

Physics in the classroom

REVIEW

Format of final

- **NOON**, not at 1:00 !
- 15 multiple choice and 5 essay/show work.
- Old test on my web site.
- You may use a 3x5 note card. No micro writing or card will be confiscated (see syllabus).
- I strongly suggest that you bring a calculator.
- I will post the grades outside my office door, and I will try to post them on my web site.

General

- Good Science vs. Bad Science.
- Uncertainty (\pm)
- Significant figures
- Scientific notation
- Units (all answers must include units to be correct)
- Graphs (read and make) slope, area under curve

Mechanics

- Position, velocity, acceleration.
- Newton's 3 laws, particularly $F=ma$
- Heavier objects do **NOT** fall faster than light ones (in vacuum).
- Density = mass/volume.
- Work = Force x distance.
- Levers and pulleys.

Oscillations and Waves

- Oscillations (amplitude, period) displacement vs. **time** graph.
- Waves (amplitude, wavelength) displacement vs. **distance** graph (snapshot).
- $v = f \times \lambda$
- Standing waves: (waves on strings and waves in a tube) nodes, antinodes.

Electricity and Electromagnetism

- Ohm's Law ($V = I \times R$)
- Electrical power ($P = I \times V$)
- Series and parallel resistors.
- Electromagnetism: **Changing** magnetic field produces a current, not steady magnetic field.
- Transformers
- $$\frac{V_2}{V_1} = \frac{N_2}{N_1}$$

Optics

- Optics, Snells Law $n_i \sin \theta_i = n_r \sin \theta_r$
- Speed of light: $c = 3 \times 10^8 \text{ m/s}$

Questions next time