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Other items in your journal may be more readily kept on a computer. Personal contacts, especially if the communication is through E-mail, are a natural choice. Most communications software packages, such as Microsoft Outlook®, include good contact management tools as well as automatic filing of all correspondence. You may choose to periodically transcribe the handwritten contents of your journal to the computer. Some may even choose to scan in sketches to become part of their computer-based document.

The following pages are examples of sections of real journals, along with some annotations intended to provide guidance to you regarding the content of your journal:

This journal entry is a rough draft of a letter being written to request the donation of equipment for use in a student's project. After the wording was smoothed out, the letter was entered on a computer and printed out for mailing. A copy of the letter sent can be found in the "correspondence" section of this student's journal.

9/17 Letter to Home Depot, etc.

~~Dear \_\_\_\_\_,~~

We are students at Colonie High School and are involved in a unique experience this school year. We have a full year to build a device which ~~has a~~ fulfills a need of some sort that is not currently available. Our group <sup>of 3 students</sup> has decided to ~~test~~ construct a remote controlled lawn mower. Of course, we need a lawn mower. We were wondering how we should go about getting a lawn mower donated to us for the benefit of our <sup>project</sup> ~~grades~~ and for our school. ~~This~~ <sup>It</sup> would translate into local media ~~exposure~~ <sup>advertisement</sup> for the supplier of the mower and ~~much exposure~~ <sup>exposure</sup> for the company. If a mower was donated, ~~then~~ it would benefit both parties. ~~Any~~ Any help ~~at~~ <sup>be</sup> at all would be greatly appreciated.

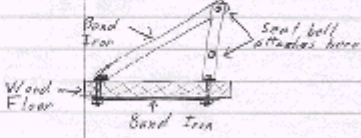
Thank you for your time.

In ~~past~~ <sup>created various</sup> past years, we have ~~worked on various~~ other projects such as hydraulic ~~lifts~~ lifts and compressors. These minor accomplishments have brought attention to Colonie High School, as will this project.

This is a page from a student's journal. He was researching safety belts. Included in this daily entry is a narrative outlining the technical details of the problem, a simple sketch detailing the proposed method of attachment to the vehicle, and a calculation which takes into account design parameters and supposes a 0.1 second deceleration in the event the vehicle comes to a sudden stop if it were to hit something.

5/7 There are questions as to how the seat belts should be mounted to the vehicle. The original plan was to attach the seat belts to the exterior of the car on the PVC frame, however, there is a shared feeling among the group that that design would look too bulky, be of too great an inconvenience, and would also make it difficult to get on the body of the car.

It would therefore be preferred by the group to have the seat belts mounted to the floor inside of the car. The question of greatest concern is whether the wood floor will be sturdy enough to undergo the force of a person being thrown forward if the car should come to an abrupt stop.

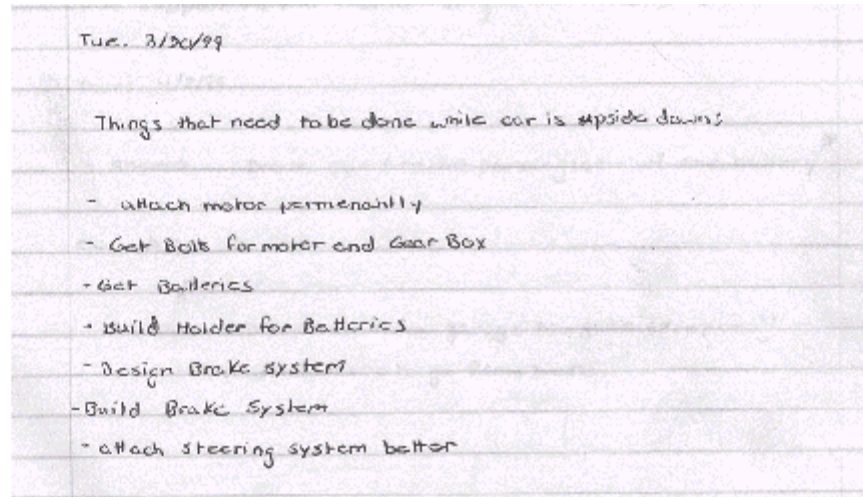


$F = ma$   
 $m = 100 \text{ kg} = \text{mass of person}$   
 $v = 13.5 \text{ m/sec}$   
 $t = .1 \text{ sec}$   
 $-a = 135 \text{ m/sec}^2$   
 $F = 13500 \text{ N}$

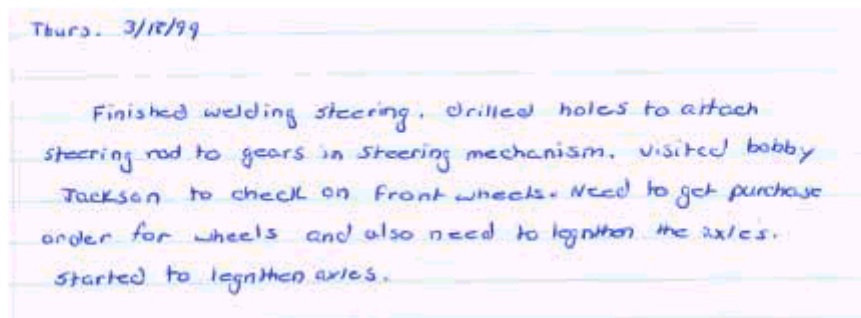
All values are approximated as any testing would destroy the prototype vehicle. This calculation would approximately determine the force the wood floor would undergo in a worst case scenario.

The student concludes actual testing would destroy the vehicle. Is there some other way to test this design?

