WEEKLY PLANNER: ALL SCIENCE WEEK

OF 12.10.18

Objectives for the week: *Be ready for the final exam.* **PSST- you WILL score a 3 or better on the EOC!!!!**

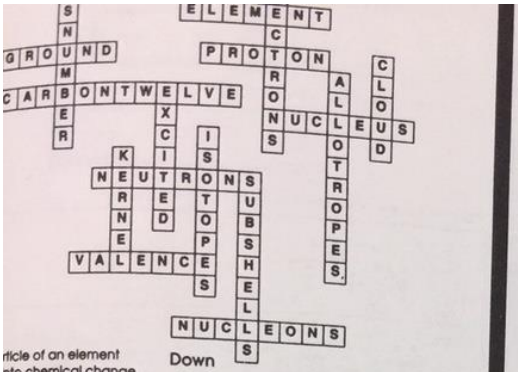
Day	Honors Biology - How can we ACE the EOC???	Honors Chemistry -How can we ACE the chemistry NCFE?
Mon 12/10	EOC REVIEW part 1 *HW= finish review pg 1-10	**Radioactivity** **Quantum Chemistry** *HW=Finish ALL packet #1-100 according to directions. -Radioactivity, half life, and phys/chemical change.
Tues 12/11 STUDY BUDDIES!	EOC REVIEW part 2 *HW= ENTIRE PACKET DUE on day of exam to in Pod 206 ! BE THERE by 8:55 so I can collect your packet and give you a present!	Present #1-123 ENTIRE PACKET DUE on day of exam to Ms. R. Gore! BE THERE by 8:55 so I can clear your calculator and give you a present!
Wed 12/12	XXXXXXXXXXXXXXXXXXX	3rd block CHEM exam 9am Fair BLuff
Thurs 12/13	XXXXXXXXXXXXXXXXX	2nd block CHEM exam 9am Fair BLuff
Fri 12/14	1ST BLOCK EXAM 9AM FAIR BLUFF	XXXXXXXXXXXXXXXXXXXXXXX

https://climatechangefocus.weebly.com/

QFC= Questioning for: Concept, Clarification, Cause, Connections,

The Science Socratic Questioner:

-is Patient
-is Kind
-is Humble
-Seeks reason for the misconception
-is Dynamic
-Seeks to help the person understand and announce the correct answer all on their own
-Lets the presenter think they came up with the right answer all on their own!! 😊



rticle of an element
nto chemical change
rotons in the nucleus

omposed into simpler
rdinary chemical

ll electrons are at their
nergy level
arged particle found

atomic mass unit
of an atom is here.
hus atomic number
utermost principal

trons are these.

Down

2. Sum of the protons and neutrons in the nucleus of an atom
3. Charged atom or group of atoms
5. Equal to the number of protons in a neutral atom
9. The volume of an atom is determined by the size of its electron _____ .
10. Different forms of the same element
12. State in which electrons have absorbed energy and ↑jumped↑ to a higher energy level
14. Atoms with the same atomic number but different atomic masses
15. The nucleus and all electrons in an atom except the valence electrons
17. s, p, d, f

following nuclear reactions.

1. $^{42}K \rightarrow {}^{0}_{1}e +$ _____ $^{42}_{20}Ca$
2. $^{239}Pu \rightarrow {}^{4}_{2}He +$ _____ $^{235}_{92}U$
3. $^{235}_{92}U \rightarrow$ $^{4}_{2}He$ _____ $+ {}^{231}_{90}Th$
4. $^{1}_{1}H + {}^{3}_{1}H \rightarrow$ _____ $^{4}_{2}He$
5. $^{6}_{3}Li + {}^{1}_{0}n \rightarrow {}^{4}_{2}He +$ _____ $^{3}_{1}H$
6. $^{27}_{13}Al + {}^{4}_{2}He \rightarrow {}^{30}_{15}P +$ _____ $^{1}_{0}n$
7. $^{9}_{4}Be + {}^{1}_{1}H \rightarrow$ $^{6}_{3}Li$ _____ $+ {}^{4}_{2}He$
8. $^{37}K \rightarrow {}^{0}_{1}e +$ $^{37}_{18}Ar$
9. $^{235}_{92}U + {}^{1}_{0}n \rightarrow {}^{142}_{56}Ba + {}^{91}_{36}Kr + 3{}^{1}_{0}n$
10. $^{238}_{92}U + {}^{4}_{2}He \rightarrow$ _____ $^{241}_{94}Pu + {}^{1}_{0}n$

