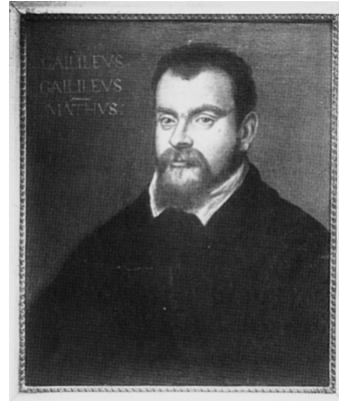


Galileo & the Telescope— Sept 20

Test 1

Galileo makes a telescope in 1609

- Galileo discovers
 - Moons of Jupiter
 - Mountains on the moon
 - New stars
 - Milky Way has many stars
 - Phases of Venus
 - Disproves Ptolemy’s earth-centered model
- A model of discovery enabled by a new instrument
 - What cannot be seen cannot be discovered
 - Many discoveries were made soon after a new technology or instrument was built.



Galileo by Tintoretto
http://galileo.rice.edu/images/people/galileo/g_tintoretto.gif

Test 1

- Test 1
 - Wed 9/29
 - Covers
 - Material through today’s class (9/20)
 - Homework 1-3
 - Bring one 8.55×11” cheat sheet (front & back)
 - Tests are written, not multiple choice. Average was 67% for Fall 2009.
- “How to study” on Mon, 9/27. Focus on main ideas, then details.
- Missouri (Show me) Club
 - Tues 9/28; 7:40-8:40pm, room 1420.
- Practice test (test from fall 2009). Link is on syllabus on angel.

<p>17 H02</p> <p>20</p> <p>22</p> <p>24 H03</p> <p>27</p> <p>28</p> <p>29</p>	<p>Kepler’s Laws of planetary motion. §3.3</p> <p>1838—Size of the Solar System & Distances to the Nearest Stars</p> <p>Galileo invents the telescope. (Sidereus Nuncius, pp. 64–67.)</p> <p>Newton’s laws of motion & gravity §3</p> <p>How big is the solar system? Parallax of Mars and Venus. pg</p> <p>Preparation for test. Practice test Practice test answer</p> <p>Missouri (Show me) Club. 7:40-8:40pm, room 1420.</p> <p>Test</p>
---	--

Galileo's telescope

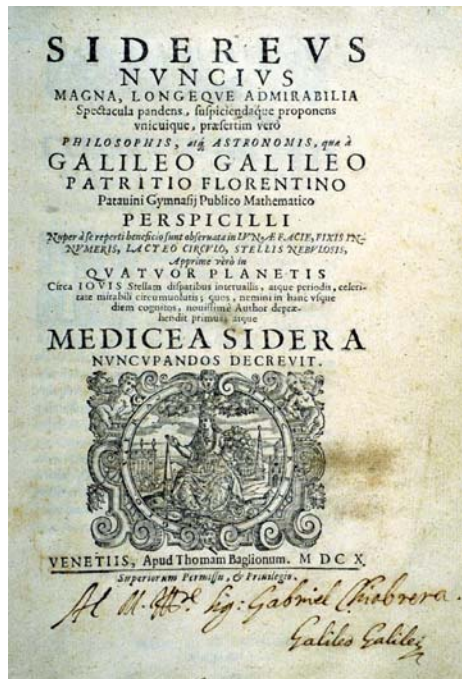


Wood, paper; length: 1360mm, lens diameter 26mm
<http://galileo.imss.firenze.it>

Sidereal Messenger

Unfolding great and many wonderful sights and displaying to the gaze of everyone, especially philosophers and astronomers, the things that were observed by **Galileo Galilei, Florentine patrician** and public mathematician of the University of Padua, with the help of a **spyglass** lately devised by him, about the face of the moon, countless fixed stars, the Milky Way, nebulous stars, but especially about the **four planets** flying around the star of Jupiter at unequal intervals and periods with wonderful swiftness; which unknown by anyone until this day, the first author detected recently and decided to name **Medicean Stars**. Venice 1610

—trans A van Helden, *Siderius Nuncius*, U Chicago, 1989



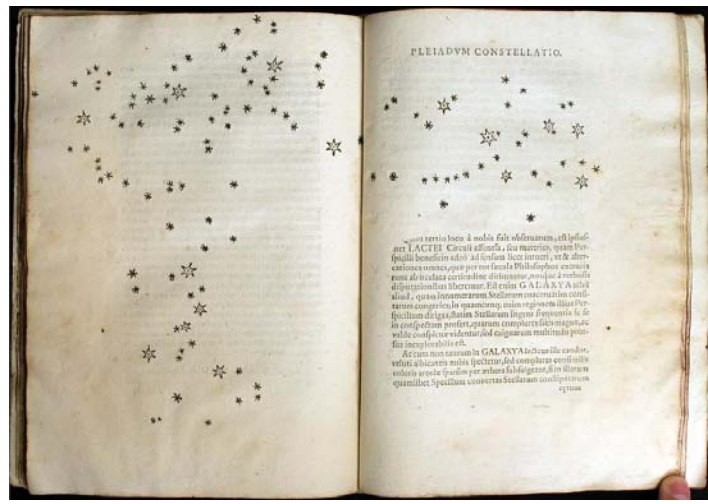
Mountains on the Moon

- Imperfections on a heavenly object

<http://hsci.cas.ou.edu/exhibits/>



Countless stars (Pleiades)



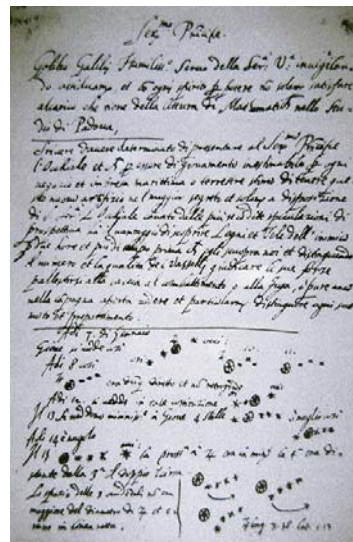
Galilean moons of Jupiter

- This was a demonstration that objects orbit something other than the earth.
1. On 7 Jan 1610, what unusual hint did Galileo uncover about these “stars”?
 - A. They were very bright.
 - B. They were nearly on a line.
 2. When did Galileo first know for certain that these were not stars, but moons of Jupiter?
 - A. 7 Jan 1610
 - B. 8 Jan
 - C. 9 Jan
 - D. 10 Jan
 - E. 11 Jan



Galileo's journal
http://galileo.rice.edu/images/things/journal_jup1.gif

- How does the evidence disprove that they are stars?
 - Assume the three objects seen near Jupiter on 7 Jan 1610 were real stars. Draw what Galileo would have seen on Jan 8th.
3. Spacing between the stars is as on the 7th.
 - A. the same
 - B. different
 4. Distance from easternmost star to Jupiter is _____.
 - A. precisely the same
 - B. different.



Phases of Venus

4. When Venus is very, very close to the sun in the sky (for example when Venus sets very shortly after the sun sets), what phases are possible?
 - A. Crescent only
 - B. Nearly full only
 - C. Crescent and nearly full
5. When Venus is very, very close to the sun in the sky (for example when Venus sets very shortly after the sun sets), what phases are possible according to Ptolemy's model?
 - A. Crescent only
 - B. Nearly full only
 - C. Crescent and nearly full