

# SCIENCE PLANNER: WEEK OF 8.19.19



## OBJECTIVES FOR THE WEEK:

**Honors Biology** : What are the particles that make up life? obj 4.1 Students will understand the biochemistry of life. Bio.4.1.1 Compare the structures and functions of the major biological molecules (carbohydrates, proteins, lipids, and nucleic acids) as related to the survival of living organisms

**Honors Chemistry**: What is matter and change? obj 2.1 Students will understand matter and change. Chm.2.1.1 Explain the energetic nature of phase changes.

## DAILY AGENDA – (SUBJECT TO CHANGE)

<https://www.flippity.net/rp.asp?k=19kzP96zz110xAviM5eWVGtc3mUET9003e38YxMM8Zv>  
[Q](#)

DAY	Honors Biology	Honors Chemistry
Mon 8/19	<p>-Warm up                      -Finish notes: properties of water                      -Stations lab! (no more than 3 people at a station at a time)</p> <p><b>HW= Test corrections (on a separate sheet of paper, write out FULL sentences and EXPLAIN!!) due WED! Reflect on the following:</b></p> <p><a href="https://www.youtube.com/watch?v=caaiAOw1Mek&amp;t=0.2s">https://www.youtube.com/watch?v=caaiAOw1Mek&amp;t=0.2s</a></p>	<p>-Warm up                      -Go over Math basics CK12 1-25                      -1 person must take the test still                      -Notes: Matter and Change</p> <p><b>HW= 1-25 CK12, work on matter and change tonight ☺</b></p>
Tues 8/20	<b>WARM UP-</b> video recap	Warm up: Keaton's experiment

	<p><b>-FINISH ALL LAB STATIONS!!</b></p> <p><b>HW= reflect on this video:</b><a href="https://www.youtube.com/watch?v=VSc491HLzDo&amp;t=0.2s">https://www.youtube.com/watch?v=VSc491HLzDo&amp;t=0.2s</a> , color periodic table!, 6 lab stations due tomorrow- explain ALL.</p>	<p>Collect #1-25</p> <p><b>-NOTES: Matter and change</b></p> <p><b>HW= work on CK12 matter and change, bring in a SHINY penny, work on test corrections!</b></p>
Wed 8/21	<p>Warm up: Safety video below</p> <p><b>SURFACE TENSION LAB</b></p> <p><b>HW= Biomolecules coloring pages #1-3 due tomorrow!</b></p>	<p>Warm up: Safety video below</p> <p>CK-12:</p> <p><b>ALLOY LAB</b></p> <p><b>HW= TEST CORRECTIONS DUE TOMORROW in class!</b></p>
Thur 8/22	<p>Warm up- SPACE SHUTTLE</p> <p>NOTES: Biomolecules</p> <p><b>CARBOHYDRATE LAB!</b></p> <p><b>HW= STUDY for test!</b></p>	<p><b>WARM UP- Space shuttle Quiz</b></p> <p><b>FINISH NOTES- matter and change</b></p> <p><b>HW= CK12- matter DUE tonight by 11pm! STUDY for test!!!</b></p>
Fri 8/23	<p>TEST- biomolecules and water chemistry</p> <p><b>COLORING pages 1-7 due Monday, check website this weekend! (as always, you should check every night)!</b></p>	<p>TEST- MATTER AND CHANGE</p> <p><b>CK-12: Atomic theory and quiz Due 8/27/19, Atomic Structure and quiz due 8/29/19.</b></p>