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Name _____

ISOTOPES

100.0 g sample of ^{198}Au is left after 8.10 days if its half-life is

12.5g

of ^{16}N decays to 12.5 g in 14.4 seconds. What is its half-life?

7.2 seconds

is 12.4 hours. How much of a 750 g sample is left after 62 hours?

23.4g

fe of ^{99}Tc if a 500 g sample decays to 62.5 g in 639,000 years?

2.13×10^5 yrs

h is 1.4×10^{10} years. If there are 25.0 g of the sample left after ow many grams were in the original sample?

100g

^{131}I left after 40.35 days. How many grams were in the original ife is 8.07 days?

160g

Name _____

PERIODIC TABLE WORKSHEET

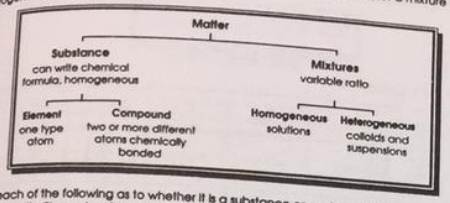
1. lower left
2. upper right
3. decreased, increased positive nuclear charge
4. increases, additional principal energy levels
5. larger
6. smaller
7. increases, increased positive nuclear charge
8. decreases, outermost electron is farther away from nucleus, shielding effect of inner electrons
9. upper right (F)
10. lower left (Fr)
11. alkali metals
12. alkaline earth metals
13. transition elements
14. metals, nonmetals
15. halogens
16. fluorine
17. nobel gases
18. "d" & "f"
19. valence electrons
20. principle energy levels
21. transition element
22. more
23. metals
24. atomic numbers
25. semimetal or metalloid

ANSWER KEY

MATTER—SUBSTANCES VS. MIXTURES

Name _____

All matter can be classified as either a substance (element or compound) or a mixture (heterogeneous or homogeneous).



Classify each of the following as to whether it is a substance or a mixture. If it is a substance, write Element or Compound in the substance column. If it is a mixture, write Heterogeneous or Homogeneous in the mixture column.

Type of Matter	Substance	Mixture
1. chlorine	element	
2. water	compound	
3. soil		heterogeneous
4. sugar water		homogeneous
5. oxygen	element	
6. carbon dioxide	compound	
7. rocky road ice cream		heterogeneous
8. alcohol	compound	
9. pure air		homogeneous
10. iron	element	

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PHYSICAL VS. CHEMICAL PROPERTIES

Name _____

A physical property is observed with the senses and can be determined without destroying the object. For example, color, shape, mass, length and odor are all examples of physical properties.

A chemical property indicates how a substance reacts with something else. The original substance is fundamentally changed in observing a chemical property. For example, the ability of iron to rust is a chemical property. The iron has reacted with oxygen, and the original iron metal is changed. It now exists as iron oxide, a different substance.

Classify the following properties as either chemical or physical by putting a check in the appropriate column.

	Physical Property	Chemical Property
1. blue color	✓	
2. density	✓	
3. flammability		✓
4. solubility	✓	
5. reacts with acid to form H_2		✓
6. supports combustion		✓
7. sour taste	✓	
8. melting point	✓	
9. reacts with water to form a gas		✓
10. reacts with a base to form water		✓
11. hardness	✓	
12. boiling point	✓	
13. can neutralize a base		✓
14. luster	✓	
15. odor	✓	

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PHYSICAL VS. CHEMICAL CHANGES

Name _____

In a physical change, the original substance still exists. It has only changed in form. In a chemical change, a new substance is produced. Energy changes always accompany chemical changes.

Classify the following as being a physical or chemical change.

