

MONDAY, MARCH 18th

DO NOW

- In your notebooks, to be checked, solve this problem...

There are 3 Oxygen in 1 Aluminum Oxide (Al_2O_3) and 4 Oxygen in 1 Dinitrogen Tetraoxide (N_2O_4). These are units of Ionic and Covalent Compounds!

Know:



Asked: How many Dinitrogen Tetraoxide (N_2O_4) can be made with 44 Oxygen Atoms?

TODAY'S PLAN

1. Do and review the **DO NOW** and **Qualitative Prompt (QP)**!
 - Today's **QP** = Using your Jot-Down Notes, WRITE the names of the following Compounds; Ionic: (CaCl_2 , NaCl , KF , LiBr , Na_2C_2 , and Na_2O) & Covalent: (N_2O , SO_2 , P_2O_3 , N_2O_4 , As_2O_5 , & SF_6)!
2. Open books, **WORK** on today's **AO**!
3. ***HW** = Read & Do Pg. 226-227 & 230-231+ Bring-Ins Lab HW Item!

TODAY'S ACADEMIC OBJECTIVE

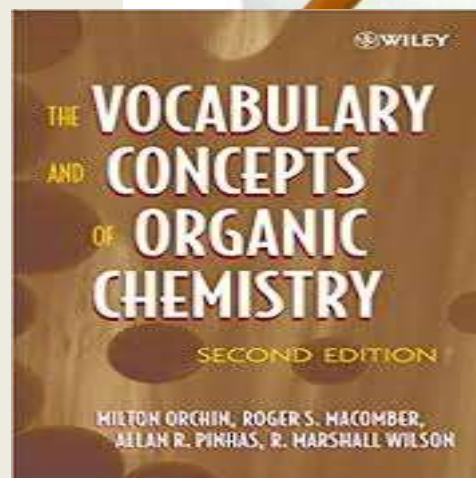
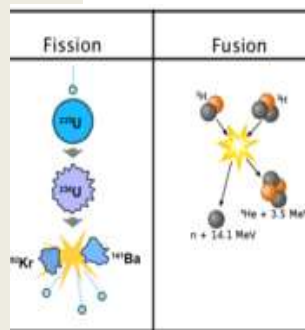
Today you will **PRACTICE** how to use **NOMENCLATURE** to name Ionic and Covalent **COMPOUNDS**!

Vocab Lab - Pg. 225 AND Pg. 241 AND Pg. 267 AND Pg. 277

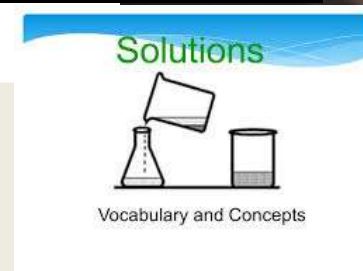
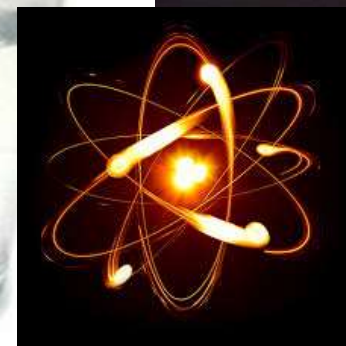
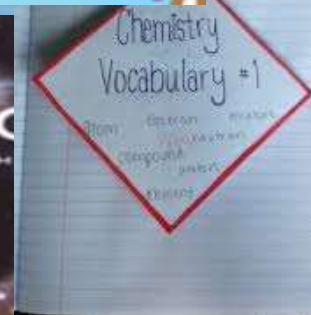
- 1. Students, LISTEN UP UP UP!
 - There are 21 (TWENTY-ONE) vocabulary terms that you MUST define, using the **GLOSSARY** of your book, to get full HW credit!
 - Be sure to NUMBER your terms for when I come and check them! 😊
 - There are **TWO (2) BONUS** Terms not listed that you must also **DEFINE!**
 - Ion
 - Compound

Nuclear Chemistry Vocabulary

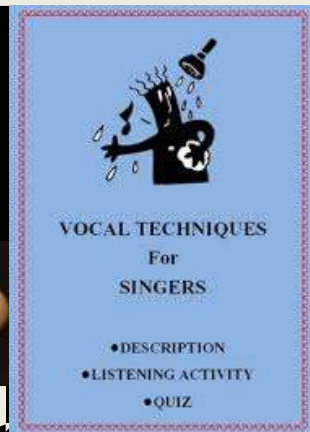
- **Radiation** - energy that is emitted from a source and travels through space.
- **Ionizing Radiation**- Has enough energy to change atoms and molecules into ions; examples: X-rays and gamma rays.
- **Nonionizing Radiation**- Does not have enough energy to ionize matter, examples: radio waves, microwaves
- Accidentally discovered by Henri Becquerel in 1896 when he was performing a lab with fluorescent screens.
- **Radioactivity** is the spontaneous emission of radiation from the nucleus of an atom.



