

Honors Chemistry/S. Wigginton

Summer Assignment

Welcome to Honors Chemistry. I am looking forward to teaching you about the substances that make up things and the concepts that describe how those things work.

The Honors Chemistry Summer Assignment consists of 4 tasks designed to prepare you for Chemistry. During the first week of class, you will be given an assessment to determine your mastery of the concepts covered in the 4 tasks.

The concepts reviewed are:

- 1. Element Names and Symbols***
- 2. Scientific Notation***
- 3. Lab Safety***
- 4. Basic Chemistry Knowledge***

You can access your assignment on a computer/chromebook/tablet by going to my webpage: <https://sites.google.com/mcnairy.org/shane-wigginton/home>

Or scan the QR code using the camera on your smartphone.



You will find the assignment under the "Honors Chemistry" button. If you have any questions email me at wigginton.shane@mcnairy.org.

Elements 1 - 36



Break these down into 3 groups to learn to make the easier!

Set 1		Set 2		Set 3	
hydrogen	H	aluminum	Al	manganese	Mn
helium	He	silicon	Si	iron	Fe
lithium	Li	phosphorus	P	cobalt	Co
beryllium	Be	sulfur	S	nickel	Ni
boron	B	chlorine	Cl	copper	Cu
carbon	C	argon	Ar	zinc	Zn
nitrogen	N	potassium	K	gallium	Ga
oxygen	O	calcium	Ca	germanium	Ge
fluorine	F	scandium	Sc	arsenic	As
neon	Ne	titanium	Ti	selenium	Se
sodium	Na	vanadium	V	bromine	Br
magnesium	Mg	chromium	Cr	krypton	Kr

Scientific Notation

Express these numbers in scientific notation.

- 0.0023 _____
- 0.258 _____
- 10.236 _____
- 14,000 _____
- 0.000036 _____
- 2.52 _____

Express these numbers in decimal notation.

- 4.36×10^2 _____
- 3.40×10^{-1} _____
- 2.67×10^5 _____
- 1.45×10^{-2} _____
- 5.02×10^4 _____
- 1.21×10^{-7} _____

Use your calculator to solve the following. Be sure to express your answer in scientific notation even if your calculator does not.

- $(3.0 \times 10^3) + (5.0 \times 10^3)$ _____
- $(6.9 \times 10^3)(2.455 \times 10^4)$ _____
- $\frac{(4.3 \times 10^9)(3.1 \times 10^{-3})}{(5.0214 \times 10^5)}$ _____
- $(4.58 \times 10^{-5}) + (3.2 \times 10^{-2})$ _____

Lab Safety



Lab Safety

- ✓ Learn emergency procedures.
- ✓ Know where emergency equipment is stored.
- ✓ Push lab stools in out of the way—Keep Aisles Clear!



Lab Safety

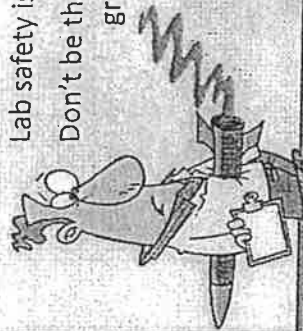
- ✓ Always add acids to water—never add water to acids! Pour acid while stirring.
- ✓ Never return spilled or unused chemicals to the stock bottle.



Discuss with your partner why you think this is a rule.

Lab Safety

Lab safety is a GROUP concept! Don't be the one to let your lab group down!



Lab Safety

- ✓ No shorts, skirts, or open-toed shoes.
- ✓ Roll up long sleeves.
- ✓ Long hair **MUST** be tied back.
- ✓ No dangling jewelry.
- ✓ Safety goggles, lab coat or apron
- ✓ No books, backpacks, or purses in the lab area.



Lab Safety

One difficult thing to remember while you're in the lab-

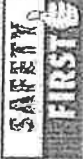
- ✓ Don't touch your face, eyes, or mouth while working in the lab. This includes putting your pen or pencil in your mouth.