1. Sodium hydroxide dissolves in water. physical
2. Hydrochloric acid reacts with potassium hydroxide to produce a salt, water and heat. chemical
3. A pellet of sodium is sliced in two. physical
4. Water is heated and changed to steam. physical
5. Potassium chlorate decomposes to potassium chloride and oxygen gas. chemical
6. Iron rusts. chemical
7. When placed in H_2O, a sodium pellet catches on fire as hydrogen gas is liberated and sodium hydroxide forms. chemical
8. Evaporation physical
9. Ice melting physical
10. Milk sours. chemical
11. Sugar dissolves in water. physical
12. Wood rotting chemical
13. Pancakes cooking on a griddle chemical
14. Grass growing in a lawn chemical
15. A fire is inflated with air. physical
16. Food is digested in the stomach. chemical
17. Water is absorbed by a paper towel. physical

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BOYLE'S LAW

Name _____

Boyle's Law states that the volume of a gas varies inversely with its pressure if temperature is held constant. (If one goes up, the other goes down.) We use the formula:

$$P_1 \times V_1 = P_2 \times V_2$$

Solve the following problems (assuming constant temperature).

1. A sample of oxygen gas occupies a volume of 250. mL at 740. torr pressure. What volume will it occupy at 800. torr pressure? 231 mL
2. A sample of carbon dioxide occupies a volume of 3.50 liters at 125 kPa pressure. What pressure would the gas exert if the volume was decreased to 2.00 liters? 219 kPa
3. A 2.0 liter container of nitrogen had a pressure of 3.2 atm. What volume would be necessary to decrease the pressure to 1.0 atm? 6.4 liters
4. Ammonia gas occupies a volume of 450. mL at a pressure of 720. mm Hg. What volume will it occupy at standard pressure? 426 mL
5. A 175 mL sample of neon had its pressure changed from 75 kPa to 150 kPa. What is its new volume? 88mL
6. A sample of hydrogen at 1.5 atm had its pressure decreased to 0.50 atm producing a new volume of 750 mL. What was its original volume? 250 mL
7. Chlorine gas occupies a volume of 1.2 liters at 720 torr pressure. What volume will it occupy at 1 atm pressure? 1.1 liters
8. Fluorine gas exerts a pressure of 900. torr. When the pressure is changed to 1.50 atm, its volume is 250. mL. What was the original volume? 317 mL

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Item #	Correct Answer
1	D
2	C
3	A
4	B
5	B
6	A
7	A
8	A
9	C
10	A
11	D
12	B
13	B
14	C
15	A
16	D
17	C
18	A
19	C
20	D
21	C
22	D
23	A
24	A
25	A
26	A
27	C
28	A
29	A
30	D
31	C
32	C

BIO 1.2

33	C
34	A
35	A
36	C
37	D
38	B
39	A
40	B
41	D
42	C
43	D
44	D
45	D
46	B
47	C
48	B
49	A
50	A
51	**C**
52	**A**
53	**D**
54	**B**
55	**D**
56	**B**
57	**A**
58	**C**
59	**A**
60	**C**
61	**C**
62	**A**
63	**A**
64	**D**
65	**A**
66	**A**
67	**C**
68	**C**
69	**A**
70	**C**
71	**D**
72	**D**

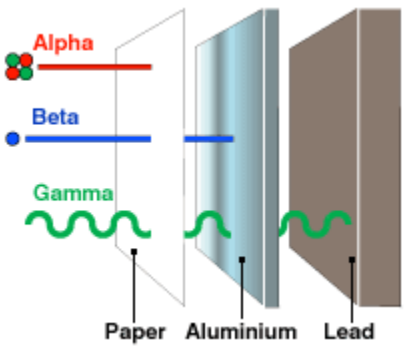
BIO 1.2

73	**B**
74	**B**
75	**D**
76	A
77	A
78	C
79	B
80	A
81	B
82	C
83	C
84	A
85	B
86	B
87	B
88	A
89	D
90	A
91	A
92	A
93	D
94	D
95	C
96	A
97	D
98	B
99	A
100	D

Radioactivity-

- An unstable atomic nucleus emits a form of radiation (alpha, beta, or gamma) to become stable.
- In other words, the nucleus decays into a **different** atom.