# WARM UP ACTIVITIES

<b>MON</b>	<p><b>BIO-</b> Draw a diagram of a water molecule and show its polarity.</p> <p><b>CHEM-</b> The observed mass of the sun is <math>6.270 \times 10^{26}</math> g but the true mass of sun is <math>5.97 \times 10^{24}</math> kg. Find the percent error.</p>										
<b>TUES</b>	<p><b>BIO-</b> Summarize the video from last night's homework.</p> <p><b>CHEM-</b> In a lab experiment, Keaton finds the speed of sound to be <math>7.5 \times 10^2</math> miles per hour. The true value of the speed of sound is 343 m/s. What is his % error? (use sig figs)</p>										
<b>WED</b>	<p><a href="https://www.youtube.com/watch?v=MEIXRLcC6RA&amp;t=3s">https://www.youtube.com/watch?v=MEIXRLcC6RA&amp;t=3s</a></p> <p><b>I believe the four most important safety rules are.....</b></p> <table border="1" data-bbox="412 1136 1414 1570"><thead><tr><th data-bbox="412 1136 654 1283"><b>SAFETY RULE</b></th><th data-bbox="654 1136 1414 1283"><b>REASON for it!</b></th></tr></thead><tbody><tr><td data-bbox="412 1283 654 1360">1</td><td data-bbox="654 1283 1414 1360"></td></tr><tr><td data-bbox="412 1360 654 1438">2</td><td data-bbox="654 1360 1414 1438"></td></tr><tr><td data-bbox="412 1438 654 1516">3</td><td data-bbox="654 1438 1414 1516"></td></tr><tr><td data-bbox="412 1516 654 1570">4</td><td data-bbox="654 1516 1414 1570"></td></tr></tbody></table>	<b>SAFETY RULE</b>	<b>REASON for it!</b>	1		2		3		4	
<b>SAFETY RULE</b>	<b>REASON for it!</b>										
1											
2											
3											
4											
<b>THUR</b>	<p>What <b>THREE</b> questions would you personally ask an astronaut while in orbit around the Earth?</p>										

**FRI**

**Draw a lewis dot siagram to show the bonding in a molecule of SO<sub>2</sub> (sulfer dioxide).**

**What are the conversion factors needed to go from Pounds/m<sup>3</sup> to Kg/ft<sup>3</sup> ?**

Handwritten calculation showing a subtraction of  $5.97 \times 10^{24} \text{ kg}$  minus  $0.627 \times 10^{24} \text{ kg}$  to get  $5.34 \times 10^{24} \text{ kg}$ , followed by a percentage calculation  $\frac{5.34 \times 10^{24} \text{ kg}}{5.97 \times 10^{24} \text{ kg}} \times 100 = 89.5\%$  with a note "sig figs = 3".



Answer Key  
Quiz: ChemTest 8.16.19

Quiz Date: Aug 18, 2019

Key A

- |    |   |   |
|----|---|---|
| 1  | C | 1 |
| 2  | A | 1 |
| 3  | D | 1 |
| 4  | A | 1 |
| 5  | D | 1 |
| 6  | C | 1 |
| 7  | C | 1 |
| 8  | C | 1 |
| 9  | B | 1 |
| 10 | B | 1 |
| 11 | C | 1 |
| 12 | C | 1 |
| 13 | C | 1 |

**Warm Ups- Week of \_\_\_\_\_ NAME: \_\_\_\_\_**

**MON**

**TUES**

**WED**

**THURS**

**FRI**

**Total points available= \_\_\_\_\_ Points earned= \_\_\_\_\_**

**BIOCHEM LAB STATIONS!!!**

## *Station 1*

### Atomic Structure

1. What are the 3 subatomic particles that make up an atom? Where are they found and what are their charges?
2. Which of these particles determines the element's identity?
3. Which of these particles have the biggest impact on the element's mass?
4. Which of these particles are moved around when bonds are formed in order for the atom to become stable?
5. Which of these particle's amount, when changed, creates different isotopes of an element?
6. What are valence electrons? Where are they? How do we know how many an element has? Why do they matter?

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## *Station 2*

### Ionic Bonds

1. Why do atoms form bonds?
2. What makes a bond ionic?
3. What are characteristics of ionic compounds?
4. Give an example of a cation and an anion. Include how they are formed.
5. Draw an electron dot diagram for the bond that would form between sodium and sulfur.

#### Hints for #5:

- Write the symbol for each element
- Draw dots around element to represent the number of valence e-. 1 e- on each side before pairing.
- Use arrows to show transfer of e-
- They want 8 e- to be stable so transfer e- and add atoms until both elements are stable.