Advanced Vocabulary



SCIENCE QUIZ ALERT



• Students, listen UP!!!

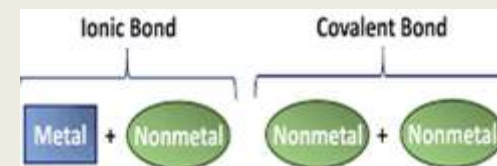


– We will be having another **VOCAL QUIZ** soon to help us LEARN how to IDENTIFY and NAME some common Ionic and Covalent Compounds!

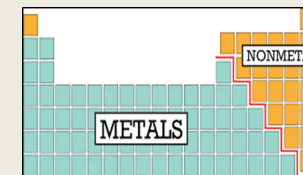


– This quiz will require you to STUDY your Jot-Down Notes on Naming Ionic and Covalent Compounds!

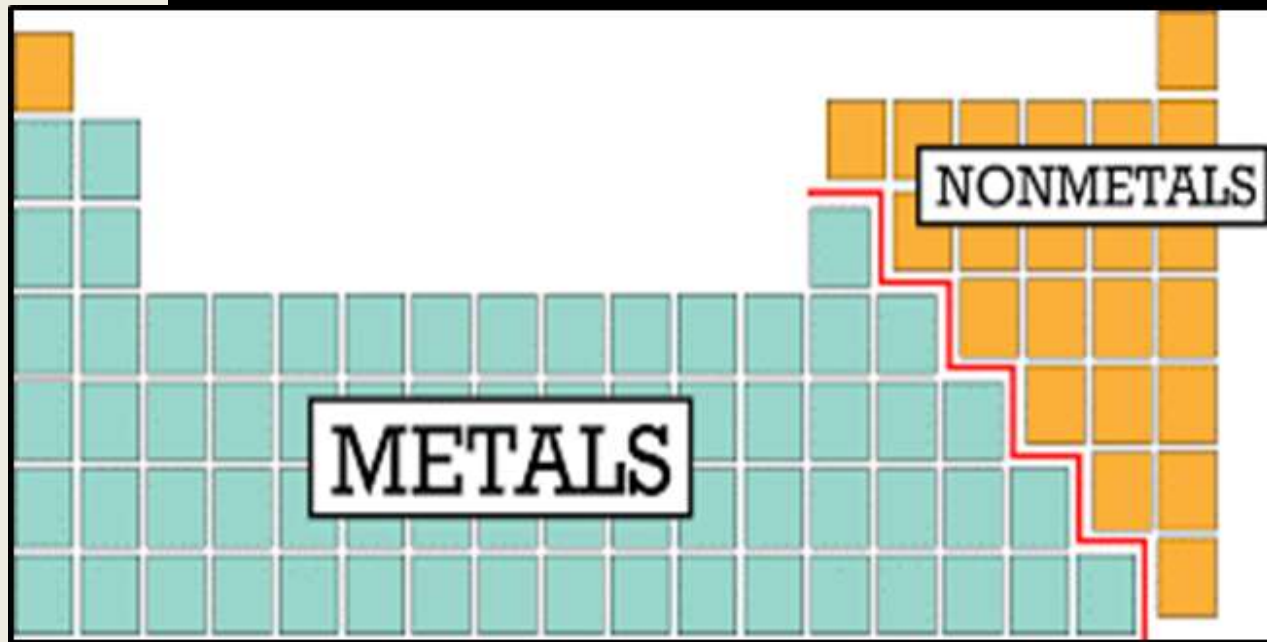
– You are responsible for learning the how to IDENTIFY if a Compound is Ionic or Covalent!