Three types of radiation and their effects:



Name	Symbol	What is it?	Penetration depth in air	What blocks it?	Charge	Deflected by Magnetic Field?
Alpha	α or $^{4}_{2}He$	Helium nucleus: 2 protons and 2 neutrons	8cm	paper	Positive	Yes, less than beta particles because they have a higher mass
Beta	$^{0}_{-1}\beta$ or e^{-}	High energy electron	1m	3mm aluminium	Negative	Yes, more than alpha, and in the opposite direction because they have the opposite charge
Gamma	γ	Part of the Electromagnetic Spectrum	Forever	Several m of concrete or lead	None	No

Type of radiation	Symbol	Composition	Charge	Mass (atomic mass units)
Alpha	α	2 protons and 2 neutrons (a helium nucleus)	+2	4
Beta	β^-	electron	–1	Negligible
Positron	β^+	antimatter electron	+1	Negligible
Gamma	γ	photons of electromagnetic energy	0	0

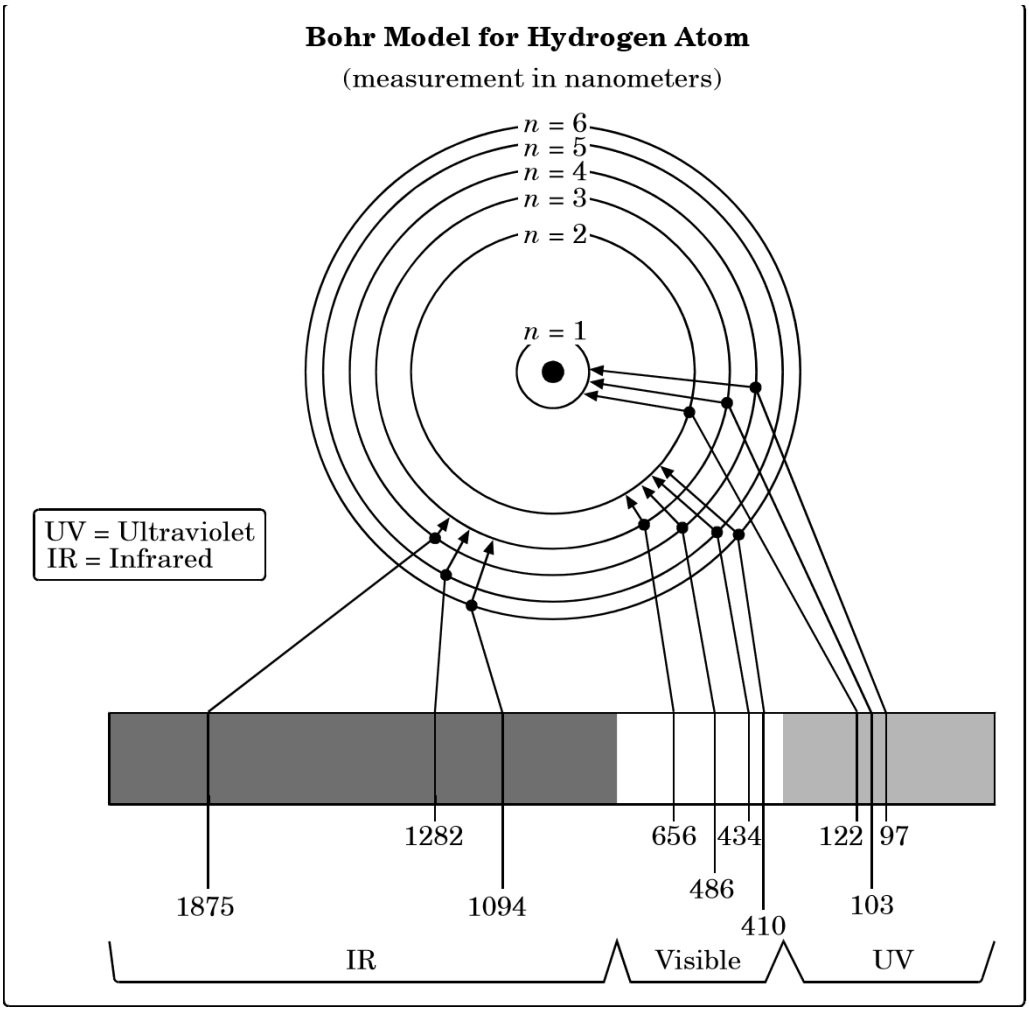
Half life: Amount of time it takes for one half of a sample of radioactive atoms to decay

