105 REVIEW

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You will need your CID for the exam-
Memorize it!!!!!

Other Reviews

- Fri 1-3 108 MARB
  - This is a weekly review, so feel free to come at any time during the semester.
  - We cover general concepts as well as problems from the book and from the homework.
- Come with questions!!

Concepts

- Algebra
- Trig
- Motion in 1-D
- Motion in 2-D /Vectors (projectiles)
- Newton's Laws of Motion & Forces
- Rotational Motion & the Law of Gravity

Algebra & Trigonometry

- Sin, Cos, Tan
- Degrees vs Radians
  - for this test you only need Degrees
- Pythagorean Theorem

Motion in 1-D

- Distance vs Displacement: What's the difference?
- Speed vs Velocity : What's the difference?
  - Initial
  - Final
  - Average
  - Instantaneous
  - What does it mean to have +v vs –v vs v=0?
- Acceleration
  - Average
  - Instantaneous
  - What does it mean to have +a vs –a vs a=0?
- Graph Analysis
- Kinematic Equations

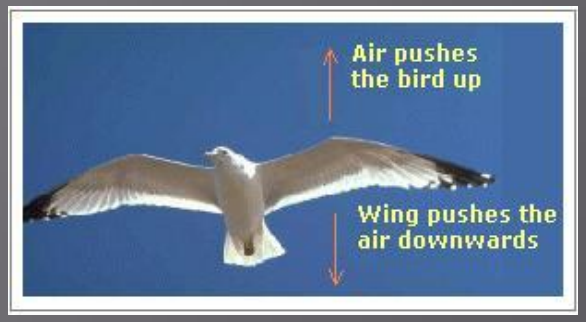
Motion in 2-D

- Vectors (know trig)
- Relative velocity
- Kinematic Equations
- How to solve Projectile Problems (my strategy)
  - Make a table of x and y information:
  - Usually, you'll use one of the directions to solve for time, then use time with the information in the other direction to find whatever you're looking for
- Make sure you are solving for the MAGNETUDE when they ask you for it, don't just find a component of the vector

Newton's Laws

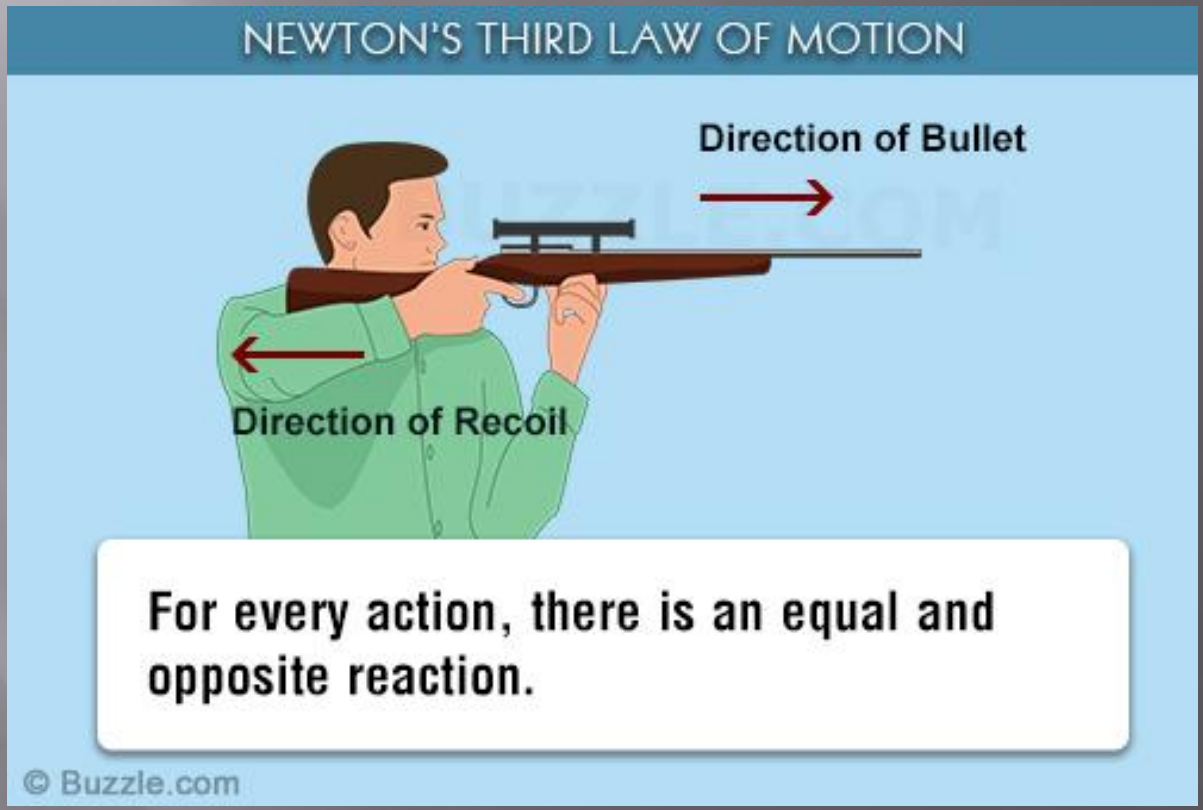
- 1st Law:
  - An object with a constant velocity (including v=0) will continue moving (or not moving) with that velocity unless acted upon by an outside force.
- 2nd Law:
  - F=ma
- 3rd Law:
  - "Every action has an equal and opposite reaction."
  - If I push on the block, it's pushing back on me
  - They why does only one thing move?