- **BONUS Points for also being able to correctly NAME the Compound!**

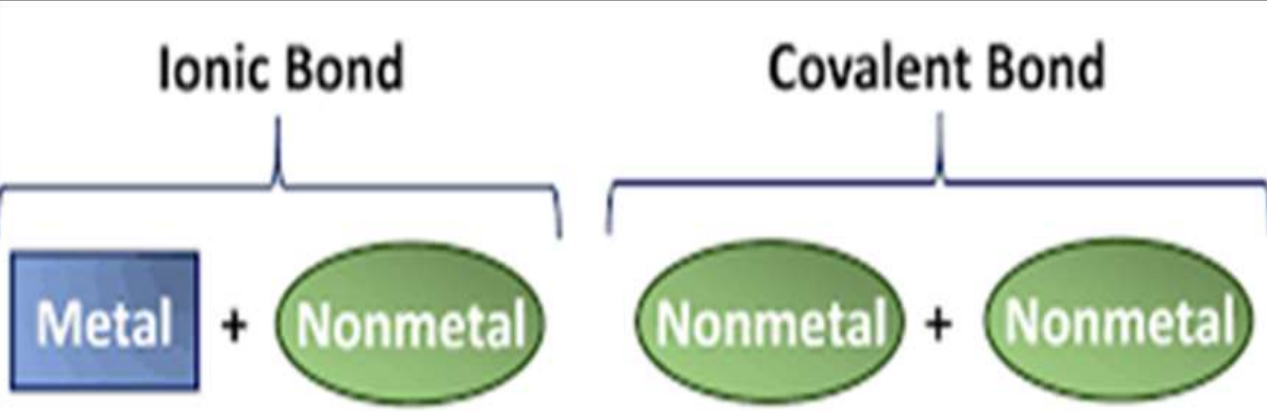
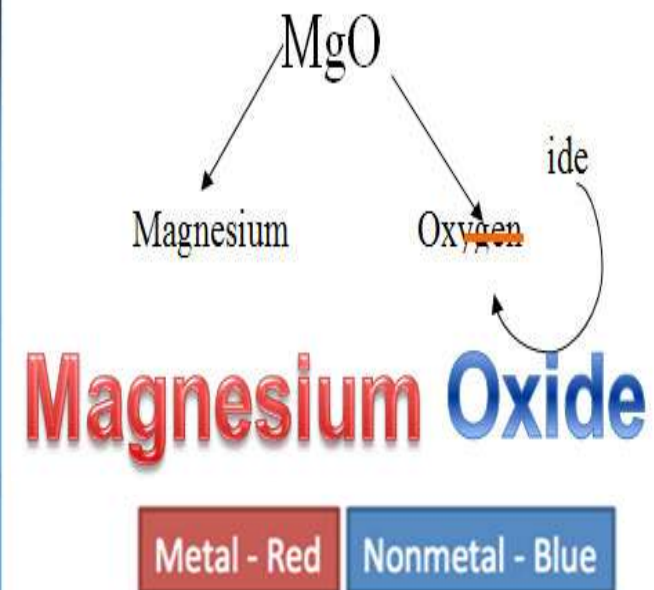


SCIENCE QUIZ ALERT



Simple Ionic Compounds

- Let's look at this example: **KBr**
- Name the metal (cation) first
 - Potassium
- Name the non-metal (anion) next, end it with **-ide**
 - Bromine becomes bromide
- Put together: **Potassium bromide**



Naming Covalent Compounds

- Steps**
 - Write the name of the **first element**.
 - Add a prefix according to the subscript.
 - EXCEPT: if the subscript is 1, don't add a prefix
 - Write the name of the **second element** (change the ending to **-ide**)
 - Add a prefix according to the subscript.

number of atoms	prefix	example
1	mono	NO nitrogen monoxide
2	di	NO ₂ nitrogen dioxide
3	tri	N ₂ O ₃ dinitrogen trioxide
4	tetra	N ₂ O ₄ dinitrogen tetroxide
5	penta	N ₂ O ₅ dinitrogen pentoxide
6	hexa	SF ₆ sulphur hexa fluoride
7	hepta	IF ₇ iodine hepta fluoride
8	octa	P ₄ O ₈ tetra phosphur decoxide
9	nona	P ₄ S ₉ tetra phusphur nona sulphide
10	deca	AS ₄ O ₁₀ tetra arsenic decoxide

Ionic Bond Naming Rules – Jot This Down!

- To name most “Ionic Compounds”, swap out the current ending syllable in the 2nd Element’s name for “-ide” and then just put it after the first Element’s name!

