Research and Engineering

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1 Research

Notebooks represent research ideas you're working on, stored in digital form in the cloud or kept securely in your head. (See the rules for virtual and mental items for more information on transferring and copying notebooks.)

For groups, many notebooks were given to everyone in the group. If you have a notebook for a group, you should probably coordinate with the rest of the group, especially given that some people like research more than others.

Notebooks consist of some number of pages. Start with the first page open, but open other pages only when directed to. Pages of a research notebook will often be lists of steps to complete. Mark off each step when you complete it. Some pages may instead be textual instructions or information.

Unless otherwise specified, you may get someone else to complete steps for you on your research. If you do so, you must tell them the name of your research notebook.

If you have the same notebook as someone else, you can show them a page you've opened to allow them to open the same page, or a step you've completed to allow them to mark off that step.

1.1 Research Steps

1.1.1 Resource Steps

Often, you will have to spend resources, such as charges, RTIs, Experience, or Sanity. Unless otherwise noted, anyone can spend the resource, but if you have someone else spend for you you must tell them the name of your research notebook.

You can spend an Experience that is part of the cost for a research step, even someone else's, even though you can't normally transfer Experience.

1.1.2 Interaction Steps

Some steps will direct you to converse with someone or ask someone a question. You don't have to tell people you interact with that you're doing research or what your research is.

1.1.3 Game Steps

These steps require working with a helper or helpers that don't have the research you're working on and that haven't seen any relevant pages. You must tell them the name of your research. If you inadvertantly break the rules for a step (e.g., you use a forbidden word in Taboo), you can't complete the step with any of your current helpers. In general, this type of step will be designed to reveal some information about your research to to your helpers.

Charades Get someone to guess the specified word without talking by pantomiming.

Pictionary Get someone to guess the specified word without talking by drawing pictures. You can't use words or letters in your drawing.

Taboo Get someone to guess the specified word from your spoken description, which cannot include the word itself, any of the specified forbidden words, or any variations or forms of those words.

Twenty Questions Get someone to guess the specified word. You may only speak by answering questions, and the only answers you can give are 'Yes', 'No', and 'Does Not Compute'.

Hangman Write a number of blanks equal to the number of letters in the specified word. Get someone to guess letters. Fill in letters in the approprite blanks. If they guess 10 letters that do not appear in your word, you must start over with different guessers.

1.2   Analysis Steps

Sometimes data or a sample requires extensive analysis to enable research to progress. Such steps will read "Analysis: *place*" or "Overnight Analysis: *place*", where 'place' will be something like a biology lab or a computer cluster. Visit the specified place. Write 'Analysis', your notebook's name, and today's date on the sign there, then return to that place sometime the next day to mark off this step. (Remember that the day doesn't roll over until 6am.)

Analysis is not interruptable; if your line is gone when you return, it just means that Plant grunged our sign.

2   Engineering

2.1   Building Prototypes

To build devices, you may need to build something out of legos that fulfills certain requirements. The legos in an engineering project must be attached to form a single object and must fulfil any other constraints specified in the project. (For example, "no red legos may touch any blue legos".)

RTIs can be used to build a device prototype. **To attach legos together, you or your helpers must have an appropriate skill**, but you don't have to spend any charges.

You can move legos around on a device, with the appropriate skill. You can detach legos from a device, but doing so destroys the detached legos; you can't use them in a different device. (If it breaks accidentally because you dropped it or something, you may repair it.)

2.2   Experiments

When you're engineering something for advanced research, you probably won't get it right the first time. An engineering project in a notebook may specify a procedure for testing your project. Follow the procedure, then remove the first numbered sticker to reveal a box with a complication. There are two types of complications.

"Condition" boxes specify an additional constraint on your project, such as needing a specific number of legos of a specific color. If your project happens to already meet this constraint, you can continue immediately; remove the next sticker and continue to that box. Otherwise, the specified consequence occurs, and you must modify your prototype to meet the new constraint (and the existing constraints) and perform another experiment to continue.

"Failure" boxes are unavoidable. They give you additional steps to carry out before you can try a further experiment. After you have completed these steps, remove the next sticker to reveal a "Result" box, which will generally modify the constraints on your prototype (such as by adding additional legos, beyond the initial count of legos needed for your prototype). Then, perform

another experiment to continue. Each Failure only happens once, and any costs imposed by Failure or Result boxes only happen once, but the Conditions and any device modifications from Result boxes apply to all further experiments.

Each following experiment follows the instructions in each box, in order; if all constraints are satisfied, remove the next sticker and continue. At some point, a box will tell you your prototype is finished, which often lets you open the next page of your research. When your prototype is finished, you may replace it with an item card and return the legos to a lego bin.

Note that failed experiments can have negative consequences, including Sanity loss of up to 5 Santiy.

2.3   Story Tasks

For some notebooks or other mechanics, you will need to write stories. Stories are generally short passages of text, a few paragraphs at most. Stories need to satisfy certain specified requirements.[1]

Some story tasks require experiments that use stickers, like building engineering device prototypes. Unless specified otherwise, to do test a story, you must read it aloud to an audience of at least 3 people, then ask them for feedback. Testing a story allows you to remove stickers in exactly the same way as testing a device prorotype. Condition boxes for stories will specify requirements for your story such as characters, elements, or plot twists it must include.

Audience members for testing stories must not be people you know are working on the same research. You do not need to tell them what notebook you are working on.

Someone in an audience for a story you're testing can't be in the audience for another test of that story until at least an hour has passed.

Like for device experiments, failed Story tests can cost up to 5 Sanity.

3   Results

Once you've completed your notebook, you may acquire the ability to build items, either individually or on a large scale.

If your notebook allows you to build items "in a region", this refers to a region of Earth as specified in the Human Mechanics Room (4-253). Building things in a region may be easier with help of a diplomat from that area.

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[1]They are not judged on quality, so don't worry if you "can't write".