



Henry Ford Academy-Chemistry with Ms. G



This course is designed to prepare students for introductory college chemistry by fostering critical thinking skills, developing basic chemistry knowledge, and encouraging awareness of the effect of chemistry on the world around us. Inquiry, experimentation, analysis, writing, and collaborative participation are the methods that will be used to teach. Use of the textbook will be taught, encouraged and emphasized to help prepare students for future college science courses.

Student Expectations

- Students must attend all class sessions on time. There is a strong correlation between frequent absences or tardiness and a low score in this course.
- **Assignments must be turned in on time.** Late work will be accepted for **one week** after the due date for **60% credit**. No late work will be accepted after this time.
- Students are expected to work and contribute fairly in collaborative groups and to treat their classmates and instructor with care and respect.
- Students should expect to read a section in the textbook covering new material **prior** to the material being covered in class.
- Students will be in uniform upon entering the classroom.

Copying

Copied work will be graded as a zero. If a student provides his work to another student for copying, both students will receive a zero.

Student Assessment

- Projects
- Class Participation
- Written assignments will be graded based on the following criteria:
 - Fulfillment of the goals of the assignment.
 - Technical quality.
 - Scientific content.
- Presentation when applicable.
- Collaborative Effort.
- Quizzes, Tests, and Homework.

Extra Help

Extra help is available before Block 1 on most days, and one day per week during homework lab.

Grading

The course will be graded as follows:

- 20% Midterm/Final
- 30% Tests/Projects/Quizzes
- 20% Classwork
- 15% Homework
- 15% Bellwork/Participation/Labwork

Supplies

- Binder for handouts
- Notebook to be used **only** for Chemistry notes
- Need a pencil every day
- Calculator
- Highlighter

Homework

Homework is assigned to reinforce the material taught in class, and to prepare for the next day's lesson. I will randomly select homework to be graded. **Not all homework will be graded.**

Course Projects

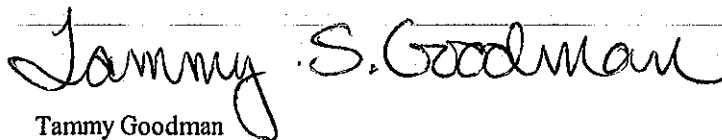
Qual Lab: Working in a group, students will be given five test tubes containing unknown compounds. Students will design and implement the proper lab tests, utilizing prior lab techniques and data, to identify the sample from a list of possible compounds. This project will culminate in a written lab report (one per group).

Designer Chemistry: Students will design and manufacture one chemical compound. Your apprenticeship will last several weeks. The first few weeks will be spent "learning the ropes" and reviewing the chemistry learned in Integrated Science 1. Moles, stoichiometry, quantitative and qualitative analysis and laboratory techniques will be studied. The end product will be synthesizing your assigned solid and gas compounds. Your job evaluation will be based on the percent yield of your compound, accuracy, presentation of your lab design and results.

The Chemistry of Soap: Students will research the chemical reactions involved in making soap. They will design, produce, package, and promote a bar of soap with particular properties. You will have to investigate what type of organic compounds make your soap long-lasting, big or small bubbles, and good cleaning ability.

The best way to reach me is via email. I look forward to spending the semester with you (or your student ☺)

Best Regards,



Tammy Goodman
tgoodman@hfa.spfs.k12.mi.us

Class Website <http://hfa-chemistry.wikispaces.com/> (Check here for additional copies of assignments)
313.982.6200 Ext: 2036

LABORATORY SAFETY CONTRACT

I, _____, a responsible student in Chemistry,
have read the Lab Safety Rules, and agree to do my part to maintain a safe laboratory
environment for myself and others. I
understand and will abide by the following conditions:

1. Follow instructor's directions.
2. Wear eye protection whenever lab chemicals are present.
3. Wear gloves and other protection when advised.
4. Follow good housekeeping practices.
5. Know where emergency equipment is located.
6. Be considerate of others, act responsibly, and NO horseplay.

I have read and agree to follow the above rules, and those in the Lab Safety Rules, while in the
laboratory.

(Signed and Dated by Student)

Parent/Guardian Contract

I, _____, as parent or legal guardian of _____, have read
the above contract, and the Lab Safety Rules, with my child. I support the instructor's effort to
achieve a safe laboratory,
and will encourage my child to uphold his/her part of the above agreement.