– Ex: For NaCl, turn “Chlorine” into “Chloride” and then add it to “Sodium” to make “Sodium Chloride”!

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Ionic Bond = Metal + Nonmetal

Ionic Bonding

- Electrons are **transferred**

The diagram illustrates the process of ionic bonding. On the left, a Sodium atom (Na) with one valence electron and a Chlorine atom (Cl) with seven valence electrons are shown. A dashed arrow indicates the transfer of one electron from the sodium atom to the chlorine atom. On the right, the resulting Sodium ion (Na⁺) and Chloride ion (Cl⁻) are shown. The sodium ion has lost its valence electron, and the chloride ion has gained it. Below the ions, the resulting compound is labeled as Sodium chloride (NaCl).

Na Sodium atom Cl Chlorine atom Na⁺ Sodium ion (a cation) Cl⁻ Chloride ion (an anion)

Sodium chloride (NaCl)

Simple Ionic Compounds

- Let's look at this example: **KBr**
- Name the metal (cation) first
 - Potassium
- Name the non-metal (anion) next, end it with -ide
 - Bromine becomes bromide
- Put together: **Potassium bromide**

NaF
Sodium Fluoride

Ca₃P₂
Calcium Phosphide

MgO
Magnesium Oxide

K₂S
Potassium Sulfide

Al₂O₃
Aluminum Oxide

Metal - Red

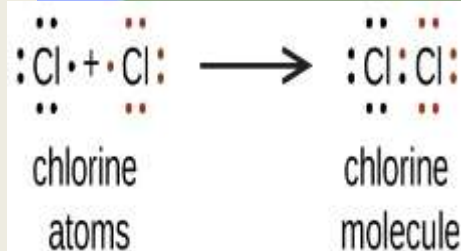
Nonmetal - Blue

Covalent Bond Naming Rules – Jot This Down!

- To name many “Covalent Compounds”, we still swap out the current ending syllable in the 2nd Element’s name for “-ide” and then put it after the first Element’s name!
- However, we must ALSO add “Number Prefixes” such as mono-, di-, tri-, tetra-, penta-, and hexa- to the beginning of each Element’s name!
 - Ex: For N_2O_3 , turn “Oxygen” into “Trioxide” and then add it to “Dinitrogen” to make “Dinitrogen Trioxide”!
 - NOTE:** We NEVER add the mono- prefix to the first Element! Ex: CO is Carbon Monoxide, NOT Monocarbon Monoxide!

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Covalent Bond = Nonmetal + Nonmetal
 Covalent Bond = |
 Metallic Bond



Chlorine atoms share a pair of electrons in a covalent bond

Naming Covalent Compounds

• Steps

- Write the name of the **first element**.
- Add a prefix according to the subscript.
 - EXCEPT: if the subscript is 1, don’t add a prefix
- Write the name of the **second element** (change the ending to -ide)
- Add a prefix according to the subscript.

number of atoms	prefix	example
1	mono	NO nitrogen monoxide
2	di	NO ₂ nitrogen dioxide
3	tri	N ₂ O ₃ dinitrogen trioxide
4	tetra	N ₂ O ₄ dinitrogen tetroxide
5	penta	N ₂ O ₅ dinitrogen pentoxide
6	hexa	SF ₆ sulphur hexa fluoride
7	hepta	IF ₇ iodine hepta fluoride
8	octa	P ₄ O ₈ tetra phosphur decoxide
9	nona	P ₄ S ₉ tetra phusphur nona sulphide
10	deca	AS ₄ O ₁₀ tetra arsinic decoxide

TUESDAY, MARCH 19th

DO NOW

Know: Food is made of Organic Chemicals classified as Macronutrients (Protein/Carb/Fat) or Micronutrients (Vitamins/Minerals).

Asked: What is the **best** reason for including fruits and vegetables in a healthy diet?

A: Some contain Plant Protein

B: Some contain Complex Carbohydrates

C: Most are rich in Micronutrients

TODAY'S PLAN

1. Do and review the **DO NOW** and **Qualitative Prompt (QP)**!
 - Today's **QP** = Imagine that you were only able to eat 1 large meal a day AND that you only had 1 hour to finish it. DESIGN and DRAW a meal that you think you could finish in an hour, would keep you full all day, AND be considered healthy!
2. Open books, **WORK** on today's **AO**!
3. ***HW** = Read & Do Pg. 232-233!

