Review for Test #1

- Responsible for:
  - Parts of Chapter 23
  - Notes from class and online
  - Problems worked in class (including group assignments)
  - Homework assignments (EOC and LON-CAPA)
- Test format:
  - 3 problems (30 points each), 1 bonus (5 points)
  - 3 conceptual questions (10 points total)
  - Time: 75 minutes
- Test materials:
  - Pencil, eraser, and non-programmable calculator
  - No formulae sheet or paper; all provided
  - Closed textbook and notes

Rules for the Test

- You **must show all work** to receive credit
- At least one empty seat between each student where possible
- No talking during test, except to proctor or instructor
- Put name and 811/810 number on test sheet
- Bring Student ID - show proctor
- All electronics turned **off** (phones, tablets, computers, Apple watch, etc.), except simple calculator
- Proctor is watching!

Material Covered

- Waves:

- period, frequency, wavelength, speed, wave equation
- sound waves, light, electromagnetic spectrum
- Doppler effect for sound
- superposition of waves: interference, beats, standing waves
- phase, phase shift, phase difference

- Chapter 23: Laws of Geometric Optics

- Law of reflection
- Index of Refraction, Snell's Law
- Dispersion and Prisms, total internal reflection

Material Covered

- Chapter 23 (continued)
  - Huygen's and Fermat's Principles
  - Images from spherical mirrors and refraction
  - Thin lenses
  - Real and virtual images, magnification

  Devices:
  - the camera, the eye
  - magnifier, microscope
  - refracting telescope

Example Problem

A diverging lens has radii of curvature with magnitudes of 40 cm on each side. What is its focal length?

Example Problem

The desired overall magnification of a compound microscope is 140X. The objective alone produces a lateral magnification of 12.0X. Determine the required focal length of the eyepiece