Studying for Test 1—26 Sept

- Announcements
  - Observatory Open House at MSU Observatory
    - Fri, 30 Sept, & Sat, 1 Oct
    - 9-11pm, weather permitting
- Outline
  - About Test 1
  - Example question. What do I need to be successful?
  - Big ideas, less important ideas, details
  - BI, LII, & D for class of 16 Sept.
  - BI, LII, & D for Homework 3, question 2.

About Test 1

- Test 1, Wed, 28th
  - Covers
    - Material in class through 9/19. Newton is not on test.
    - Homework 1-3.
  - Tests are written, not multiple choice.
  - Average was 67% for Fall 2009 and 78% for Fall 2010
  - Low stakes. To calibrate your efforts. Test 1 counts 1/3 as much as Tests 2 & 3.
  - Practice Test (test from 2010) is on angel.
    - Link is on Syllabus on angel
  - Missouri Club
    - Tues, 27th, 7:40-8:40, BPS1420
  - Common cheat sheet
    - Send me formulas for cheat sheet by 10pm on 27th.

What do I need to be successful on the practice test and homework?

- Definitions?
- Main ideas?
- To explain means writing sentences.
  - A phrase or an equation is not an explanation.

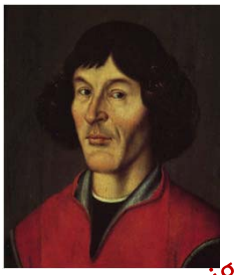
4. Astronomers discovered a new comet, and they found that it passes closest to the sun at a distance of 0.5AU and the second focus of its orbit is 20AU from the sun.
   a. (3 pts.) Find the length of the major axis.
   b. (3 pts.) Is it likely to return in your lifetime? (You are 20 years old.) Explain how you found your answer.

Preparation for Test 1

- Do the practice test (Test 1 from Fall 2010)
  - Link on syllabus on angel
  - We did not cover material for Question 1 from 2010.
- Review the homework. For each question,
  - What is the main idea?
  - What are less important ideas? How are they related to the big ideas?
  - What are details?
- For each class,
  - What are the one or two big ideas? You must understand these.
  - What are less important ideas? How are they related to the big ideas?
  - What are details?

- What are the one or two big ideas? You must understand these.
- What are less important ideas?
  - Examples of less important ideas
    - Definitions
    - Drawings
  - How are they related to the big ideas?
- What are details?

The Copernican Revolution
The Beginning of Science—16 Sept



Nicholas Copernicus
(1473–1543)

Tycho Brahe
(1546–1601)

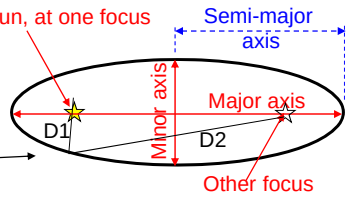
Johannes Kepler
(1571–1630)

Identify big ideas, less important ideas & details

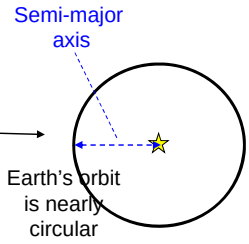
Columbus 1492 Jamestown 1607

Kepler's First Law of Planetary Motion 1605

- The path of a planet is an ellipse.
  - Ellipse is figure for which D1+D2 does not change
  - The sun is at one focus.
  - Eccentricity = (dist between foci)/(major axis)



1. For this ellipse, the eccentricity is approximately
   A. 0
   B. 0.1
   C. 0.3
   D. 0.7
   E. 0.9
2. Same question for



- What are the one or two big ideas? You must understand these.
- What are less important ideas?
  - Examples of LII
    - Definition
    - Drawing
  - How are they related to the big ideas?
- What are details?

A. For a point on an ellipse, the sum of distances between the point and the two foci is a constant.
B. The path of a planet is an ellipse with the sun at one focus.
C. The eccentricity is the distance between the two foci divided by the major axis.
D. The semi major axis is half the long axis.
E. A circle is an ellipse.

- Identify a "big idea," a less important idea, a detail.

1. Idea C is __.
   A. BI.
   B. LII.
   C. D.

- What are the one or two big ideas? You must understand these.
- What are less important ideas?
  - Examples of LII
    - Definition
    - Drawing
  - How are they related to the big ideas?
- What are details?

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- **Hwk 3, Q2: A Comet** has an orbital period of 100 years, and its eccentricity is 0.97. (4 pts.) How far from the sun does it get? How close to the sun does it get? Give your answer in AU.

2. Which was not a big idea but was essential for me to do Q 2 on Hwk 3?