Welcome Chem 30A

- Introductory Chemistry
- Laney College
- Spring 2016 Semester

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  - I'm mostly away from email Fri, Sat, Sun…
  - otherwise I usually reply the following day.

- Add codes given next week. Please don't ask yet.

Lecture 1 Goals

- Why are we in this classroom?
  - Historical perspective on science, chemistry, and technology (Ch 1.1)
- Do you belong in this class?
  - No previous chemistry experience is required.
  - Algebra prerequisite: Math 201 or 210D
    - If your math skills are lacking, make that your top priority.
  - Math self assessment
- Cover the syllabus
  - Policies, schedule, grading, study tips
  - Be familiar with this document!
  - Course materials
    - Textbook – McMurry 7th (or any) edition
    - Lab manual – from the bookstore
  - Follow lab attendance and dress code policies for a passing grade

Where does science come from?

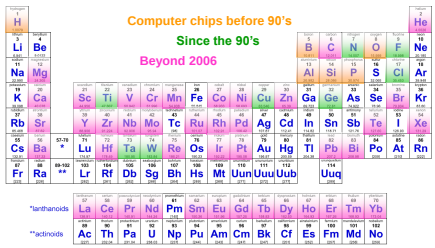
(Not on any exam.)

- Natural science is proposed by ancient Greeks (~600 BC)
  - Idea that the observable world (weather, heat, rocks) is explained exclusively in terms of the natural 'stuffs' *of* our world
    - as opposed to *supernatural* explanations
  - Scientific progress means improving on your teacher's methods
  - Mathematics enabling astronomy emerge around 150 BC

- Scientific method spreads after the dark ages
  - Roger Bacon (1214-1294) borrows from Muslims on repeating cycles of observation, hypothesis, experimentation, and verification
  - Galileo (1562-1642) is called the father of the (modern) scientific method
  - Descartes (1596-1650) fosters a scientific revolution with geometry and calculus
    - Science is contained in 3D mathematical models, not just abstract ideas
- Chemistry and physics split around 14th century Renaissance in Europe
  - Experimental chemistry gains from Venetian glass blowing

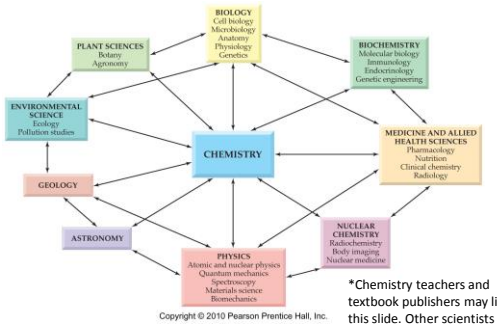
- Periodic table of Mendelev (1869) organizes the elements
  - Chem 192 picks up from here…

Every thing is composed of chemical "elements"



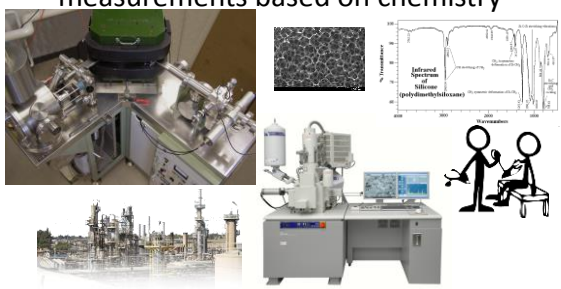
Slide taken from "Is there life after CMOS?" by Paul M. Soloman, IBM T. J. Watson Research Center.

1.1 Modern chemistry is the central academic science*



*Chemistry teachers and textbook publishers may like this slide. Other scientists might put their own story at the center!

All branches of science rely on measurements based on chemistry

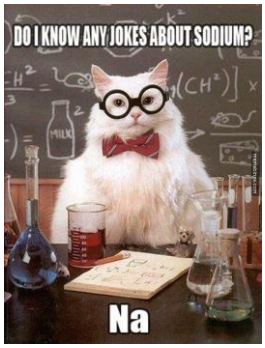


In Chem 30A, you will learn basic chemistry principles on which modern instrumentation and technology are based. You'll gain confidence in trusting your judgement over the analysis machine.

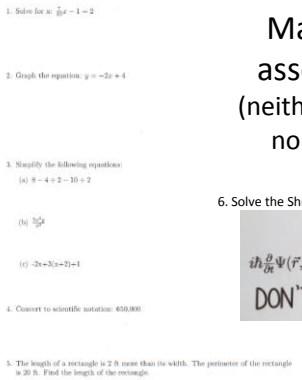
Why are you here?

- Anonymously respond with short answers:
  - What are your educational/career objectives?
  - What grade do you want in Chem 30A?
  - How many hours per week do you plan to study, outside of class?
  - Describe any previous chemistry experience.
  - Rate your math skills on 1-10 scale
    - 10 = I'm really good at algebra

Let's take a 5-minute break.



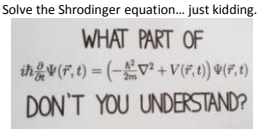
Have a pen/pencil and blank sheet of paper when we resume.

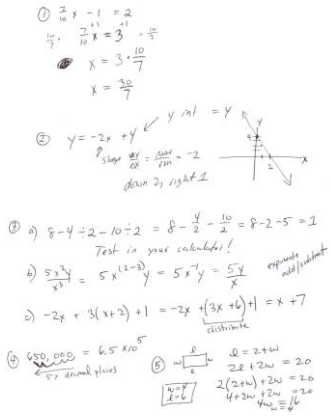


1. Solve for x: $\frac{7}{10}x - 1 = 2$
2. Graph the equation: $y = -2x + 4$
3. Simplify the following equations:
   (a) $8 - 4 + 2 - 10 \div 2$
   (b) $\frac{5x^3y}{x^5}$
   (c) $-2x+3(x+2)+1$
4. Convert to scientific notation: 650,000
5. The length of a rectangle is 2 ft more than its width. The perimeter of the rectangle is 20 ft. Find the length of the rectangle.

Math self-assessment
(neither collected nor graded)

6. Solve the Shrodinger equation… just kidding.



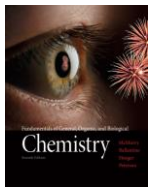


Worked solutions

If you can do this, you have a high probability of success in Chem30A!

If this is not happening, you need to improve your math skills to pass Chem30A.

Let's cover the syllabus



- Policies
  - Strict lab policies for passing grade
  - You must withdraw if needed
    - I don't drop students, except for no-shows
- Materials
  - Textbook: McMurry 7th Ed.
  - Chem30A lab manual
  - Printer access to print lab sheets
  - Scientific calculator (no graphing calculators or cell phones)
  - Lab goggles
- Be prepared… know the schedule.
- Understand how your grade is computed.
- Apply the study tips for success!!

[syllabus is on the Moodle]