(Signed and Dated)

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Student Name _____

Dear Parent,

Please fill out this contact sheet and return. This will allow me to easily contact you with information regarding your student. In addition, please contact me via email either by going through the Academy website or with me email address: **tgoodman@hfa.spfs.k12.mi.us** This will allow me to add you to our class email list and keep you up to date with important information.

Parent

Name	Email	Phone

		Phone

Name	Email	Phone

		Phone

Information about your student you would like me to know:

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Name: _____

Block: 1 of 2

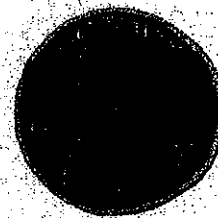
A Penny For Your Thoughts

Lesson Guide: Investigation I – Lesson 1

Circle
One

Investigation I - Defining Matter

The science of chemistry has its roots in the ancient practice of alchemy. Early alchemists were among the first individuals to study and work with matter in a systematic way. One of their desires was to make gold from ordinary substances. Throughout this unit you will be walking in the footsteps of the alchemists, finding out for yourselves what matter is made of and how it can be changed. This investigation introduces you to the basics of working with matter.



Lesson Guide: A Penny For Your Thoughts

Investigation I – Lesson 1

In this activity you will be introduced to, and use, some of the equipment that chemists make use of in the laboratory. You will be transforming a copper penny into a “gold” one and discussing what might have taken place.

ChemCatalyst

Answer the following question:

Long ago, early scientists tried to turn ordinary things into gold. This pursuit was called alchemy and the people who engaged in alchemy were called alchemists.

- Do you think the alchemists were successful in turning things to gold? Explain your thinking.

Activity

Your instructor will guide you through an experimental procedure. Be sure to pay close attention to your instructor's directions. This procedure uses dangerous chemicals. Do not proceed to the next step until instructed to do so.

Instructions:

Part One:

1. Place enough zinc filings in a 100 mL beaker to cover the bottom.
2. Carefully add 20 mL of 3M sodium hydroxide to the same beaker.
3. Place the beaker on a hot plate which has been set to “4”. If the liquid begins to boil turn down the hot plate a little.
4. Use your tongs to pick up the penny and place it in the beaker.
5. Once the penny is coated, remove it with the tongs. Make sure your teammate uses the other set of tongs to hold the hot beaker still while the penny is removed.

- Put the hot penny in the 250 mL beaker, which is half-filled with cold tap water. This serves to cool and rinse the penny.

Part Two:

- Set up and light the Bunsen burner according to your teacher's directions.
- Adjust the flame on the burner using the metal collar. A blue flame is hotter than a yellow or orange flame.
- Use your tongs to place the "silvered" penny into the flame of the Bunsen burner.
- Hold the penny in the flame only until it changes color, and no longer. Pay attention, it happens quickly (within about ten seconds)!
- Once the penny has changed color, place it in a beaker of cold water to cool.

Part Three:

- Follow your teacher's directions regarding the beaker of sodium hydroxide and zinc.
- Do a general clean up of the lab area.

Answer the following questions:

- Describe what you observed during the experiment.
- What do you think happened to turn the penny silver?
- What do you think happened to turn the penny gold?

Making Sense Question:

Do you think you made real gold? How could you find out?

Making Sense

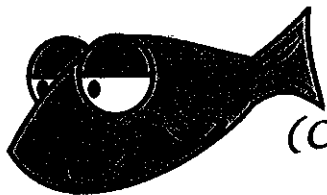
In order to make gold it is first necessary to understand what gold, copper, and other substances are composed of. Chemists use the word "matter" to describe the substances that make up the world around us. Throughout the Alchemy Unit you will be studying matter and as you do so you will keep returning to the alchemist's pursuit for gold. Over the course of the unit, you will learn all about matter – what it is composed of and how it can be transformed.

Check-in

No check-in question for this class.

Homework

No homework for this class.



1. *A Fish in the Hand*

(Can you tell your fortune?)

You have obtained a Fortune Telling Fish from your instructor. Take it home and follow the instructions that come with it. Place the fish in your hand and observe the results. Discuss the observations with other members of your family. You will need to develop a *hypothesis* or explanation for the observed behavior. Your next step is to carry out investigations to determine if your hypothesis is correct. If your investigations do not support your hypothesis, form a new one and test it.

