Review for Test #2

- Responsible for:

  - Chapters 2 (2.6, 2.7, 2.9), 3 (3.1-3.16), 4 (4.1-4.5, 4.7, 4.8, 4.10); all material from Test 1
  - Notes from class
  - Problems worked in class; Homework assignments

- Test format: 4 problems (15 points each)

  - 1 problem (30 points)
  - 1 set of conceptual questions (10 points)
  - Time: 75 minutes

- Test materials: Pencil, eraser, and non-programmable calculator; No formulae sheet or paper (provided); closed textbook and notes

Rules for the Test

- One empty seat between each student
- No talking during test, except to proctor or instructor
- Put name and 810 number on test (first page)
- Bring Student ID
- All electronics turned **off** (phones, tablets, computers, etc.), except simple calculator
- Proctor is watching!

Material Covered

- Chapter 2: Relative Velocity, Galilean and Lorentz transformations
  - position, momentum update relations
- Chapter 3: Fundamental Interactions
  - Newton's 3rd law
  - Fundamental forces (interactions)
  - Universal gravitational force
  - Coulomb force and other fundamental forces
  - total system momentum
  - conservation of momentum and collisions
  - center of mass (position and velocity)
- Chapter 4: Contact Interactions
  - normal force, friction force, inclines
  - tension force (ropes, cables, massless pulleys)
  - spring force

Example Problem

A 2.0 kg wood box slides down a vertical wooden ramp which was an angle of 45 degrees. What magnitude of force should you apply to cause the box to slide down at a constant speed? Take $\mu_k = 0.2$.

Chapter 3, P53

Given a collision of two objects with initial momenta $\mathbf{p}_{Ai} = < 20, -5, 0 >$ kg m/s and $\mathbf{p}_{Bi} = < 5, 6, 0 >$ kg m/s. What is the total initial momentum. If $\mathbf{p}_{Af} = <18,5,0>$ kg m/s, what is $\mathbf{p}_{Bf}$? What is the impulse on A due to B?