TODAY'S ACADEMIC OBJECTIVE

Today you will **INTERACT** with Organic Compounds by **STUDYING** the components of **FOOD**!

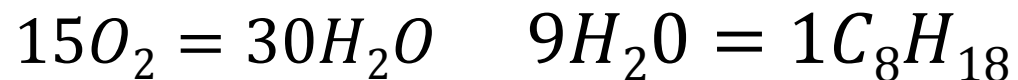
WEDNESDAY, MARCH 20th

DO NOW

- In your notebooks, to be checked, solve this problem...

There are 15 Oxygen Molecules (O_2) in 30 Water (H_2O) and 9 Water in 1 Octane Molecule (C_8H_{18}). These are units of Organic Chemistry!

Know:



Asked: How much Octane (C_8H_{18}) can be made with 135 molecules of Oxygen (O_2)?

TODAY'S PLAN

1. Do and review the **DO NOW** and **Qualitative Prompt (QP)**!
 - Today's **QP** = QP BOOK REVIEW = Using Pg. 230-231 of your book, WRITE what an "Organic Compound" is and then LIST the main Elements that compose them!
2. Open books, **WORK** on today's **AO!**
3. ***HW** = STUDY for Vocal Quiz!

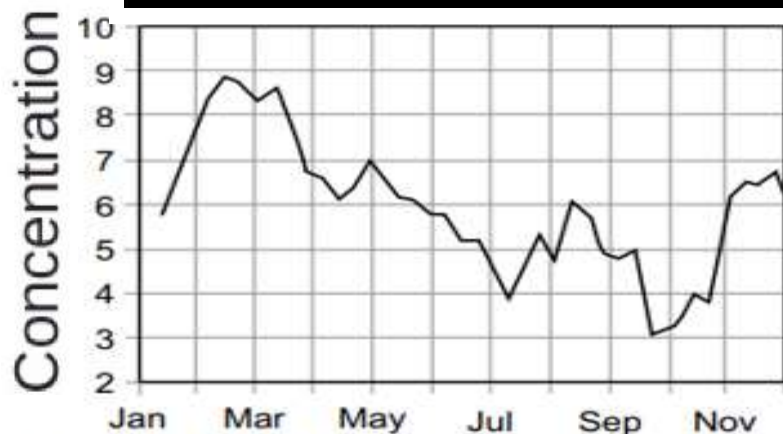
TODAY'S ACADEMIC OBJECTIVE

Today you will **INTERACT** with Organic Compounds by **STUDYING** the components of **FOOD!**

THURSDAY, MARCH 21st

DO NOW

Know:



Asked: Which Element's concentration is *most likely* to peak during the Spring rebirth? **A:**

Fluorine (F) **C: Calcium (Ca)**

B: Carbon (C) **D: Sulfur (S)**

TODAY'S PLAN

1. Do and review the **DO NOW** and **Qualitative Prompt (QP)**!
 - Today's **QP** = Using your Jot-Down Notes WRITE the RULES for naming IONIC and COVALENT Compounds and then NAME these Compounds for today's VOCAL QUIZ; SiO, Na₂C₂, P₂O₅, and LiF!
2. Open books, **WORK** on today's **AO**!
3. ***HW** = FINISH Bring-Ins Lab HW!

TODAY'S ACADEMIC OBJECTIVE

Today you will **RISE UP** and conquer the **BASICS** of Chemical Compound Nomenclature by **ACING** our latest **VOCAL QUIZ**!

Bring-In's Lab Steps – Designing An OMAD

- Using all of the foods that you and your classmates BROUGHT IN, you must DESIGN 2 OMAD Meals totaling between 2000 and 2500Cal!
- One meal will be your “Favorite Foods Meal” and the only requirement is that it must be between 2000 and 2500Cal!
- Your other meal will be your “Healthy Meal” and must thus follow the following rules;
 - You MUST follow the FDA’s Daily Recommended Intake (DRI) for **Fat, Carbs, and Protein** by keeping these values within the “2000-2500Cal” range.
 - You MUST have a balanced meal with AT LEAST ONE food from 4 of the 5 food groups!
- RECORD all of the different foods in your two OMAD Meals and CALCULATE the total number of Calories, Fat, Carbs, Protein, Cholesterol, Sodium, Vitamin A, Vitamin C, Calcium, Iron, Sugars, and Fiber to CREATE a “Nutrition Facts” Label for BOTH of your meals!
- Finally, answer the HW Problems!