- ✓ No food, drink, or gum in the lab!

Lab Safety

- ✓ Always use caution in the lab.
- ✓ Handle chemicals carefully.
- ✓ No horseplay in the lab!
- ✓ Read and follow all directions.



Lab Safety

- ✓ Don't use chemicals that are not labeled.
- ✓ Don't taste anything in the lab unless instructed to do so.
- ✓ Smell by wafting.
- ✓ No unauthorized experiments!



Lab Safety

- ✓ Always notify your teacher first!
- ✓ Sweep up any broken glass and dispose of as directed by your teacher.
- ✓ Clean up any spills immediately. (If an acid is spilled, neutralize it with a base first. For a base spill neutralize with vinegar.)
- ✓ Report any spills, accidents, or injury to the teacher immediately!



Lab Safety

✓ For a chemical spill on your skin—hold under water for 15 minutes.

✓ For a chemical splash into your eyes, hold eyes open widely, and over eye wash for 15 minutes.

✓ In case of a large area of spill—use the safety shower.



Lab Safety

✓ In case of fire:

- turn off gas source
- cover with inverted beaker
- wet paper towel
- fire blanket
- use the fire extinguisher.



Lab Safety

✓ Keep flammables away from open flames.

✓ Don't look directly into a container that is being heated.

✓ Point the end of a test tube being heated away from yourself and others.



Lab Safety

✓ Don't let electrical cords hang over edges of lab bench.

✓ Keep all electrical cords, wires, and appliances away from water.



Lab Safety

✓ Clean and put away all equipment at the end of the lab period.

✓ Dispose of waste products according to instruction.

✓ Always wash your hands after each lab.



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Student Name: _____
Period: _____

Welcome to a new school year and to chemistry. This year in chemistry students will participate in many laboratory activities. Safety in the laboratory, as in chemistry class, will be a top priority for students and their teacher. In order to ensure that safety is the driving force behind all lab experiences, students will read and KNOW the following safety rules.

In order to participate in chemistry lab, students will be required to have on file with their teacher a safety agreement signed by the student and their parent(s) or guardian(s). A second copy of this agreement will be kept in the student's chemistry notebook where it is accessible by both students and parents. **Students will not be allowed to participate in lab until they turn in a signed safety agreement.**

GENERAL CONDUCT

1. Conduct yourself in a responsible manner with safety as your first priority.
2. Know the locations of lab safety equipment and safety procedures to follow in case of an accident or emergency.
3. Notify your teacher immediately of any unsafe conditions you may observe.
4. When entering the classroom or laboratory, do not touch any equipment, chemicals, or other materials until you are instructed to do so. This includes any demonstrations that your teacher may have set up.
5. Read all procedures and instructions thoroughly before beginning a lab activity. Then, follow all written and verbal instructions carefully.
6. Do not bring food, drink, including water, or gum/candy into the lab area.
7. Horseplay, jokes, and pranks are very dangerous, and are prohibited in the laboratory!
8. Only bring lab instructions, worksheets, or lab books into the lab area. Books, purses, backpacks are not allowed. Cell phones are only allowed in the lab work area when necessary for lab work. Your teacher will give instructions on when cell phones are allowed- all other times keep cell phones put away.
9. Always keep aisles clear. Keep lab stools pushed under the lab bench when not in use.
10. Never perform unauthorized experiments! Strictly follow written and oral instructions.
11. Use the fume hood when working with volatile substances, or substances that give off toxic fumes.
12. You will be assigned a lab station for lab work with your group. Do not leave your assigned station during lab unless instructed to do so.
13. Know what to do in case of fire drill or other type of drill that occurs during lab. Turn off gas and electrical equipment.
14. Don't touch your face, eyes, or mouth during a lab experiment. Wash your hands thoroughly after each lab.
15. Dispose of all chemicals as instructed. Never wash chemicals down the sink drain unless instructed to do so. You will be instructed by your teacher on proper disposal of waste for each lab activity.