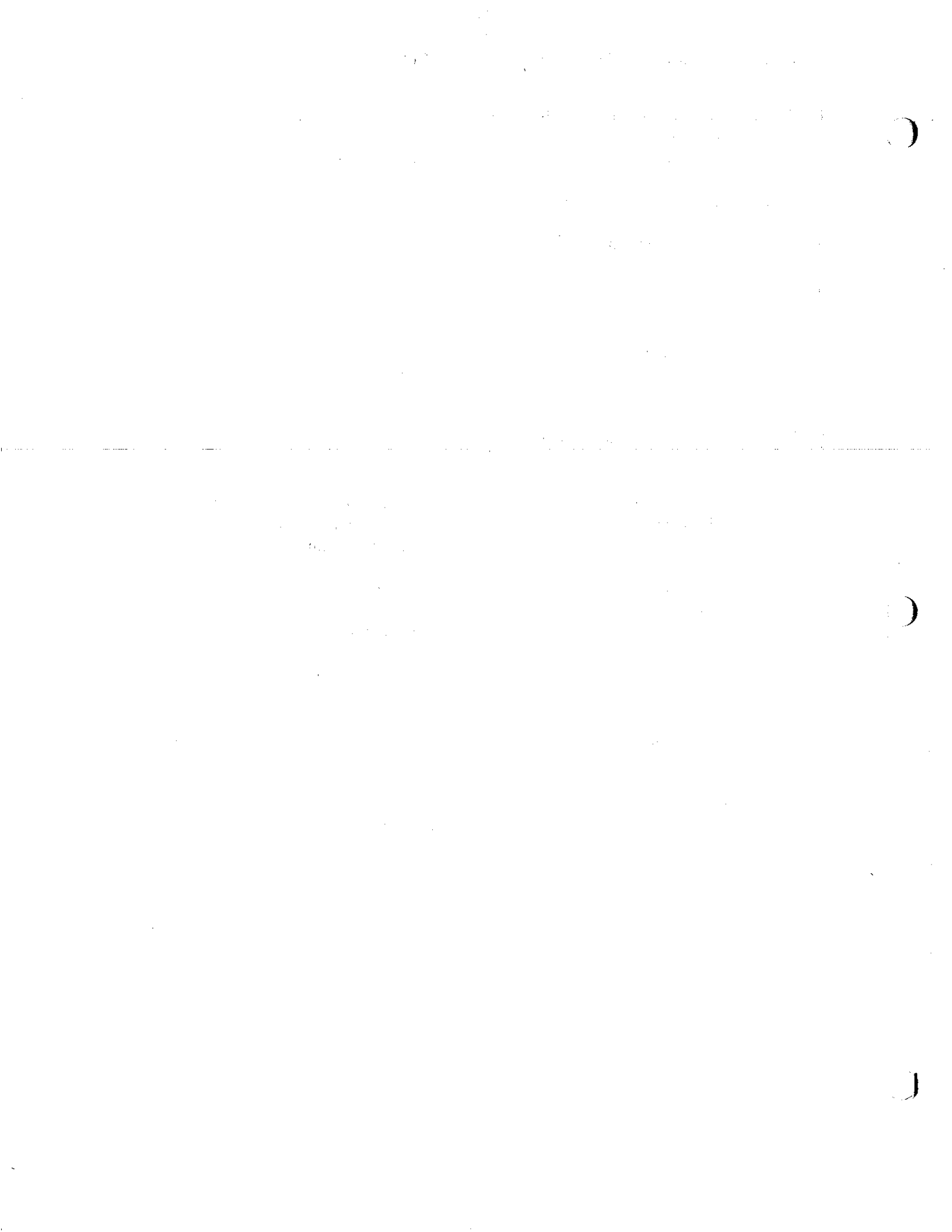
Write **two paragraphs** describing all of your investigations and the results of them. Be sure to include a **data table**. What are your conclusions regarding the cause of the behavior and what evidence do you have as support for them? Have the other members of your family with whom you discussed the problem read your paragraph and write a short comment at the bottom.

CONFIDENTIAL

The following information is being provided to you for your information only. It is not intended to be used for any other purpose. The information is confidential and its disclosure is restricted to those individuals who have a need to know it. It is the policy of the Department of Justice to protect the confidentiality of this information.