Macronutrients



* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:

	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Potassium		3,500mg	3,500mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g
Protein		50g	65g

Nutrition Facts	
Serving Size 1 cup (240 mL)	
Servings Per Container About 16	
Amount Per Serving	
Calories 90	Calories from Fat 0
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Cholesterol Less than 5mg	1%
Sodium 135mg	6%
Total Carbohydrate 13g	4%
Dietary Fiber 0g	0%
Sugars 13g	
Protein 9g	
Vitamin A 10%	Vitamin C 4%
Calcium 30%	Iron 0% • Vitamin D 25%



Bring-In's Lab Space Setup – Designing AN OMAD

Healthy OMAD Meal

Healthy Meal Foods	# of Servings	Calories (Cal)	Fat (g)	Carbs (g)	Protein (g)	Cholesterol (mg)	Sodium (mg)	Vitamin A (%)	Vitamin C (%)	Calcium (%)	Iron (%)	Fiber (g)	Sugar (g)
Total:													

Favorite Foods OMAD Meal

Favorite Meal Foods	# of Servings	Calories (Cal)
Total:		

Bring-In's Lab HW

- 1.
- 2.
- 3.

Organic Chemistry – Jot This Down!

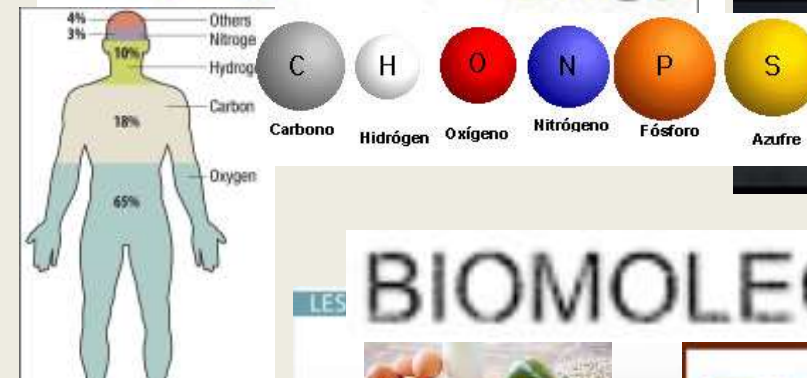
- ORGANIC Chemistry is the study of the CHEMICALS that make up living THINGS!
- There are SIX (6!) main Elements VITAL to life on Earth and thus most abundant in MOST living things!
 - CARBON (C), HYDROGEN (H), OXYGEN (O), NITROGEN (N), PHOSPHORUS (P), AND SULFUR (S) AKA **CHONPS**!
- These Elements are found BONDED inside living things as the FOUR Major Biomolecules!
 - Nucleic Acids, Carbohydrates, Proteins, and LIPIDS!
 - The last three are also known as “Macronutrients”!

Major Branches of Chemistry

Organic Chemistry

Formerly defined as the *branch of science concerned with substances derived from living things.*

$[\text{NH}_4^+][\text{NCO}^-]$



WHAT WE'RE MADE OF

Calorie Content of Macronutrients
Fat: 9 calories per gram
Protein: 4 calories per gram
Carbohydrates: 4 calories per gram

BIOMOLECULES

proteins **carbohydrates**

lipids **nucleic acids**

DNA and **RNA**

Bring-In's Lab – HW Problems and Questions

1. DRAW a “Nutrition Facts” Label for your Healthy Meal (You do not need to include Saturated Fat or anything else not included in your tables)!
2. *What is Organic Chemistry? What are the main Elements found in most Organic Compounds? Are Organic Compounds only found in living things? If not, give an example of one found in something not alive.*
3. The 4 Major Biomolecules (Proteins, Carbohydrates, Lipids aka Fats, and Nucleic Acids) are examples of Organic Compounds in living things. Which ones are also found in food as “Macronutrients”? Finally, which one do you think has the most “stored energy” and how could you test this?

FRIDAY, MARCH 22nd

DO NOW

• In your notebooks, to be checked, solve this problem...
There are about 4 Joules in 1 calorie, 1000 calories in 1 kilocalorie, and a bit over 860 kilocalories in 1 kilowatt-hour. These are units of Chemical Energy!