PROPER DRESS FOR LAB

1. Any time chemicals, heat, or glassware are in use during a lab experience, students will wear lab safety goggles. NO EXCEPTIONS! Points may be deducted from your lab grade for not adhering to this safety rule.
2. Let your teacher know if you wear contact lenses.
3. Long hair, dangling jewelry, loose or baggy clothing are a safety hazard in the lab. Tie back long hair; remove dangling jewelry; remove baggy jackets, and roll up sleeves before lab begins. Lab aprons will be provided when appropriate to protect clothing.
4. No open toed shoes are allowed in the lab area- such as sandals.

ACCIDENTS IN THE LAB

1. Report ANY accident to your teacher immediately.
2. If a chemical splashes in your eye(s), immediately flush with water from the eye wash station for at least 15 minutes.
3. If a chemical splashes on your skin, immediately flush with running water from the lab sink. Should there be a large area of skin or clothing involved in a chemical spill use the safety shower.

HANDLING CHEMICALS

1. You should consider all chemicals in the laboratory as dangerous. Do not touch, taste, or smell chemicals unless instructed to do so by your teacher. The proper way to smell of a chemical will be demonstrated by your teacher.
2. Check labels on chemicals twice before using. Do not use and chemical that has not been labeled.
3. Do not return unused chemicals to the stock containers.
4. Always add acids to water—never water to acids—when making an acid dilution.
5. Never use flammable liquids near an open flame or other source of heat.
6. Do not remove chemicals or other lab materials from the lab.
7. Unauthorized experimentation is strictly prohibited.

HANDLING LABORATORY EQUIPMENT

1. Place any broken glassware in its designated glass disposal container, or as instructed by your teacher.
2. Always lubricate glassware (such as glass tubing, or glass thermometers) before inserting in a rubber stopper.
3. The plastic wash bottles at each station are to be filled with distilled water only! Never fill these wash bottles from the sink water tap.
4. When removing an electrical plug from the socket, grasp the plug, and not the cord. Make sure that your hands are completely dry before plugging or unplugging electrical equipment.
5. Make sure all glassware are free from chips or cracks before using them—especially when heating.
6. Hot glass and cool glass look the same. Test glassware by bringing the back of your hand near the glass. Do not immerse hot glassware in cold water; place hot glassware on a balance pan, or place hot glassware on the lab bench.

USING THE LAB BURNER

1. Never leave a lit burner unattended. Always turn the burner off when not in use.
2. Long hair must be tied back, remove dangling jewelry, and secure baggy, loose clothing.
3. Do not reach across a lit lab burner.
4. Do not point the open end of a test tube that is being heated at yourself or others.
5. Heated metals and glass stay hot for a very long time. Handle these with tongs or heat resistant gloves.
6. Never look into a container that is being heated.
7. Never place hot containers directly on the lab bench. Use an insulated pad to place hot containers on the bench.
8. Do not heat a closed container.

Do you wear contact lenses? _____

Do you have allergies? _____ If yes, list allergies here: _____

I, _____ (print student's name) have read and agree to follow all of the safety rules listed above. I understand that I must follow these rules to ensure my safety in the lab, and the safety of others. I will make safety a priority in all lab experiences. I understand that any violation to the laboratory rules set forth above may result in my being removed from the current lab and possibly lab activities in the future. (for example: all labs for the rest of the semester, or for the rest of the year.) I agree that misbehavior in the lab may also result in a failing grade for that lab, and/or removal from the course.

Student Signature _____

Date _____

Parents:

Please read the safety rules above. No student will be permitted to take part in a laboratory activity until this agreement is signed by both the student and the parent/guardian and is on file with the teacher. The student is expected to keep a copy of this agreement in his/her chemistry notebook.