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## *Station 3*

### Covalent Bonds

1. What makes a bond covalent?
2. What are characteristics of covalent compounds (also known as molecules)?
3. Draw the bond that would form between two hydrogens.
4. Draw the bond that would form between nitrogen and hydrogen.
5. Draw the bond that would form between carbon and oxygen.

#### Hints for #3-5:

- Draw electron dot diagrams
- Write the symbol for each element
- Draw dots around element to represent the number of valence e-. 1 e- on each side before pairing.
- They want 8 e- to be stable, so draw circles to show sharing.
- Re-draw with circles as dashes (1 dash = 2 e-shared)

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## *Station 4*

### Water

1. Draw 2 water molecules. Label the hydrogen bonds and covalent bonds.
2. Explain the difference between cohesion and adhesion.
3. What makes water a terrific solvent?
4. What does it mean for living things that water has a high specific heat?
5. What does it mean for living things that water is less dense as a solid?



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# Station 5

## Periodic Table

- Fill in the chart on your answer sheet. Use the periodic table below to help you.

**Periodic Table of the Elements**

Period	Group																														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18													
1	H Hydrogen 1.008																														
2	Li Lithium 6.941	Be Beryllium 9.012																													
3	Na Sodium 22.990	Mg Magnesium 24.305	Al Aluminum 26.982															Si Silicon 28.086	P Phosphorus 30.974	S Sulfur 32.06	Cl Chlorine 35.45	Ar Argon 39.948									
4	K Potassium 39.098	Ca Calcium 40.078	Sc Scandium 44.956	Ti Titanium 47.88	V Vanadium 50.942	Cr Chromium 52.00	Mn Manganese 54.938	Fe Iron 55.845	Co Cobalt 58.933	Ni Nickel 58.69	Cu Copper 63.546	Zn Zinc 65.38	Ga Gallium 69.723	Ge Germanium 72.64	As Arsenic 74.922	Se Selenium 78.96	Br Bromine 79.904	Kr Krypton 83.80													
5	Rb Rubidium 85.468	Sr Strontium 87.62	Y Yttrium 88.906	Zr Zirconium 91.224	Nb Niobium 92.906	Mo Molybdenum 95.94	Tc Technetium 98.906	Ru Ruthenium 101.07	Rh Rhodium 102.905	Pd Palladium 106.42	Ag Silver 107.868	Cd Cadmium 112.411	In Indium 114.818	Sn Tin 118.710	Sb Antimony 121.757	Te Tellurium 127.6	I Iodine 126.905	Xe Xenon 131.29													
6	Cs Cesium 132.905	Ba Barium 137.327	La Lanthanum 138.905	Hf Hafnium 178.49	Ta Tantalum 180.948	W Tungsten 183.84	Re Rhenium 186.207	Os Osmium 190.23	Ir Iridium 192.222	Pt Platinum 195.084	Au Gold 196.967	Hg Mercury 200.59	Tl Thallium 204.38	Pb Lead 207.2	Bi Bismuth 208.98	Po Polonium 209	At Astatine 210	Rn Radon 222													
7	Fr Francium 223	Ra Radium 226	Ac Actinium 227	Rf Rutherfordium 261	Ds Darmstadtium 271	Sg Seaborgium 271	Bh Bohrium 272	Hs Hassium 277	Mt Meitnerium 276	Uun Ununennium 289	Uuub Unubium 288	Uuul Ununilium 287	Uuub Ununbium 286	Uuub Ununbium 285	Uuub Ununbium 284	Uuub Ununbium 283	Uuub Ununbium 282	Uuub Ununbium 281	Uuub Ununbium 280												
			Lanthanide Series										Actinide Series																		
			La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

KEY: Atomic Number, Symbol, Name, Carbon (12.011)

# Station 6

## Chemistry of Life

- What are the 6 elements necessary for life? List them and come up with a mnemonic device or other way to remember them.
- Explain the difference between polar and nonpolar molecules. Include which are hydrophilic and which are hydrophobic.
- Starting with an atom, write the levels of organization that build into making an organism, like the hippo below. Come up with a memory trick for this like you did for #1.





## Lab Stations: Chemistry Practice

Answer the questions from each station in the boxes below. You do not have to go in order, you just need to make sure you get to every one!

