Reading: *Astronomy Notes* sections 1.1 through 1.4 and skim chapter 2

Vocabulary terms used:
- **astronomical unit**—average distance between the Earth and the Sun (149.6 million kilometers). Used for interplanetary distances. Abbreviated with “AU”.
- **light year**—distance light travels in one year (9.461 trillion kilometers, over 63,000 AU!). Used for interstellar distances.

**model**—an abstraction that is a simplified view of reality.
**theory**—a logical, systematic set of principles or explanation that has undergone testing or validation from careful observations and has stood up against attempts to prove it false. A scientific theory can be used to make a variety of predictions of what will happen under different circumstances.

### Outline

**Sense of Scale**

**Size** (solar system models: campus + quarter coin)

- If Pluto orbit fits in a quarter, nearest star is how far away: __________
- Milky Way galaxy is how big in this scale model: ________________

**Time** (cosmic calendar + walk through history)

- If universe’s history is put on the solar system model between the Sun and Uranus, then each big step (1 meter) would equal ________ years.
- The solar system formed______ steps beyond Saturn = _____ years ago.
- Life began______ steps beyond Saturn = ______ years ago.
- All of human history________________

**Figuring out how things work**

**Observe**

**Generalize**

- Model definition
- What separates a scientific theory or model from other types of explanations:__________

- “Theory” in everyday language vs. a “science theory” ______________

**Observe + experiment**

**Revise, expand, or reject the theory/model**

- What is the sole judge of scientific truth: ______________
- Assumption #1: ___________________
- Assumption #2: ___________________
- “Scientific truth” —_________________

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Self-imposed limitation: ________________

Science – religion conflict? Not necessarily! ____________

Communicate results in clear, logical fashion & Peer Review

Value of Astronomy

Why/how astrology is not a science