Newton's 3rd Law Bird Example



- Consider the flying motion of birds. A bird flies by use of its wings. The wings of a bird push air downwards.
- Since forces result from mutual interactions, the air must also be pushing the bird upwards.
- The size of the force on the air equals the size of the force on the bird; the direction of the force on the air (downwards) is opposite the direction of the force on the bird (upwards).
- For every action, there is an equal (in size) and opposite (in direction) reaction.
- Action-reaction force pairs make it possible for birds to fly.

Newton's 3rd Law Bullet Example



Newton's 3rd Law Equillibrium Example

- http://hyperphysics.phy-astr.gsu.edu/hbase/newt.html#nt3x

Forces

- Force due to Gravity
- Normal Force
- Friction
  - Static vs Kinetic
- Tension
  - 2 Body problems (pulleys, 2 blocks, etc.)
- What does it mean when forces balance?
- Solving a Force Problem
  - Draw a picture
  - Draw a FBD
  - Write out the Force Summation Statements

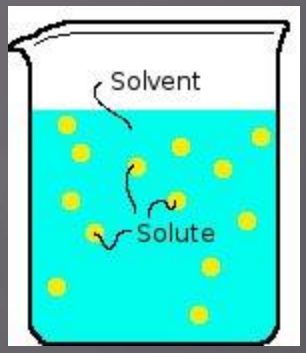
Rotational Motion & The Law of Gravity

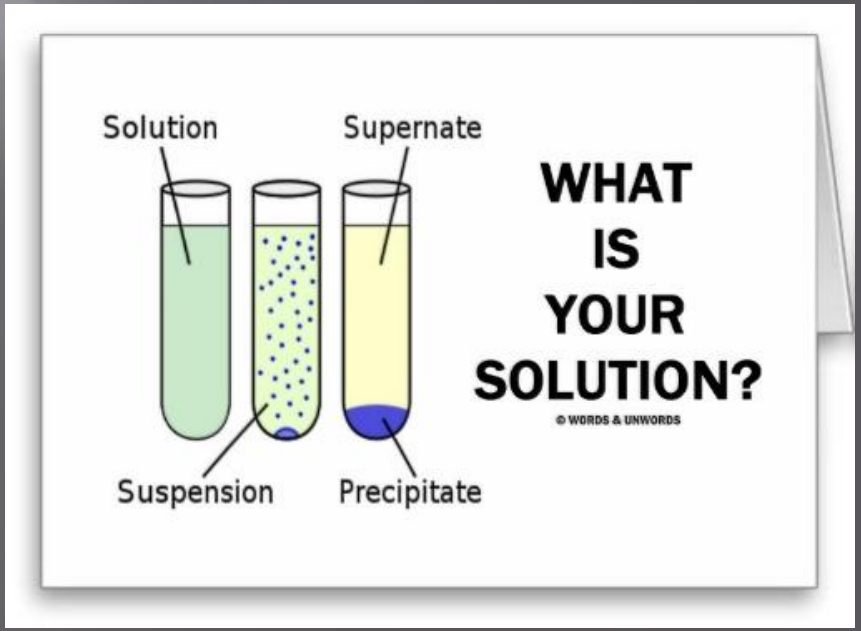
- Centripetal force is an imaginary force, kind of like a category of forces
- Centripetal Force- the NET force causing an object to move in a circle
  - Which force would you have to remove to let the object move in a straight line?
- F=ma
- Orbiting Problems

ANNOUNCEMENT!

Solutions

- Solution = solute + solvent
- Example: Sugar Water
  - Solute = sugar
  - Solvent = water
- A mixture is when the substances don't dissolve in each other. Ie. Oil & Water





Any more questions?

Thanks for coming! Don't forget to sign the paper please!