### Station 1

*Atomic Structure*

### Station 2

*Ionic Bonds*

### Station 3

*Covalent Bonds*

### Station 4

Water

### Station 5

Periodic Table

Name of Element	Chemical Symbol	Atom, Isotope or Ion?	OVERALL Electrical Charge	Atomic Number	Atomic Mass	# of Protons	# of Neutrons	# of Electrons
Nitrogen		atom						
Barium	Ba <sup>3+</sup>							
	S				32			
Oxide	O <sup>2-</sup>							
Carbon					12			6
	C	isotope		6	14			
Potassium Ion	K <sup>+</sup>							
Neon		atom						

### Station 6

Chemistry of Life

# Station 5

## Periodic Table

Name of Element	Chemical Symbol	Atom, Isotope or Ion?	OVERALL Electrical Charge	Atomic Number	Atomic Mass	# of Protons	# of Neutrons	# of Electrons
Nitrogen		atom						
Barium	Ba <sup>3+</sup>							
	S				32			
Oxide	O <sup>2-</sup>							
Carbon					12			6
	C	isotope		6	14			
Potassium Ion	K <sup>+</sup>							
Neon		atom						

**The COMPUTER and Gaming Exploration Club will meet on the SCC campus THIS Thursday, 8/22/19 from 3-5pm. It is \$5 to join and our schedule will be coming out SOON. Fair Bluff students need a parent note Thursday morning for Ms. Angie to get you on the shuttle bus that afternoon and you need to have a ride home at 5pm from SCC. Please schoology Ms. Evans or Ms. Gore with questions.**



CR12

$$1) (2.4 \times 10^3) + (5.6 \times 10^5) = 1,344,000,000 = \boxed{1.3 \times 10^9}$$

$$2) (5.03 \times 10^9) - (42.6 \times 10^8)$$

$$\begin{array}{r} 5030000000 \\ - 426000000 \\ \hline 770000000 \end{array}$$

$$= 7.7 \times 10^8 = \boxed{.77 \times 10^9}$$

$$4) KE = \frac{1}{2}mv^2, \text{ when velocity is squared, } (v)^2 = (2)^2 = 4$$

KE increases by 4 times

$$9) (1,000m)^2 = (1km)^2$$

$$1km^2 = 1,000,000m^2$$

$$\frac{7222km^2}{1km^2} \times \frac{(1 \times 10^6 m^2)}{1km^2} = 7,220m^2$$

$$= \boxed{7.22 \times 10^3 m^2}$$

18) % error is used to determine the accuracy of a measured value

$$*1a) a - b - c = 400$$

$$c = a - b - 400$$

$$c = 1387.11 - 928.161 - 400 = ?$$

$$= 58.949$$

$$\begin{array}{r} 1387.11 \\ - 928.161 \\ \hline 458.949 \end{array} \rightarrow \begin{array}{r} 458.95 \\ - 400 \\ \hline 58.95 \end{array} = \boxed{60}$$

$$20) \frac{4.00}{32.01} \times 100 = 12.496\% = \boxed{12.5\%}$$

$$25) \frac{46.007}{45.0} = 5 \text{ sig. digs} \div 3 \text{ sig. digs}$$

- the answer must have  $\boxed{3 \text{ sig. digs}}$

3) Any object that is moving has kinetic energy.

4)  $KE = \frac{1}{2}mv^2$   $(2)^2 = 4$

5) Energy is the capacity to do work

6) Work = Energy that is transferred

7)  $KE = \frac{1}{2}mv^2$   $m = \text{mass}$   $v = \text{velocity}$

11) fundamental vs. derived units

m, L, g, s, // // m/s, g/cm<sup>3</sup>, kg·m/s<sup>2</sup>

12)  $\square 250\text{ml} + \square 250\text{ml} + \square 250\text{ml}$

$1\text{cm}^3 = 1\text{ml}$

$750\text{ml}$

16) %error =  $\frac{\text{act} - \text{theo}}{\text{act}} \times 100 = \frac{5.97 \times 10^{24}\text{kg} - 6.270 \times 10^{23}\text{kg}}{5.97 \times 10^{24}\text{kg}} \times 100$

observed mass must be

converted to kg =  $6.270 \times 10^{23}\text{kg}$

$\frac{5.97 \times 10^{24}\text{kg} - 6.27 \times 10^{23}\text{kg}}{5.97 \times 10^{24}\text{kg}} \times 100 = 89.5\%$