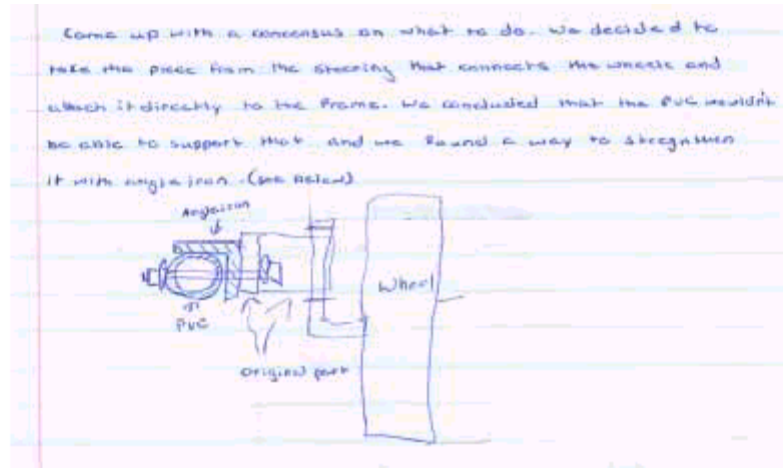
In this journal entry, the student brainstormed and made a list of everything he thought needed to be done while his car was upside down. A thorough understanding of the construction process and sequence is essential when you get to this part of your project. In this case, the student could return to this entry to ensure everything had in fact been done and he can also add to the list if anything else occurs later.



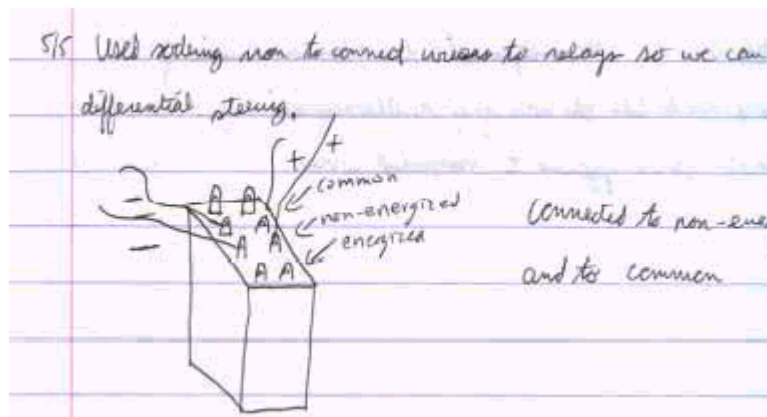
In this entry, an accounting of the day's events is recorded and a few items, which need to get done, are also put down. Reference to the individual can undoubtedly be found in the "contacts" section of the journal.



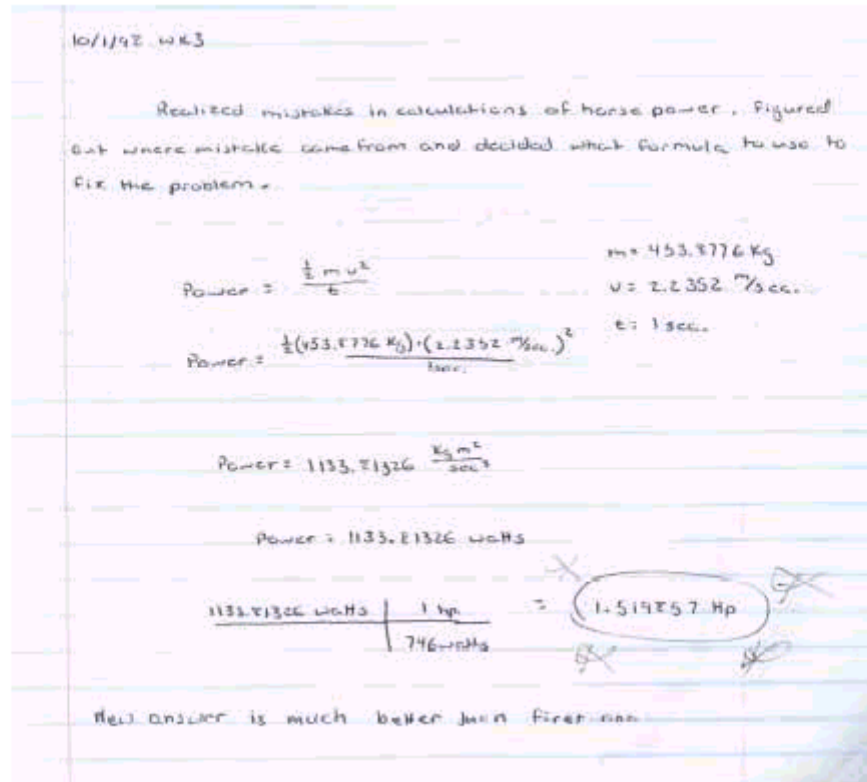
In the below entry, a working diagram is sketched to show how a steering mechanism is proposed to be assembled. Modifications may occur later, but this page in the journal will serve as the reference on what the original intent is. Future modifications should be documented as well and may refer back to this page. Much later, CAD drawings of the individual parts and an overall assembly drawing will be made to fully document the prototype.



This journal entry shows a quick sketch showing which terminals on an electric relay are to be connected. In this case, the student figured out how the relay worked by experimenting with it on a bench top. By the end of class, his understanding was such that this sketch was made. Note that this is only an excerpt from the total day's accomplishments.



This journal entry shows calculations made to determine the power of an electric motor needed to meet the original design specifications. Note that this student acknowledges a previous error. The equation being used is power equals change in kinetic energy per time.



As you can see from these examples, a wide variety of information belongs in your journal. Learning how to catalog this information requires self-discipline, but the effort is worth it. For those of you who doubt this, wait until you spend hours of your time looking for some “lost” piece of information you need now, even though you did not think you would need it when you made the decision to not put it in your journal.