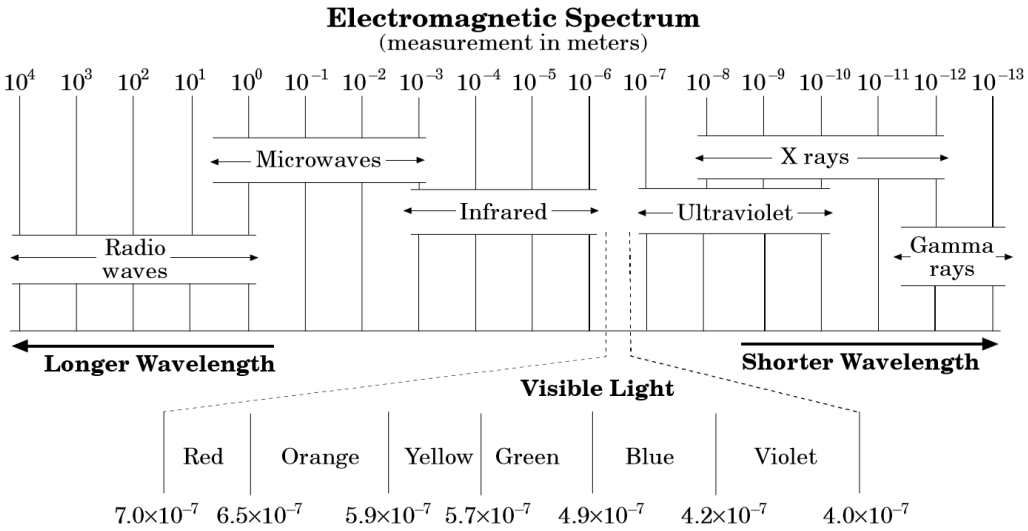
This is 100g of a radioactive element:

- Example1: You have 400 mg of a radioisotope with a half-life of 5 minutes. How much will be left after 30 minutes?

- Example2: Suppose you have a 100 mg sample of Au-191, which has a half-life of 3.4 hours. How much will remain after 10.2 hours?

QUANTUM LEAP-





CHEMISTRY ANSWERS

1 b	11 c	21 b	31 c	41
2 d	12 a	22 c	32	42
3 b	13 YOU calc.	23 b	33	43 c
4 b	14 b	24 b	34	44 b
5 a	15 b	25 c	35	45 a
6 e	16 c	26 d	36	46 b
7 a	17 b	27 c	37	47 d
8 c	18 c	28 d	38	48 b
9 a	19 c	29 a	39	39 d
10 b	20 d	30 b	40	50 c

51 d picture	61 a	71 b	81 YOU calc	91
52 a	62 a	72 b	82 YOU calc	92
53 a	63 c	73 d	83 c	93
54 c	64 d	74 b	84 c	94
55 b	65 a	75 c	85 a	95
56 d picture	66 c pic	76 a	86 d	96
57 c picture	67 You calc	77 c	87 YOU calc	97
58 a pic	68 9029J	78 a	88 YOU calc	98
59 c	69 c	79 YOU calc	89 YOU calc	99
60 c	70 d	80 a	90 YOU calc	100

101	111 EQ	121 a
102	112 EQ	122
103	113 EQ	123 d
104	114 EQ	
105	115 pH	
106	116 pH	
107 a	117 Molarity	
108 b	118 Molarity	
109 d	119 70g	
110 EQ	120 unsatrtd	

115-118, 109-114, 103-106, 99-102, 86-89