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1. A series of logical steps that is followed in order to solve a problem is called the
 - a. experimental process
 - b. scientific theory
 - c. scientific method
 - d. model method
2. Which SI prefix means one million?
3. Which SI prefix means one-hundredth (1/100)?
4. Matter is defined as:
5. A substance that cannot be broken down in a simpler substance is
 - a. a compound.
 - b. a mixture.
 - c. an element.
 - d. an atom.
6. The chemical formula for water, H_2O , means that each water molecule contains:
7. You put 1 gram of salt into 1 liter of water and stir. The result liquid is an example of
 - a. a pure substance.
 - b. a heterogeneous mixture.
 - c. a homogeneous mixture.
 - d. an immiscible mixture.
8. The smallest unit of substance that behaves like a substance is
 - a. an element.
 - b. an atom.
 - c. a molecule.
 - d. a compound.
9. The chemical symbol for sulfuric acid is H_2SO_4 . How many atoms are contained in each molecule of sulfuric acid?
10. The chemical formula for table sugar is $C_{12}H_{22}O_{11}$. How many oxygen atoms are in each sugar molecule?
11. A material that can be represented by a chemical formula is
 - a. an element.
 - b. a mixture.
 - c. a homogeneous solution.
 - d. a pure substance.
12. Which of the following is a gas-liquid mixture?
 - a. the air we breathe
 - b. a carbonated drink
 - c. soapsuds
 - d. ice cubes
13. Which state of matter will hold its shape without a container?
14. A substance has a mass of 360 g and a volume of 6.5 cm^3 . What is its density?
 - a. 2700 g/m^3
 - b. 270 g/m^3
 - c. 480 g/m^3
 - d. 48 g/cm^3



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Mrs. G's Classroom Procedures

Safety

- No horseplay is permitted in the room or lab area for safety reasons.
- Safety goggles are to be worn at all times when **anyone** is working the lab. "Worn" means on your face over your eyes, not on the top of your head! ☺ No goggles=zero score for lab

Entering the Classroom

- Shut your phone off, and put it away before entering the room.
- Place all purses and backpacks on the floor. Sharpen pencils, etc before class starts and prepare for your work.
- **If tardy**, please enter the room quietly, pick up any handouts from the front table on the way in and quietly take your seat.

Returning from an Absence

- Check the class notebook to copy the notes you missed from that day. Collect any handouts you missed from the filing cabinet behind my desk in the drawer marked "Chemistry" or "Strategies in Math".
- Tests and quizzes may be made up for one week after an absence. After that, you will receive a zero. It is **your** responsibility to schedule missed tests and quizzes with me.
- Make up work will be accepted per the policy in the student handbook

Turning in Work

- Work is turned in to the tray behind my desk beneath the sign that says, "Turn in work here". I complete all grading during the weekend. I will grade all current work that includes a **name** and **block** number.

Late Work

- Late work will be accepted during the calendar week after it was due for **60%** credit. After that, it will not be accepted. (Except in case of absence-see student handbook)

Copying

- Copying on any test or assignment will result in a zero score on the test or assignment. In cases where a student provides his or her work to another student for the purpose of copying, **BOTH** students will receive a zero on their assignment.

Electronics

- Please shut off all electronics before entering the classroom.
- **On occasion**, I will allow students to listen to their personal music while working in the classroom. I will inform students when this is permissible. Headphones or earbuds must be worn.
- Any cell phones or cameras seen during a test or quiz will be confiscated, and the student will have to arrange to retake the test or quiz.

Bathroom Breaks

- Plan to use the bathroom before first block and during your lunch to avoid missing instruction.
- Only one student will be allowed to leave the room at a time.
- Bring your planner to me for signing, and then sign the board near the door with your name and time on the way out.

LAB SAFETY RULES—Chemistry

Henry Ford Academy

My teacher has pointed out to my class all of the following safety features in the chemistry laboratory: safety shower, eye wash stations, first aid kit, fire extinguishers and fire exit.