Know:

$$4\text{J} \approx 1\text{cal} \quad 1000\text{cal} = 1\text{kcal}$$
$$860\text{kcal} \approx 1\text{kWh}$$

Asked: How many kilo-watt hours (kWh) are in 6,880,000 Joules (J)?

TODAY'S PLAN

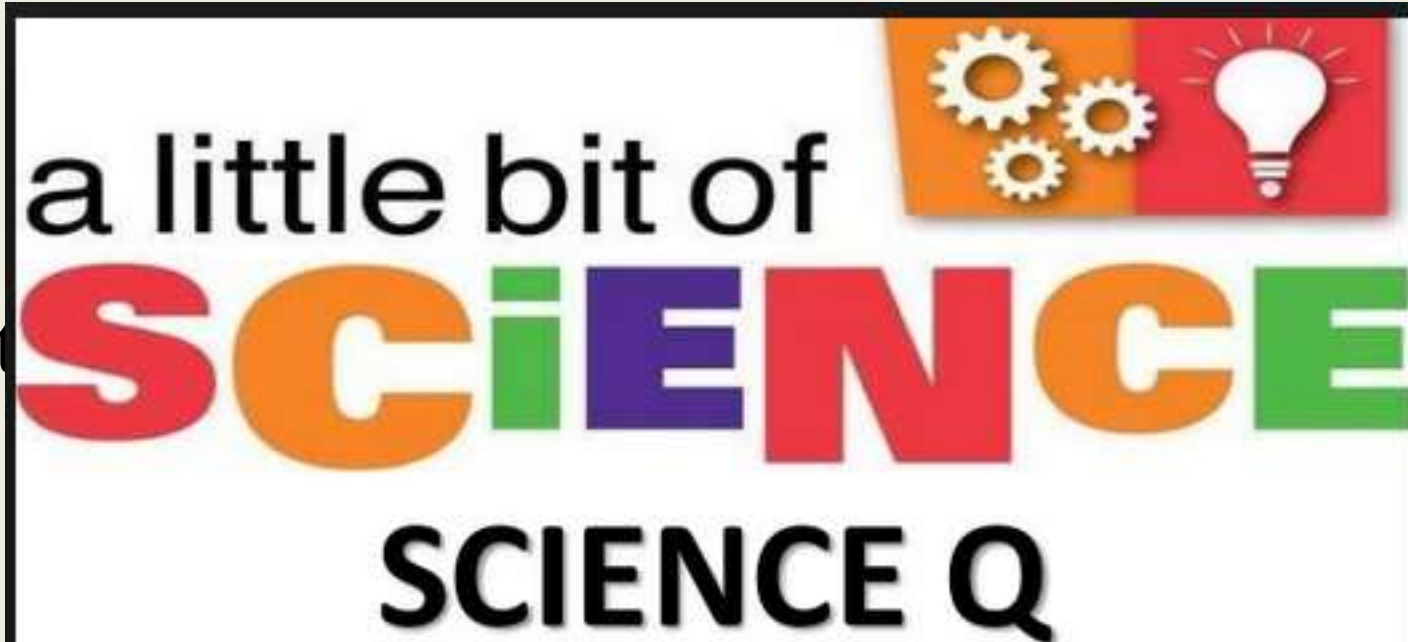
1. Do and review the **DO NOW** and **Qualitative Prompt (QP)**!
 - Today's **QP** = DESIGN and DRAW a method for measuring the amount of energy (CALORIES!) in a piece of food and then use Pg. 230-233 to LIST the 3 types of ORGANIC Compounds!
2. Open books, **WORK** on today's **AO!**
3. ***HW** = Use GOOGLE to define the term "Elementary Particle" AND then give an EXAMPLE of one (not a Quark)!

TODAY'S ACADEMIC OBJECTIVE

Today you will **WITNESS** how the **AMOUNTS** of Organic Compounds in food determines their amounts of **ENERGY!**

Bell 2 Bell

- We work what in this class?!?!?!
 - **BELL 2 BELL**
- Every single precious **SECOND** of academic instructional time is thus utilized in this classroom!
- You students will thus be vocally quizzed **EVERY DAY** until I **DISMISS** you at the end of class (with a positive greeting and a thank-you of course!).



Bell 2 Bell

- We work **BELL 2**
BELL in Mr. Floyd's class!
- I will thus quiz you about the science we learned today until the very end!
- Let us begin!

