

Name: _____

Date: _____

Phys 194–FYRE Assignment #1 Scientific Method and Astronomy Literature

Assignment Policy: You can consult class notes, books, and online resources. You can work in small groups (2 or 3), but you must turn in your own work. Make sure you are clear about the process you use to solve the problems: partial credit will be awarded.

Scientific Method

In astronomy as in other sciences, the scientific process often begins with an observation, and then follows a series of steps, involving making a hypothesis, using the hypothesis to make a prediction, testing the prediction, evaluating the results of the test, and then modifying the hypothesis or making new predictions.

For example, you might observe that it is warmer in the summer than in the winter, and go through the scientific process as follows:

- Hypothesis: The Earth is closer to the Sun in the summer than in the winter, making temperatures warmer.
- Prediction: If your hypothesis is true, the Sun should appear larger in the sky in the summer than in the winter, and everywhere on Earth should be warmer at the same time of year.
- Test: Make careful measurements of the apparent size of the Sun in the sky over the course of a year, and measure the temperature at many points on the Earth over the year.
- Results: Your tests show that the Sun does not appear to be larger in the sky during the summer, and that on average temperatures are warmer in the northern hemisphere while they are colder in the southern hemisphere and vice versa, instead of being warmer everywhere at the same time.
- Evaluate: The results of your tests are inconsistent with your prediction, and therefore you need to form a new hypothesis to explain why it's warmer in the summer than in the winter, and begin the process again.

1. Briefly describe an example of the scientific process from your personal experience. Have you applied the scientific method to cooking? To trying to fix something that was broken? To trying to explain something you didn't understand?

2. Come up with a hypothesis that *cannot* be tested using the scientific method.

Astronomy Literature

1. Go to the NASA ADS website (see homepage for link). Pick a CGCA faculty member (professor) and find the first paper where that person was the first author. What is the title? What is the journal information (journal, year, volume, page)?

2. What is the oldest paper that the CGCA author's paper cited?

3. What is the most recent paper that cites the CGCA author's paper?