$5.97 \times 10^{24}\text{kg}$

sig figs = 3

$- 6.27 \times 10^{23}\text{kg}$

$5.34 \times 10^{24}\text{kg}$

$5.34 \times 10^{24}\text{kg}$

$5.97 \times 10^{24}\text{kg}$

$\times 100 = 89.5\%$

17) Accepted value = true or correct value

22)  $0.01218 \leftarrow 4 \text{ sig figs}$

$0.0236 \leftarrow 3 \text{ sig figs}$

answer can only have 3 sig figs

24)  $4.0007 \times 4.0 =$  answer can only have 3 sig. figs.

6) Work = Energy (both are measured in Joules)  
Work is done by transferring energy

8)  $r = 2.1 \text{ cm}$      $\pi = 3.14$

$$V = \frac{4}{3} \pi r^3 = \frac{4}{3} (3.14) (2.1 \text{ cm})^3$$

answer must only have 2 sig digs

\*10)  $129 \text{ cm}^3 = 129 \text{ mL}$

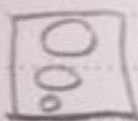
$$\frac{129 \text{ cm}^3}{1} \times \frac{1 \text{ mL}}{1 \text{ cm}^3} \times \frac{1 \text{ L}}{1000 \text{ mL}} = \boxed{.129 \text{ L}}$$

$$(1 \text{ cm})^3 = (10 \text{ mm})^3$$

$$1 \text{ cm}^3 = 1000 \text{ mm}^3$$

$$\frac{129 \text{ cm}^3}{1} \times \frac{1000 \text{ mm}^3}{1 \text{ cm}^3} = 129,000 \text{ mm}^3 = \boxed{1.29 \times 10^5 \text{ mm}^3}$$

13)



$D = \frac{m}{V}$  same mass but incr. volume means it gets less dense and more buoyant.

\*14) Gases are more or less dense than liquids or solids at room temperature?

15)  $m = 26.98 \text{ g}$      $D = 2.70 \text{ g/cm}^3$      $D = \frac{m}{V}$

answer must have 3 sig digs

$$V = \frac{m}{D} = \frac{26.98 \text{ g}}{2.70 \text{ g/cm}^3} = 9.99259 \text{ cm}^3 = \boxed{9.99 \text{ cm}^3}$$

21)  $100 + 200 + 300 =$

$$\begin{array}{r} 100 \\ +200 \\ \hline 300 \\ +300 \\ \hline 600 \end{array} = \boxed{6 \times 10^2} \quad 1 \text{ sig fig}$$

23)  $10.888 \times 44 =$  answer can only have 2 sig figs.

$$= 479.072$$

$$= \boxed{480}$$

**SURFACE TENSION LAB! Name: \_\_\_\_\_**

**#1 RULE: Perpendicular= straight up and down at a 90° angle!!**

- 1) **I believe I can fit \_\_\_\_\_ drops on the head of a penny.**
- 2) **I believe I can fit \_\_\_\_\_ drops on the tail of a penny.**
- 3) **I believe that \_\_\_\_\_ drops are equal to 1.0 mL of water.**
- 4) **ACTUAL = \_\_\_\_\_ drops on the head of a penny.**
- 5) **ACTUAL = \_\_\_\_\_ drops on the head of a penny.**
- 6) **ACTUAL = \_\_\_\_\_ drops to make a mL of water.**
- 7) **Pepper float observation=**
- 8) **Toothpick/pepper observation=**
- 9) **Dixie cup, isopropyl, and oil observation=**
- 10) **5 reasons why this lab ties in to our learning this week:**





**You will have:**

**Water (clear)**

**isopropyl (blue)**

**corn oil (yellow)**

**Salt water (red)**