

Chemistry Honors Summer Assignment 2019

Welcome to Chemistry Honors!

I am looking forward to working with all of you this year. You are taking Chemistry Honors because you love a challenge and work hard in school. This summer assignment will hopefully be fun for you and help you feel more prepared for class this fall! Below are the instructions for your summer assignment. It is broken down into five parts. This assignment is **due on the first day of class**. If you have any questions, please email me directly at rdziopa@ichspride.org.

Have fun researching!

Ms. Dziopa

Part 1: Vocabulary

In a notebook, please define the following vocabulary terms listed below. You can write down these terms on the first few pages or the last few pages of your notebook. These words will show up throughout the year. You can use your notebook as a dictionary which can help you during class time!

1. Accuracy
2. Atom
3. Boiling point
4. Calorie
5. Chemical bond
6. Chemical change
7. Chemistry
8. Compound
9. Dipole-dipole forces
10. Electron
11. Endothermic
12. Exothermic
13. Half-life
14. Heterogeneous Mixture
15. Homogeneous Mixture
16. Ion
17. Isotopes
18. Law of conservation of mass
19. Mass
20. Matter
21. Mole
22. Periodic Table
23. Physical Change
24. pH
25. Precision
26. Proton

- 27. Radiation
- 28. Scientific notation
- 29. Solute
- 30. Solvent

Part 2: Conversions

Use the following conversion factors to solve the problems below. Please show all work neatly on a separate sheet of paper that is numbered according to the problem.

Here are tutorials of how to do conversions if you need help:

<https://www.youtube.com/watch?v=5tHpDzXP-lg>

https://www.youtube.com/watch?v=w0nqd_HXHPQ

<https://www.youtube.com/watch?v=7N0IRJLwpPI>

MASS CONVERSION FACTORS

$$1 \text{ gram (g)} = 1000 \text{ mg} \quad 1 \text{ kg} = 1000 \text{ g}$$

LENGTH CONVERSION FACTORS

$$1 \text{ meter (m)} = 1000 \text{ mm} \quad 1 \text{ m} = 100 \text{ cm} \quad 1 \text{ km} = 1000 \text{ m}$$

VOLUME CONVERSION FACTORS

$$1 \text{ liter (l)} = 1000 \text{ ml} \quad 1 \text{ kl} = 1000 \text{ l}$$

ENERGY CONVERSION FACTORS

$$1 \text{ calorie (cal)} = .001 \text{ kcal} \quad 1 \text{ cal} = 4.184 \text{ joules}$$

PROBLEMS

1. $5 \text{ mg} = \underline{\hspace{2cm}} \text{ g}$
2. $403 \text{ g} = \underline{\hspace{2cm}} \text{ mg}$
3. $970 \text{ kcal} = \underline{\hspace{2cm}} \text{ cal}$
4. $2.3 \text{ ml} = \underline{\hspace{2cm}} \text{ l}$
5. $28.5 \text{ mm} = \underline{\hspace{2cm}} \text{ m}$
6. $418.4 \text{ joules} = \underline{\hspace{2cm}} \text{ cal}$
7. $.560 \text{ mg} = \underline{\hspace{2cm}} \text{ g}$

8. 3.5 km = _____ mm
9. 243 joules = _____ kcal
10. 1,350 ml = _____ kl
11. 22.4 l = _____ ml
12. 22.4 m = _____ mm
13. 22.4 g = _____ mg
14. 22.4 cal = _____ kcal
15. 22.4 joules = _____ kjoules

Part 3: Research

During this part of your summer assignment, you are going to pick one element that can be found on the periodic table. An interactive picture of the periodic table can be found here: <http://www.rsc.org/periodic-table>. Your job is going to look up facts about this element and fill in the graphic organizer posted below. You can either type your answers or write them in your notebook.

Element Graphic Organizer

Basic Facts	Element Name and Symbol	
	Element Family	
	Atomic Number	
	Atomic Mass	

Interesting Facts	When was it discovered?	
	How was it discovered? Who discovered it?	
	Where is the element's name from? Why is it named this?	
	Where in the world is it typically found?	
Physical Properties	Color	
	Texture	
	Light Transmission	
	Luster	
	Hardness	

	Density	
	Phase in room temperature	
	Melting Point	
	Boiling Point	
Chemical Properties and Uses	What are common compounds that contain this element?	
	3 uses for this element	
Books and websites used		

Part 4: Essay

The main phases of matter are solid, liquid, and gas. After listening to the song “Solid, Liquid, and Gas” by They Might Be Giants, please write a 1 page essay explaining how you think the song uses music to demonstrate microscopic properties of solids, liquids, and gases. Your essay should include 3 paragraphs: an introduction, body, and conclusion. You can either type your essay or write it in your notebook. A copy of the song can be found here:

<https://www.youtube.com/watch?v=btGu9FWSPTc> DO NOT copy and paste information from the internet - write in your own words!

Part 5: Chemistry Around Us! (Highly recommended, but not required)

In order to gain a deeper appreciation for chemistry, it helps to get up close and personal with science every once in awhile. Here are some suggestions for things to do this summer:

1. Visit Liberty Science Center in Jersey City, NJ
2. Visit the Science Exhibits at the Newark Museum in Newark, NJ
3. Read this book: *The Disappearing Spoon: And Other True Tales of Madness, Love, and the History of the World from the Periodic Table of the Elements* by Sam Kean
4. Read this book: *The Cartoon Guide to Chemistry* by Larry Gonick and Craig Criddle
5. Watch the following documentaries on Netflix: “Particle Fever”, “Cosmos: A Spacetime Odyssey”, “The Devil We Know”, “The Nuclear Option”