I agree to the following safety procedures when I am in the chemistry laboratory:

1. Goggles must be worn when *any* lab work is being performed in the laboratory. (Even if your work is done, goggles must be worn until all groups are done.)
2. No horseplay is allowed in the lab. Be considerate of others.
3. Practice good "housekeeping" techniques. Return items to proper places in good condition. Avoid cluttering work area.
4. Do not use chemicals from unlabeled containers. Check each label before dispensing a chemical. Do not return a chemical to a bottle without the teacher's permission.
5. Unless told otherwise, treat all chemicals as poisonous and/or corrosive. Wash off spills immediately with plenty of water. Always wash hands before leaving lab.
6. No eating in the lab during lab days.
7. Follow all written and verbal instructions carefully. If you do not understand a direction or part of a procedure, ask the instructor before proceeding.
8. No unauthorized lab work may be done. A teacher must be present for a student to do any lab work. **Never try lab experiments at home.**
9. Study each lab assignment before coming to lab. Pay attention to safety notes in the lab assignment and from the teacher. Some common concerns:
 - a. Do not pipette by mouth.
 - b. Do not use chipped or cracked glassware.
 - c. Do not heat a closed system.
 - d. Do not point heated containers at anyone, including yourself.
 - e. Use a fume hood for any noxious fumes.
 - f. Place hot glass on a wire gauze until cool.
 - g. Tie back hair that is longer than shoulder length.
 - h. Do not use flammable material near an open flame.
 - i. Wear gloves when dispensing irritating chemicals.
 - j. Dilute concentrated acids by adding acid to water, **never by adding water to acid.**
10. Keep aisles clear. Push your stool under the table when not in use.
11. Experiments must be personally monitored at all times. Do not wander around the room, distract others, interfere with the experiments of others, or talk across the room.
12. Contact lenses should not be worn if possible whenever in the laboratory.
13. Report an accident or spill to the instructor no matter how trivial it may appear.
14. Never handle broken glass with your bare hands. Use a brush and dustpan to clean up broken glass. Place broken glassware in the designated glass disposal container.

Name: _____

Block: 1012

A Penny For Your Thoughts

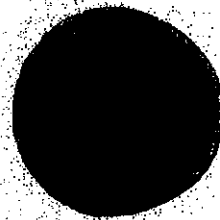
Lesson Guide: Investigation I - Lesson 1

Circle One

Finger Here

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- Do you think the alchemists were successful in turning things to gold? Explain your thinking.

Activity

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Instructions:

Part One:

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- Carefully add 20 mL of 3M sodium hydroxide to the same beaker.
- Place the beaker on a hot plate which has been set to "4". If the liquid begins to boil turn down the hot plate a little.
- Use your tongs to pick up the penny and place it in the beaker.
- Once the penny is coated, remove it with the tongs. Make sure your teammate uses the other set of tongs to hold the hot beaker still while the penny is removed.

Read together

Point out safety shower/ Eyewash

Bellwork in notebooks

Give time to read & highlight

Do NOT pour back

- Put the hot penny in the 250 mL beaker, which is half-filled with cold tap water. This serves to cool and rinse the penny.

Part Two:

- Set up and light the Bunsen burner according to your teacher's directions.
- Adjust the flame on the burner using the metal collar. A blue flame is hotter than a yellow or orange flame.
- Use your tongs to place the "silvered" penny into the flame of the Bunsen burner.
- Hold the penny in the flame only until it changes color, and no longer. Pay attention, it happens quickly (within about ten seconds)!
- Once the penny has changed color, place it in a beaker of cold water to cool.

Part Three:

- Follow your teacher's directions regarding the beaker of sodium hydroxide and zinc.
- Do a general clean up of the lab area.

Answer the following questions:

- Describe what you observed during the experiment.
- What do you think happened to turn the penny silver?
- What do you think happened to turn the penny gold?

Making Sense Question:

Do you think you made real gold? How could you find out?

NaOH
22.98
16
1

Making Sense

In order to make gold it is first necessary to understand what gold, copper, and other substances are composed of. Chemists use the word "matter" to describe the substances that make up the world around us. Throughout the Alchemy Unit you will be studying matter and as you do so you will keep returning to the alchemist's pursuit for gold. Over the course of the unit, you will learn all about matter – what it is composed of and how it can be transformed.

Check-in

No check-in question for this class.

Homework

No homework for this class.

3 mol
1000 mol x

20 ml
1 group x

Make
11 gr x 2 class x
class

Need Hot Plate 250 ml beaker, 10 ml beaker, Tongs, 20 ml grad cylinder