Your signature below indicates that you have read the safety rules set out above, and are aware that these measures are taken to ensure the safety of your child, other students, and the teacher. Lab safety is a priority, and with the cooperation of parents, students, and the teacher a strict safety program can ensure a safe environment for our students.

Parent/Guardian Signature _____

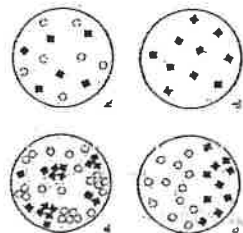
Date _____

Honors Chemistry Summer Assignment Task 4
S.WiggIntcn/D17

1. A compound is

- A. a pure substance that cannot be broken down into simpler, stable substances.
- B. a pure substance, made of two or more atoms chemically bonded, that can be broken down into simpler, stable substances.
- C. the smallest unit of matter that maintains its chemical identity.
- D. any substance that is not chemically bonded, but can be held stable in the same container.

2. Which part of the illustration below shows the particles in an element?

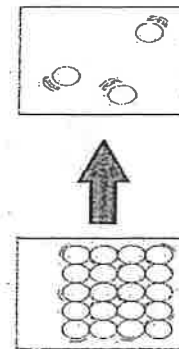


3. How many electrons are in a fluorine atom?



- A. 18.998
- B. 9
- C. 19
- D. 10

4. Which phase change is depicted in the particle drawing?

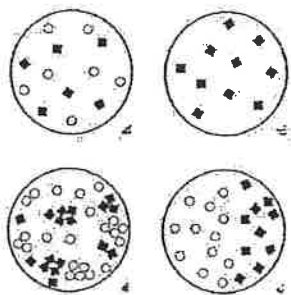


- A. melting
- B. freezing
- C. condensing
- D. evaporating
- E. subliming
- F. depositing

5. When atoms combine to form compounds they do so in whole number ratios. This is true for all atoms. Would this behavior express a theory or a law?

- A. law
- B. Theory

6. Which part of the illustration below shows the particles in a heterogeneous mixture?



7. How many protons are in a fluorine atom?

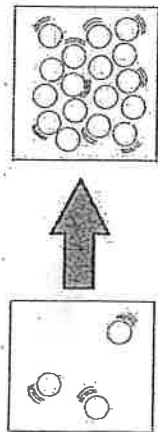


- A. 9
- B. 18.998
- C. 10
- D. 19

8. Matter includes all of the following except _____.

- A. air
- B. light
- C. smoke
- D. bacteria

9. Which phase change is depicted in the particle drawing?



- A. melting
- B. freezing
- C. condensing
- D. evaporating
- E. subliming
- F. depositing

10. When scientists seek to explain a phenomena or behavior using supportive data they are expressing a(n) _____.

- A. hypothesis
- B. experiment
- C. law
- D. theory

11. Which of the following is not a key step to the scientific method?

- A. conclusion/analysis
- B. experimentation
- C. hypothesis
- D. theory

12. Which number is always the same as an atom's proton number?

- A. atomic number
- B. mass number
- C. atomic mass

13. Which of the following is not a physical change?

- A. cutting
- B. melting
- C. burning
- D. boiling

14. In science, which should we expect to change over time, a theory, a law, or both?

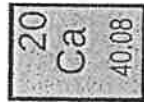
- A. theory
- B. law
- C. both

15. How many neutrons are in a fluorine atom?



- A. 18.998
- B. 9
- C. 10
- D. 19
- E.

16. Which value is the atomic number?

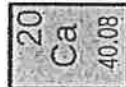


- A. 20
- B. 40.08

17. What skill is a scientist using when she listens to the sound a gas makes when it is ignited?

- A. interpreting data
- B. making a hypothesis
- C. drawing conclusions
- D. making observations

18. Which value is the atomic mass?



- A. 20
- B. 40.08

19. The process of obtaining information by using the senses is called a/an

- A. scientific method
- B. observation
- C. inquiry
- D. conclusion