Scientific Research 1 Summer Homework

To get prepared for Scientific Research 1, I recommend you focus on these tasks over the summer.

**1. Learn the Scientific Method Deeply**

Understand each step:

* Asking testable questions
* Forming hypotheses
* Designing controlled experiments
* Analyzing and interpreting data
* Drawing conclusions and communicating results

**2. Explore Research Topics of Interest**

Start identifying areas you’re passionate about:

* Environmental science, biology, physics, psychology, etc.
* Read articles, watch documentaries, or explore recent scientific discoveries

**3. Practice Reading Scientific Literature**

Get familiar with:

* Peer-reviewed journal articles (try *Google Scholar* or *PubMed*)
* Abstracts, introductions, methods, results, and discussions
* Highlighting key findings and understanding graphs

**4. Develop Basic Lab Skills**

If possible, practice:

* Measuring accurately
* Using lab equipment (like balances, microscopes, or sensors)
* Following safety protocols

**5. Learn to Use Spreadsheets and Graphing Tools**

Get comfortable with:

* Microsoft Excel or Google Sheets
* Creating tables, charts, and trendlines
* Performing basic statistical analysis (mean, median, standard deviation)

**6. Understand Experimental Design**

Study:

* Independent, dependent, and controlled variables
* Sample size and replication
* Control groups and bias reduction

**7. Practice Scientific Writing**

Try writing:

* A mock research proposal
* A lab report or abstract
* A literature review on a topic of interest

**8. Explore Ethics in Research**

Learn about:

* Informed consent and human subject research
* Plagiarism and data fabrication
* Ethical treatment of animals in research

**9. Learn About Citation and Research Tools**

Familiarize yourself with:

* APA or MLA citation styles
* Tools like Zotero, EasyBib, or Google Scholar for managing sources

**10. Start a Mini Research Project**

Design a small-scale experiment at home or in your community:

* Track plant growth under different conditions
* Survey peers on a behavioral topic
* Analyze local environmental data (e.g., air quality, water pH)